BATTELLE

GEOTECHNICAL FACTUAL REPORT

GEOTECHNICAL EXPLORATION
SAN CRISTOBAL DISPOSAL SITE

Doña Ana, San Cristóbal, Republica Dominicana

AUGUST 13, 2018

Horizon Consultants
Soluciones en Ingeniería Geotécnica

GEOTECHNICAL EXPLORATION
SAN CRISTOBAL DISPOSAL SITE

Doña Ana, San Cristóbal, Republica Dominicana

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Doña Ana, San Cristóbal, Republica Dominicana

1. Introduction

This report has been prepared at the request of Battelle and forms part of the studies for an environmental assessment. It presents the results of a geotechnical investigation carried out within an area identified for the development of the disposal site in San Cristobal, Dominican Republic.

The purpose of this exploration was to investigate the subsurface soil and ground water conditions at selected locations within the site for the evaluation of the physical/engineering properties. This report presents the factual information of the work performed in the field and laboratory test results.

The scope of our geotechnical services consisted of the following:

- Perform drilling and sampling of (14) hollow-stem auger soil borings and installation of six (6) standpipe piezometers.
- Conduct laboratory testing of selected samples to characterize the subsurface materials.
- Preparation of geotechnical field report presenting test location map and boring/piezometer logs.

The following section summarizes the activities that were undertaken well as the results of the field exploration.

2. Field Work

The field exploration program included 14 soil borings at the project site to evaluate subsurface conditions and was carried out between 4 to 15 June 2018. In total 6 standpipe piezometers were installed to measure the level of ground water table. 14 trial pits were excavated using CAT backhoe, advanced to depths of 8 – 10 ft. Coordinates were obtained using a handheld Garmin62S GPS and elevations where obtained by the provided topographic plan.

All works were conducted in accordance and supervision of the consulting engineer. Soil borings were drilled at the positions denoted on the appended boring location plan in **Appendix A**, which presents soil profiles, boring and trial pit logs. The boring information is presented on **Table 1.** A photographic sequence of the field activities is shown in **Appendix D**.

Drilling was carried out utilizing a trailer mounted drill rig (CME-55), and 8-inch diameter hollow-stem augers were used to advance the boreholes. Samples were obtained using a 140-pound hammer with a 30-inch free fall. Our CME-55 drill rigs use an automatic hammer release mechanism with efficiency (E_m) of 0.85 (85%). The standard penetration test (SPT) was performed at nominal 5 feet intervals. Soil samples were collected by split spoon and thin-walled tube (Shelby). Undisturbed samples were collected as appropriate and the information is summarized on **Table 2**.

Blow counts were recorded for every 6 inches, for a total penetration of 24 inches into the ground, following the procedures of ASTM D1586. No corrections have been applied for effects of automatic hammer drive energy, drill rod lengths, or sampler diameter. These borings were logged by a Horizon Consultants geotechnical engineer at the time of the drilling. Recovered samples descriptions are based on visual field and laboratory observations using classification methods of ASTM D2488.

When laboratory data are available, classifications are in accordance with ASTM D2487. The undisturbed sample tubes were sealed with paraffin wax to prevent the loss of

moisture, while the disturbed samples were transported to the laboratory using sealed and moisture proof containers ASTM D4220.

Table 1. Exploratory borings

Boring/ Test Pit	Exploration Depth (feet)	Ground Elevation (m)	Ground Water Table El. (feet)	Easting (m)	Northing (m)	Installed Piezometer (Y/N)
SB-01	80	83.3	12.3	378317	2030314	Y
SB-02	42	77.5	NM	378374	2030267	N
SB-03	82	74	8.6	378348	2030199	Y
SB-04	42	76.5	9.5	378289	2030244	N
SB-05	81.32	78	12	378046	2030232	Y
SB-06	42	67.5	26	377991	2030132	N
SB-07	42	70.5	NM	378076	2030138	N
SB-08	41.4	61.1	NM	378000	2030054	N
SB-09	81.4	67.8	61	378077	2030047	Y
SB-10	42	74.5	13.5	378149	2030073	N
SB-11	42	66.5	NE	378172	2030022	N
SB-12	41.4	68.2	17.7	378258	2029999	Y
SB-13	42	64	NE	378137	2029931	N
SB-14	40.9	59.5	10.5	378018	2029947	Y
TP-01	10	83.3	-	378322	2030310	-
TP-04	8	76.5	-	378287	2030252	-
TP-05	10	78	-	378046	2030240	-
TP-06	8	67.5	-	377998	2030132	-
TP-08	8	61.1	-	377989	2030054	-
TP-09	8	67.8	-	378107	2030039	-
TP-12	8	68.2	-	378232	2029992	-
TP-14	8	59.5	-	378016	2029961	-

NE – not encountered NM – not measured

Table 2. Undisturbed samples collected

Boring No.	Depth (ft)	Shelby Sample No.	Recovery (in)	Soil Description
SB-03	32	1	16	Fat clay [CH]. Hard
SB-07	20	1	16	Fat clay [CH]. Hard
SB-09	67	1	6	Shale
SB-10	27	1	10	Shale
SB-11	22	1	20	Fat clay [CH]. Hard

3. Summarized Subsoils

The subsoils encountered within the boreholes are summarized on **Table 3** and includes the following:

- Topsoil – covers the site to an average depth of 1.3 ft and comprises a dark brown, very stiff, organic, clayey, containing roots.
- Clay – underlies the topsoil with an average thickness of 28 ft and consists of high – medium plasticity, light brown, hard.
- Shale – underlies the clay with an average thickness of 19 ft and where encountered is predominantly a completely weathered, extremely weak rock, fine grained, dark green color.
- Alluvium – occurs in some boreholes and underlies the clay with average thickness of 5 ft. It is medium to dense density, clayey sand or gravel.

Table 3. Summary of soil thickness

Soil Type	Soil Thickness (ft)		
	Min	Max	Average
Topsoil	0.0	3.0	1.3
Clay	0.0	38.7	27.9
Shale	0.0	50.3	18.7
Alluvium	0.0	18.0	5.1

4. Laboratory Tests

Laboratory testing was performed on representative samples collected during the field explorations to evaluate the geotechnical engineering properties of the subsurface materials. Tests included natural moisture content (ASTM D2216), particle-size sieve and hydrometer analysis (ASTM D422), Atterberg Limits (ASTM D4318), modified/standard proctor (ASTM D1557/698), triaxial CU (ASTM D4767), hydraulic conductivity (ASTM D5084), and slug test (ASTM D4044). Testing was completed in accordance with applicable ASTM standards.

Table 4 presents a summary of the average results laboratory tests performed to the soil samples obtained at the project area. The detailed laboratory test report is presented in **Appendix B.**

Table 4. Summary of laboratory tests

MATERIAL	USCS	Depth Min (ft)	Depth Max (ft)	Gravel (%)	Sand (%)	Fines (%)	PL (%)	LL (%)	PI (%)	Max Density (kg/m3)	Optimum Moisture (%)	Natural Moisture (%)
Fat Clay - High Plasticity	CH	5	40	1	7	92	27	57	31	1832	14	21
Clay - Low Plasticity	CL	5	25	1	21	78	21	41	20	1962	10	20
Clayey Gravel	GC	5	25	48	26	27	22	45	22	2056	10	15
Shale	CH	30	80	1	6	94	27	60	33	1861	14	17
Silty Sand	SM	5	25	0	67	33	23	29	6	-	-	24

4.1 Compaction Tests

Modified Proctor compaction tests were carried out on the clay and shale materials, the results are summarized in **Table 5** below.

Table 5. Summary of compaction tests

Material	USCS	Boring No.	Depth (ft)	Max Density (kg/m3)	Optimum Moisture (%)
Shale	CH	SB10	40	1861	14.1
Lean clay with sand	CL	SB01	6	1920	10.5
Fat clay	CH	SB04	7	1815	15.6
fat clay	CH	SB05	10	1861	16.0
Fat clay	CH	SB06	8	1806	16.1
Lean clay with sand	CL	SB08	5	1989	10.2
Fat clay	CH	SB09	8	1845	9.9
Lean clay	CL	SB12	8	1977	8.8
Clayey gravel	GC	SB14	5	2056	10.0

4.2 Hydraulic Conductivity

Soil samples were submitted for hydraulic conductivity analysis ASTM D5084. **Table 6** below summarizes the results. Please refer to **Appendix B** for detailed lab test results.

Table 6. Summary of hydraulic conductivity

Material	USCS	Boring No.	Depth (ft)	Permeability (cm/sec)	Injection Pressure (PSI)
Shale	CH	SB01	60	4.20E-07	10
Fat Clay	CH	SB02	20	1.80E-06	10
Fat Clay	CH	SB03	20	4.50E-07	10
Shale	CH	SB05	50	7.80E-08	5
Fat Clay	CH	SB06	35	6.50E-07	10
Fat Clay	CH	SB07	40	1.70E-07	10
Fat Clay	CH	SB07	20	7.30E-07	10
Fat Clay	CH	SB08	25	6.70E-08	10
Shale	CH	SB10	50	2.00E-07	10
Fat Clay	CH	SB11	15	9.50E-07	10
Fat Clay	CH	SB12	25	8.90E-08	10
Fat Clay	CH	SB13	30	5.30E-07	5
Shale	CH	SB14	35	2.70E-07	10

4.3 Consolidated Undrained Triaxial

Soil samples were submitted for consolidated undrained triaxial ASTM D4767. **Table 7** below summarizes the results.

Table 7. Summary of CU Triaxial

Material	USCS	Boring No.	Sample	c' (psf)	φ' (deg)
Fat Clay	CH	SB03	SH-1	26.4	31.7
Shale	CH	SB10	SH-1	105	34.8

5. In Situ Slug Tests

Instantaneous change in head (Slug) tests ASTM D4044 were conducted on all monitoring wells. On this test the slug is withdrawn from the well causing an instantaneous change of the water level in the monitoring well. While the water level recovers it is measured with the indicator instrument until the recovery of the water level is reached. Results of the slug tests are presented on **Appendix C**.

6. Groundwater

Monitoring wells were installed in six (6) borings for the purpose of taking ground water level measurements. Ground water level measurements began on June 15 2018, and are summarized on **Table 7**. All measurements are referred from ground level.

Table 7. Summary of water level measurements

Monitoring Location	Depth Well (ft)	Stickup PVC (ft)	08-Jun-18	15-Jun-18	29-Jun-18	* 11-Jul-18	27-Jul-18	10-Aug-18
SB01	26.9	1.87	-	13.2	12.8	11.8	12.9	12.2
SB03	19.5	0.42	-	8.6	6.70	6.88	6.8	9.4
SB05	28.1	0.49	12.0	10.1	8.3	6.7	7.2	10.7
SB09	68.7	1.00	-	61.0	24.4	24.3	24.3	25.0
SB12	31.7	0.89	-	17.8	18.34	18.31	18.3	20.2
SB14	19.2	0.59	10.5	10.5	10.3	10.1	10.4	9.3

* Day after rainstorm

Sincerely,

By **Horizon Consultants, S.A.**

Tirso A. Álvarez Fermín, Ph.D., P.E.
Geotechnical Consultant

APPENDIX A

Tests Location Plan

Soil Profiles

Boring and Piezometer Logs

141,374 m2
P. No. 478-A

ACCESO

ARROYO NAJAYO

TORRE TRANSMISION

PARC. 48

58,325 m2
AREA VERTEDERO ACTUAL

P. No. 307380711989
Antigua P. No. 479

CANADA

ARROYO NAJAYO

ARROYO NAJAYO

SB-01 TP-01 B B'
SB-02
SB-03
SB-04 TP-04
SB-05 TP-05 A A'
SB-06 TP-06
SB-07
SB-08 TP-08
SB-09 TP-09
SB-10 C C'
SB-11
SB-12 D D'
SB-13
SB-14 TP-14

LEGEND

- Boring drilled by Horizon Consultants
- Borings with installed piezometer
- Trial Pit
- Subsurface Profile

General Notes
1. 14 borings were drilled to explore the subsurface conditions.
2. 6 piezometers were installed to monitor water level conditions.
3. 9 trial pits were performed to recover grab samples and exploration.

Reference Documents
1. Boring and Piezometer Locations_2018-05-23.dwg
2. Requerimientos de Muestreos y Pruebas.pdf

CLIENT: BATTELLE	PROJECT: San Cristobal Disposal Site	GRAPHIC SCALE	PROJ. No.: 981-18	HorizonConsultants Soluciones en Ingeniería Geotécnica
	TITLE: Boring and Piezometer Location Plan		DATE: June 2018	
			SCALE: Graphic	
			FORMAT: 11x17 (A3)	

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981-18 - Battelle

SOIL PROFILE: SECTION A-A'

LEGEND

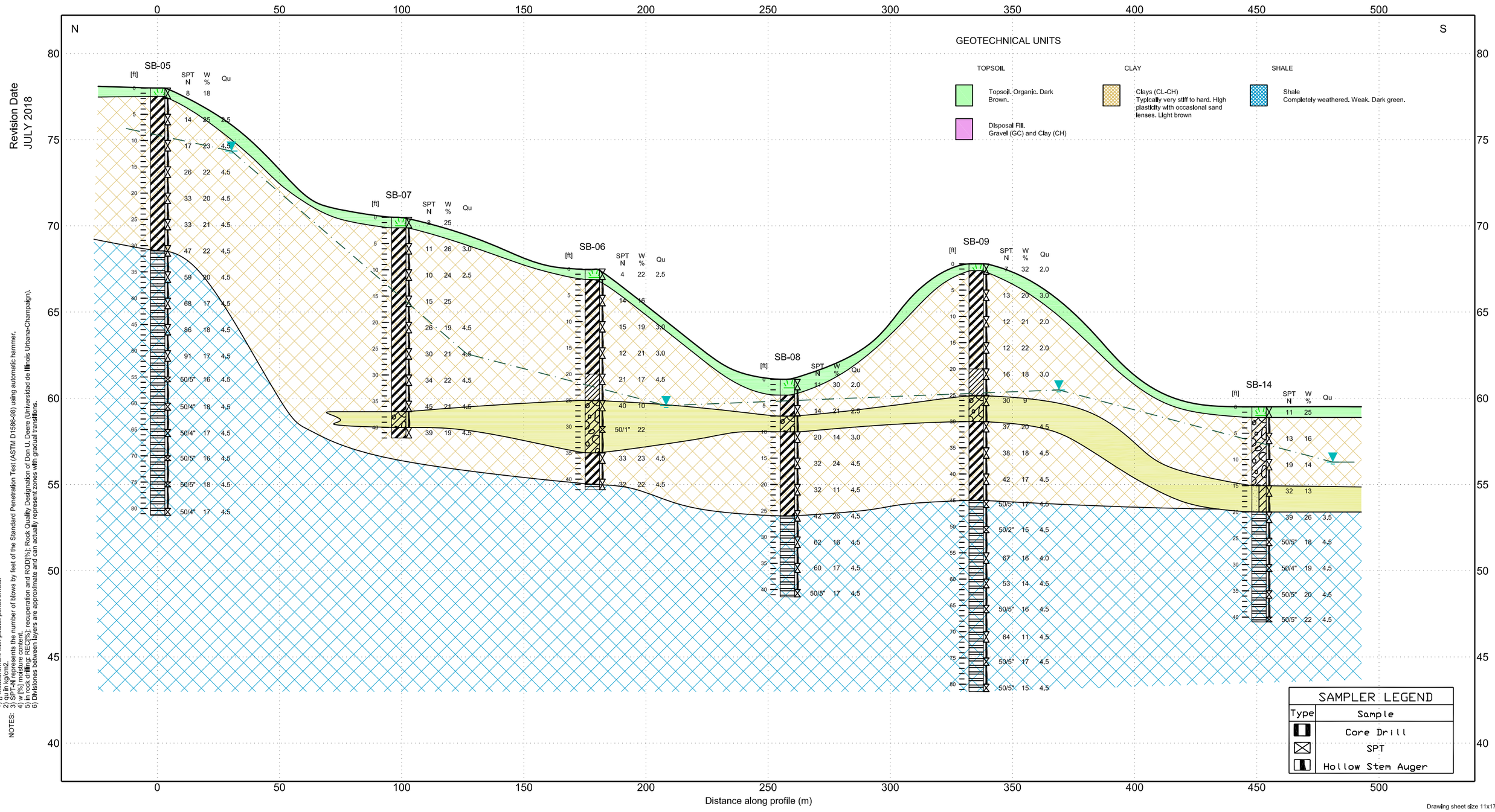
Topsoil | USCS High Plasticity Clay | Shale | USCS Low Plasticity Clay | USCS Clayey Gravel | USCS Poorly-graded Sand with Clay

TESTS / OTHER

N - Standard penetration test value

W% - Natural water content

Qu - Pocket penetrometer compressive strength [kg/cm2]



Revision Date
JULY 2018

NOTES:
1) [] Measurement with pocket penetrometer
2) qu in kg/cm2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) W% represents the natural water content.
5) In rock drilling REC(%); recuperation and RQD(%); Rock Quality Designation of Don U. Deere (Universidad de Illinois Urbana-Champaign).
6) Divisiones between layers are approximate and can actually represent zones with gradual transitions.

Drawing sheet size 11x17 in

HorizonConsultants

981-18 - Battelle

SOIL PROFILE: SECTION B-B'

LEGEND

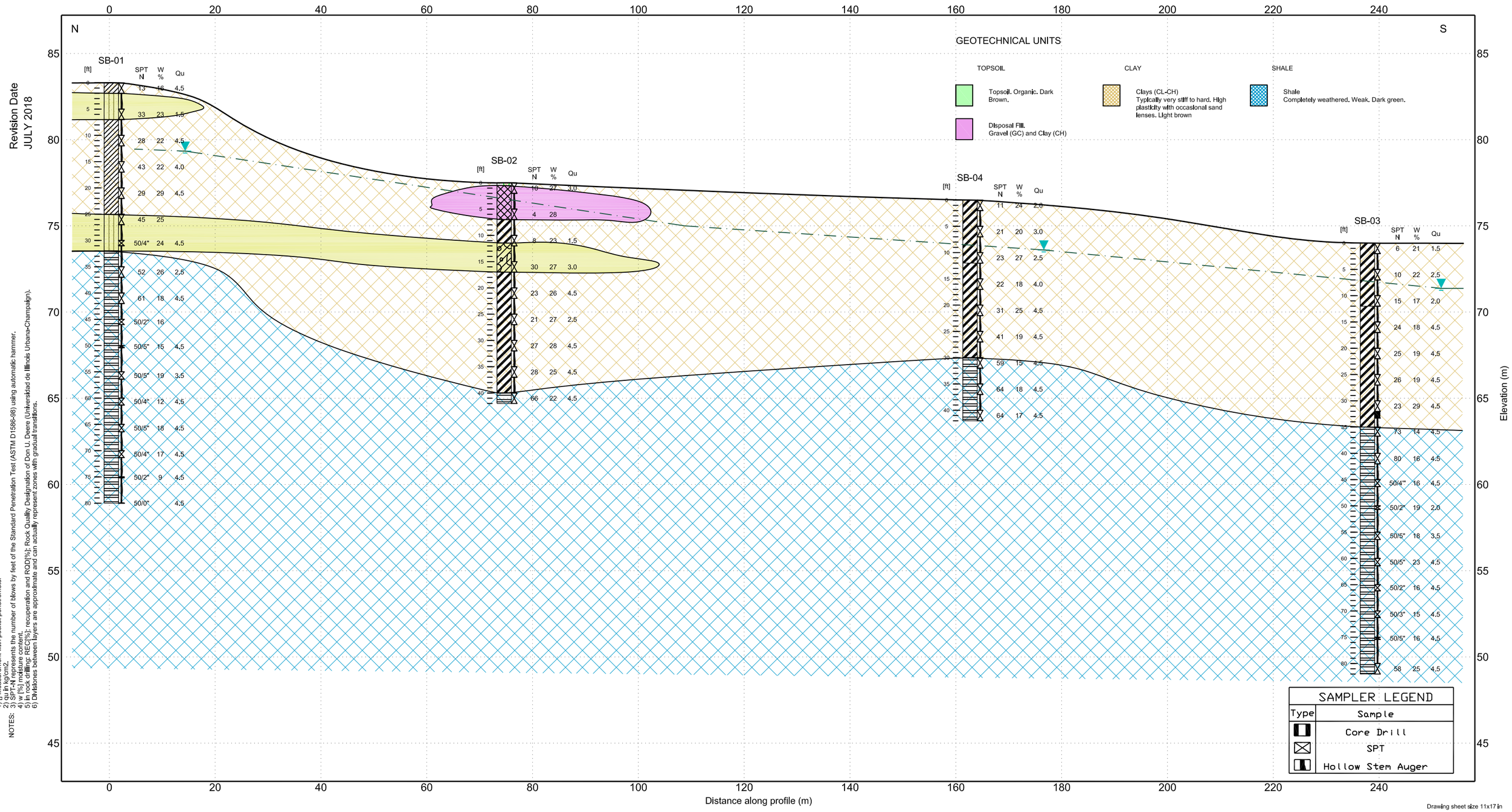
- USCS Low Plasticity Sandy Clay
- USCS Silty Sand
- Shale
- Topsoil
- Fill (made ground)
- USCS High Plasticity Clay
- USCS Clayey Gravel

TESTS / OTHER

N - Standard penetration test value

W% - Natural water content

Qu - Pocket penetrometer compressive strength [kg/cm2]



Revision Date
JULY 2018

NOTES:
1) [] Measurement with pocket penetrometer
2) qu in kg/cm2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w% = natural water content
5) In rock drilling REC(%); recuperation and RQD(%); Rock Quality Designation of Don U. Deere (Universidad de Illinois Urbana-Champaign).
6) Divisiones between layers are approximate and can actually represent zones with gradual transitions.

Drawing sheet size 11x17 in

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SOIL PROFILE: SECTION C-C'

LEGEND

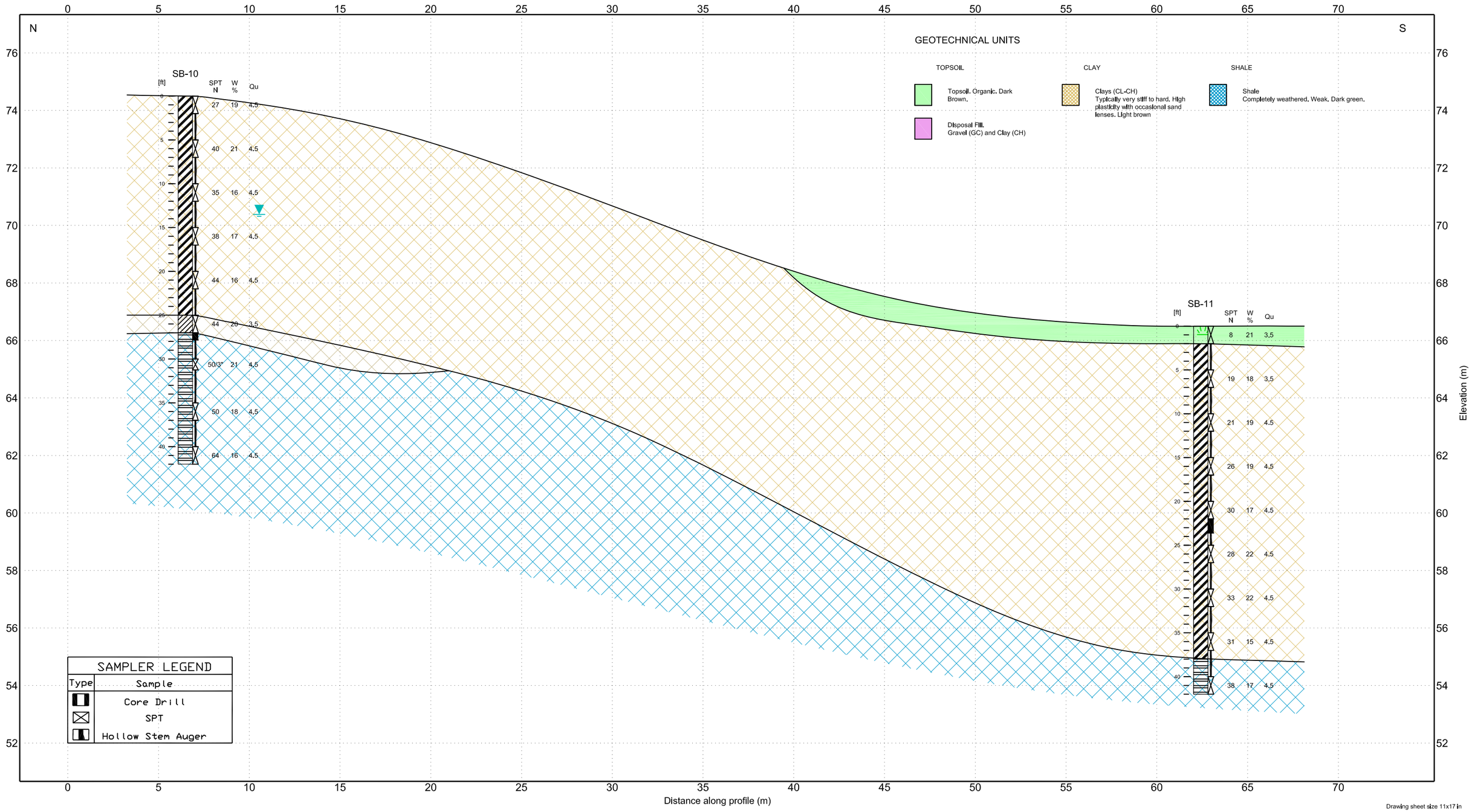
USCS High Plasticity Clay | USCS Low Plasticity Clay | Shale | Topsoil

TESTS / OTHER

N - Standard penetration test value

W% - Natural water content

Qu - Pocket penetrometer compressive strength [kg/cm2]



Revision Date
JULY 2018

NOTES:
1) [] Measurement with pocket penetrometer
2) qu in kg/cm2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w% represents natural moisture content.
5) In rock drilling: REC[%]: recuperation and RQD[%]: Rock Quality Designation of Don U. Deere (Universitad de Illinois Urbana-Champaign).
6) Divisiones between layers are approximate and can actually represent zones with gradual transitions.

Drawing sheet size 11x17 in

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SOIL PROFILE: SECTION D-D'

LEGEND

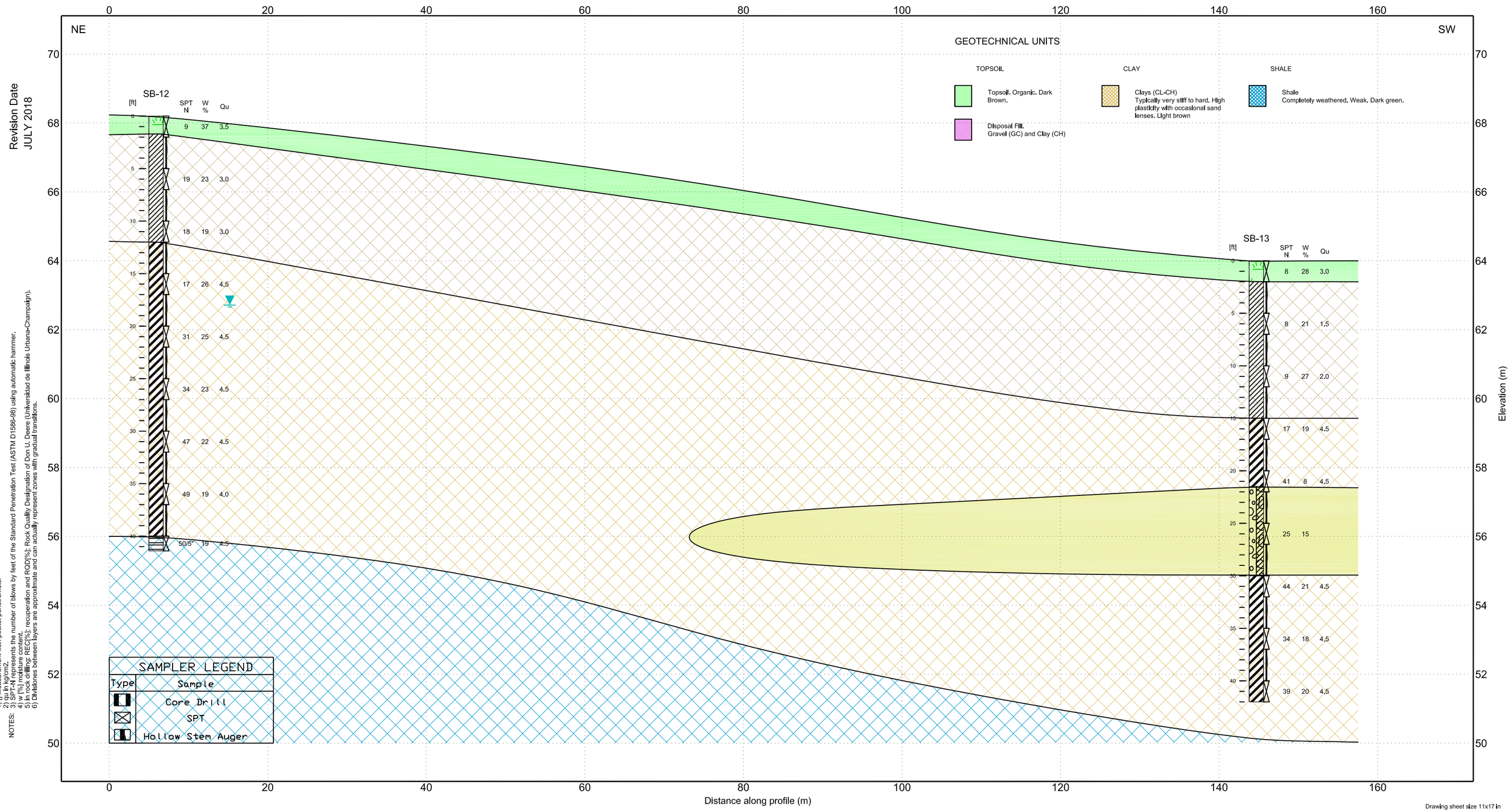
Topsoil | USCS Low Plasticity Clay | USCS High Plasticity Clay | Shale | USCS Low Plasticity Sandy Clay | USCS Poorly-graded Gravel with Clay

TESTS / OTHER

N - Standard penetration test value

W% - Natural water content

Qu - Pocket penetrometer compressive strength [kg/cm2]



Revision Date
JULY 2018

NOTES:
1) [] Measurement with pocket penetrometer
2) qu in kg/cm2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) W% represents the natural water content.
5) In rock drilling: REC(%): recuperation and RQD(%): Rock Quality Designation of Don U. Deere (Universidad de Illinois Urbana-Champaign).
6) Divisiones between layers are approximate and can actually represent zones with gradual transitions.

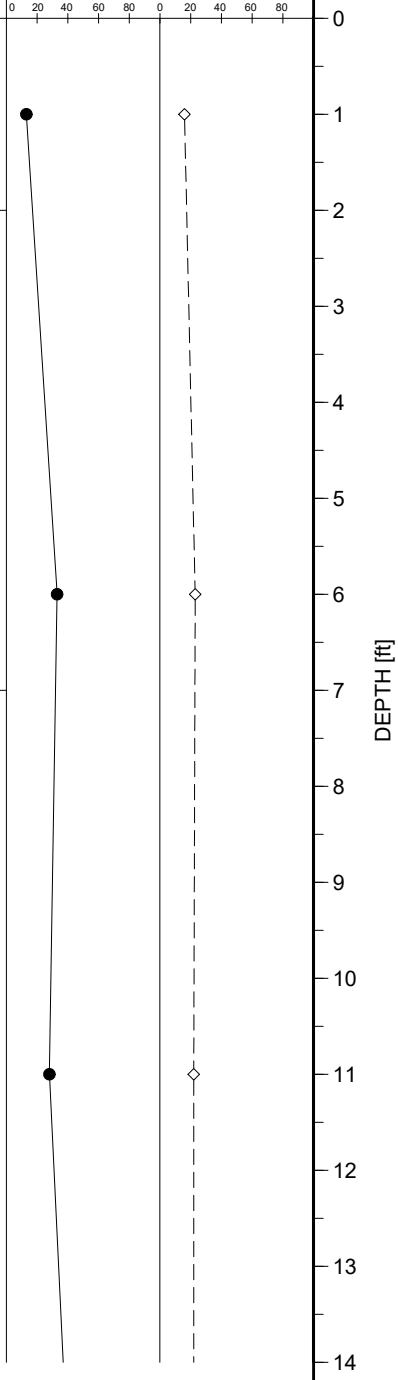
Drawing sheet size 11x17 in

BORING LOGS

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 6

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** **Start** 6/7/18	**End** 6/7/18
Water Table Depth: 12.3 [feet]	**Top Boring Elevation:** 83.3 [m MSL]	
Total Depth of Boring: 80 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	4 6 7 8	13	16	[4.50]	CLAY (CL). Sandy, medium plasticity, hard, light brown, lensed.
82.7	2.0								SILTY SAND (SM). Fine, silty, dense, light olive to brown, subrounded, dry, stratified.
				2	6 14 19 18	33	23	[1.50]	
81.2	7.0								CLAY (CL). Sandy, medium plasticity, hard, light brown grey, dry, lensed.
				3	4 11 17 19	28	22	[4.50]	



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-01**

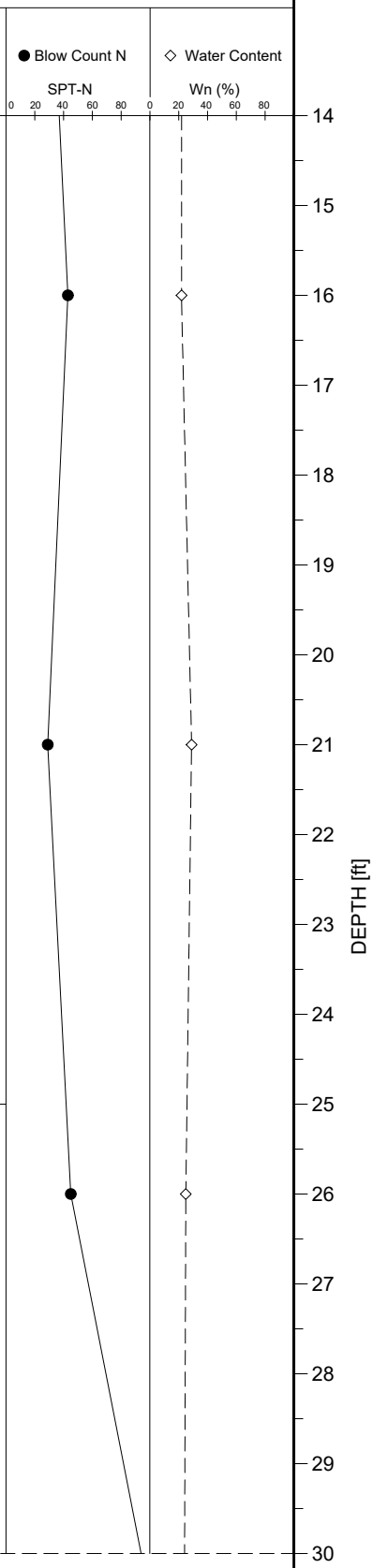
BORING LOG (continuation)

Top Boring Elevation: 83.3 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CL). Sandy, medium plasticity, hard, light brown grey, dry, lensed. *(Continued)*
				4	8 20 23 24	43	22	[4.00]	
				5	6 14 15 50/3"	29	29	[4.50]	
75.7	25.0								SILTY SAND (SM). Fine, silty, very dense, light grey brown, subrounded, wet, stratified.
				6	15 25 20 34	45	25		



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

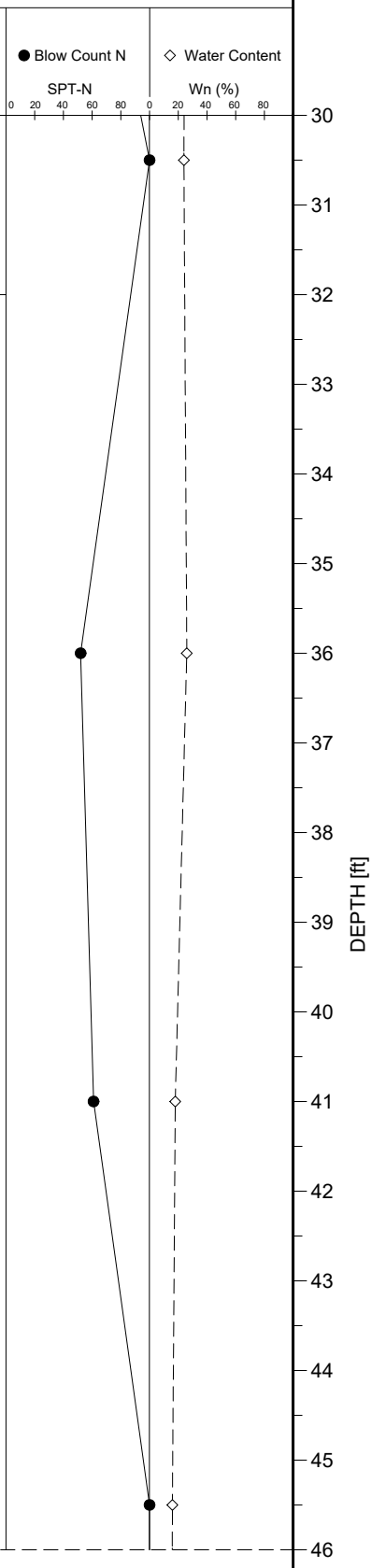
Boring: SB-01

Top Boring Elevation: 83.3 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	21 29 50/4"	50/4"	24	[4.50]	SILTY SAND (SM). Fine, silty, very dense, light grey brown, subrounded, wet, stratified. *(Continued)*
73.5	32.0								SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).
				8	17 26 26 32	52	26	[2.50]	
				9	17 29 32 35	61	18	[4.50]	
				10	14 29	50/2"	16		Some sand.



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

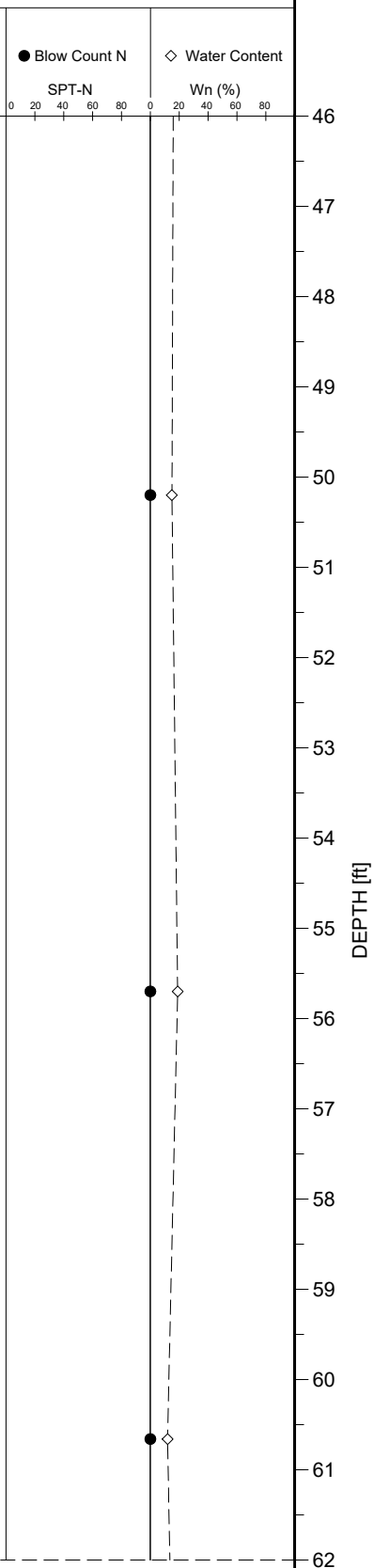
Boring: SB-01

Top Boring Elevation: 83.3 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
					50/2"				SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				11	50/5"	50/5"	15	[4.50]	Gravelly, subrounded.
				12	15 34 50/5"	50/5"	19	[3.50]	
				13	18 31 50/4"	50/4"	12	[4.50]	



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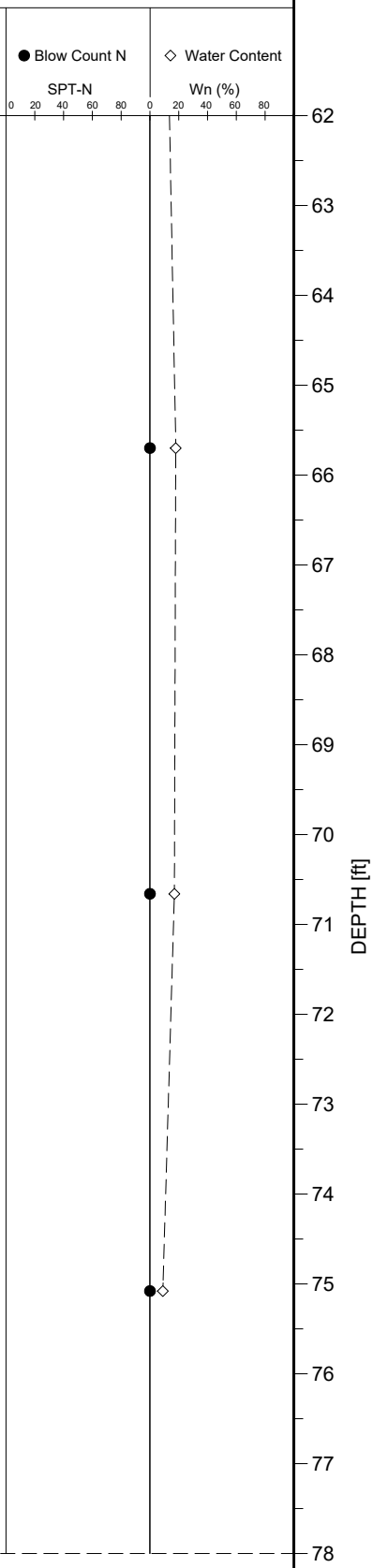
Top Boring Elevation: 83.3 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				14	21 37 50/5"	50/5"	18	[4.50]	
				15	20 35 50/4"	50/4"	17	[4.50]	
				16	50/2"	50/2"	9	[4.50]	



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Top Boring Elevation: 83.3 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
58.9	80.0			17	50/0"	50/0"		[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*

● Blow Count N — SPT-N (0 20 40 60 80)

◇ Water Content — Wn (%) (0 20 40 60 80)

BORING END: 80 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378317.00 m, N: 2030314.00 m

DEPTH [ft]: 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94

SB-01

SB-01

SB-01

SB-01

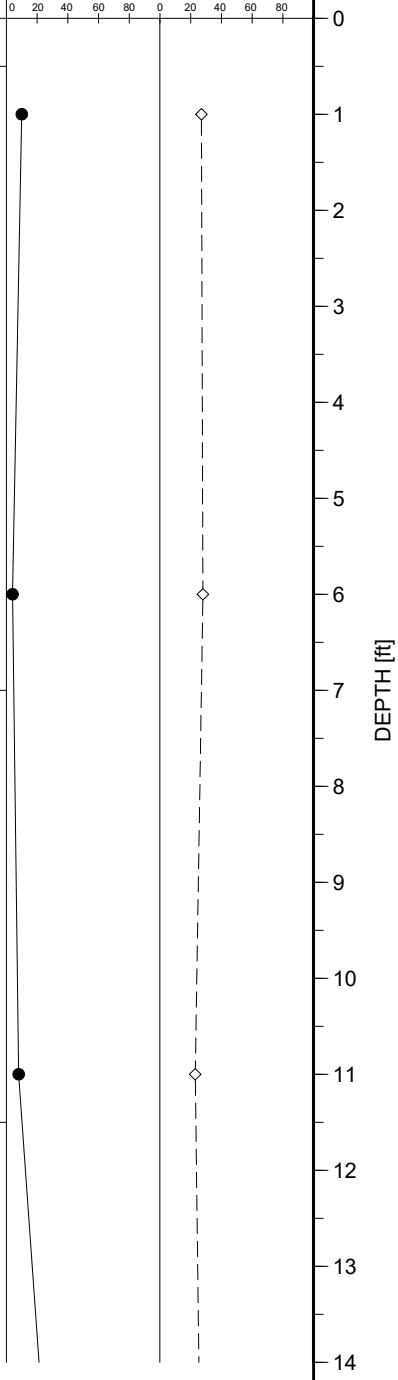
SB-01

SB-01

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/11/18	End 6/11/18
Water Table Depth: [feet]	**Top Boring Elevation:** 77.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
77.3	0.5								TOPSOIL. Trace of roots and organics, clayey, trace of sand, very stiff, dark brown.
				1	3 6 4 5	10	27	[3.00]	FILL. Clay, Gravel, Sand, loose, light brown olive, organic odor, dry, heterogenous. Poor recovery.
				2	2 2 2 2	4	28		
75.4	7.0								CLAY (CH). Stiff, high plasticity, light brown, dry, medium dry strength.
				3	4 3 5 6	8	23	[1.50]	
74.0	11.5								CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense, rounded to subrounded, medium brown to green, slight organic odor, wet, trace of organics.



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-02**

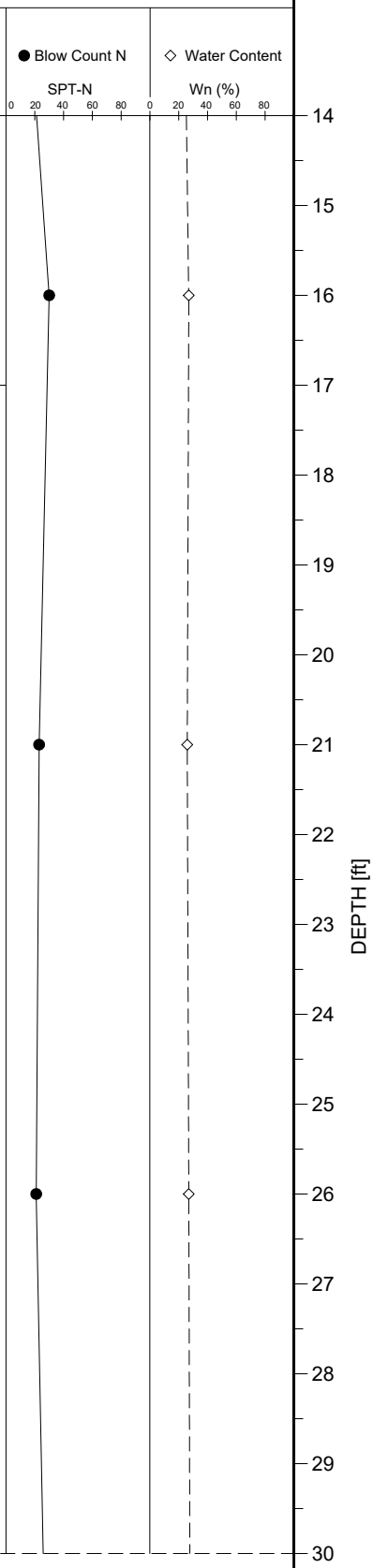
BORING LOG (continuation)

Top Boring Elevation: 77.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense, rounded to subrounded, medium brown to green, slight organic odor, wet, trace of organics. *(Continued)*
				4	6 18 12 9	30	27	[3.00]	
72.3	17.0								CLAY (CH). Hard to very stiff, high plasticity, light brown, dry to wet.
				5	4 10 13 16	23	26	[4.50]	
				6	4 9 12 18	21	27	[2.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-02

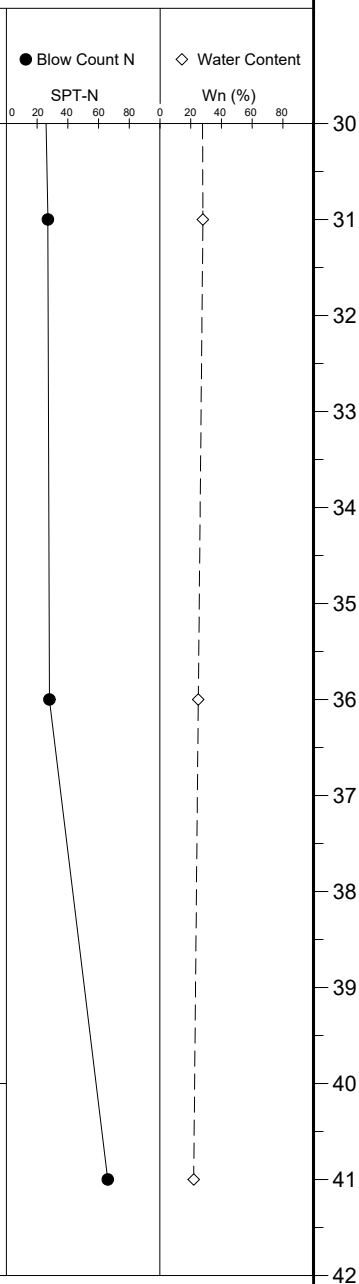
BORING LOG (continuation)

Top Boring Elevation: 77.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	6, 12, 15, 16	27	28	[4.50]	CLAY (CH). Hard to very stiff, high plasticity, light brown, dry to wet. *(Continued)* Some sand.
				8	7, 11, 17, 21	28	25	[4.50]	
65.3	40.0								
				9	13, 27, 39, 42	66	22	[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).
64.7	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378374.00 m, N: 2030267.00 m

SB-02

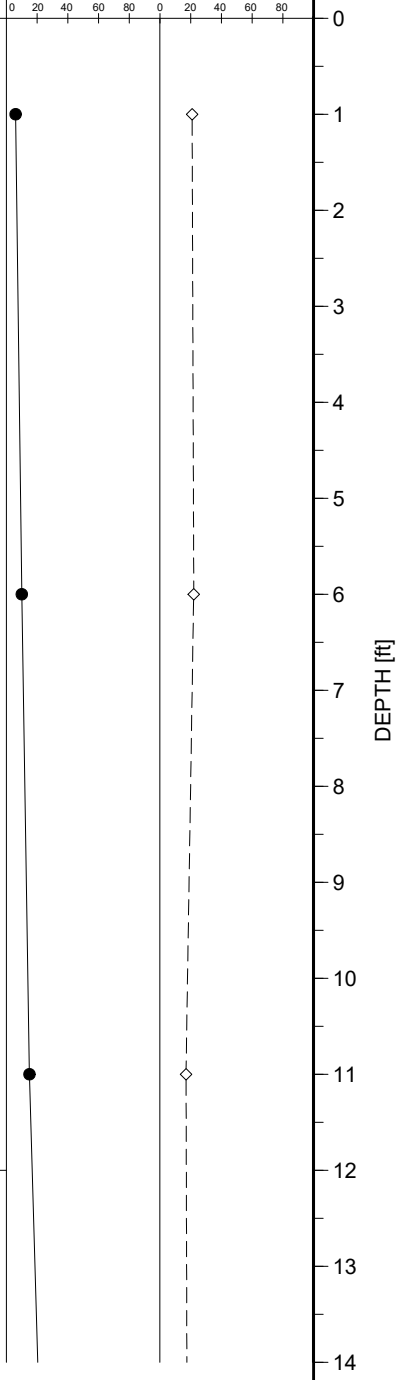
SB-02

SB-02

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 6

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/9/18	End 6/9/18
Water Table Depth: 8.6 [feet]	**Top Boring Elevation:** 74.0 [m MSL]	
Total Depth of Boring: 82 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	2 3 3 5	6	21	[1.50]	CLAY (CH). Some sand, trace gravel, high plasticity, stiff, light brown, dry, trace of organic material.
				2	3 4 6 8	10	22	[2.50]	
				3	3 7 8 12	15	17	[2.00]	
70.3	12.0								CLAY (CH). Hard to very stiff, high plasticity, light brown, dry.



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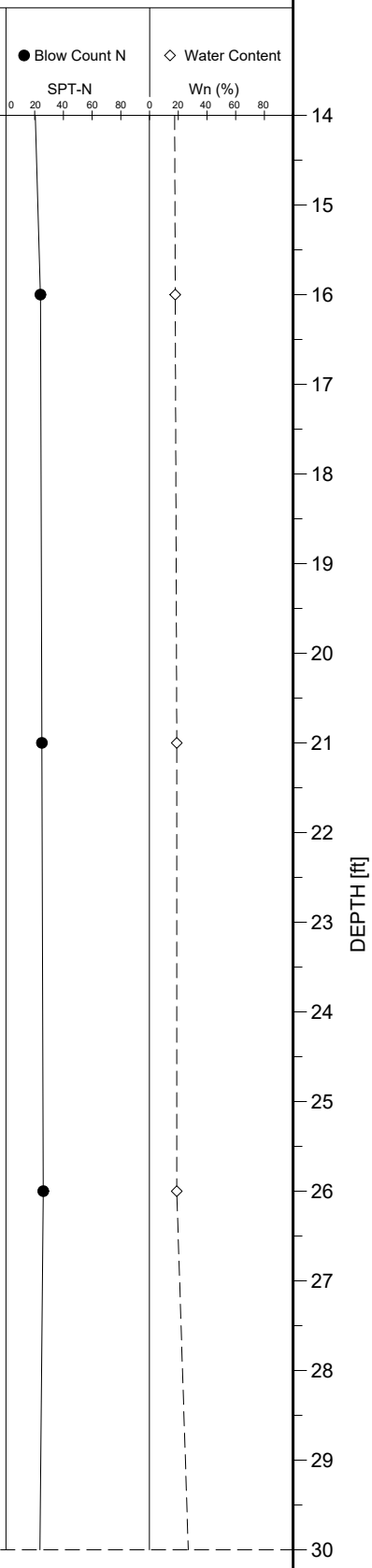
Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-03**

Top Boring Elevation: 74.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Hard to very stiff, high plasticity, light brown, dry. *(Continued)*
				4	4 11 13 14	24	18	[4.50]	
				5	5 11 14 14	25	19	[4.50]	
				6	7 13 13 13	26	19	[4.50]	



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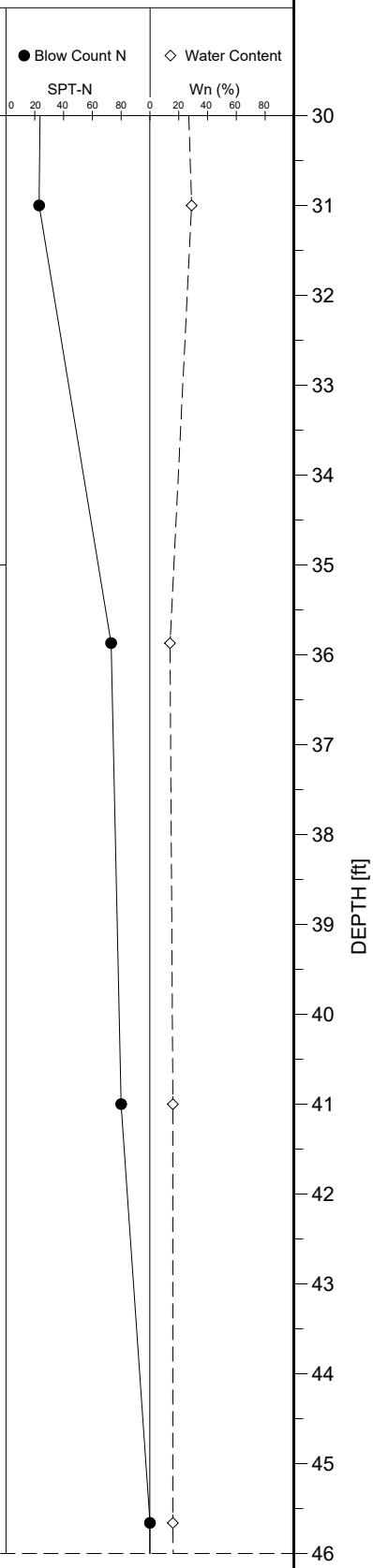
BORING LOG (continuation)

Top Boring Elevation: 74.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	6, 11, 12, 13	23	29	[4.50]	CLAY (CH). Hard to very stiff, high plasticity, light brown, dry. *(Continued)*
63.3	35.0								
				8	15, 34, 39, 50/3"	73	14	[4.50]	SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).
				9	14, 35, 45, 41	80	16	[4.50]	
				10	16	50/4'"	16	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

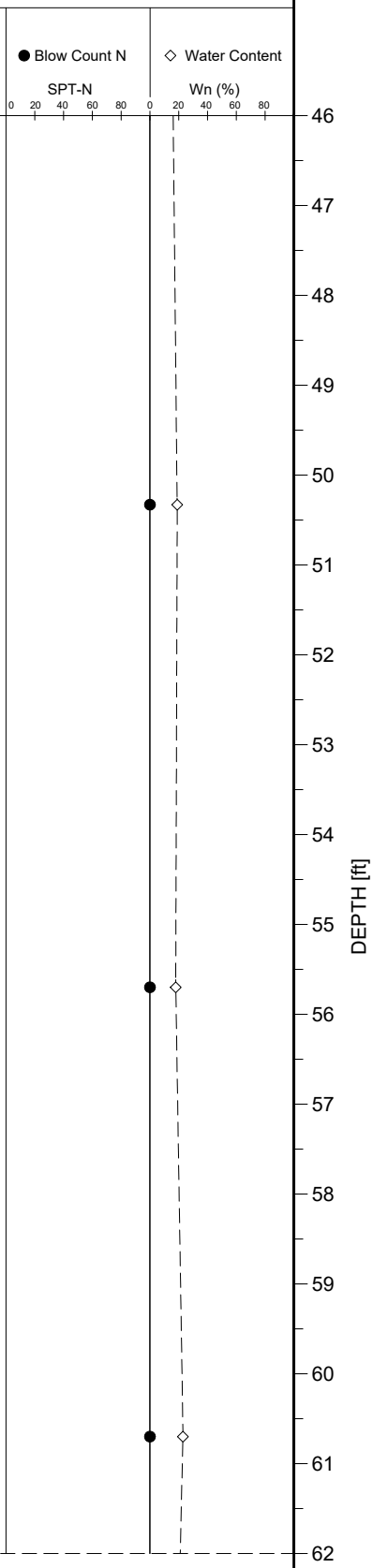
Boring: SB-03

Top Boring Elevation: 74.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				10	35 50/4'"				SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				11	22 50/2"	50/2"	19	[2.00]	
				12	15 29 50/5"	50/5"	18	[3.50]	
				13	20 35 50/5"	50/5"	23	[4.50]	



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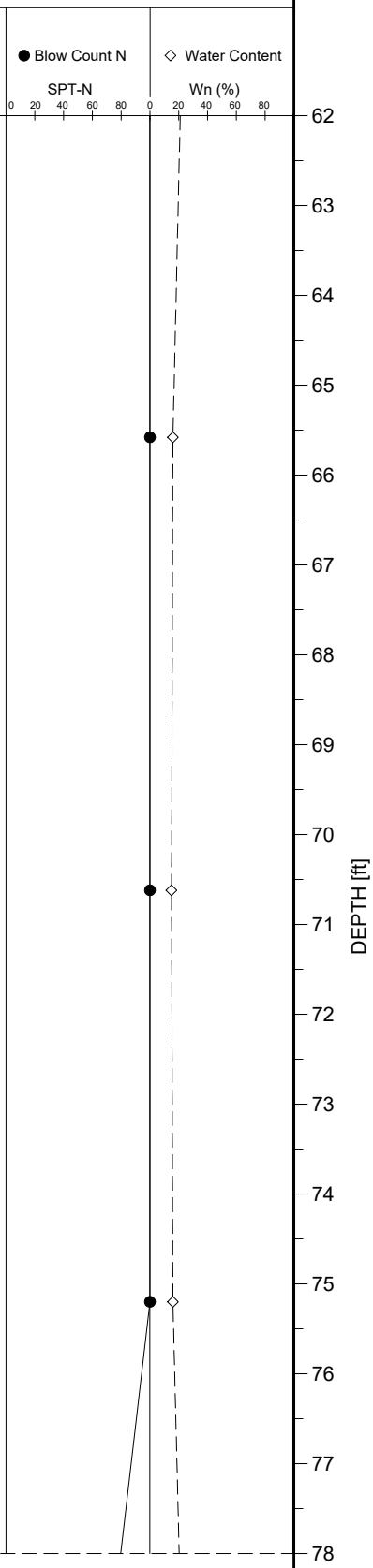
Top Boring Elevation: 74.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				14	23 37 50/2"	50/2"	16	[4.50]	
				15	34 50/3"	50/3"	15	[4.50]	
				16	50/5"	50/5"	16	[4.50]	



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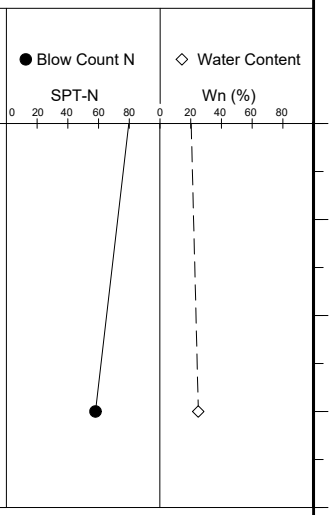
Top Boring Elevation: 74.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				17	16 21 37 39	58	25	[4.50]	
49.0	82.0								



BORING END: 82 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378348.00 m, N: 2030199.00 m

SB-03

SB-03

SB-03

SB-03

SB-03
DIAMOND
M-10
45-47

SB-03
DIAMOND
M-11
50-52

SB-03
DIAMOND
M-12
55-57

SB-03

SB-03

SB-03
DIAMOND
M-16
75-77

SB-03
DIAMOND
M-17
80-82

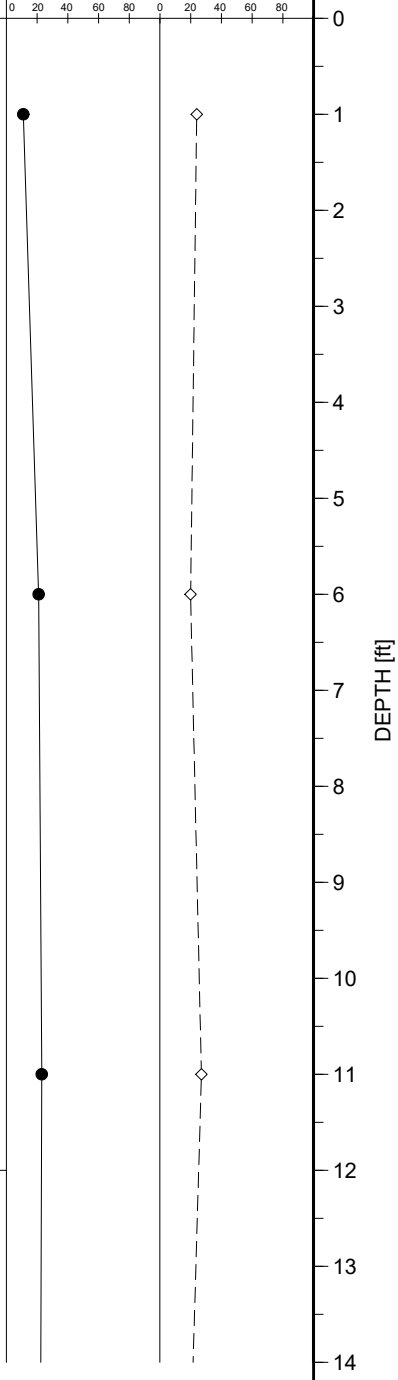
SB-03
DIAMOND
M-17
80-82

SB-03

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** **Start** 6/8/18	**End** 6/8/18
Water Table Depth: 9.5 [feet]	**Top Boring Elevation:** 76.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	3 5 6 7	11	24	[2.00]	CLAY (CH). Stiff to very stiff, high plasticity, light brown, dry.
				2	4 9 12 13	21	20	[3.00]	
				3	6 10 13 15	23	27	[2.50]	
72.8	12.0								CLAY (CH). Hard, high plasticity, light brown, dry.



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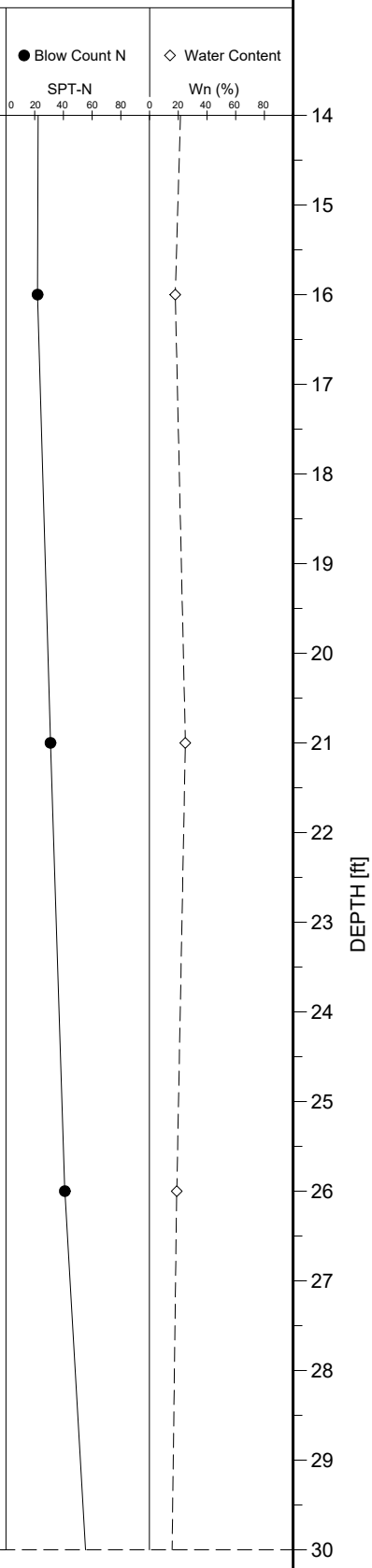
Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-04**

Top Boring Elevation: 76.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Hard, high plasticity, light brown, dry. *(Continued)*
				4	7 10 12 14	22	18	[4.00]	
				5	6 14 17 21	31	25	[4.50]	
				6	7 17 24 26	41	19	[4.50]	
67.4	30.0								



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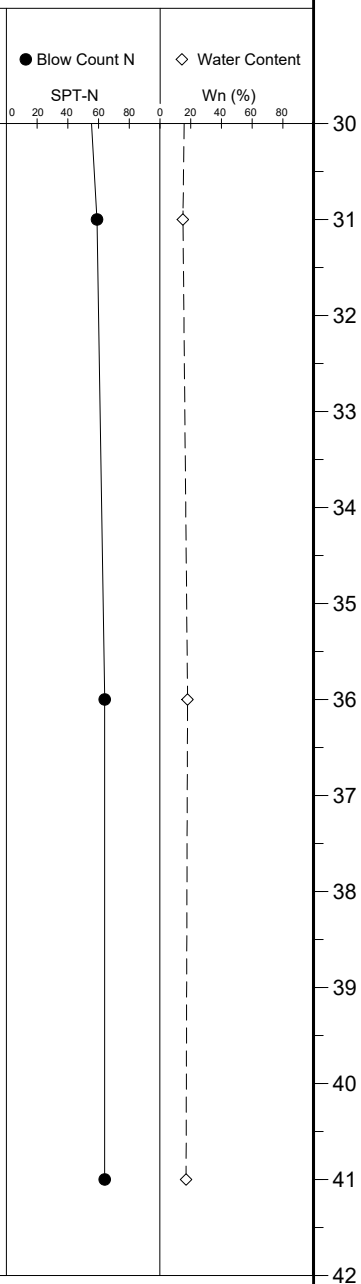
BORING LOG (continuation)

Top Boring Elevation: 76.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	11 24 35 37	59	15	[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).
				8	9 26 38 38	64	18	[4.50]	
				9	10 27 37 43	64	17	[4.50]	
63.7	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378289.00 m, N: 2030244.00 m

SB-04

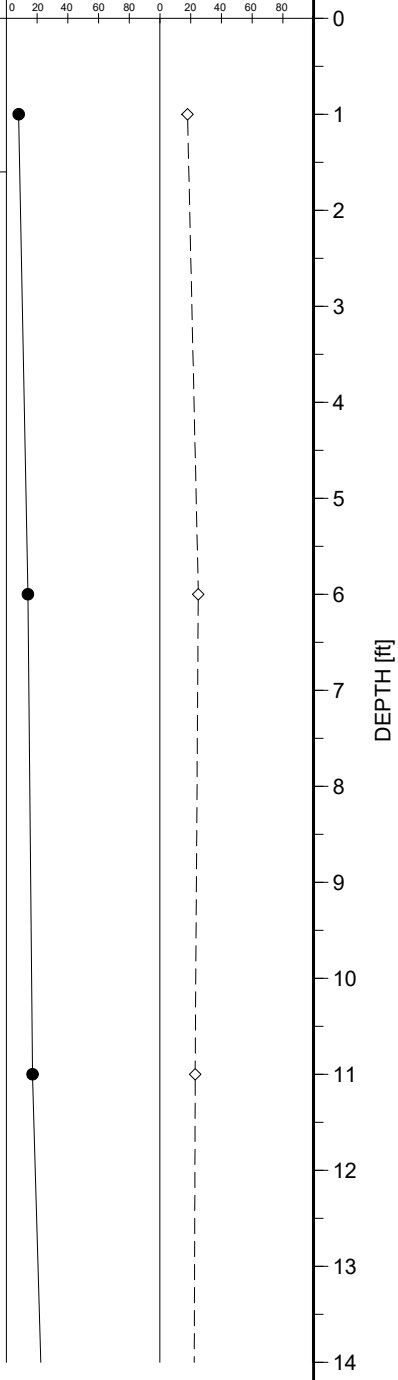
SB-04

SB-04

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 6

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/4/18	End 6/4/18
Water Table Depth: 12.0 [feet]	**Top Boring Elevation:** 78.0 [m MSL]	
Total Depth of Boring: 81.32 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	5 4 4 4	8	18		TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown.
77.5	1.6								CLAY (CH). Very stiff to hard, medium to high plasticity, dark brown, dry, very high dry strength.
				2	2 6 8 9	14	25	[2.50]	Traces of organic material, light brown.
				3	2 7 10 13	17	23	[4.50]	Hard, traces of sand, slight organic odor.



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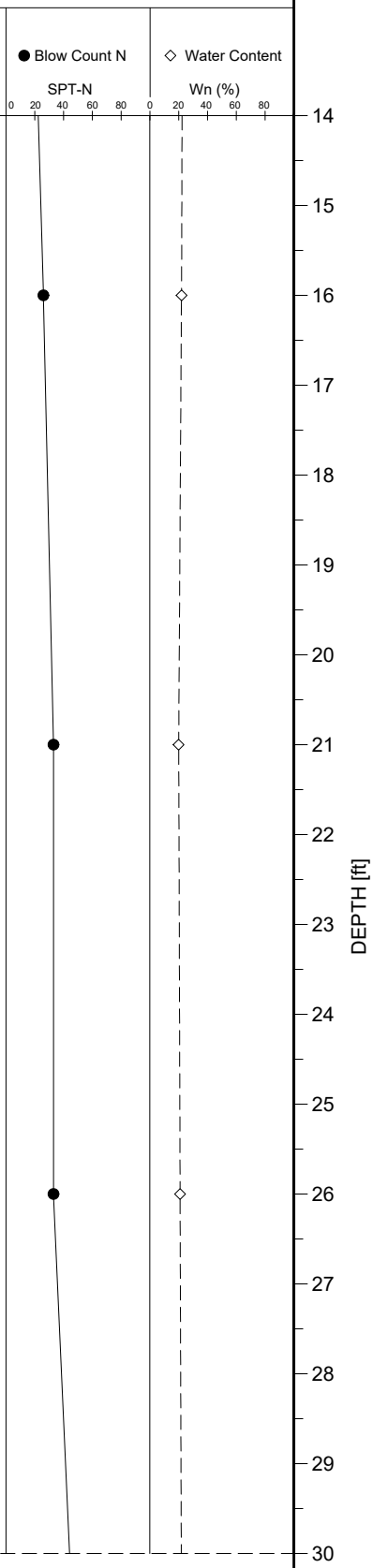
Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-05**

Top Boring Elevation: 78.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Very stiff to hard, medium to high plasticity, dark brown, dry, very high dry strength. *(Continued)*
									Dark brown, dry, strong cementation.
				4	3 10 16 19	26	22	[4.50]	
				5	9 15 18 26	33	20	[4.50]	
									Hard
				6	7 14 19 27	33	21	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-05

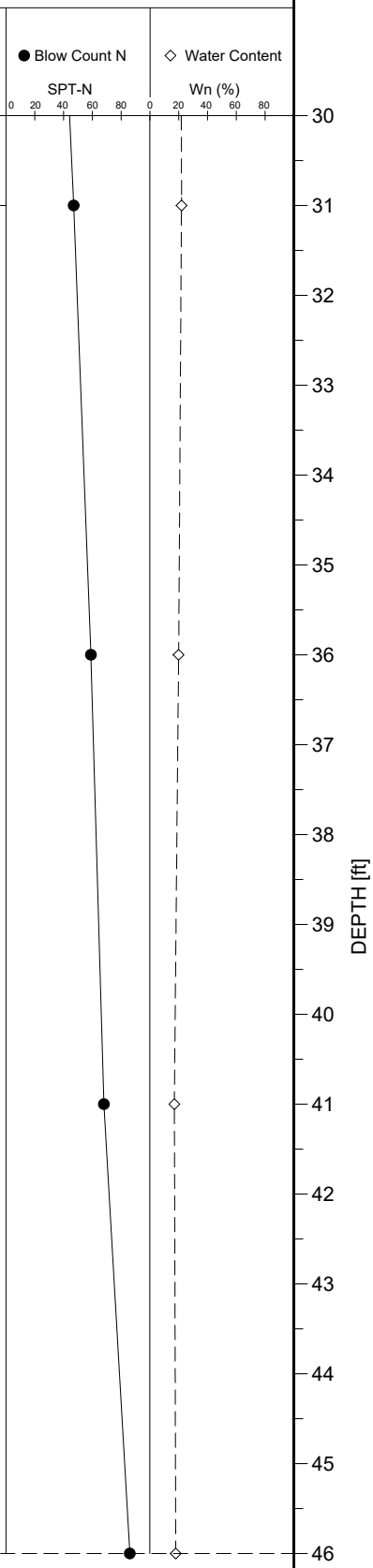
BORING LOG (continuation)

Top Boring Elevation: 78.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
68.6	31.0			7	9, 19, 28, 30	47	22	[4.50]	CLAY (CH). Very stiff to hard, medium to high plasticity, dark brown, dry, very high dry strength. *(Continued)*
									SHALE. Completely weathered, hard, fine texture, dark green, easily fissured.
				8	12, 26, 33, 38	59	20	[4.50]	
				9	14, 25, 43, 46	68	17	[4.50]	
				10	20				



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

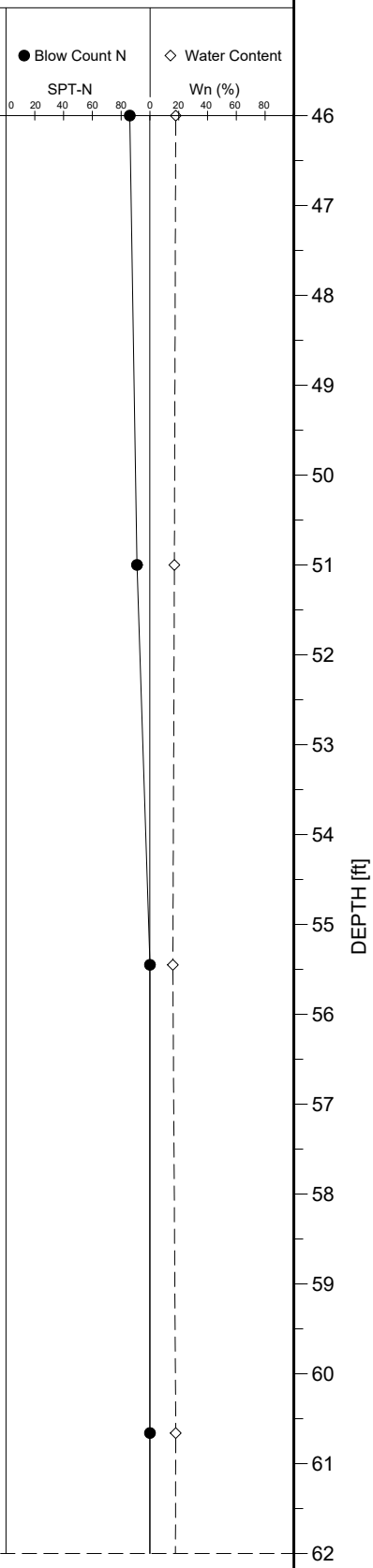
Boring: SB-05

Top Boring Elevation: 78.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				10	42 44 47	86	18	[4.50]	SHALE. Completely weathered, hard, fine texture, dark green, easily fissured. *(Continued)*
				11	22 45 46 48	91	17	[4.50]	
				12	37 50/5"	50/5"	16	[4.50]	
				13	27 45 50/4"	50/4"	18	[4.50]	



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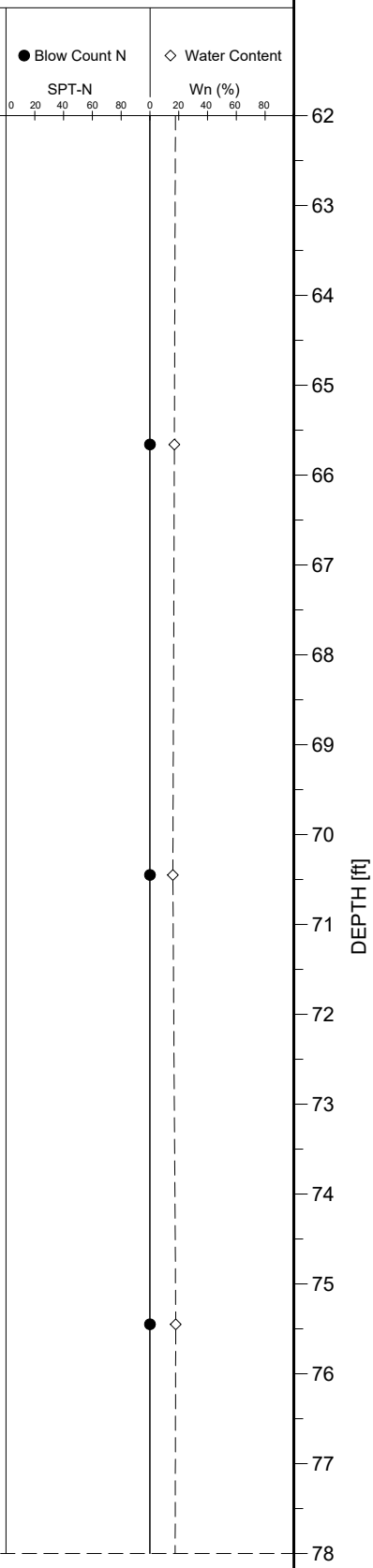
Top Boring Elevation: 78.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, hard, fine texture, dark green, easily fissured. *(Continued)*
				14	22 46 50/4"	50/4"	17	[4.50]	
				15	20 50/5"	50/5"	16	[4.50]	
				16	21 50/5"	50/5"	18	[4.50]	



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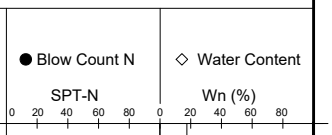
Top Boring Elevation: 78.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, hard, fine texture, dark green, easily fissured. *(Continued)*
				17	22 34 50/4"	50/4"	17	[4.50]	
53.2	81.3								



BORING END: 81.32 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378046.00 m, N: 2030232.00 m

DEPTH [ft]

SB-05

SB-05

SB-05

SB-05

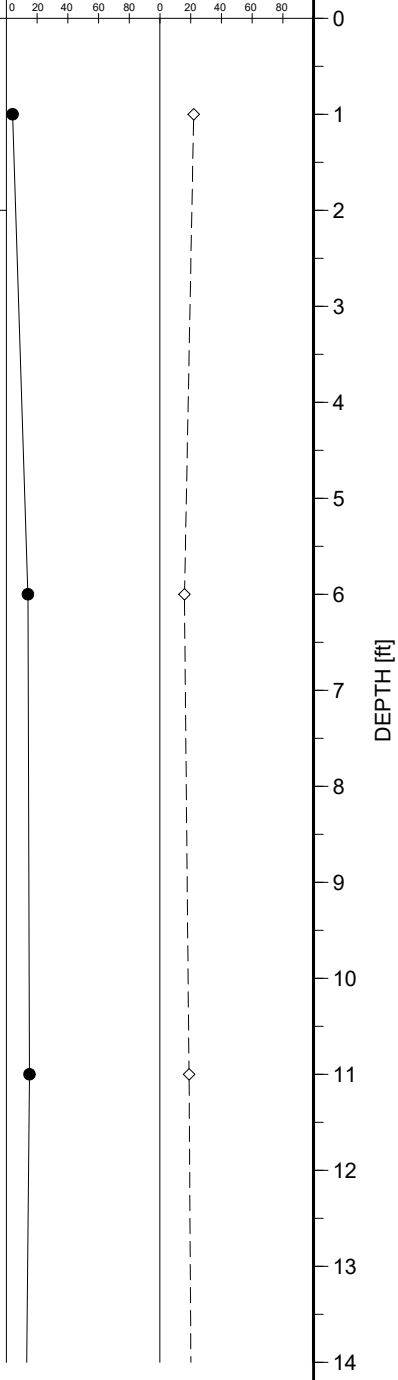
SB-05

SB-05

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/6/18	End 6/7/18
Water Table Depth: 26.0 [feet]	**Top Boring Elevation:** 67.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
66.9	2.0			1	3 2 2 2	4	22	[2.50]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown.
									CLAY (CH). Very stiff, high plasticity, light brown, dry.
				2	3 6 8 8	14	16		
				3	2 6 9 11	15	19	[3.00]	



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Project Number: 981-18	Horizon Consultants, S.A. *Solutions in Geotechnical Engineering*	Boring: SB-06

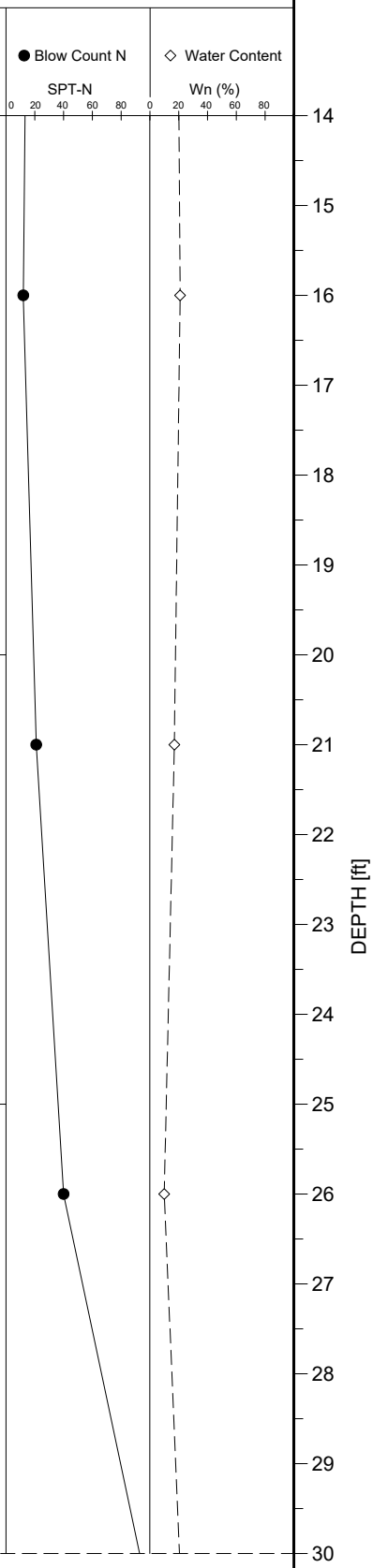
BORING LOG (continuation)

Top Boring Elevation: 67.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Very stiff, high plasticity, light brown, dry. *(Continued)*
				4	3 4 8 7	12	21	[3.00]	
61.4	20.0								
				5	5 8 13 13	21	17	[4.50]	CLAY (CL). Hard, low plasticity, light brown, dry.
59.9	25.0								
				6	13 17 23 25	40	10		CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense to very dense, rounded to subrounded, medium brown, wet (alluvium).



Continues in next page

Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-06

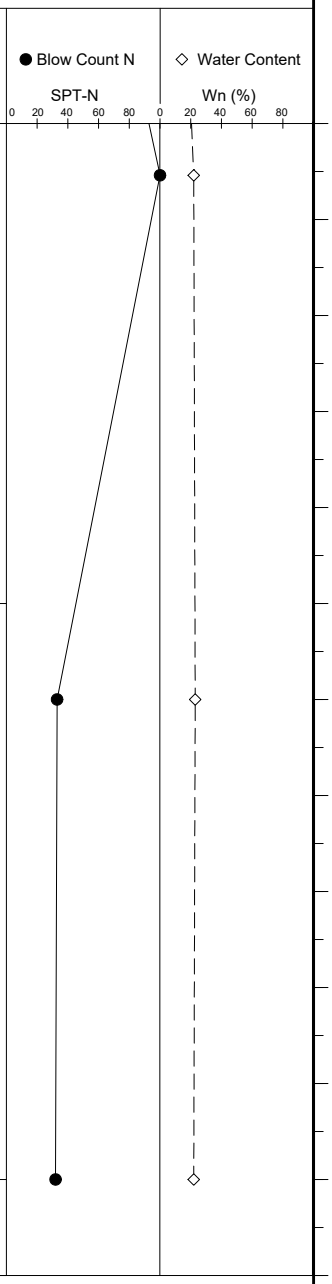
BORING LOG (continuation)

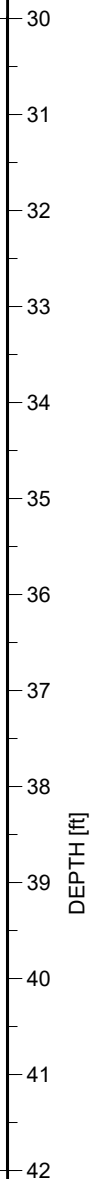
Top Boring Elevation: 67.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	16 30 50/1"	50/1"	22		CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense to very dense, rounded to subrounded, medium brown, wet (alluvium). *(Continued)*
56.8	35.0								
				8	7 14 19 24	33	23	[4.50]	CLAY (CH). Hard, high plasticity, light brown, moist.
55.0	41.0			9	7 13 19 23	32	22	[4.50]	
54.7	42.0								SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH).





BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 377991.00 m, N: 2030132.00 m

Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-06

SB-06

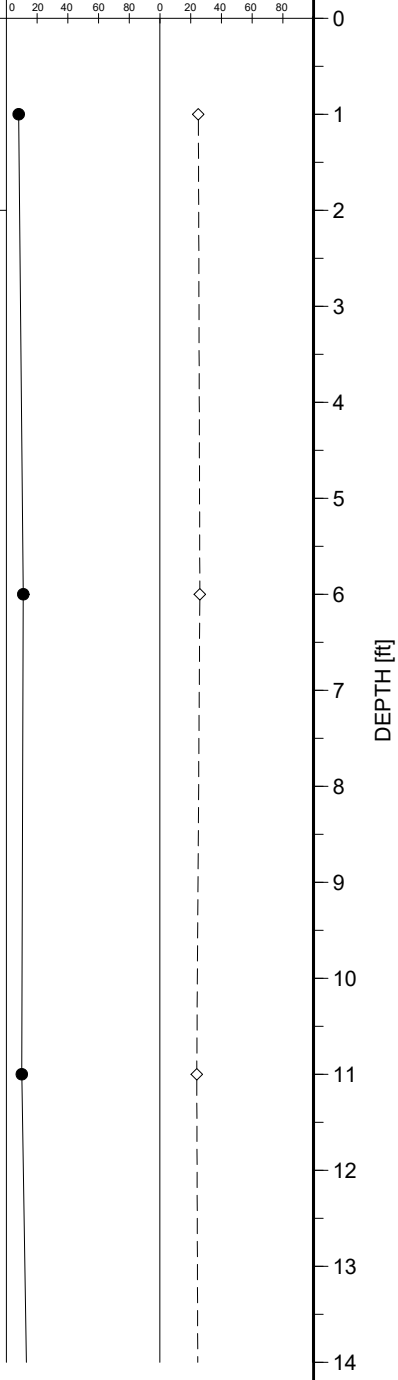
SB-06

SB-06

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/6/18	End 6/6/18
Water Table Depth: [feet]	**Top Boring Elevation:** 70.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
69.9	2.0			1	4 4 4 3	8	25		TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown.
									CLAY (CH). Very stiff to hard, high plasticity, light brown, dry.
				2	3 4 7 9	11	26	[3.00]	Some sand.
				3	4 4 6 7	10	24	[2.50]	Some sand.



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-07**

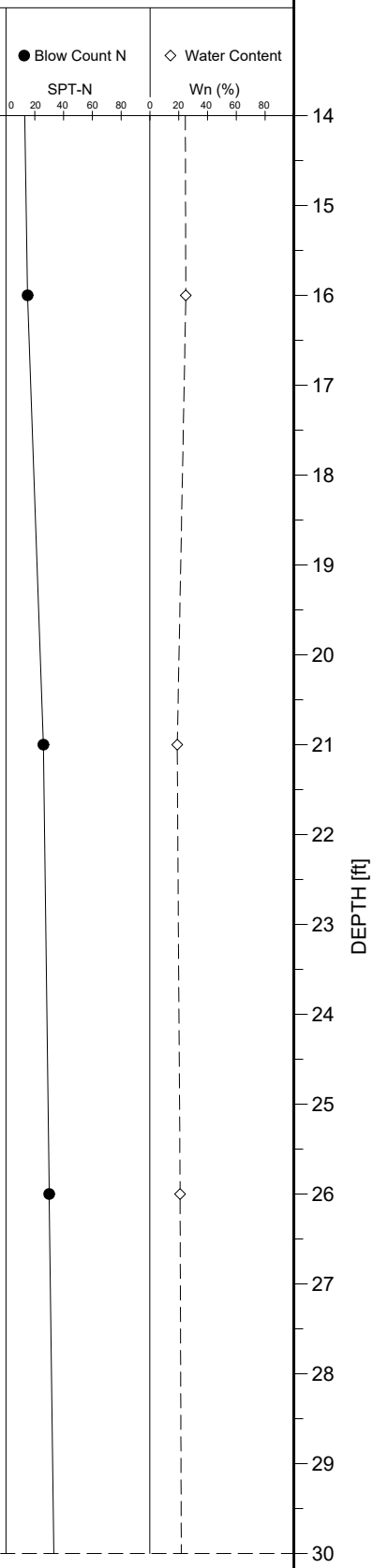
BORING LOG (continuation)

Top Boring Elevation: 70.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Very stiff to hard, high plasticity, light brown, dry. *(Continued)*
				4	5 6 9 12	15	25		
									Hard.
				5	7 9 17 20	26	19	[4.50]	
				6	6 11 19 22	30	21	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-07

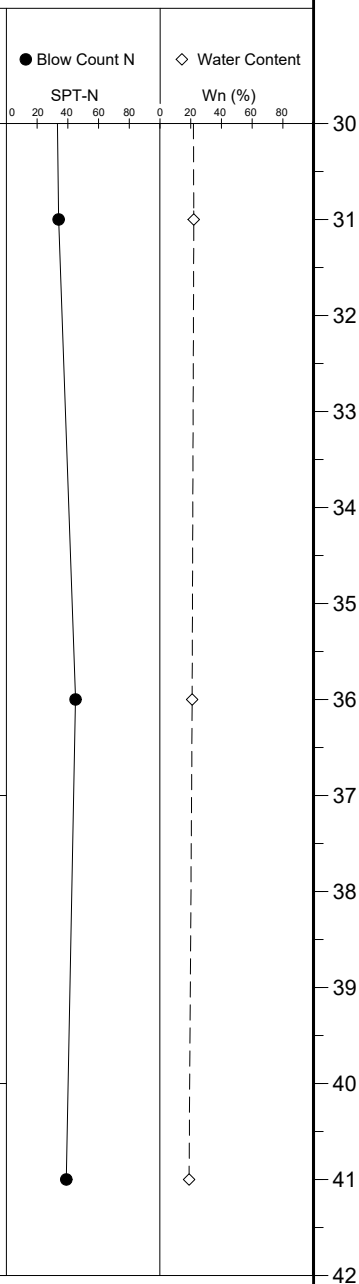
BORING LOG (continuation)

Top Boring Elevation: 70.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	8, 14, 20, 22	34	22	[4.50]	CLAY (CH). Very stiff to hard, high plasticity, light brown, dry. *(Continued)*
				8	9, 19, 26, 29	45	21	[4.50]	
59.2	37.0								CLAYEY GRAVEL (GC). Fine to coarse, sandy, rounded to subrounded, medium brown (alluvium).
58.3	40.0								CLAY (CH). Hard, high plasticity, light brown, dry.
				9	10, 14, 25, 27	39	19	[4.50]	
57.7	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378076.00 m, N: 2030138.00 m

SB-07

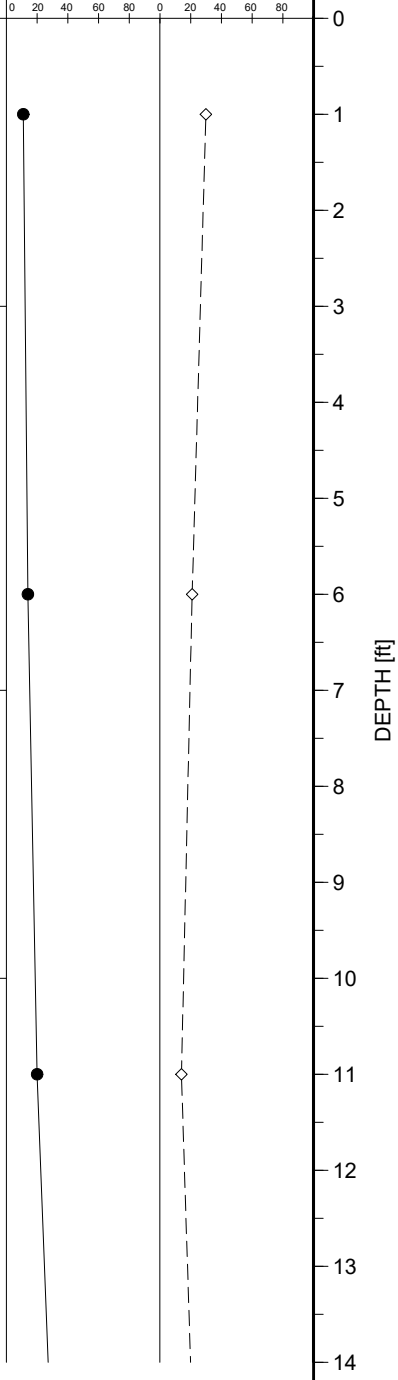
SB-07

SB-07

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/5/18	End 6/5/18
Water Table Depth: [feet]	**Top Boring Elevation:** 61.1 [m MSL]	
Total Depth of Boring: 41.4 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	3 5 6 7	11	30	[2.00]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.
60.2	3.0								CLAY (CH). Very stiff to hard, medium to high plasticity, light brown, dry, very high dry strength, (residual). Some sand.
				2	3 6 8 11	14	21	[2.50]	
59.0	7.0								CLAYEY GRAVEL (GC). Fine to coarse, sandy, rounded to subrounded, medium, brown, (alluvium).
58.1	10.0								
				3	3 10 10 10	20	14	[3.00]	



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-08**

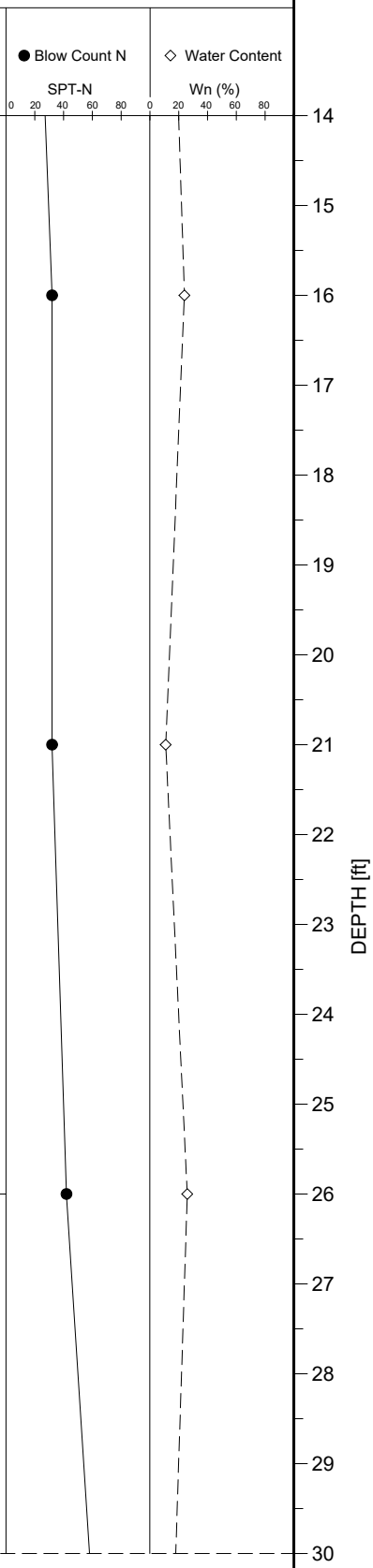
BORING LOG (continuation)

Top Boring Elevation: 61.1 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				4	6 13 19 22	32	24	[4.50]	Hard.
				5	5 12 20 24	32	11	[4.50]	
53.2	26.0			6	7 16 26 27	42	26	[4.50]	SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured, can be peeled with knife. Sampled as a High Plasticity Clay (CH).



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-08

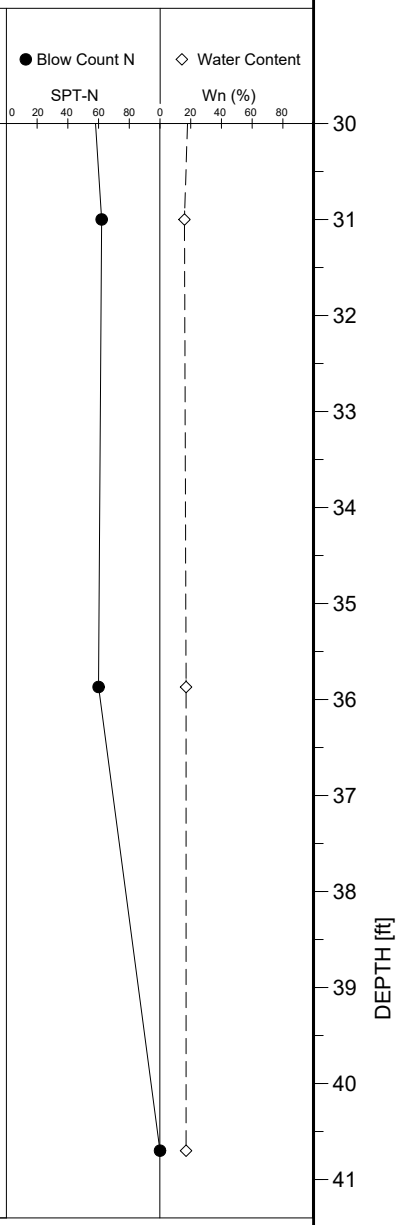
BORING LOG (continuation)

Top Boring Elevation: 61.1 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	13 27 35 40	62	16	[4.50]	SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured, can be peeled with knife. Sampled as a High Plasticity Clay (CH). *(Continued)*
				8	19 29 31 50/3'	60	17	[4.50]	
				9	17 35 50/5"	50/5"	17	[4.50]	
48.5	41.4								



BORING END: 41.4 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
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8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378000.00 m, N: 2030054.00 m

SB-08

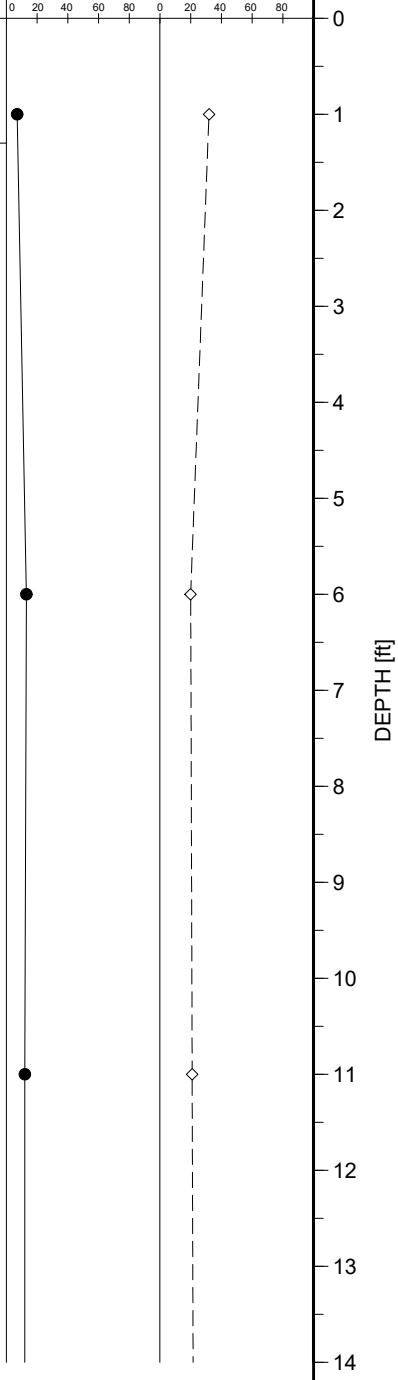
SB-08

SB-08

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 6

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/12/18	End 6/12/18
Water Table Depth: 61.0 [feet]	**Top Boring Elevation:** 67.8 [m MSL]	
Total Depth of Boring: 81.4 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
67.4	1.3			1	2 3 4 4	7	32	[2.00]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.
									CLAY (CH). Stiff to very stiff, high plasticity, light brown, dry.
				2	3 5 8 10	13	20	[3.00]	
				3	4 6 6 7	12	21	[2.00]	



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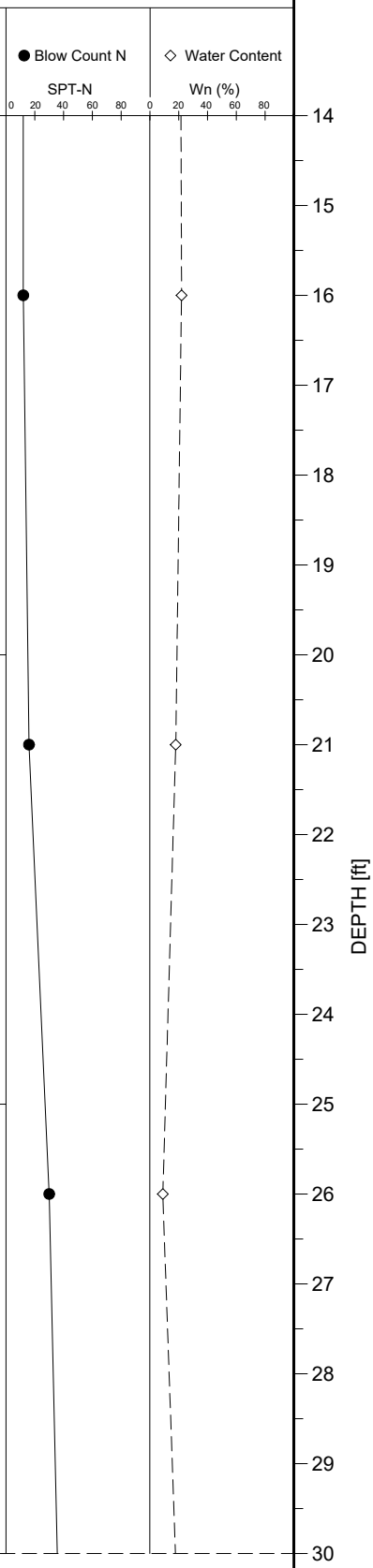
Top Boring Elevation: 67.8 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Stiff to very stiff, high plasticity, light brown, dry. *(Continued)*
				4	3 5 7 9	12	22	[2.00]	
61.7	20.0								
				5	3 7 9 12	16	18	[3.00]	CLAY (CL). Some sand, very stiff, low plasticity, light brown, dry.
60.2	25.0								
				6	13 16 14 15	30	9		CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense, rounded to subrounded, medium, brown, (alluvium).
58.7	30.0								



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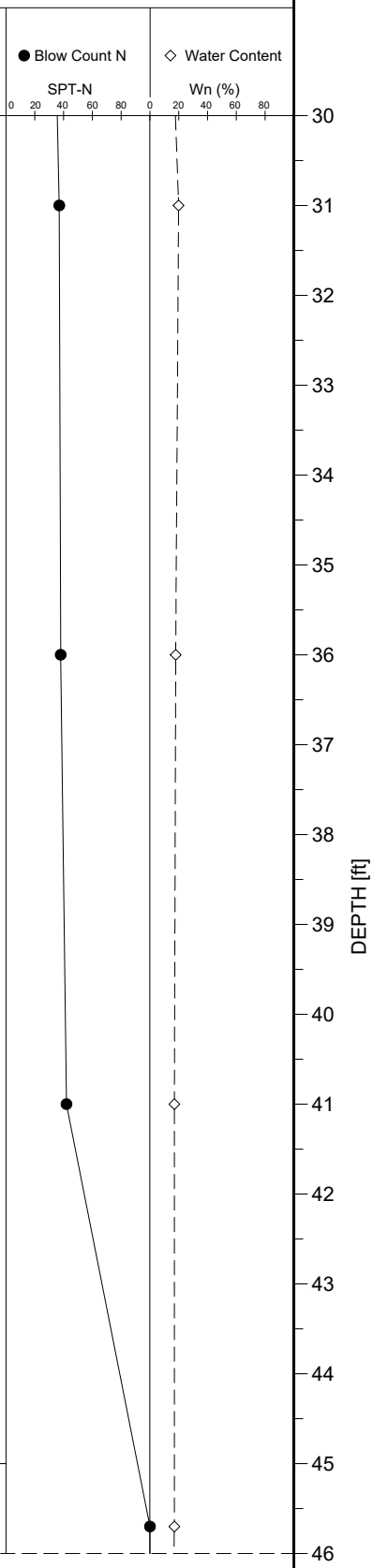
Top Boring Elevation: 67.8 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	8, 16, 21, 23	37	20	[4.50]	CLAY (CH). Hard, high plasticity, light brown, dry.
				8	8, 16, 22, 19	38	18	[4.50]	
				9	9, 18, 24, 24	42	17	[4.50]	
54.1	45.0			10	13	50/5"	17	[4.50]	



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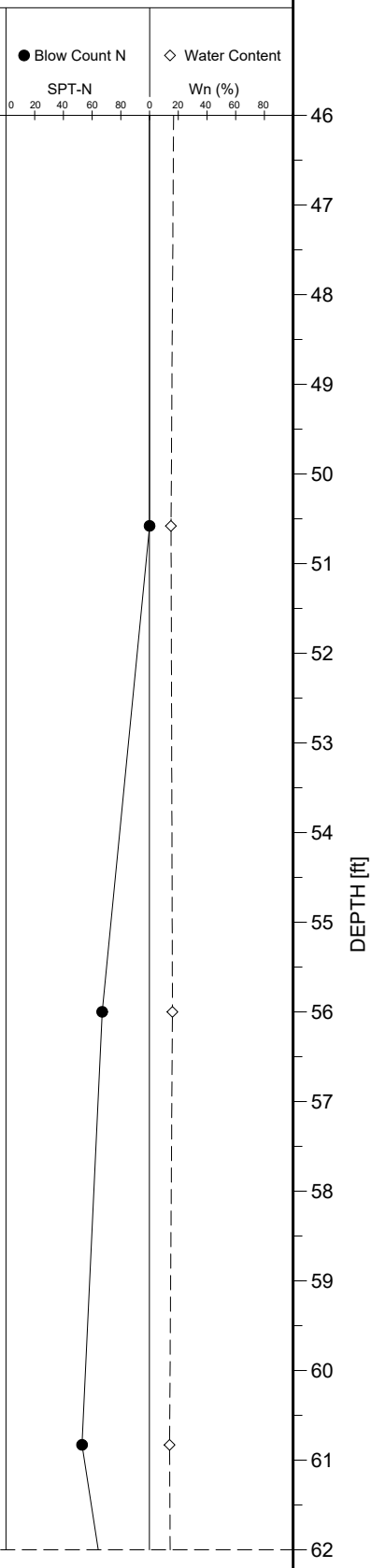
Top Boring Elevation: 67.8 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				10	32 50/5"				SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH). *(Continued)*
				11	10 15 50/2"	50/2"	15	[4.50]	
				12	15 29 38 39	67	16	[4.00]	
				13	16 21 32 50/2"	53	14	[4.50]	



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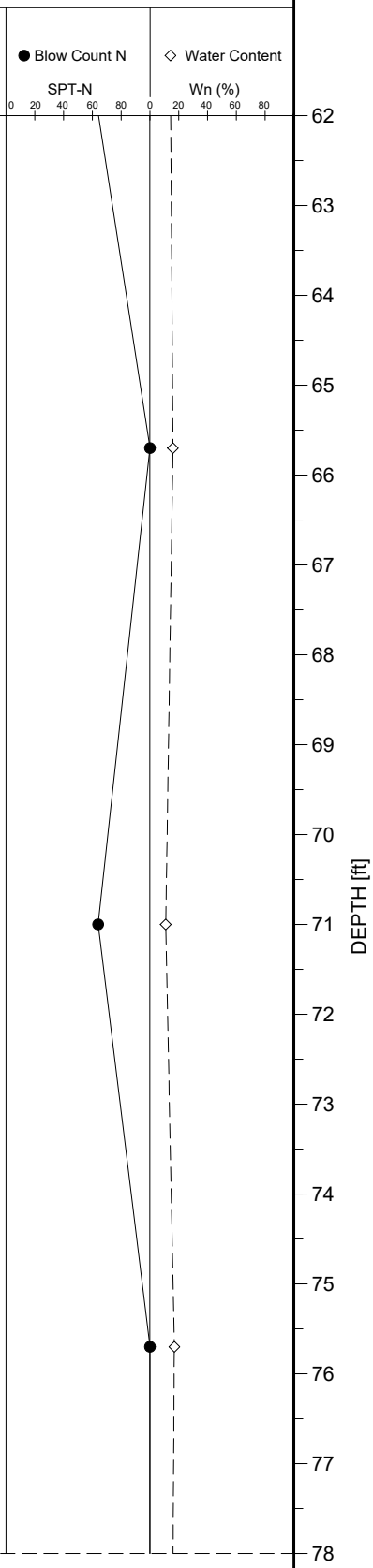
Top Boring Elevation: 67.8 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH). *(Continued)*
				14	18 35 50/5"	50/5"	16	[4.50]	
				15	18 31 33 40	64	11	[4.50]	
				16	25 41 50/5"	50/5"	17	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

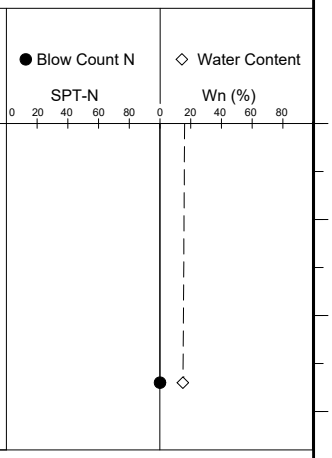
Boring: SB-09

Top Boring Elevation: 67.8 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH). *(Continued)*
					21				
				17	35	50/5"	15	[4.50]	
43.0	81.4				50/5"				



BORING END: 81.4 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
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8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378077.00 m, N: 2030047.00 m

DEPTH [ft]

SB-09

SB-09

SB-09

SB-09

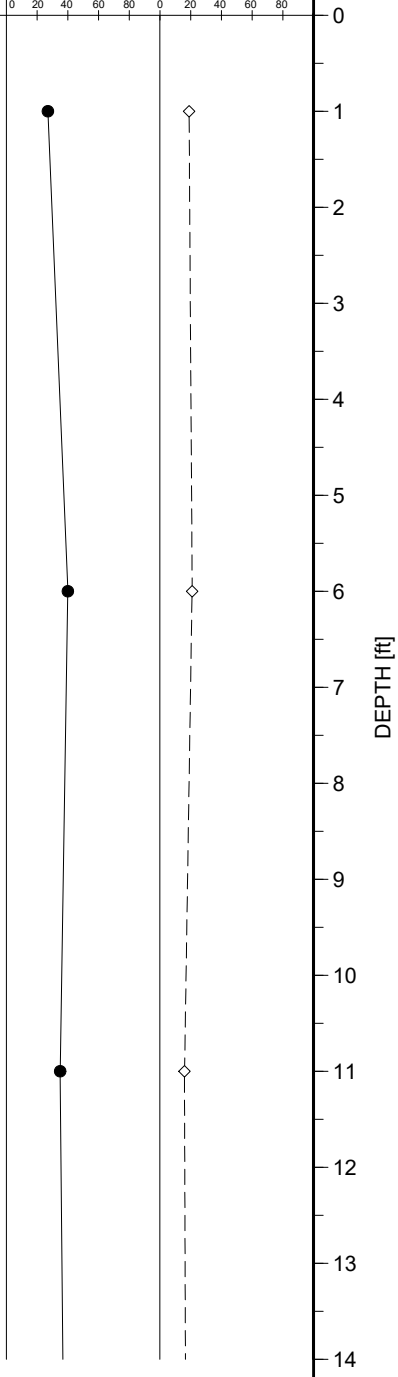
SB-09

SB-09

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** **Start** 6/14/18	**End** 6/14/18
Water Table Depth: 13.5 [feet]	**Top Boring Elevation:** 74.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	6 11 16 16	27	19	[4.50]	CLAY (CH). Hard, high plasticity, light brown, dry.
				2	10 17 23 23	40	21	[4.50]	
				3	9 16 19 21	35	16	[4.50]	



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-10**

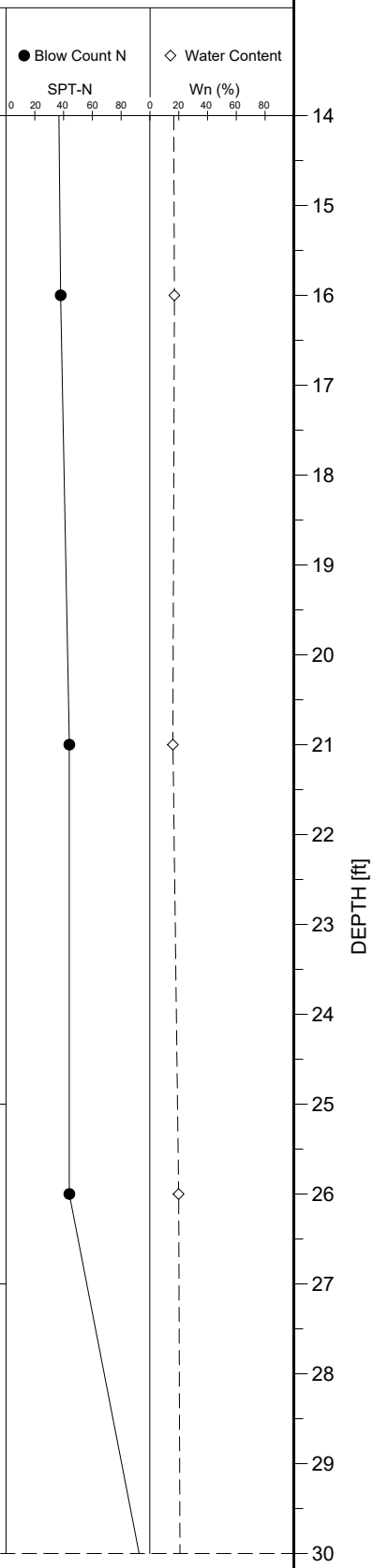
BORING LOG (continuation)

Top Boring Elevation: 74.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Hard, high plasticity, light brown, dry. *(Continued)*
				4	10 18 20 23	38	17	[4.50]	
				5	11 17 27 29	44	16	[4.50]	
66.9	25.0								
				6	10 18 26 28	44	20	[3.50]	CLAY (CL). Some sand, very stiff, medium plasticity, light brown, dry.
66.3	27.0			SH1					SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-10

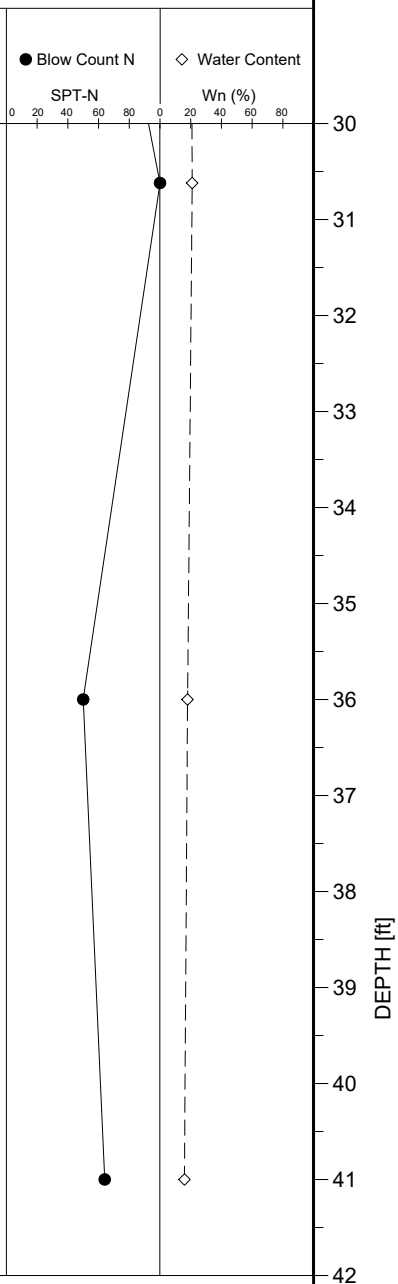
BORING LOG (continuation)

Top Boring Elevation: 74.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	19 24 50/3"	50/3"	21	[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				8	10 20 30 36	50	18	[4.50]	
				9	15 26 38 40	64	16	[4.50]	
61.7	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378149.00 m, N: 2030073.00 m

Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-10

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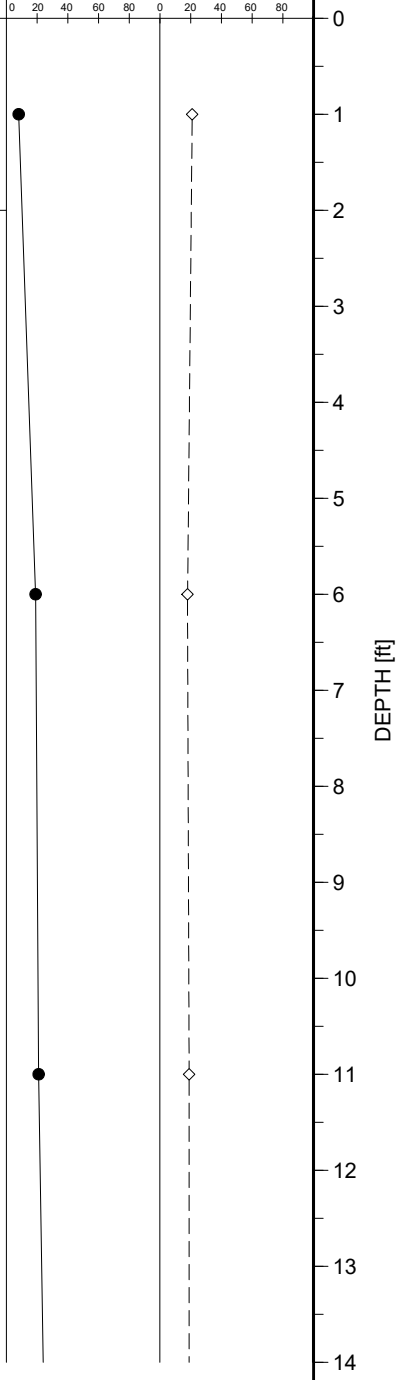
BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/14/18	End 6/14/18
Water Table Depth: [feet]	**Top Boring Elevation:** 66.5 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	4 4 4 6	8	21	[3.50]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.
65.9	2.0								CLAY (CH). Very stiff to hard, high plasticity, light brown, dry.
				2	5 9 10 13	19	18	[3.50]	
				3	5 9 12 16	21	19	[4.50]	



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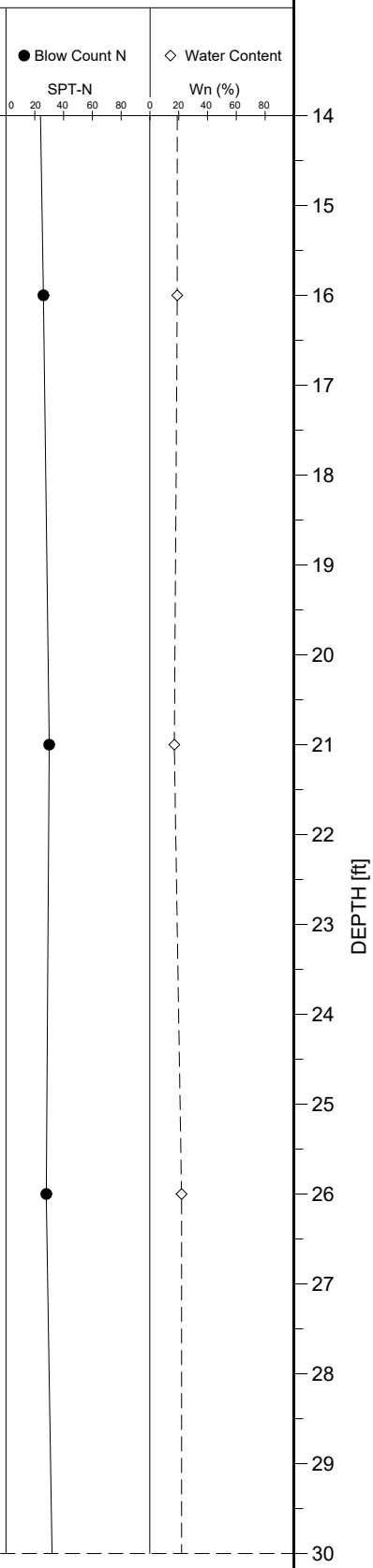
Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-11**

Top Boring Elevation: 66.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Very stiff to hard, high plasticity, light brown, dry. *(Continued)*
				4	6 11 15 17	26	19	[4.50]	
				5	9 13 17 19	30	17	[4.50]	
				SH1					
				6	7 12 16 22	28	22	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

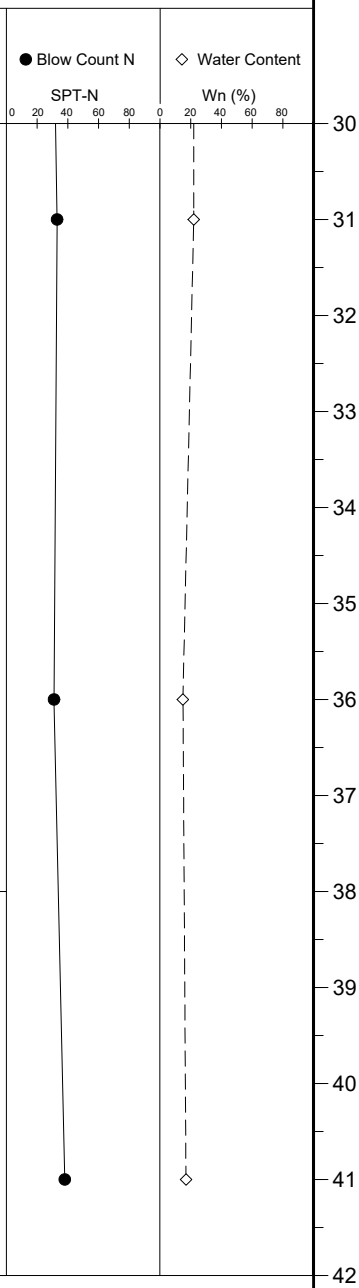
Boring: SB-11

Top Boring Elevation: 66.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	9, 13, 20, 22	33	22	[4.50]	CLAY (CH). Very stiff to hard, high plasticity, light brown, dry. *(Continued)*
				8	6, 13, 18, 23	31	15	[4.50]	
54.9	38.0								SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH).
				9	9, 14, 24, 28	38	17	[4.50]	
53.7	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378172.00 m, N: 2030022.00 m

Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-11

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BORING LOG

Project Name: Battelle

Location: Doña Ana, San Cristobal

Driller: Rolando Salcie

Machine: CME-55

Described: Cedric Féliz

Date: Start 6/11/18 End 6/11/18

Water Table Depth: 17.7 [feet]

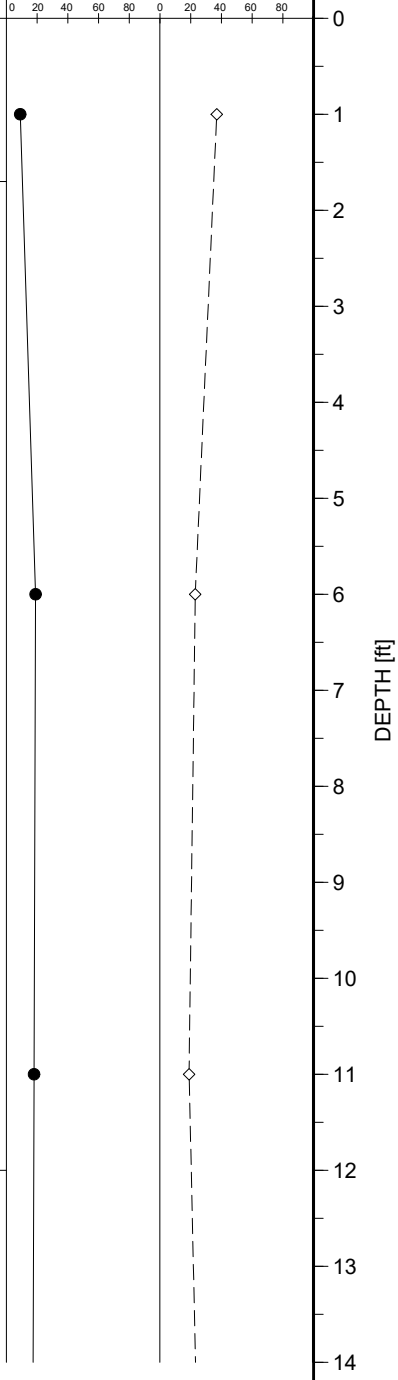
Top Boring Elevation: 68.2 [m MSL]

Total Depth of Boring: 41.4 [feet]

Inspector: Cedric Féliz

Approved: Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	3 4 5 7	9	37	[3.50]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, very stiff, dark brown, dry, slight organic odor.
67.7	1.7								CLAY (CL). Some sand, very stiff, low plasticity, light brown, dry.
				2	4 9 10 12	19	23	[3.00]	
				3	2 8 10 12	18	19	[3.00]	
64.5	12.0								CLAY (CH). Hard, high plasticity, light brown, dry.



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-12

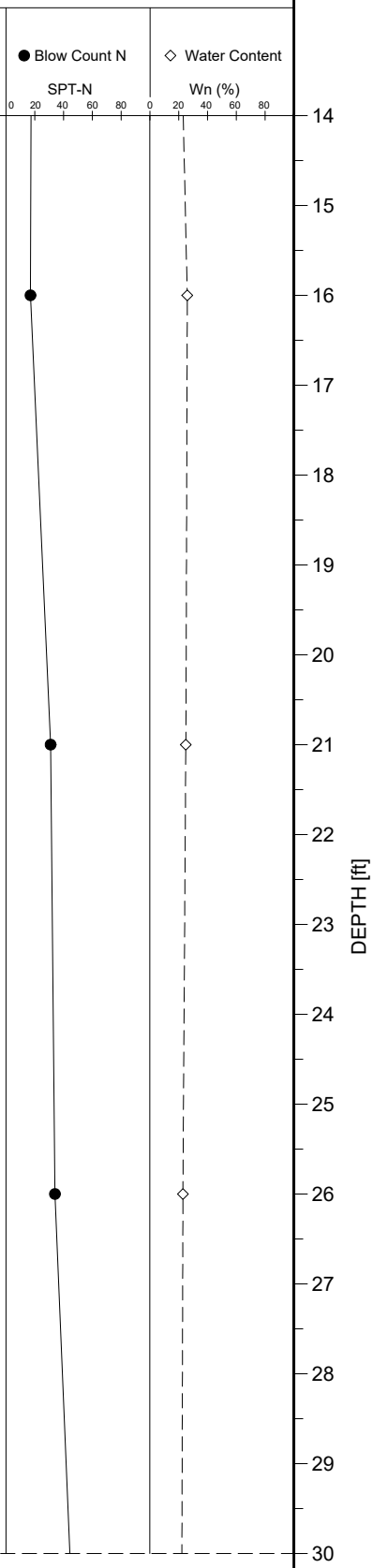
BORING LOG (continuation)

Top Boring Elevation: 68.2 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
									CLAY (CH). Hard, high plasticity, light brown, dry. *(Continued)*
				4	3 7 10 13	17	26	[4.50]	
				5	6 12 19 22	31	25	[4.50]	
				6	6 16 18 20	34	23	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-12

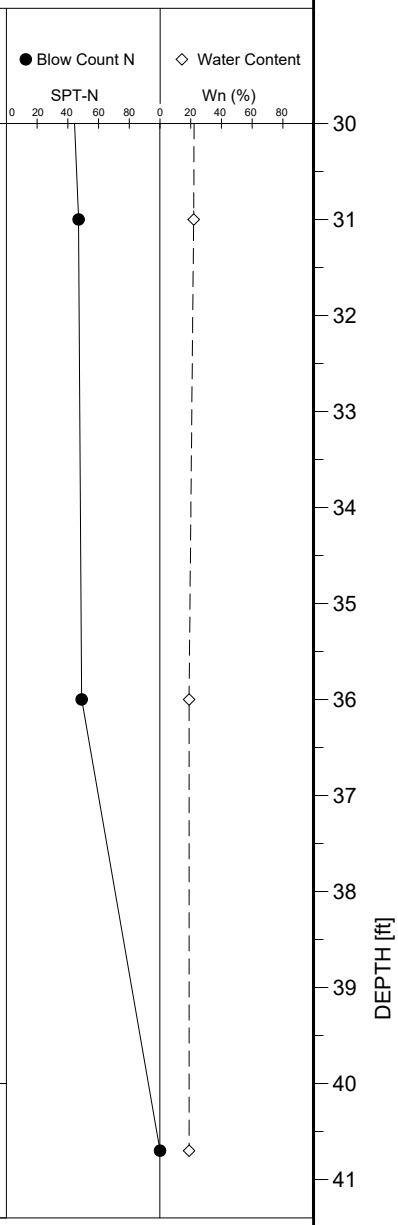
BORING LOG (continuation)

Top Boring Elevation: 68.2 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	10 20 27 30	47	22	[4.50]	CLAY (CH). Hard, high plasticity, light brown, dry. *(Continued)*
				8	8 20 29 33	49	19	[4.00]	
56.0	40.0								
55.6	41.4			9	13 26 50/5"	50/5"	19	[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH).



BORING END: 41.4 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378258.00 m, N: 2029999.00 m

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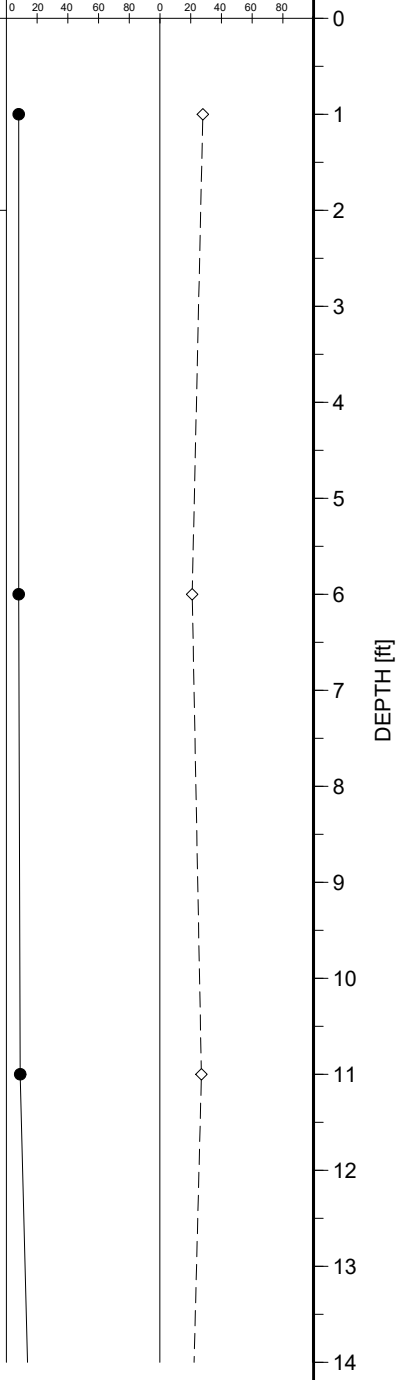
SB-12

BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/11/18	End 6/12/18
Water Table Depth: [feet]	**Top Boring Elevation:** 64.0 [m MSL]	
Total Depth of Boring: 42 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
63.4	2.0			1	3 3 5 6	8	28	[3.00]	TOPSOIL. Trace of roots and organics, clayey, trace of sand, very stiff, dark brown, dry, slight organic odor.
									CLAY (CL). Sandy, medium plasticity, stiff, light brown grey, dry, lensed.
				2	3 4 4 6	8	21	[1.50]	
				3	3 3 6 8	9	27	[2.00]	



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-13**

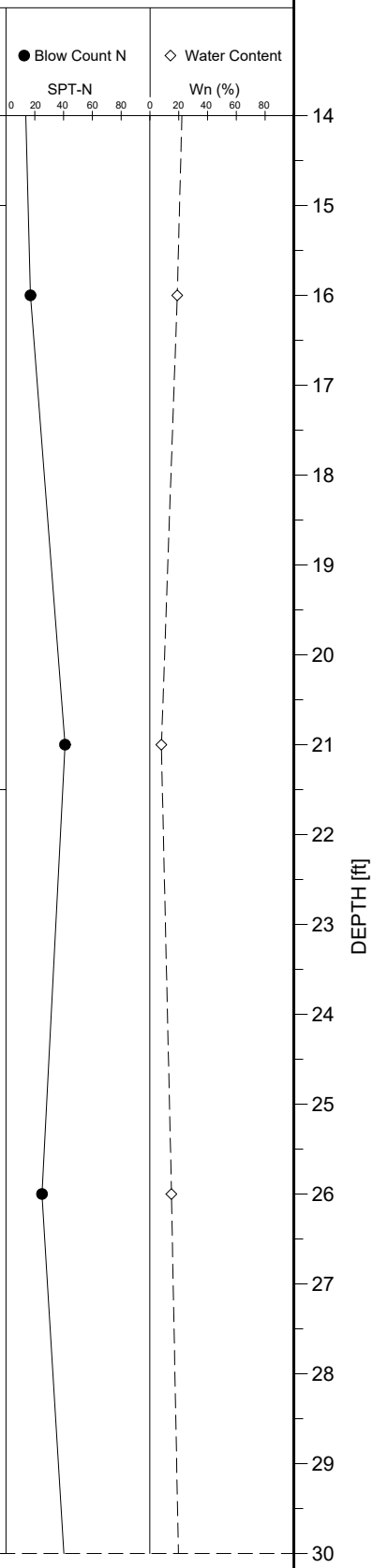
BORING LOG (continuation)

Top Boring Elevation: 64.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
59.4	15.0								CLAY (CL). Sandy, medium plasticity, stiff, light brown grey, dry, lensed. *(Continued)*
				4	4 6 11 12	17	19	[4.50]	CLAY (CH). Some sand, hard, high plasticity, light brown, dry.
57.4	21.5			5	6 19 22 25	41	8	[4.50]	
				6	7 10 15 19	25	15		POORLY GRADED GRAVEL (GP-GC). Fine to coarse, poorly graded, clayey, medium dense, rounded to subrounded, medium brown, poor recovery, (alluvium).
54.9	30.0								



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-13

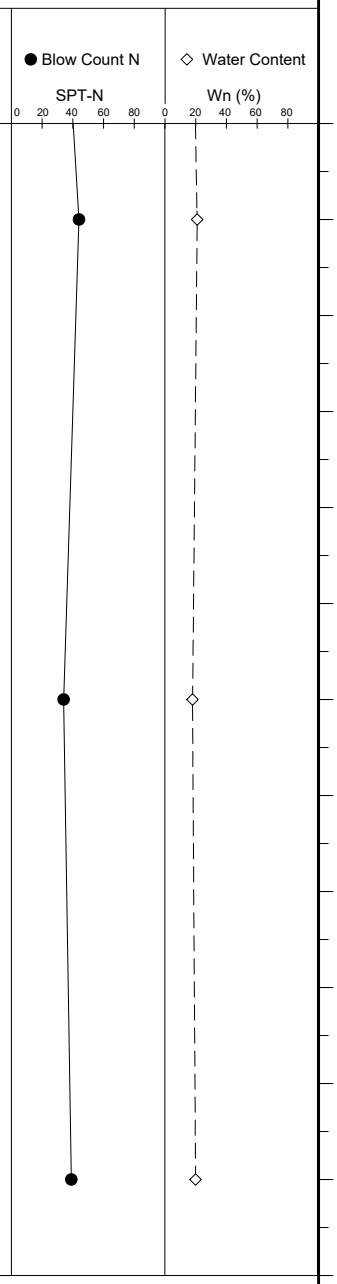
BORING LOG (continuation)

Top Boring Elevation: 64.0 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	10 20 24 26	44	21	[4.50]	CLAY (CH). Hard, high plasticity, light brown, dry.
				8	9 15 19 24	34	18	[4.50]	
				9	7 17 22 25	39	20	[4.50]	
51.2	42.0								



BORING END: 42 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378137.00 m, N: 2029931.00 m

Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

Boring: SB-13

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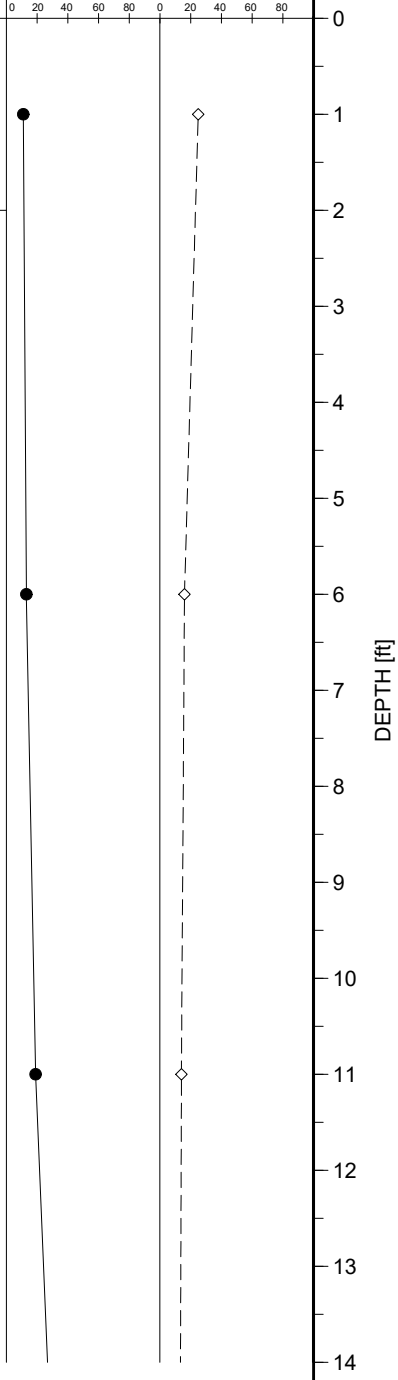
BORING LOG	**Project Name:** Battelle	**Page** 1 **of** 3

Location: Doña Ana, San Cristobal	**Driller:** Rolando Salcie	**Machine:** CME-55
Described: Cedric Féliz	**Date:** Start 6/5/18	End 6/5/18
Water Table Depth: 10.5 [feet]	**Top Boring Elevation:** 59.5 [m MSL]	
Total Depth of Boring: 40.9 [feet]	**Inspector:** Cedric Féliz	**Approved:** Dr. Tirso Alvarez

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				1	4 5 6 6	11	25		TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.
58.9	2.0								CLAYEY GRAVEL (GC). Fine to coarse, sandy, medium dense, rounded to subrounded, light brown, stratified, intercalation of gravel and clay (alluvium).
				2	10 7 6 6	13	16		
				3	10 11 8 8	19	14		



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Project Number: 981-18	**Horizon Consultants, S.A.** *Solutions in Geotechnical Engineering*	**Boring: SB-14**

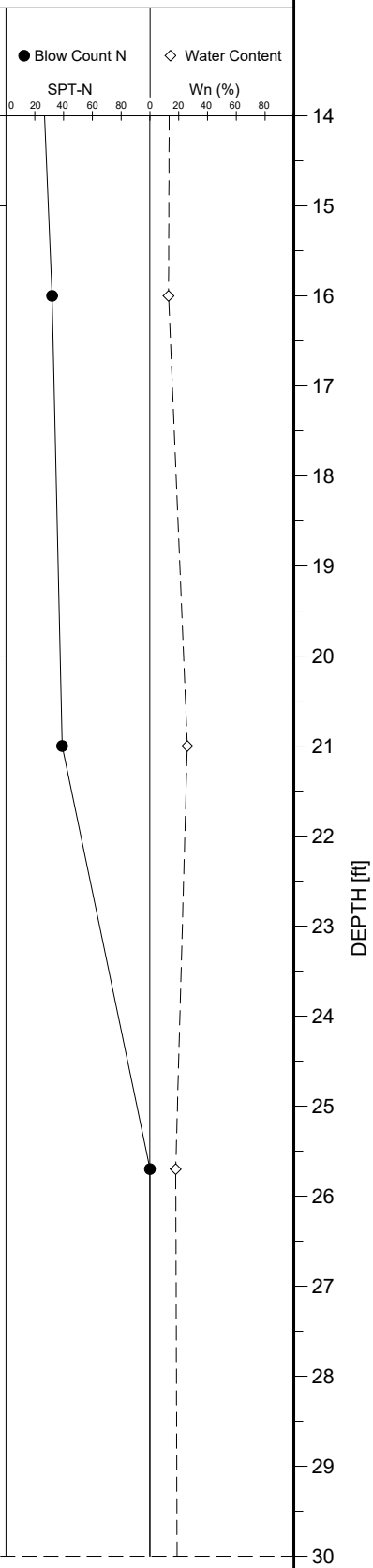
BORING LOG (continuation)

Top Boring Elevation: 59.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
54.9	15.0								
				4	18 15 17 17	32	13		POORLY GRADED SAND (SP-SC). Clayey, some gravel, dense, rounded to subrounded, light brown, stratified (alluvium).
53.4	20.0								
				5	6 18 21 24	39	26	[3.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, fissured. Sampled as a High Plasticity Clay (CH).
				6	10 37 50/5"	50/5"	18	[4.50]	



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Project Number: 981-18

Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

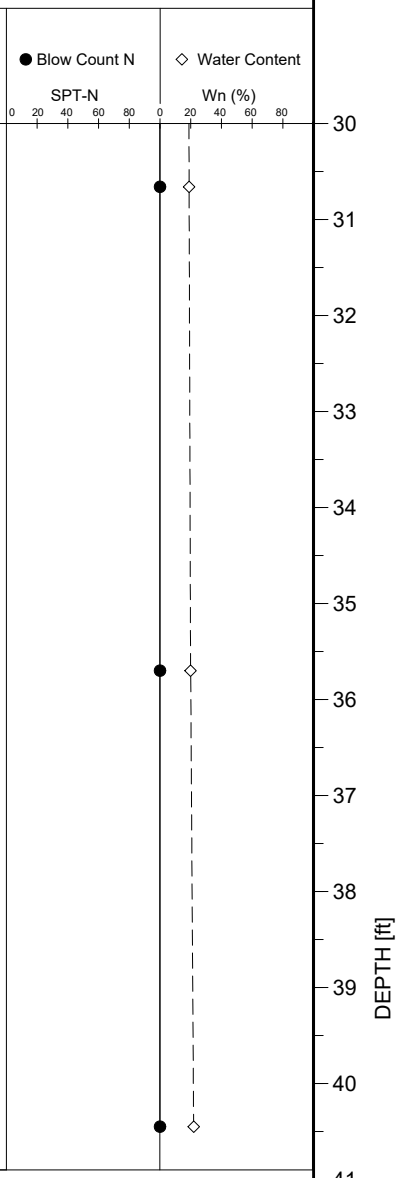
Boring: SB-14

Top Boring Elevation: 59.5 [m MSL]

Project Name: Battelle

Location: Doña Ana, San Cristobal

Elev. [m]	Depth [ft]	Symbol	Type	Sample	Blows 6"	SPT N or RQD	W [%] or REC	Qu [kg/cm²]	Description and Classification
				7	17 32 50/4"	50/4"	19	[4.50]	SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, fissured. Sampled as a High Plasticity Clay (CH). *(Continued)*
				8	19 36 50/5"	50/5"	20	[4.50]	
47.0	40.9			9	25 50/5"	50/5"	22	[4.50]	



BORING END: 40.9 feet

NOTES:
1) [] Measurement with the pocket penetrometer.
2) q_u in kg/cm^2.
3) SPT-N represents the number of blows by feet of the Standard Penetration Test (ASTM D1586-98) using automatic hammer.
4) w [%] moisture content.
5) In rock drilling: REC[%]; recuperation and RQD[%]; Rock Quality Designation of Don U. Deere (University of Illinois Urbana-Champaign).
6) Divisions between layers are approximate and can actually represents zones with gradual transitions.
7) The subsurface water level reported, was measured at the end of the drilling process and can differ of the real one, which can only be determined with the instalation and monitoring of observation wells.
8) This boring log was elaborated for an specific project and for an specific application. The one can't be separated from the geotechnical report.
9) [m MSL] Denotes meters above sea level.

BORING COORDINATES: E: 378018.00 m, N: 2029947.00 m

SB-14

SB-14

SB-14

PIEZOMETER LOGS

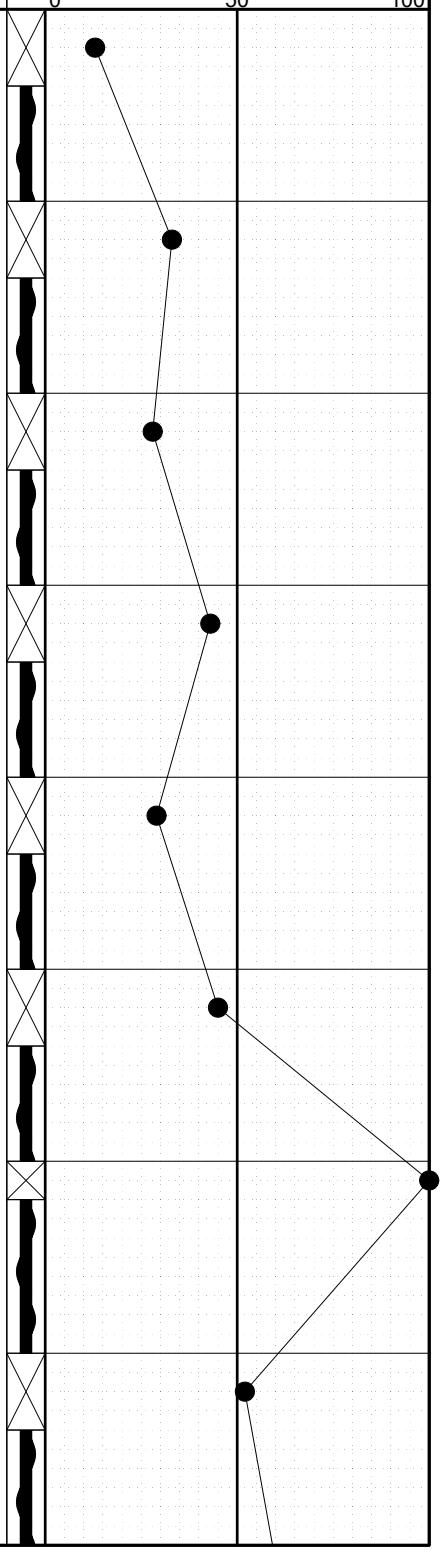
Horizon Consultants, S.A.
Solutions in Geotechnical Engineering

PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-01**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 2
Boring Depth (ft): **80.0**	Elevation (ft): **273.2**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
			CLAY (CL). Sandy, medium plasticity, hard, light brown, lensed.	Seal with cement grout at ground surface
270	5		SILTY SAND (SM). Fine, silty, dense, light olive to brown, subrounded, dry, stratified.	
265	10		CLAY (CL). Sandy, medium plasticity, hard, light brown grey, dry, lensed.	1" PVC Bell Ended Sch. 40 [1" X 19']
260	15			Grout Mix
255	20			
250	25			Bentonite Seal
			SILTY SAND (SM). Fine, silty, very dense, light grey brown, subrounded, wet, stratified.	Polyethylene Filter Tip, 12"
245	30			Washed Sand
240	35		SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).	
235				

Penetration Resistance (Blows/Foot)



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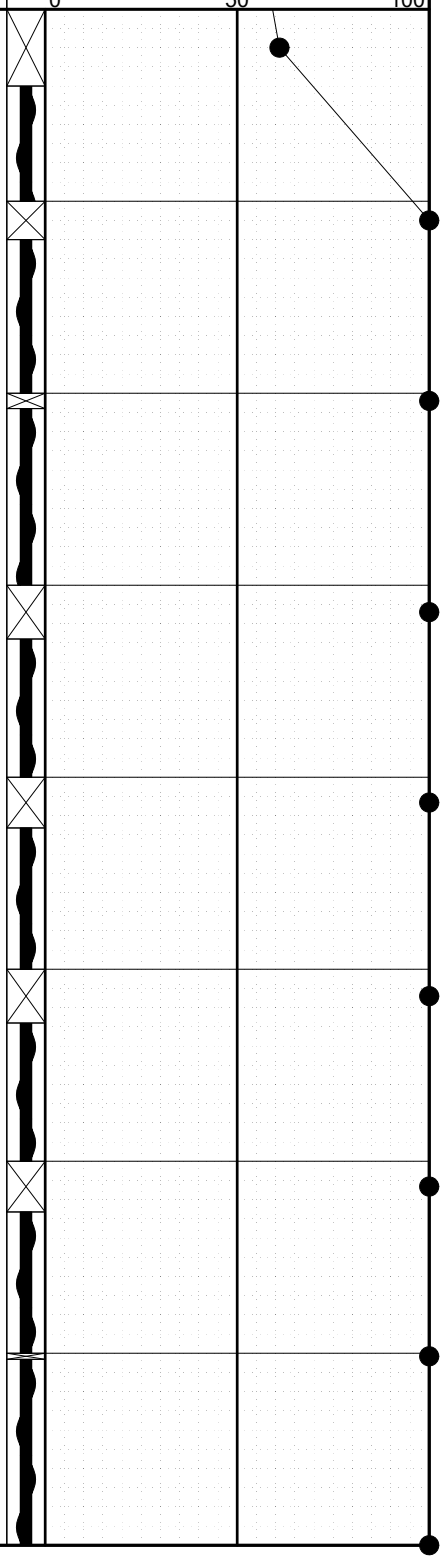
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-01**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 2 of 2
Boring Depth (ft): **80.0**	Elevation (ft): **273.2**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
230				
	45		Some sand.	
225				
	50		Gravelly, subrounded.	
220				
	55			
215				
	60			
210				
	65			
205				
	70			
200				
	75			
195				

Penetration Resistance (Blows/Foot)



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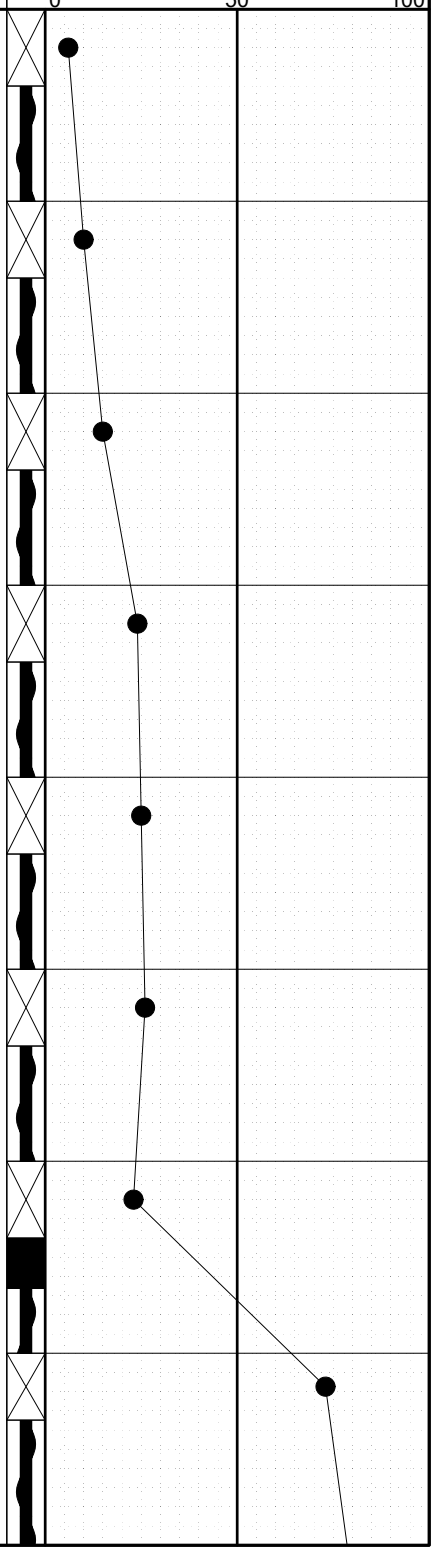
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-03**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 2
Boring Depth (ft): **80.0**	Elevation (ft): **242.7**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 2 bags of cement, 2 bags of bentonite, 1 stick of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
240			CLAY (CH). Some sand, trace gravel, high plasticity, stiff, light brown, dry, trace of organic material.	Seal with cement grout at ground surface
	5			
235				1" PVC Bell Ended Sch. 40 [1" X 19']
	10			
230			CLAY (CH). Hard to very stiff, high plasticity, light brown, dry.	Grout Mix
	15			Bentonite Seal
225				Polyethylene Filter Tip, 12".
	20			Washed Sand
220				
	25			
215				
	30			
210				
	35		SHALE. Completely weathered, extremely weak to hard/stiff, dark green, fine grained, bedded, easily fissured. Sampled as a High Plasticity Clay (CH).	
205				

Penetration Resistance (Blows/Foot)



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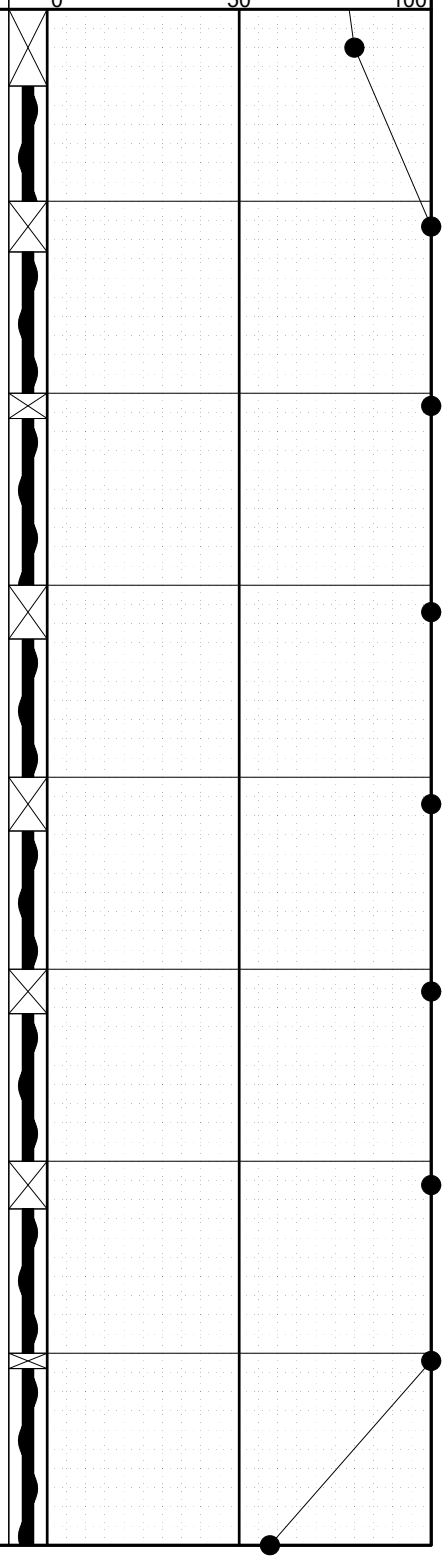
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-03**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 2 of 2
Boring Depth (ft): **80.0**	Elevation (ft): **242.7**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 2 bags of cement, 2 bags of bentonite, 1 stick of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction	Penetration Resistance (Blows/Foot) 0 50 100
200					
	45				
195					
	50				
190					
	55				
185					
	60				
180					
	65				
175					
	70				
170					
	75				
165					



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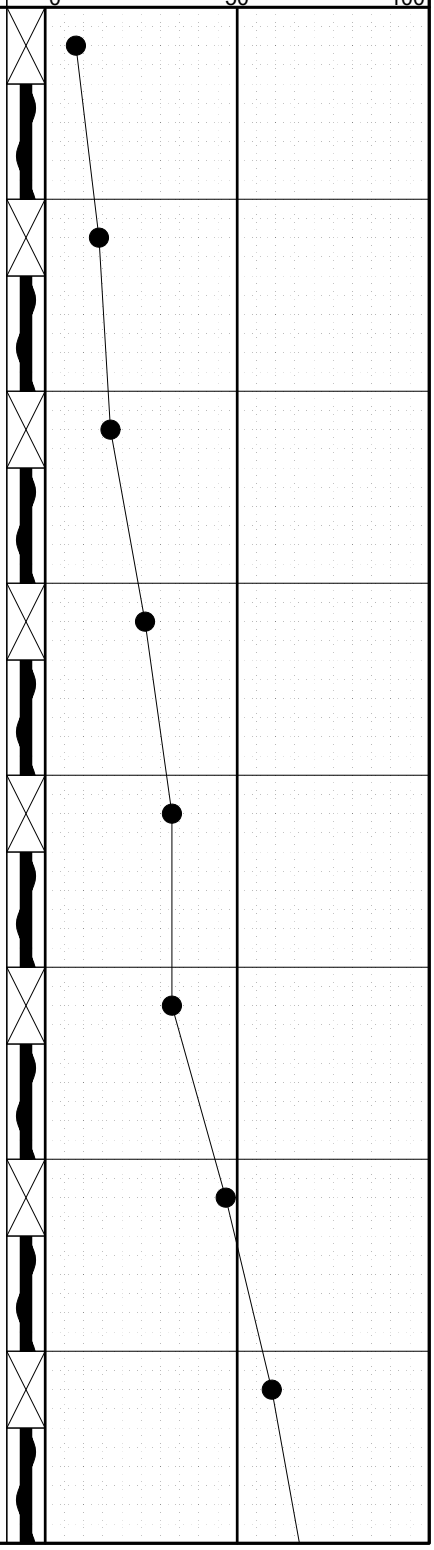
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-05**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 3
Boring Depth (ft): **110.0**	Elevation (ft): **255.8**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
255			TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown.	Seal with cement grout at ground surface
			CLAY (CH). Very stiff to hard, medium to high plasticity, dark brown, dry, very high dry strength.	
250	5		Traces of organic material, light brown.	
245	10		Hard, traces of sand, slight organic odor.	1" PVC Bell Ended Sch. 40 [1" X 19']
240	15		Dark brown, dry, strong cementation.	Grout Mix
235	20			
230	25		Hard	Bentonite Seal
				Polyethylene Filter Tip, 12".
225	30		SHALE. Completely weathered, hard, fine texture, dark green, easily fissured.	Washed Sand
220	35			

Penetration Resistance (Blows/Foot)



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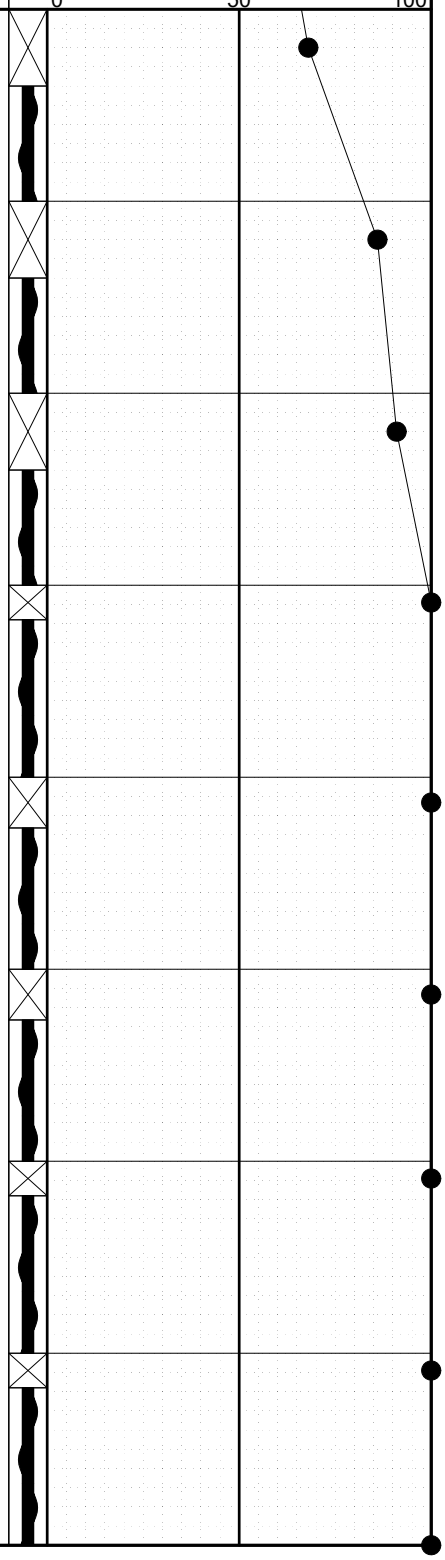
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-05**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 2 of 3
Boring Depth (ft): **110.0**	Elevation (ft): **255.8**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction	Penetration Resistance (Blows/Foot) 0 50 100
215					
	45				
210					
	50				
205					
	55				
200					
	60				
195					
	65				
190					
	70				
185					
	75				
180					



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PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-05**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 3 of 3
Boring Depth (ft): **110.0**	Elevation (ft): **255.8**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction	Penetration Resistance (Blows/Foot) 0 50 100
175					
	85				
170					
	90				
165					
	95				
160					
	100				
155					
	105				
150					
	110				

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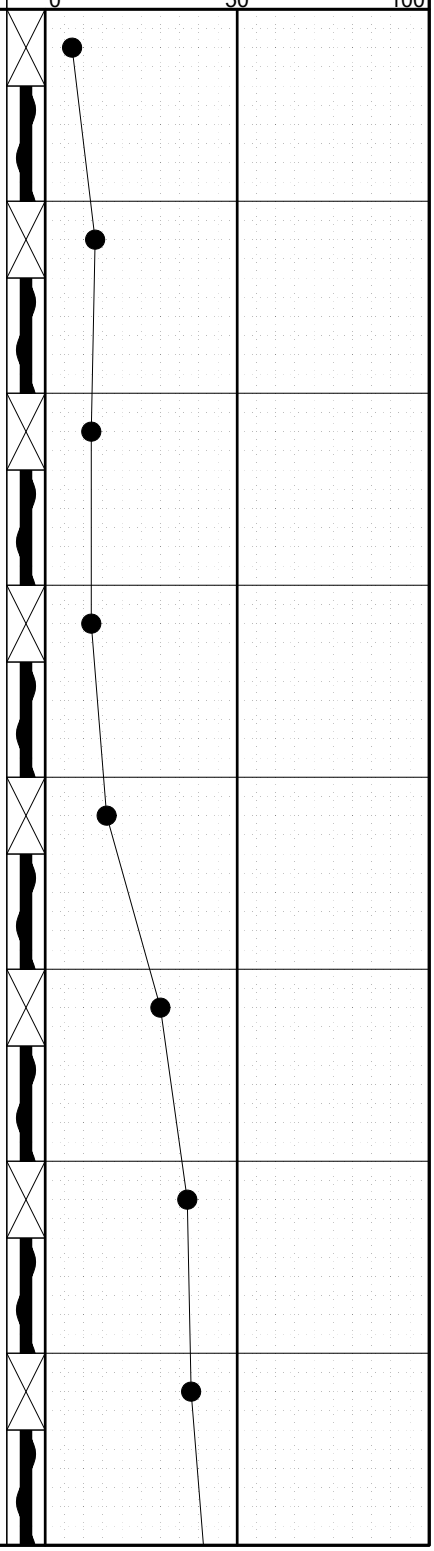
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-09**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 3
Boring Depth (ft): **85.0**	Elevation (ft): **222.4**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 10 bags of cement, 6 bags of bentonite, 4 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
			TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.	Seal with cement grout at ground surface
220			CLAY (CH). Stiff to very stiff, high plasticity, light brown, dry.	
	5			
215				
	10			1" PVC Bell Ended Sch. 40 [1" X 19']
210				
	15			
205				Grout Mix
	20		CLAY (CL). Some sand, very stiff, low plasticity, light brown, dry.	
200				
	25		CLAYEY GRAVEL (GC). Fine to coarse, sandy, dense, rounded to subrounded, medium, brown, (alluvium).	
195				
	30		CLAY (CH). Hard, high plasticity, light brown, dry.	
190				
	35			
185				

Penetration Resistance (Blows/Foot)



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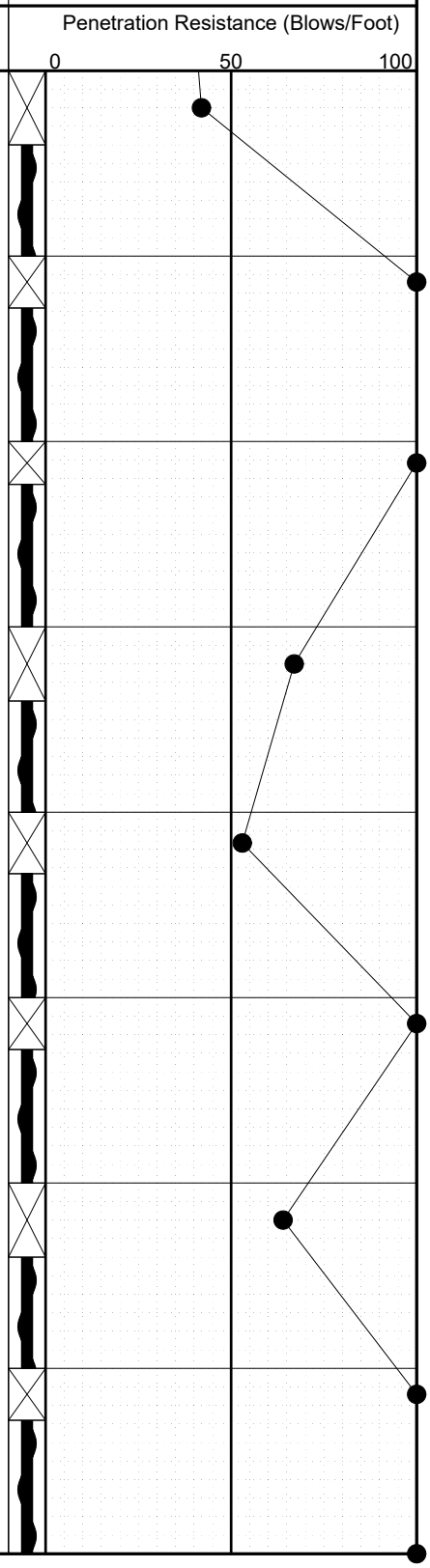
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-09**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 2 of 3
Boring Depth (ft): **85.0**	Elevation (ft): **222.4**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 10 bags of cement, 6 bags of bentonite, 4 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
180				
	45		SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH).	
175				
	50			
170				
	55			
165				
	60			
160				
	65			Bentonite Seal
155				Polyethylene Filter Tip, 12".
	70			
150				Washed Sand
	75			
145				



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PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-09**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 3 of 3
Boring Depth (ft): **85.0**	Elevation (ft): **222.4**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 10 bags of cement, 6 bags of bentonite, 4 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction	Penetration Resistance (Blows/Foot) 0 50 100
140					
	85				

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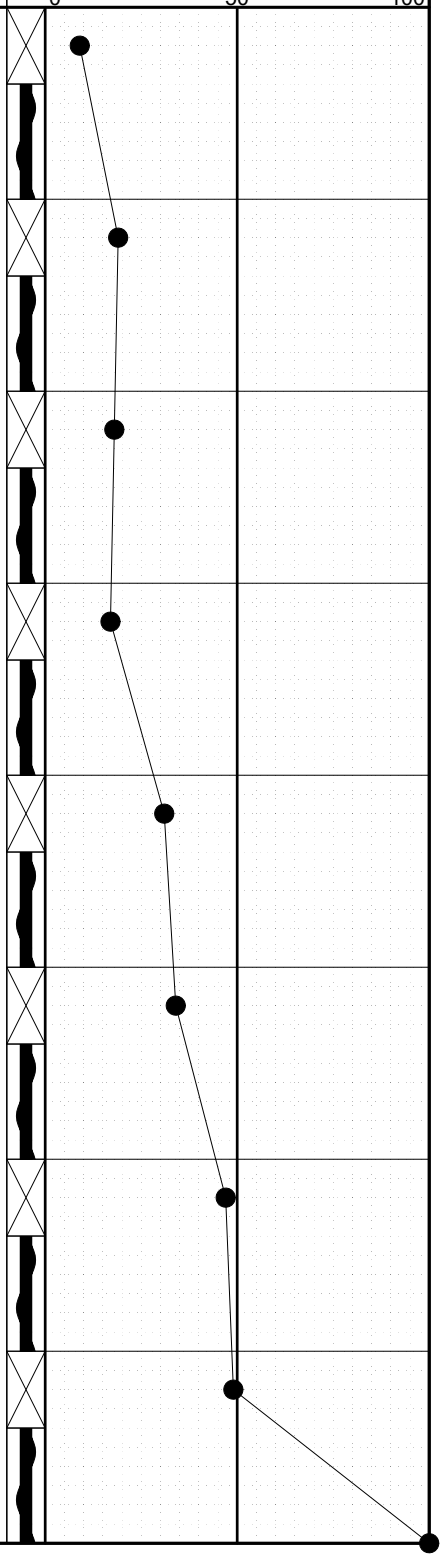
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-12**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 2
Boring Depth (ft): **40.0**	Elevation (ft): **223.7**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
			TOPSOIL. Trace of roots and organics, clayey, trace of sand, very stiff, dark brown, dry, slight organic odor.	Seal with cement grout at ground surface
220	5		CLAY (CL). Some sand, very stiff, low plasticity, light brown, dry.	
215	10			1" PVC Bell Ended Sch. 40 [1" X 19']
210	15		CLAY (CH). Hard, high plasticity, light brown, dry.	
205	20			Grout Mix
200	25			
195	30			Bentonite Seal
190	35			Polyethylene Filter Tip, 12". Washed Sand
185			SHALE. Completely weathered,	

Penetration Resistance (Blows/Foot)



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PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-12**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 2 of 2
Boring Depth (ft): **40.0**	Elevation (ft): **223.7**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 4 bags of cement, 3 bags of bentonite, 1.5 sticks of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction	Penetration Resistance (Blows/Foot) 0 50 100
			extremely weak to hard, dark green, fine grained, bedded. Sampled as a High Plasticity Clay (CH).		

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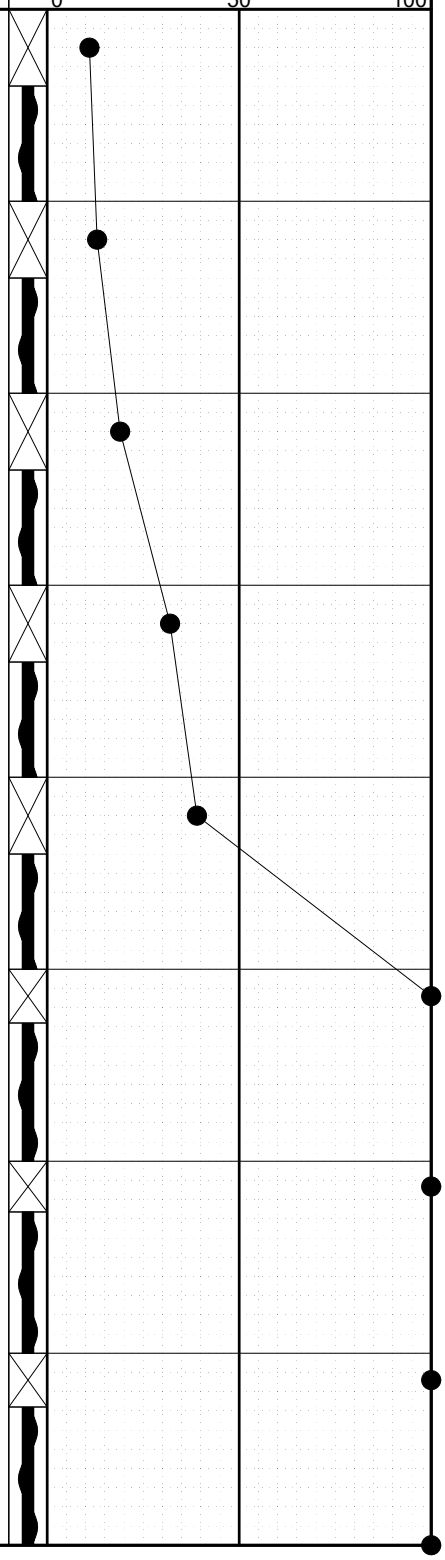
PIEZOMETER LOG

Project: **Battelle**			**Boring No. SB-14**
Location: **Doña Ana, San Cristobal**		Number: **981-18**	Sheet No. 1 of 1
Boring Depth (ft): **40.0**	Elevation (ft): **195.2**	Driller: **Rolando Salcie**	Date Started: **6/14/18**
Notes: Consumables - 3 bags of cement, 2 bags of bentonite, 1 stick of PVC (19'), 1 filter tip			Date Completed: **6/15/18**

Elev. (Feet)	Depth (Feet)	Lith-ology	Material Description	Well Construction
			TOPSOIL. Trace of roots and organics, clayey, trace of sand, stiff, dark brown, dry, slight organic odor.	Seal with cement grout at ground surface
190	5		CLAYEY GRAVEL (GC). Fine to coarse, sandy, medium dense, rounded to subrounded, light brown, stratified, intercalation of gravel and clay (alluvium).	Grout Mix
185	10			1" PVC Bell Ended Sch. 40 [1" X 19']
180	15		POORLY GRADED SAND (SP-SC). Clayey, some gravel, dense, rounded to subrounded, light brown, stratified (alluvium).	Bentonite Seal Polyethylene Filter Tip, 12".
175	20		SHALE. Completely weathered, extremely weak to hard, dark green, fine grained, bedded, fissured. Sampled as a High Plasticity Clay (CH).	
170	25			Washed Sand
165	30			
160	35			

Penetration Resistance (Blows/Foot)



SB-01

SB-01

SB-03

SB-05

SB-09

SB-12

SB-14

TEST PIT LOGS

LOG OF TEST PIT TP-01

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 83.3

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		SANDY CLAY (CL): light brown, lensed.					
		SILTY SAND (SM): light brown, fine, stratified.					
5					23		Proctor
		SANDY CLAY (CL): light brown, lensed.					
10		Bottom of hole at 10					
15							
20							

LOG OF TEST PIT TP-04

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 76.5

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		CLAY (CH): light brown, dry.					
5					20		Proctor
		Bottom of hole at 8					
10							
15							
20							

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Battelle
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981-18

SB-01

LOG OF TEST PIT TP-05

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 78

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, dry, slight organic odor.					
		CLAY (CH): light brown, dry, hard.					
5							
10		Bottom of hole at 10			23		Proctor
15							
20							

LOG OF TEST PIT TP-06

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 67.5

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, dry, slight organic odor.					
		CLAY (CH): light brown, dry, stiff.					
5							
10		Bottom of hole at 8			19		Proctor
15							
20							

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Battelle
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SB-05

SB-06

SB-06

LOG OF TEST PIT TP-08

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 61.1

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, traces of roots and rootlets.					
5		CLAY (CH): light brown, dry.			21		Proctor
		GRAVEL (GC): clayey, sandy, rounded, alluvium.					
10		Bottom of hole at 8					
15							
20							

LOG OF TEST PIT TP-09

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 67.8

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, traces of roots and rootlets.					
5		CLAY (CH): light brown, dry.					
10		Bottom of hole at 8			21		Proctor
15							
20							

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Battelle
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SB-08

SB-09

LOG OF TEST PIT TP-12

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 68.2

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, dry, slight organic odor.					
5		CLAY (CL): some sand, light brown, lensed.					
10		Bottom of hole at 8			19		Proctor
15							
20							

LOG OF TEST PIT TP-14

Date Excavated: 6/9/2018 Logged by: Cedric Féliz

Equipment: CAT Backhoe Surface Elevation(ft): 59.5

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE	HAND PEN. (tsf)	MOISTURE (%)	DRY UNIT WT. (pcf)	LAB TESTS
		TOPSOIL: dark brown, dry.					
		GRAVEL (GC): clayey, sandy, rounded, alluvium.					
5		SANDY CLAY (CL): light brown, lensed.					
		GRAVEL (GC): clayey, sandy, rounded, alluvium.			15		Proctor
		SANDY CLAY (CL): light brown, lensed.					
10		Bottom of hole at 10					
15							
20							

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Battelle
Doña Ana, San Cristobal, Rep. Dom.
981-18

APPENDIX B

Laboratory Tests

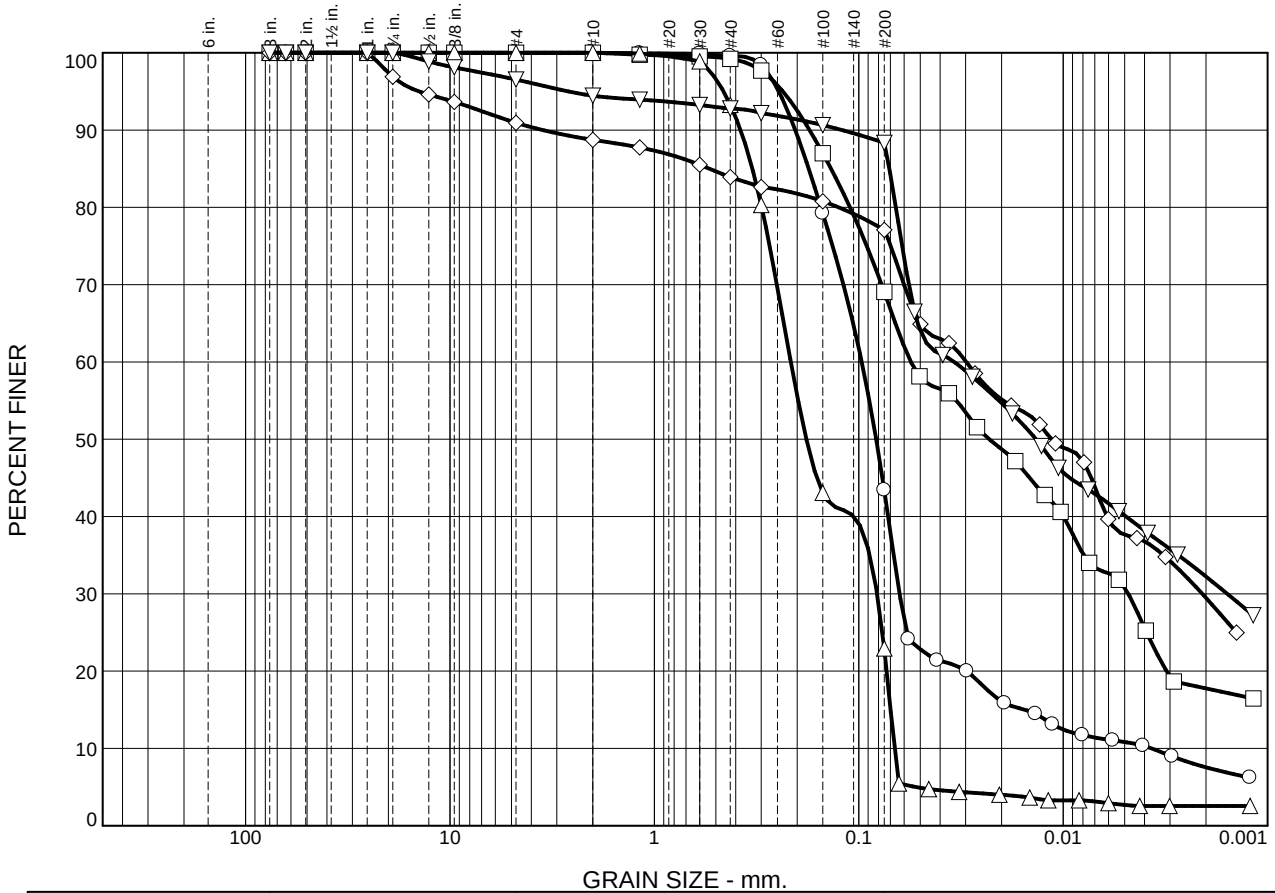
HorizonConsultants
Soluciones en Ingeniería Geotécnica

Sumary Table of Index Tests
Project: San Cristobal Disposal Site
Location: Doña Ana, San Cristobal, Rep. Dom.

Boring No.	Sample	Depth (ft)	Gravel (%)	Sand (%)	Fines (%)	Silt (%)	Clay (%)	PL (%)	LL (%)	PI (%)	Max Density (kg/m3)	Optimum Moisture (%)	Permeability (cm/sec)	Natural Moisture (%)	USCS	DESCRIPTION
SB-01	2	5	0.0	56.6	43.4	32.6	10.8	23	29	6	-	-		23	SM	silty sand
	3	10	0.0	30.9	69.1	38.3	30.8	22	41	19	-	-		22	CL	sandy lean clay
	6	25	0.0	77.1	22.9	20.2	2.7	NP	NV	NP	-	-		25	SM	silty sand
	10	45	9.1	13.8	77.1	39.5	37.6	26	62	36	-	-		16	CH	fat clay with sand
	12	55	3.5	8.1	88.4	48.3	40.1	32	65	33	-	-		19	CH	fat clay
	14	65	0.0	9.6	90.4	39.6	50.8	25	63	38	-	-		18	CH	fat clay
SB-02	3	10	3.1	7.8	89.1	36.4	52.7	25	58	33	-	-		23	CH	fat clay
	4	15	60.4	23.9	15.7	12.6	3.1	24	55	31	-	-		27	GC	clayey gravel with sand
	7	30	5.4	9.8	84.8	43.8	41.0	18	52	34	-	-		28	CH	fat clay with sand
SB-03	4	15	0.0	5.2	94.8	42.9	51.9	29	58	29	-	-		18	CH	fat clay
	7	30	0.0	3.7	96.3	48.5	47.8	30	61	31	-	-		29	CH	fat clay
	8	35	0.0	3.2	96.8	35.7	61.1	29	54	25	-	-		14	CH	fat clay
	10	45	0.0	4.5	95.5	46.1	49.4	28	61	33	-	-		16	CH	fat clay
	12	55	0.0	4.2	95.8	47.2	48.6	28	57	29	-	-		18	CH	fat clay
	SH-1	20	-	-	-	-	-	-	-	-	-	-	4.50x10-7	19	CH	fat clay
SB-04	3	10	0.2	12.2	87.6	41.9	45.7	30	60	30	-	-		27	CH	fat clay
	5	20	0.0	3.5	96.5	47.7	48.8	30	57	27	-	-		25	CH	fat clay
	6	25	0.0	6.1	93.9	43.7	50.2	27	61	34	-	-		19	CH	fat clay
	9	40	0.0	13.6	86.4	35.7	50.7	25	56	31	-	-		17	CH	fat clay
SB-05	2	5	1.1	14.6	84.3	23.6	60.7	29	59	30	-	-		25	CH	fat clay with sand
	3	10	0.0	4.7	95.3	41.6	53.7	29	55	26	-	-		23	CH	fat clay
	4	15	0.0	3.0	97.0	43.9	53.1	26	56	30	-	-		22	CH	fat clay
	5	20	0.0	3.9	96.1	40.6	55.5	27	55	28	-	-		20	CH	fat clay
	6	25	0.0	2.7	97.3	48.9	48.4	25	53	28	-	-		21	CH	fat clay
	9	40	0.0	2.0	98.0	49.2	48.8	27	71	44	-	-		17	CH	fat clay
SB-06	3	10	0.0	0.9	99.1	34.6	64.5	25	55	30	-	-		19	CH	fat clay
	5	20	0.2	8.5	91.3	50.2	41.1	20	45	25	-	-		17	CL	lean clay
	6	25	45.0	36.1	18.9	7.1	11.8	18	36	18	-	-		10	GC	clayey gravel with sand
	9	40	0.0	7.3	92.7	45.5	47.2	30	62	32	-	-		22	CH	fat clay
SB-07	2	5	1.6	15.3	83.1	47.2	35.9	27	64	37	-	-		26	CH	fat clay with sand
	SH-1	20	-	-	-	-	-	-	-	-	-	-	7.30x10-7	19	CH	fat clay
	6	25	0.0	2.7	97.3	40.2	57.1	30	61	31	-	-		21	CH	fat clay
SB-08	2	5	0.0	23.2	76.8	41.5	35.3	21	51	30	-	-		21	CH	fat clay with sand
	3	10	4.5	28.0	67.5	36.4	31.1	22	50	28	-	-		14	CH	fat clay
	7	30	0.0	3.4	96.6	48.8	47.8	25	50	25	-	-		16	CH	fat clay
	8	35	0.0	12.7	87.3	44.3	43.0	27	62	35	-	-		17	CH	fat clay
SB-09	2	5	6.8	8.0	85.2	46.6	38.6	26	56	30	-	-		20	CH	fat clay with sand
	4	15	0.0	12.8	87.2	41.0	46.2	26	58	32	-	-		22	CH	fat clay
	5	20	0.0	24.8	75.2	47.5	27.7	17	36	19	-	-		18	CL	lean clay with sand
	6	25	39.0	15.7	45.3	33.6	11.7	26	49	23	-	-		9	GC	clayey gravel with sand
	12	55	0.0	7.4	92.6	45.8	46.8	28	58	30	-	-		16	CH	fat clay
	15	70	0.0	3.1	96.9	48.8	48.1	24	56	32	-	-		11	CH	fat clay
	17	80	0.0	5.7	94.3	44.2	50.1	25	53	28	-	-		15	CH	fat clay
SB-10	4	15	0.0	6.4	93.6	45.7	47.9	27	57	30	-	-		17	CH	fat clay
	5	20	0.0	4.1	95.9	51.7	44.2	28	53	25	-	-		16	CH	fat clay
	6	25	0.6	15.0	84.4	48.8	35.6	24	42	18	-	-		20	CL	lean clay with sand
	8	30	0.0	3.2	96.8	42.9	53.9	29	57	28	-	-		21	CH	fat clay
	9	35	0.0	5.8	94.2	47.4	46.8	28	55	27	-	-		18	CH	fat clay
	10	40	0.0	1.6	98.4	43.4	55.0	28	70	42	-	-		16	CH	fat clay
SB-11	2	5	0.5	1.6	97.9	44.4	53.5	26	54	28	-	-		18	CH	fat clay

Boring No.	Sample	Depth (ft)	Gravel (%)	Sand (%)	Fines (%)	Silt (%)	Clay (%)	PL (%)	LL (%)	PI (%)	Max Density (kg/m3)	Optimum Moisture (%)	Permeability (cm/sec)	Natural Moisture (%)	USCS	DESCRIPTION
	5	20	0.0	2.1	97.9	47.1	50.8	26	54	28	-	-		17	CH	fat clay
	7	25	0.0	4.2	95.8	36.7	59.1	29	64	35	-	-		15	CH	fat clay
	9	35	0.0	5.8	94.2	38.7	55.5	30	73	43	-	-		15	CH	fat clay
	8	35	0.0	3.2	96.8	46.4	50.4	29	54	25	-	-		17	CH	fat clay
	10	40	0.0	5.2	94.8	50.1	44.7	30	74	44	-	-		22	CH	fat clay
SB-12	2	5	2.1	19.0	78.9	43.4	35.5	23	47	24	-	-		23	CL	lean clay with sand
	5	20	0.3	6.6	93.1	37.1	56.0	31	62	31	-	-		25	CH	fat clay
	9	40	0.0	4.9	95.1	44.7	50.4	28	62	34	-	-		19	CH	fat clay
SB-13	2	5	3.0	38.8	58.2	40.4	17.8	19	40	21	-	-		21	CL	sandy lean clay
	4	15	0.0	23.2	76.8	35.8	41.0	21	53	32	-	-		19	CH	fat clay with sand
	5	21	50.5	38.2	11.3	-	-	19	32	13	-	-		8	GP-GC	poorly graded gravel with clay and sand
SB-14	2	5	48.2	27.8	24.0	19.6	4.4	21	41	20	-	-		16	GC	clayey gravel with sand
	3	10	47.5	35.3	17.2	8.3	8.9	-	-	-	-	-		14	GC	clayey gravel with sand
	4	15	40.3	50.7	9.0	6.0	3.0	-	-	-	-	-		13	SP-SC	poorly graded sand with clay and gravel
	7	30	0.0	4.7	95.3	51.7	43.6	25	60	35	-	-		19	CH	fat clay
SHALE	1	40	0.1	2.5	97.4	46.3	51.1	23	63	40	1861	14.1		17	CH	fat clay
TP-01	1	6	1.0	15.8	83.2	48.6	34.6	24	34	10	1920	10.5		23	CL	lean clay with sand
TP-04	1	7	0.0	1.2	98.8	48.8	50.0	25	55	30	1815	15.6		22	CH	fat clay
TP-05	1	10	0.3	4.0	95.7	47.3	48.4	28	61	33	1861	16.0		23	CH	fat clay
TP-06	1	8	0.5	4.5	95.0	47.4	47.6	22	57	35	1806	16.1		20	CH	fat clay
TP-08	1	5	0.2	26.3	73.5	38.4	35.1	20	44	24	1989	10.2		20	CL	lean clay with sand
TP-09	1	8	1.4	4.5	94.1	38.6	55.5	26	51	25	1845	9.9		21	CH	fat clay
TP-12	1	8	0.7	12.9	86.4	43.4	43.0	24	43	19	1977	8.8		20	CL	lean clay
TP-14	1	5	45.0	14.7	40.3	-	-	22	42	20	2056	10.0		14	GC	clayey gravel

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.4	56.2	32.6	10.8
□	0.0	0.0	0.0	0.0	0.8	30.1	38.3	30.8
△	0.0	0.0	0.0	0.0	6.7	70.4	20.2	2.7
◇	0.0	3.1	6.0	2.2	4.8	6.8	39.5	37.6
▽	0.0	0.0	3.5	2.1	1.6	4.4	48.3	40.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-01	2	5	silty sand	SM
□	SB-01	3	10	sandy lean clay	CL
△	SB-01	6	25	silty sand	SM
◇	SB-01	10	45	fat clay with sand	CH
▽	SB-01	12	55	fat clay	CH

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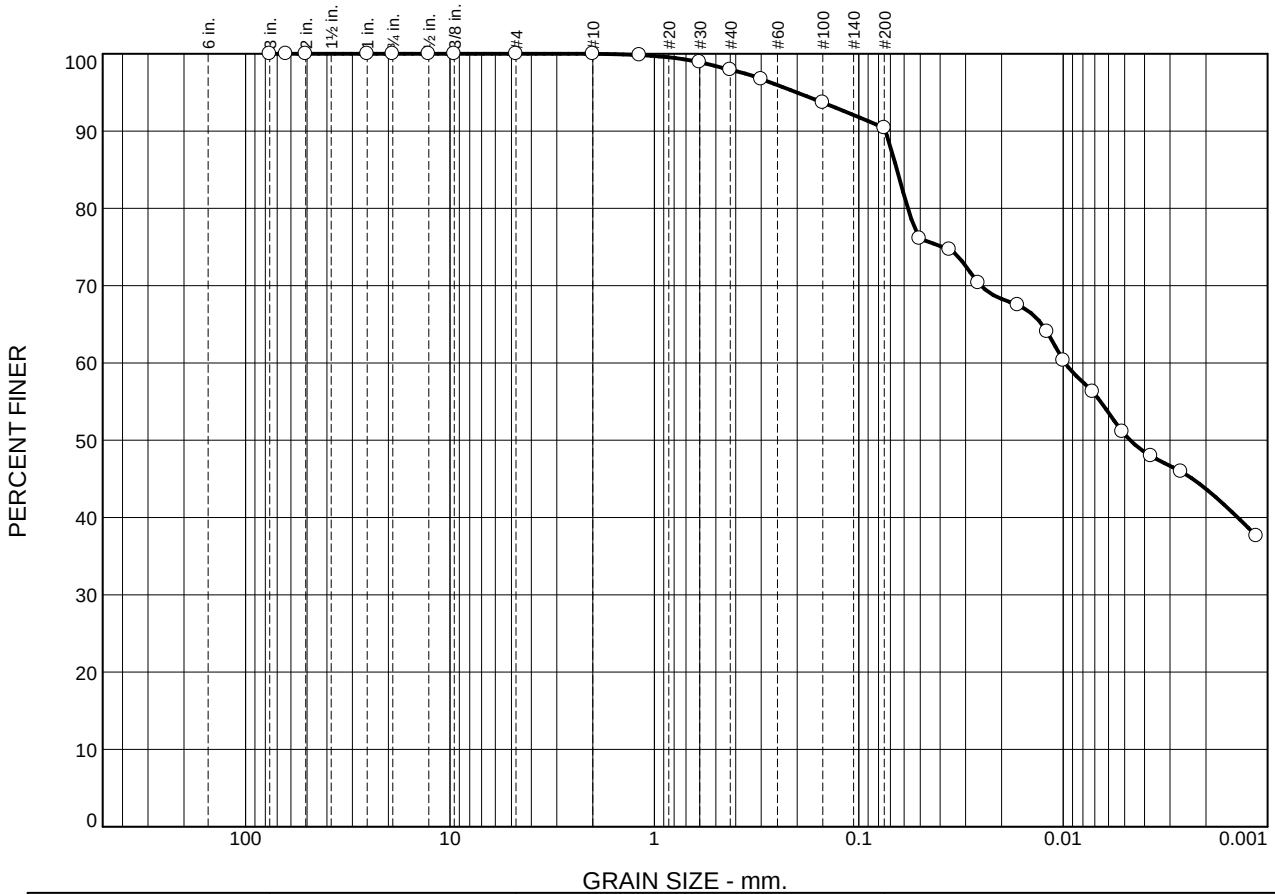
Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.1	7.5	39.6	50.8

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-01	14	65	fat clay	CH

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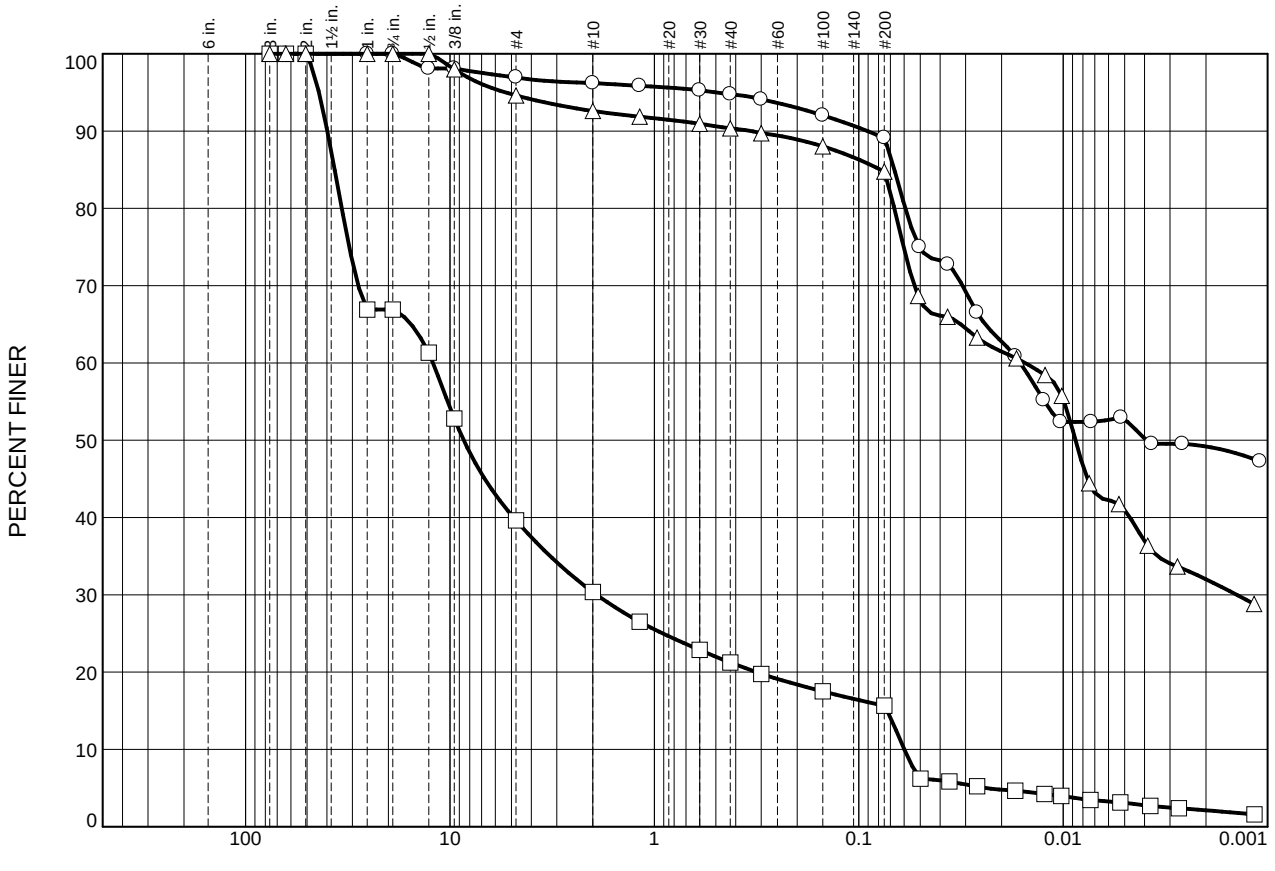
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.1	0.7	1.4	5.7	36.4	52.7
□	0.0	33.1	27.3	9.2	9.2	5.5	12.6	3.1
△	0.0	0.0	5.4	2.0	2.2	5.6	43.8	41.0

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-02	3	10	fat clay	CH
□	SB-02	4	15	clayey gravel with sand	GC
△	SB-02	7	30	fat clay with sand	CH

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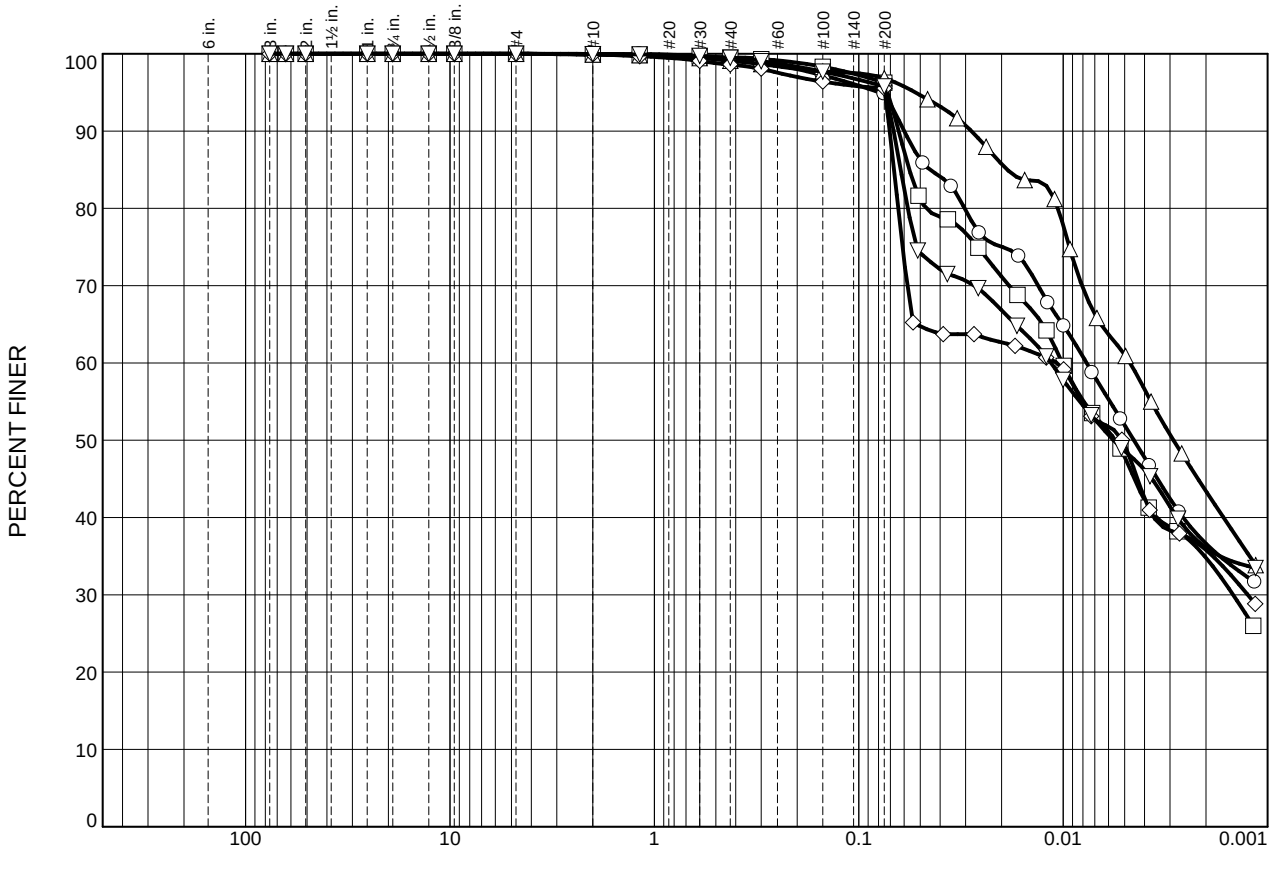
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.6	4.6	42.9	51.9
□	0.0	0.0	0.0	0.1	0.4	3.2	48.5	47.8
△	0.0	0.0	0.0	0.1	0.8	2.3	35.7	61.1
◇	0.0	0.0	0.0	0.1	1.3	3.1	46.1	49.4
▽	0.0	0.0	0.0	0.0	0.5	3.7	47.2	48.6

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-03	4	15	fat clay	CH
□	SB-03	7	30	fat clay	CH
△	SB-03	8	35	fat clay	CH
◇	SB-03	10	45	fat clay	CH
▽	SB-03	12	55	fat clay	CH

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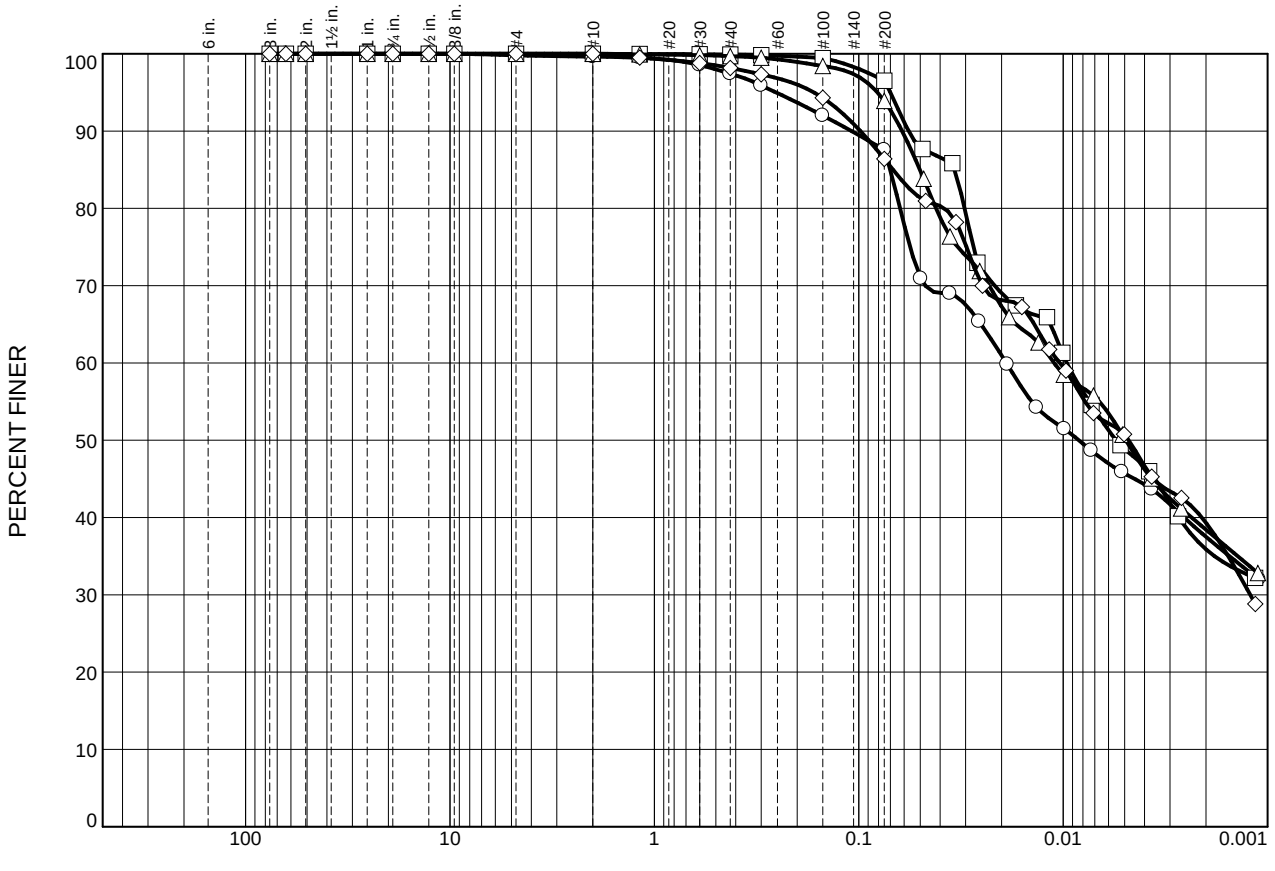
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.2	0.2	2.2	9.8	41.9	45.7
□	0.0	0.0	0.0	0.0	0.1	3.4	47.7	48.8
△	0.0	0.0	0.0	0.0	0.3	5.8	43.7	50.2
◇	0.0	0.0	0.0	0.0	1.8	11.8	35.7	50.7

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-04	3	10	fat clay	CH
□	SB-04	5	20	fat clay	CH
△	SB-04	6	25	fat clay	CH
◇	SB-04	9	40	fat clay	CH

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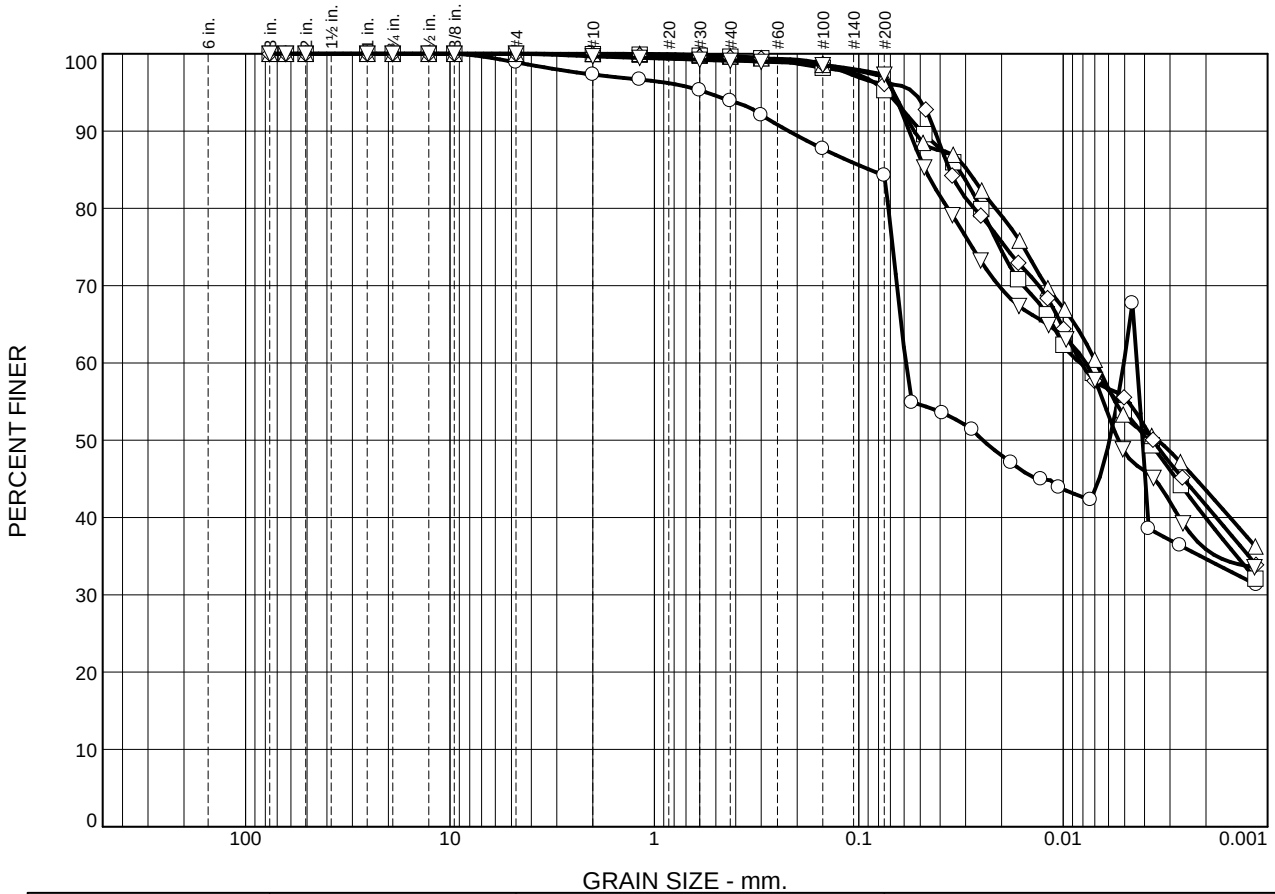
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.1	1.6	3.4	9.6	23.6	60.7
□	0.0	0.0	0.0	0.0	0.4	4.3	41.6	53.7
△	0.0	0.0	0.0	0.0	0.3	2.7	43.9	53.1
◇	0.0	0.0	0.0	0.0	0.5	3.4	40.6	55.5
▽	0.0	0.0	0.0	0.3	0.6	1.8	48.9	48.4

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-05	2	5	fat clay with sand	CH
□	SB-05	3	10	fat clay	CH
△	SB-05	4	15	fat clay	CH
◇	SB-05	5	20	fat clay	CH
▽	SB-05	6	25	fat clay	CH

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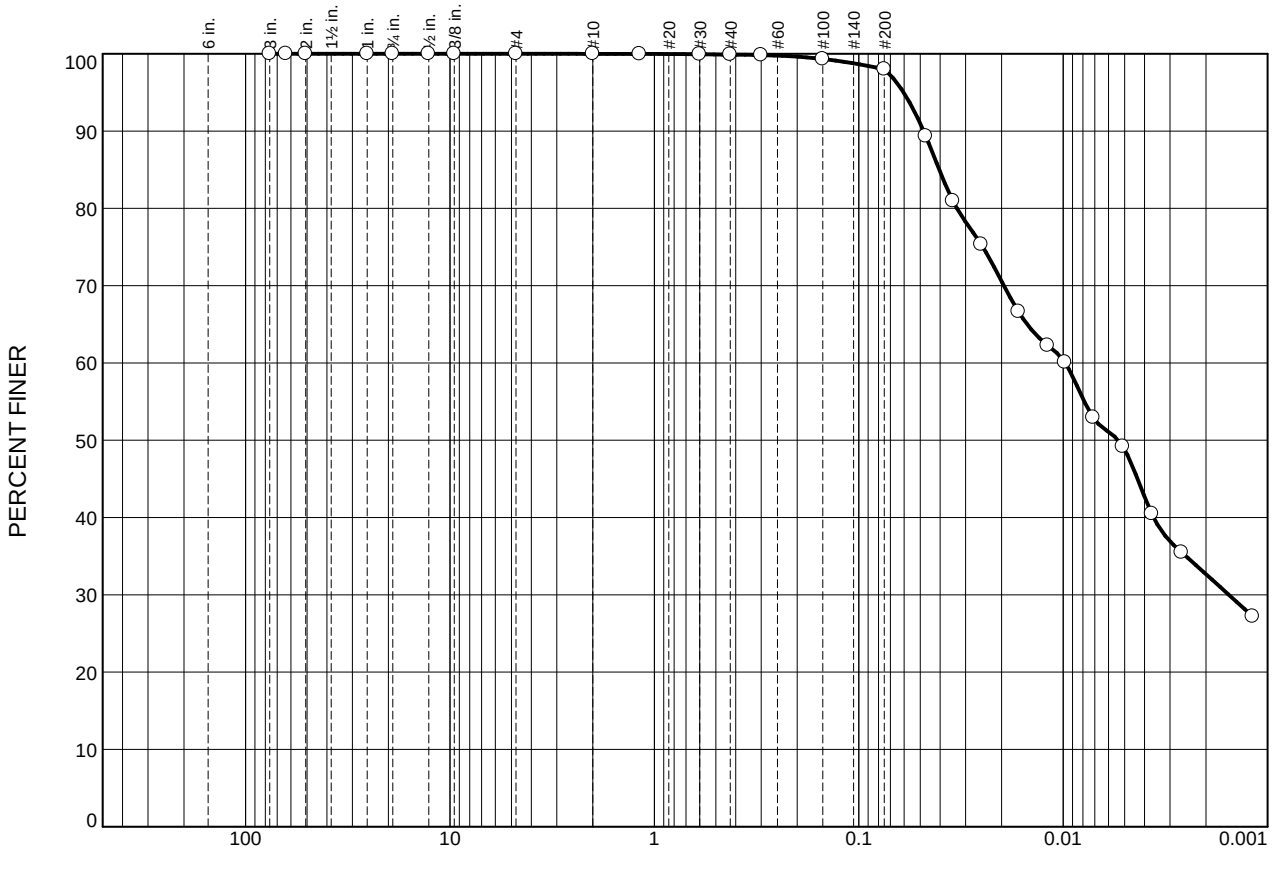
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.1	1.9	49.2	48.8

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-05	9	40	fat clay	CH

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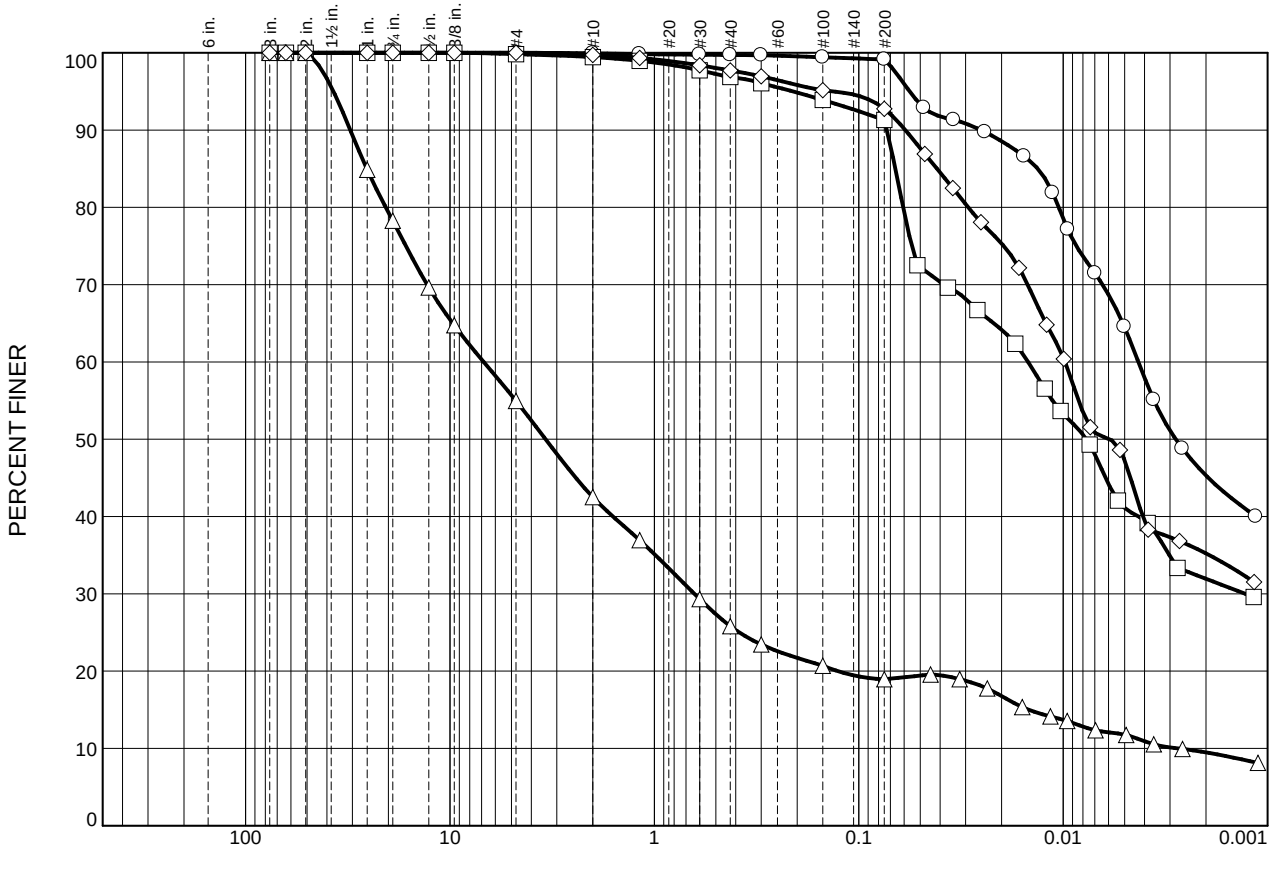
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	0.2	0.6	34.6	64.5
□	0.0	0.0	0.2	0.4	2.5	5.6	50.2	41.1
△	0.0	21.7	23.3	12.5	16.7	6.9	7.1	11.8
◇	0.0	0.0	0.0	0.3	2.0	5.0	45.5	47.2

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-06	3	10	fat clay	CH
□	SB-06	5	20	lean clay	CL
△	SB-06	6	25	clayey gravel with sand	GC
◇	SB-06	9	40	fat clay	CH

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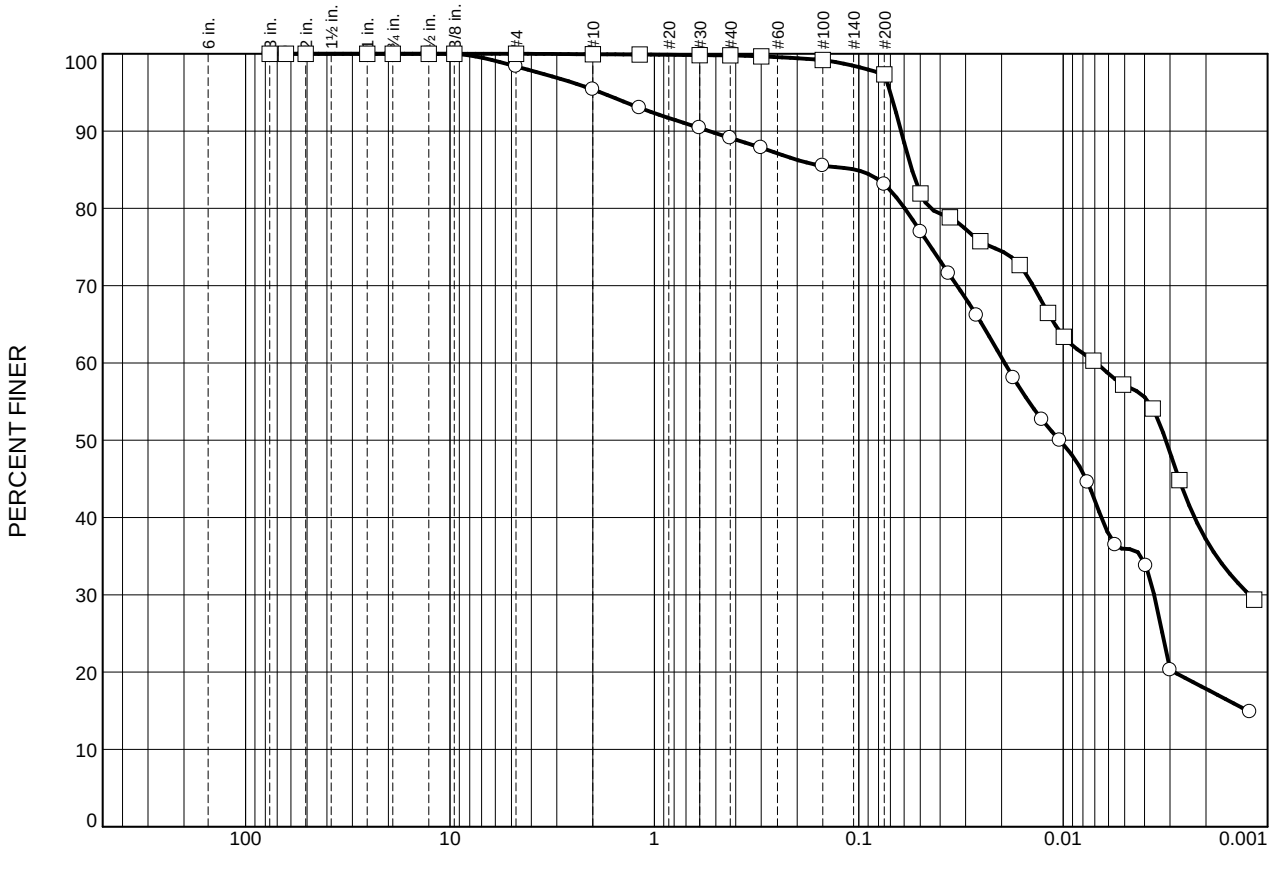
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.6	3.0	6.3	6.0	47.2	35.9
□	0.0	0.0	0.0	0.1	0.1	2.5	40.2	57.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-07	2	5	fat clay with sand	CH
□	SB-07	6	25	fat clay	CH

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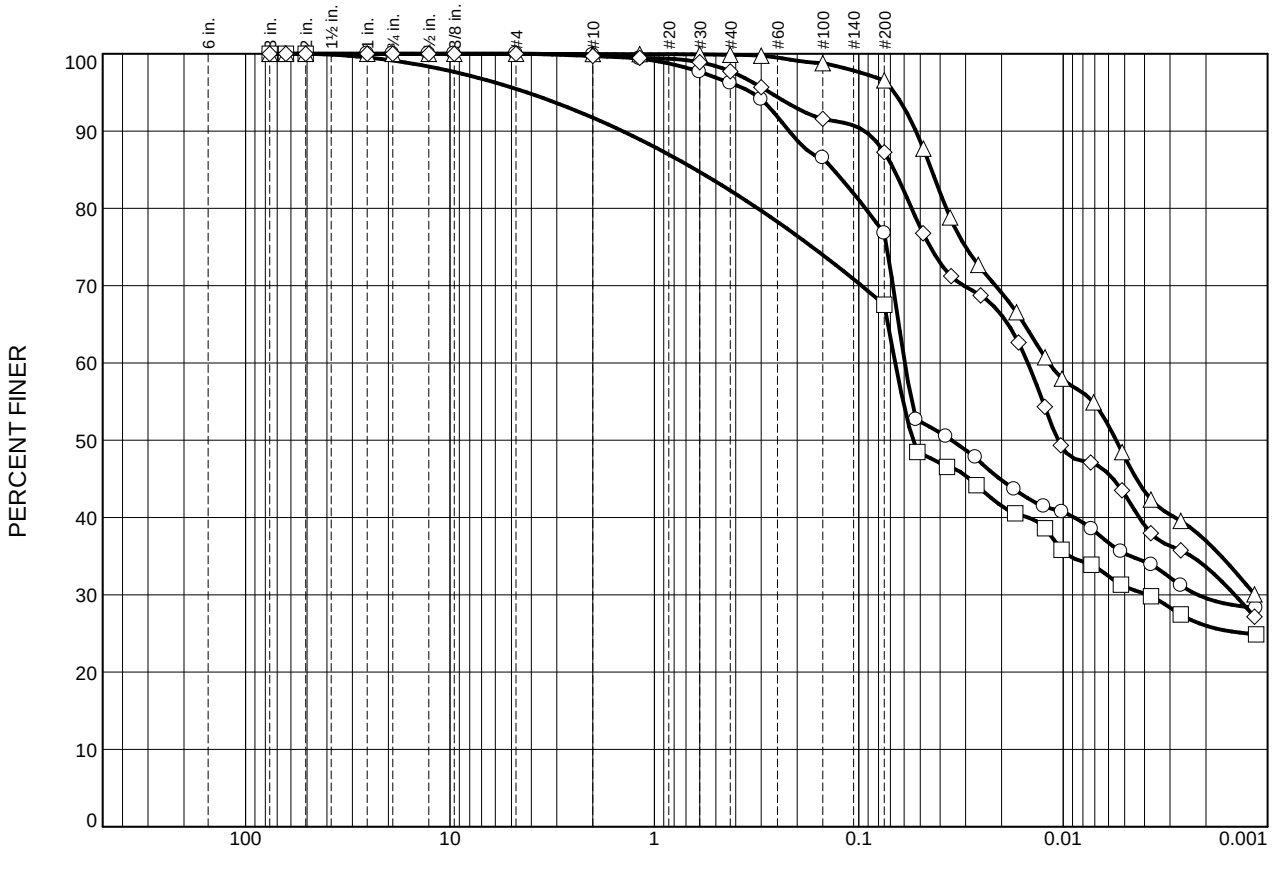
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	3.6	19.4	41.5	35.3
□	0.0	0.9	3.6	3.8	9.4	14.8	36.4	31.1
△	0.0	0.0	0.0	0.0	0.1	3.3	48.8	47.8
◇	0.0	0.0	0.0	0.3	2.0	10.4	44.3	43.0

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-08	2	5	fat clay with sand	CH
□	SB-08	3	10	fat clay	CH
△	SB-08	7	30	fat clay	CH
◇	SB-08	8	35	fat clay	CH

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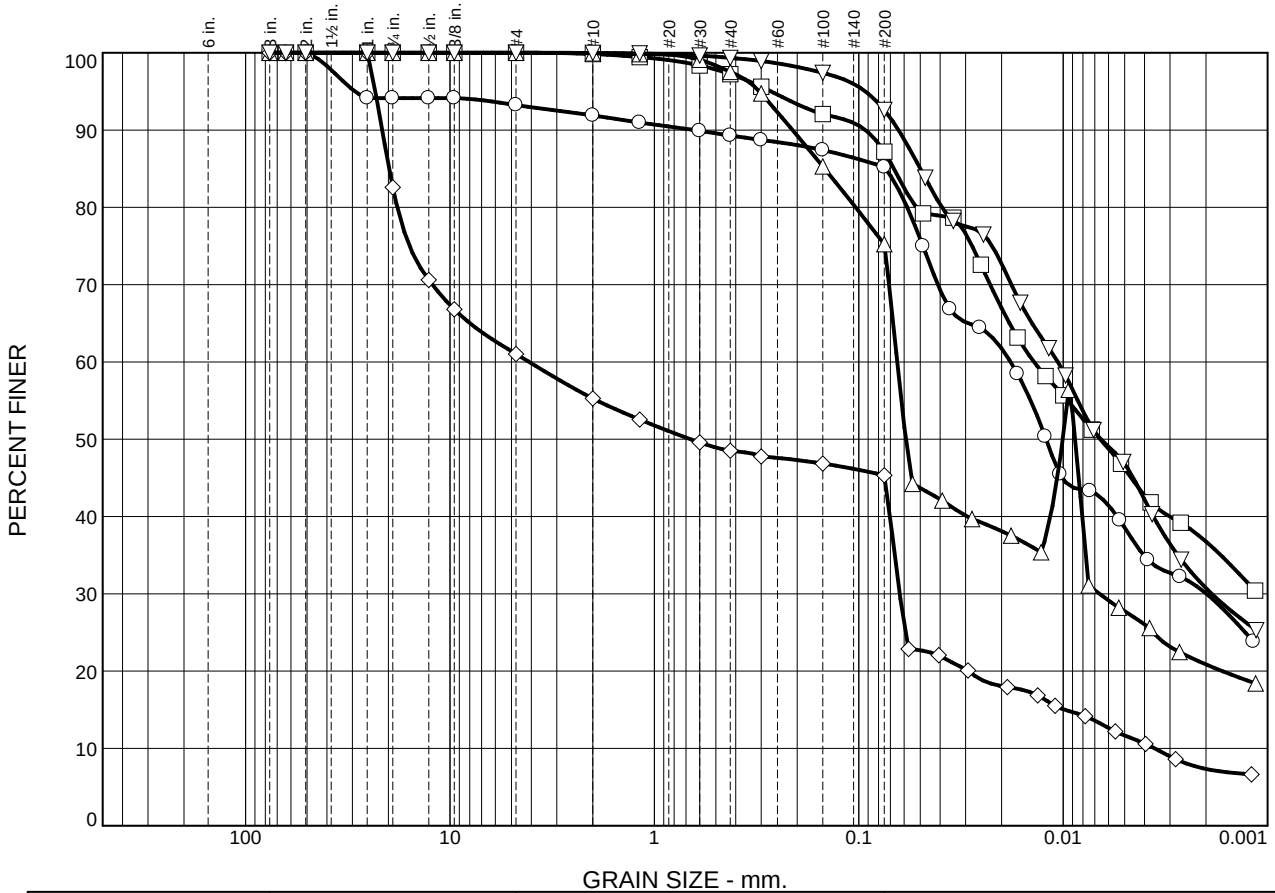
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	5.9	0.9	1.3	2.6	4.1	46.6	38.6
□	0.0	0.0	0.0	0.2	2.6	10.0	41.0	46.2
△	0.0	0.0	0.0	0.1	2.4	22.3	47.5	27.7
◇	0.0	17.4	21.6	5.7	6.8	3.2	33.6	11.7
▽	0.0	0.0	0.0	0.0	0.7	6.7	45.8	46.8

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-09	2	5	fat clay with sand	CH
□	SB-09	4	15	fat clay	CH
△	SB-09	5	20	lean clay with sand	CL
◇	SB-09	6	25	clayey gravel with sand	GC
▽	SB-09	12	55	fat clay	CH

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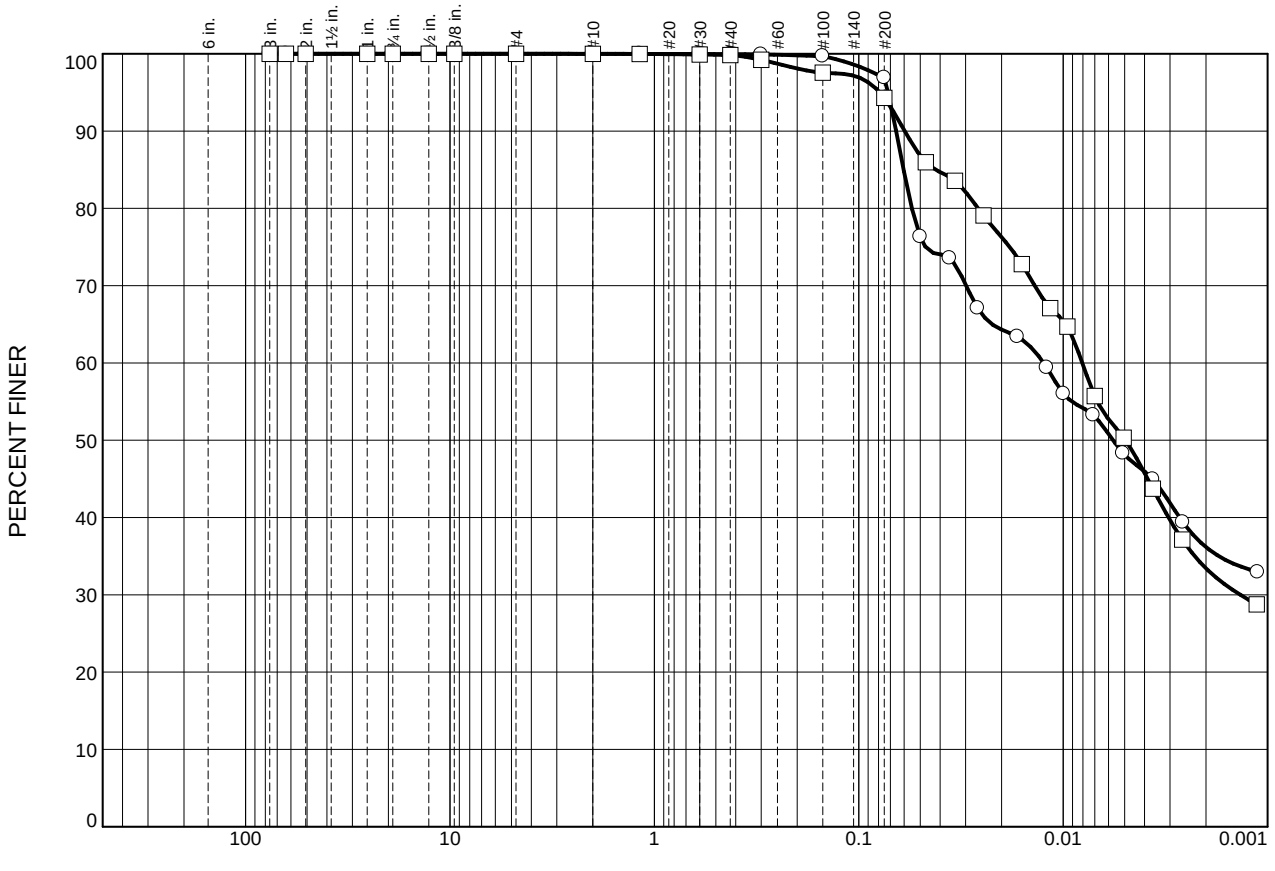
Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.0	3.1	48.8	48.1
□	0.0	0.0	0.0	0.0	0.2	5.5	44.2	50.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-09	15	70	fat clay	CH
□	SB-09	17	80	fat clay	CH

Horizon Consultants

Santo Domingo

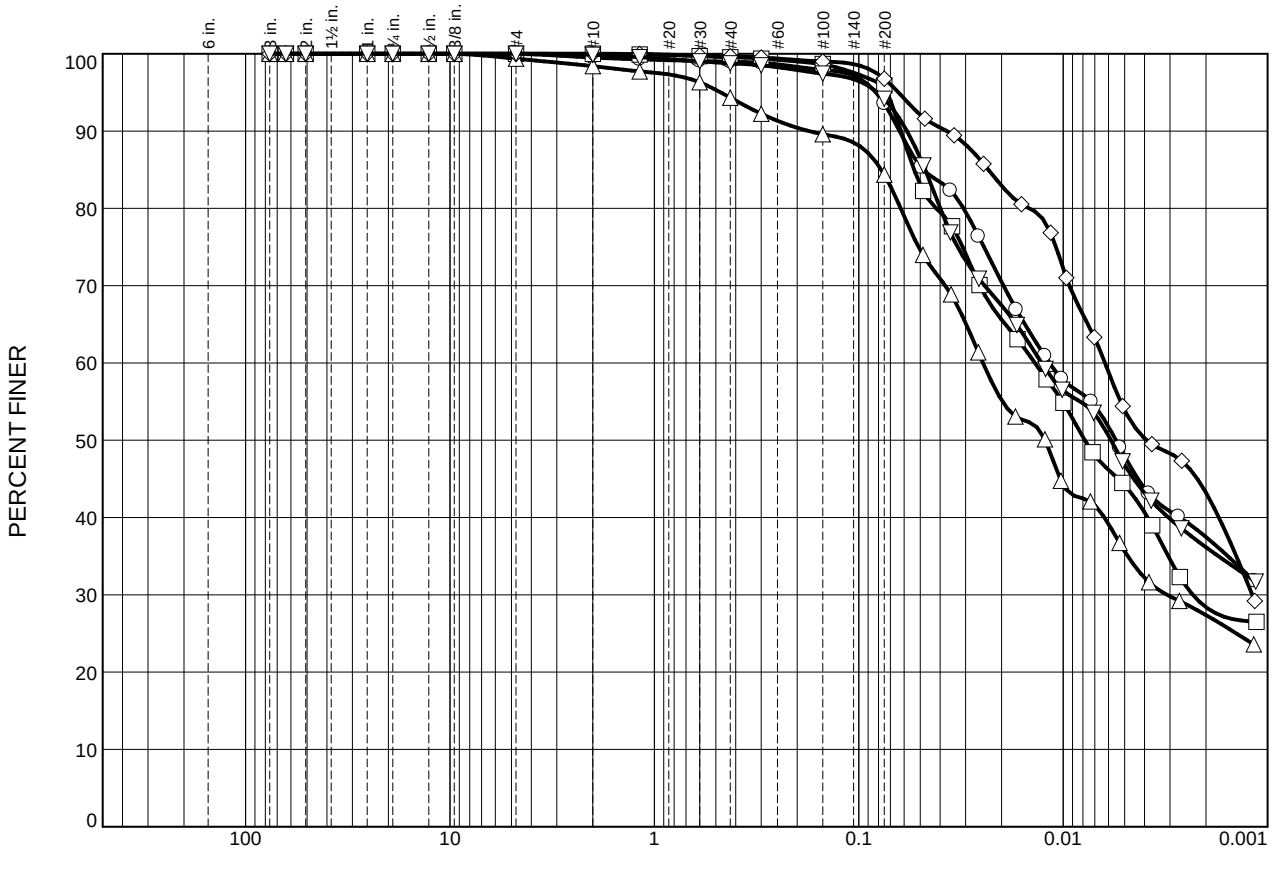
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.5	0.5	5.4	45.7	47.9
□	0.0	0.0	0.0	0.0	0.5	3.6	51.7	44.2
△	0.0	0.0	0.6	1.0	4.1	9.9	48.8	35.6
◇	0.0	0.0	0.0	0.0	0.3	2.9	42.9	53.9
▽	0.0	0.0	0.0	0.1	1.1	4.6	47.4	46.8

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-10	4	15	fat clay	CH
□	SB-10	5	20	fat clay	CH
△	SB-10	6	25	lean clay with sand	CL
◇	SB-10	8	30	fat clay	CH
▽	SB-10	9	35	fat clay	CH

Horizon Consultants

Santo Domingo

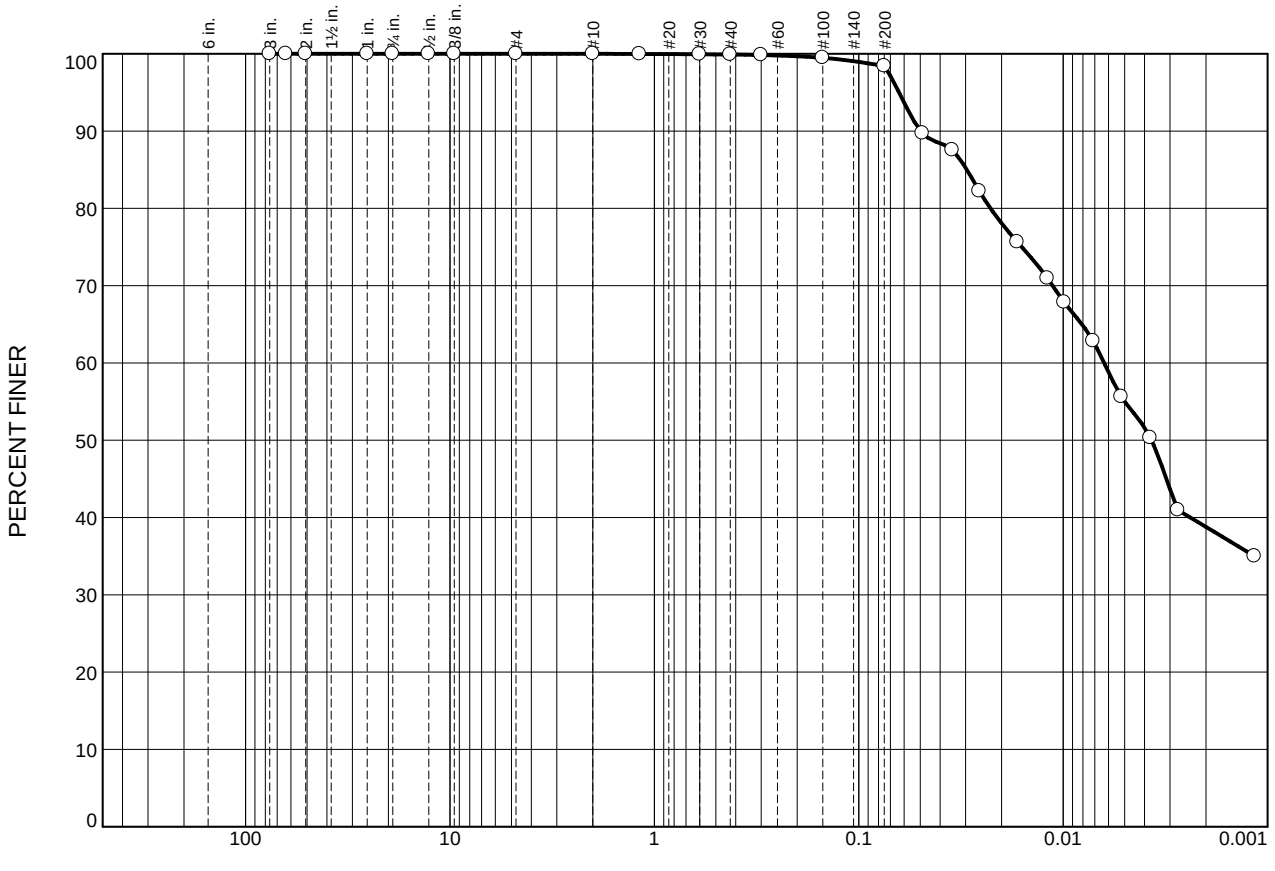
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.1	1.5	43.4	55.0

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-10	10	40	fat clay	CH

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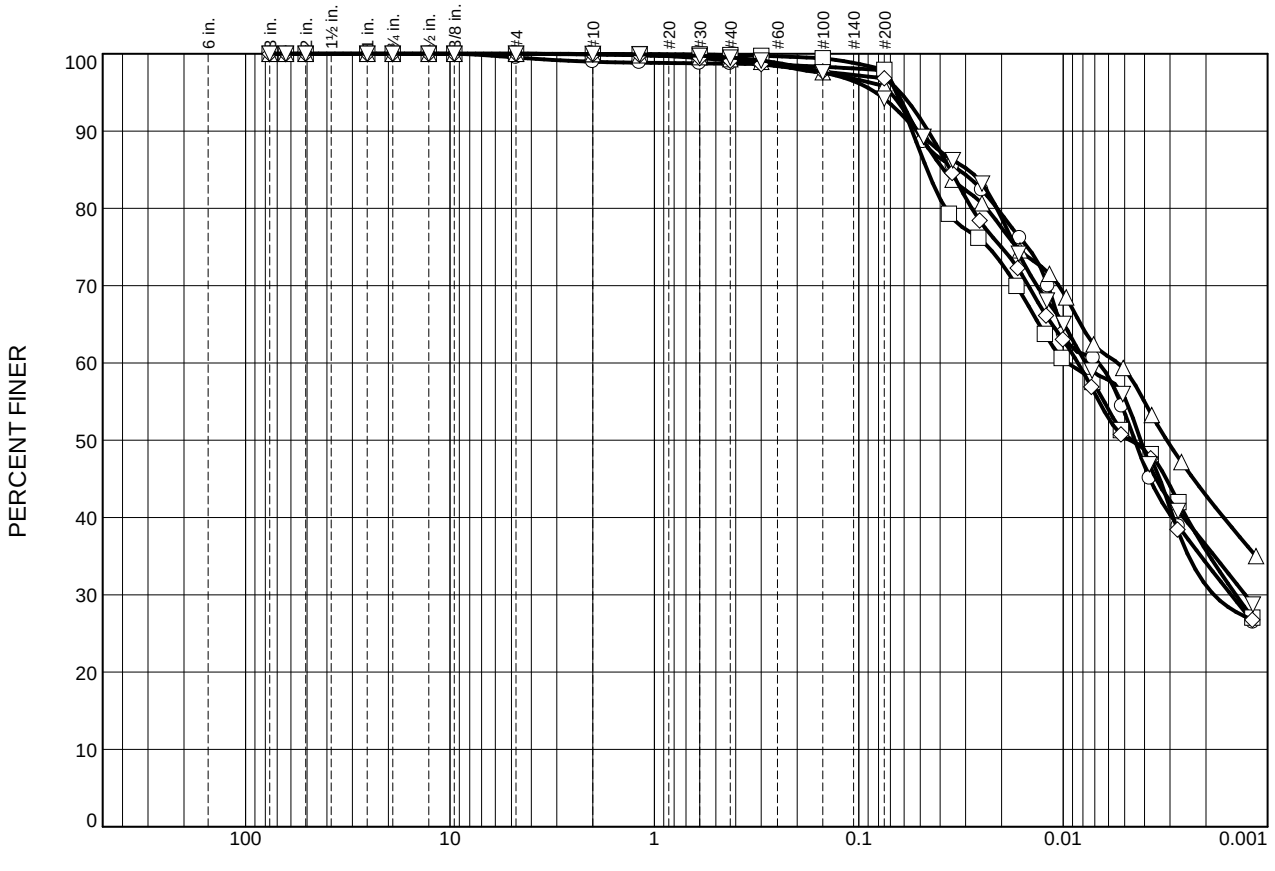
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.5	0.5	0.3	0.8	44.4	53.5
□	0.0	0.0	0.0	0.0	0.2	1.9	47.1	50.8
△	0.0	0.0	0.0	0.0	0.7	3.5	36.7	59.1
◇	0.0	0.0	0.0	0.1	0.8	2.3	46.4	50.4
▽	0.0	0.0	0.0	0.0	0.5	5.3	38.7	55.5

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-11	2	5	fat clay	CH
□	SB-11	5	20	fat clay	CH
△	SB-11	7	25	fat clay	CH
◇	SB-11	8	35	fat clay	CH
▽	SB-11	9	35	fat clay	CH

Horizon Consultants

Santo Domingo

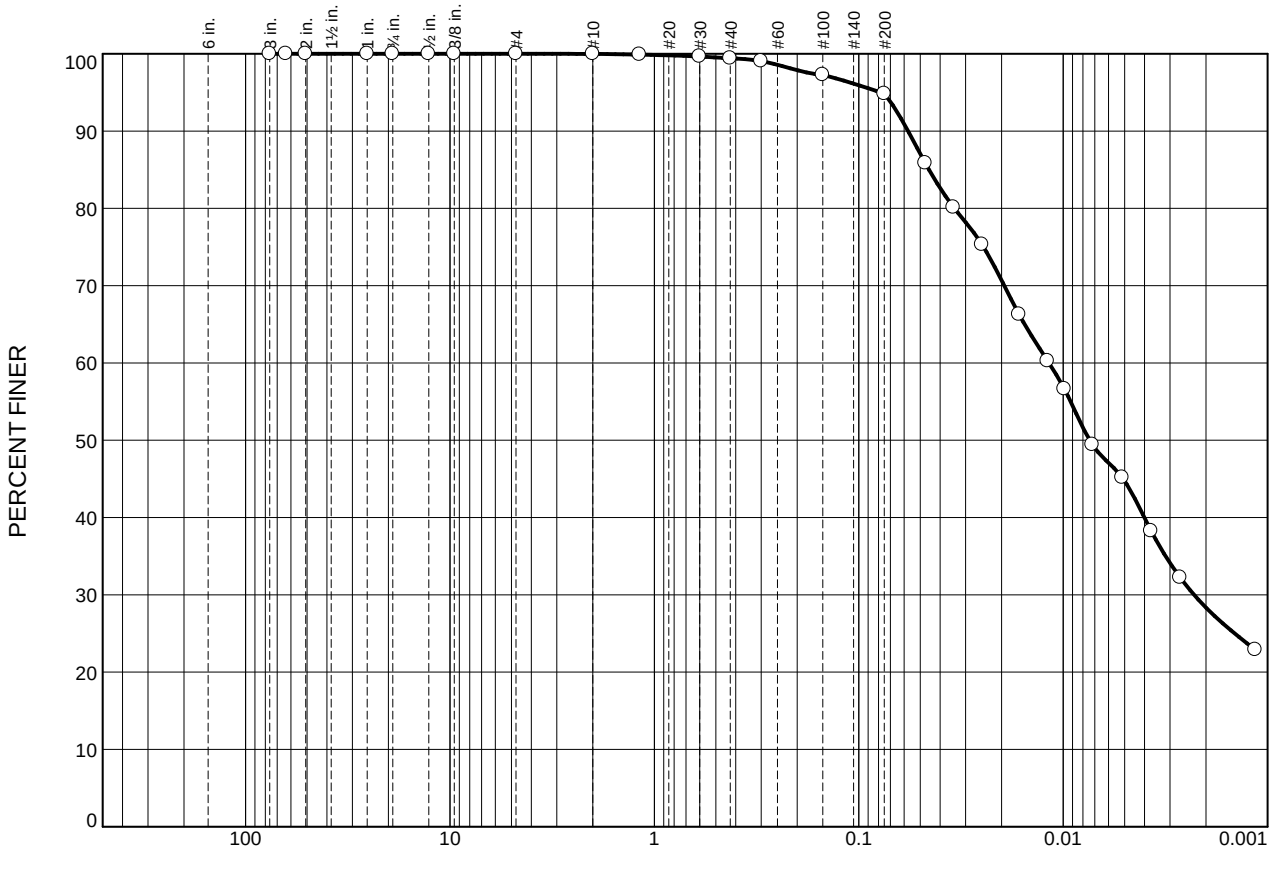
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.6	4.6	50.1	44.7

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-11	10	40	fat clay	CH

Horizon Consultants

Santo Domingo

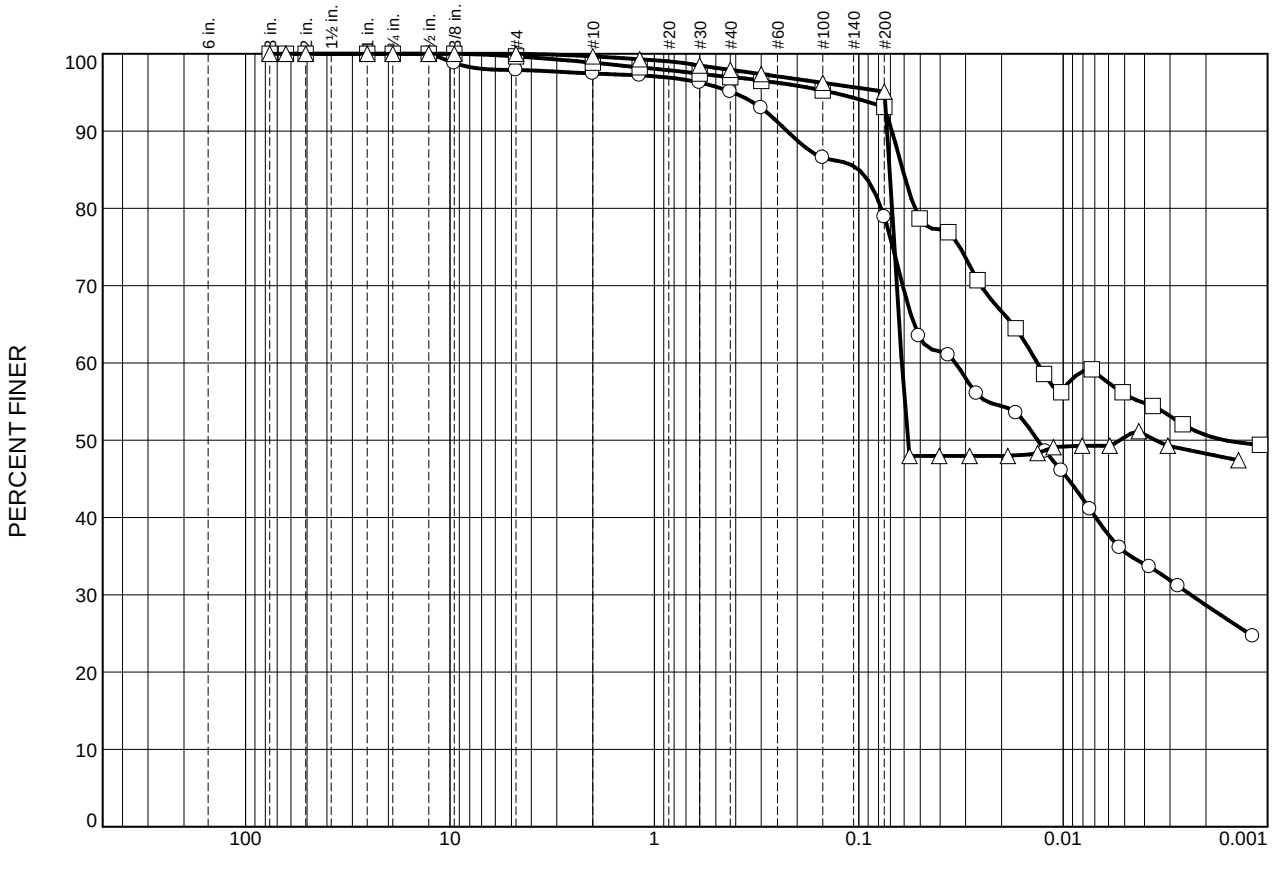
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.1	0.5	2.3	16.2	43.4	35.5
□	0.0	0.0	0.3	0.9	1.8	3.9	37.1	56.0
△	0.0	0.0	0.0	0.3	1.8	2.8	44.7	50.4

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-12	2	5	lean clay with sand	CL
□	SB-12	5	20	fat clay	CH
△	SB-12	9	40	fat clay	CH

Horizon Consultants

Santo Domingo

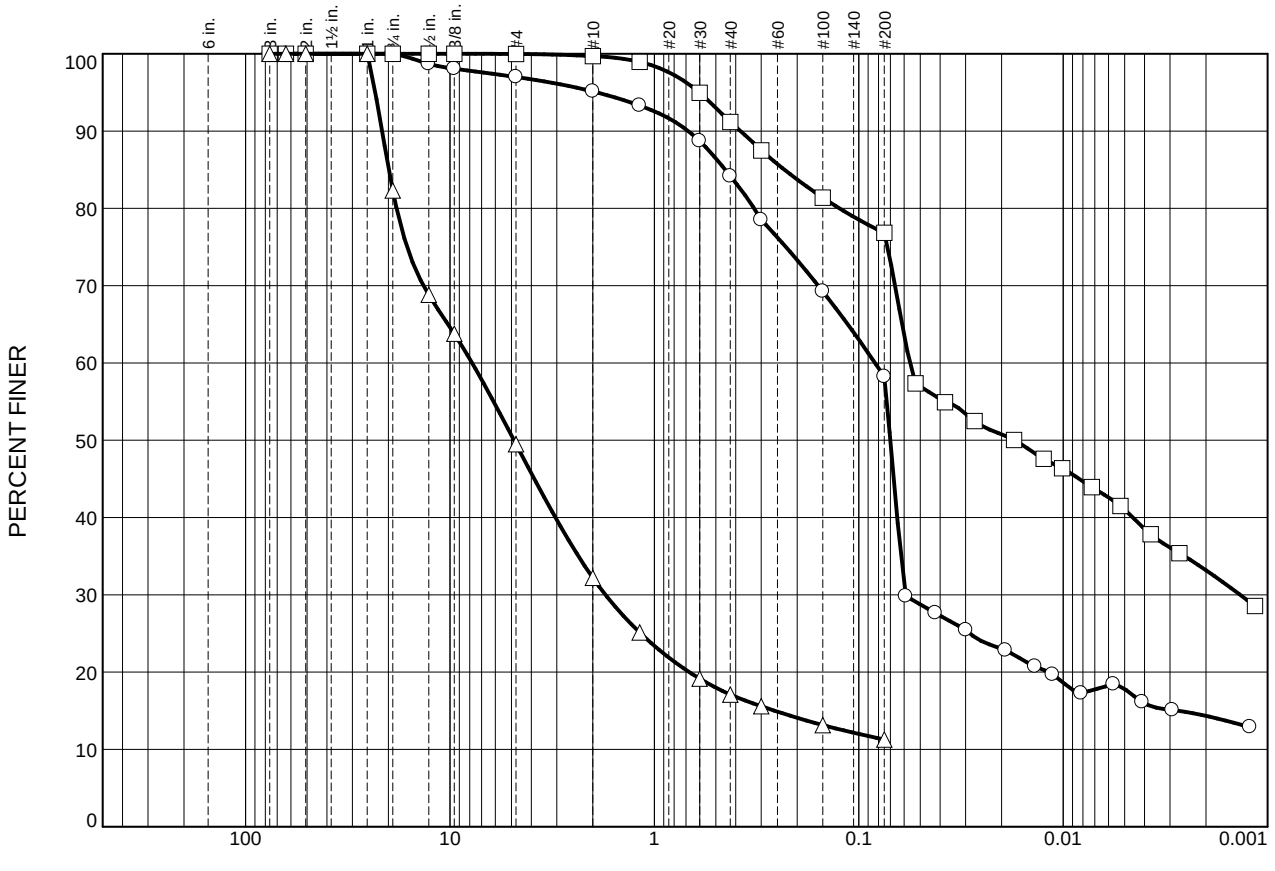
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.0	1.9	10.9	26.0	40.4	17.8
□	0.0	0.0	0.0	0.3	8.5	14.4	35.8	41.0
△	0.0	17.7	32.8	17.3	15.1	5.8	11.3	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-13	2	5	sandy lean clay	CL
□	SB-13	4	15	fat clay with sand	CH
△	SB-13	5	21	poorly graded gravel with clay and sand	GP-GC

Horizon Consultants

Santo Domingo

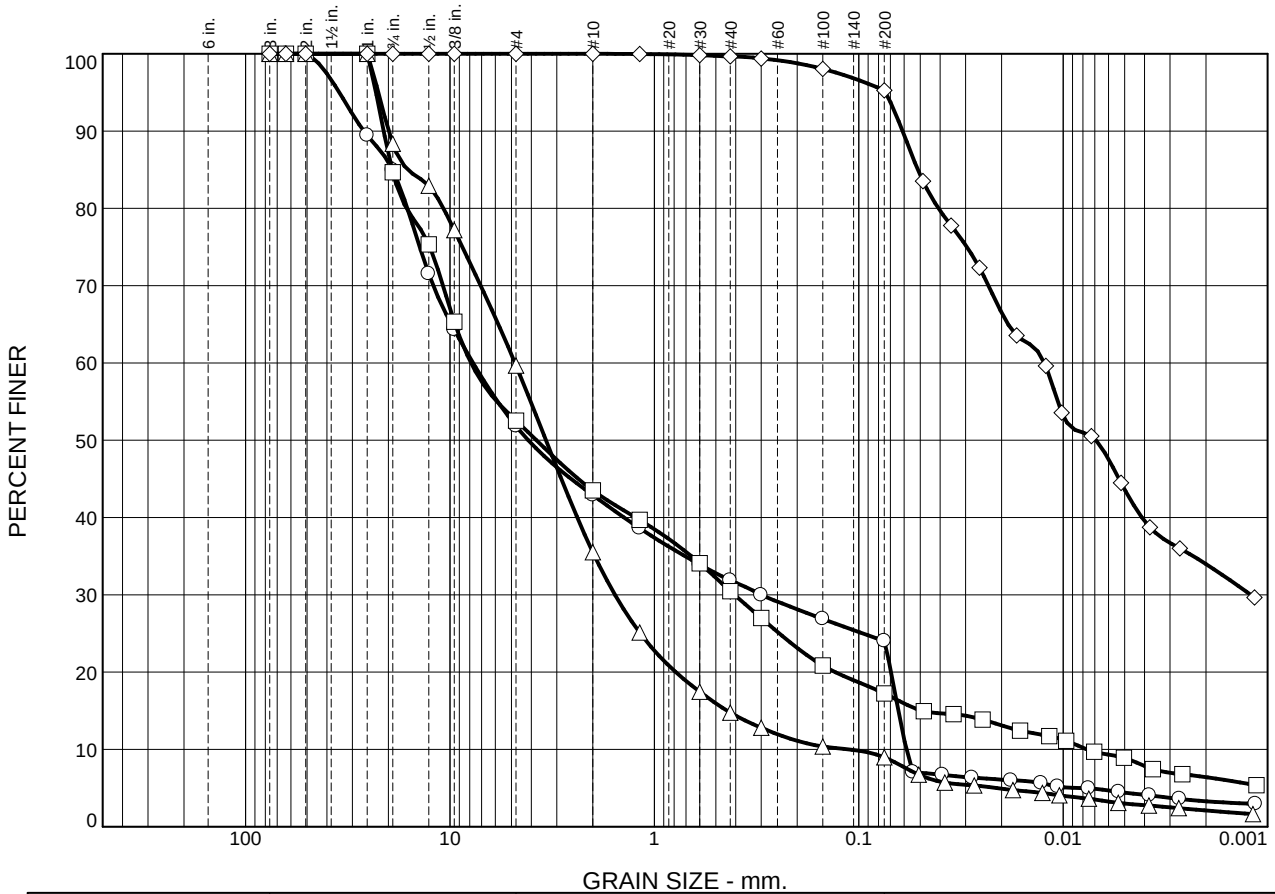
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	15.1	33.1	8.9	11.0	7.9	19.6	4.4
□	0.0	15.3	32.2	9.0	13.0	13.3	8.3	8.9
△	0.0	11.6	28.7	24.2	20.7	5.8	6.0	3.0
◇	0.0	0.0	0.0	0.0	0.3	4.4	51.7	43.6

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SB-14	2	5	clayey gravel with sand	GC
□	SB-14	3	10	clayey gravel with sand	GC
△	SB-14	4	15	poorly graded sand with clay and gravel	SP-SC
◇	SB-14	7	30	fat clay	CH

Horizon Consultants

Santo Domingo

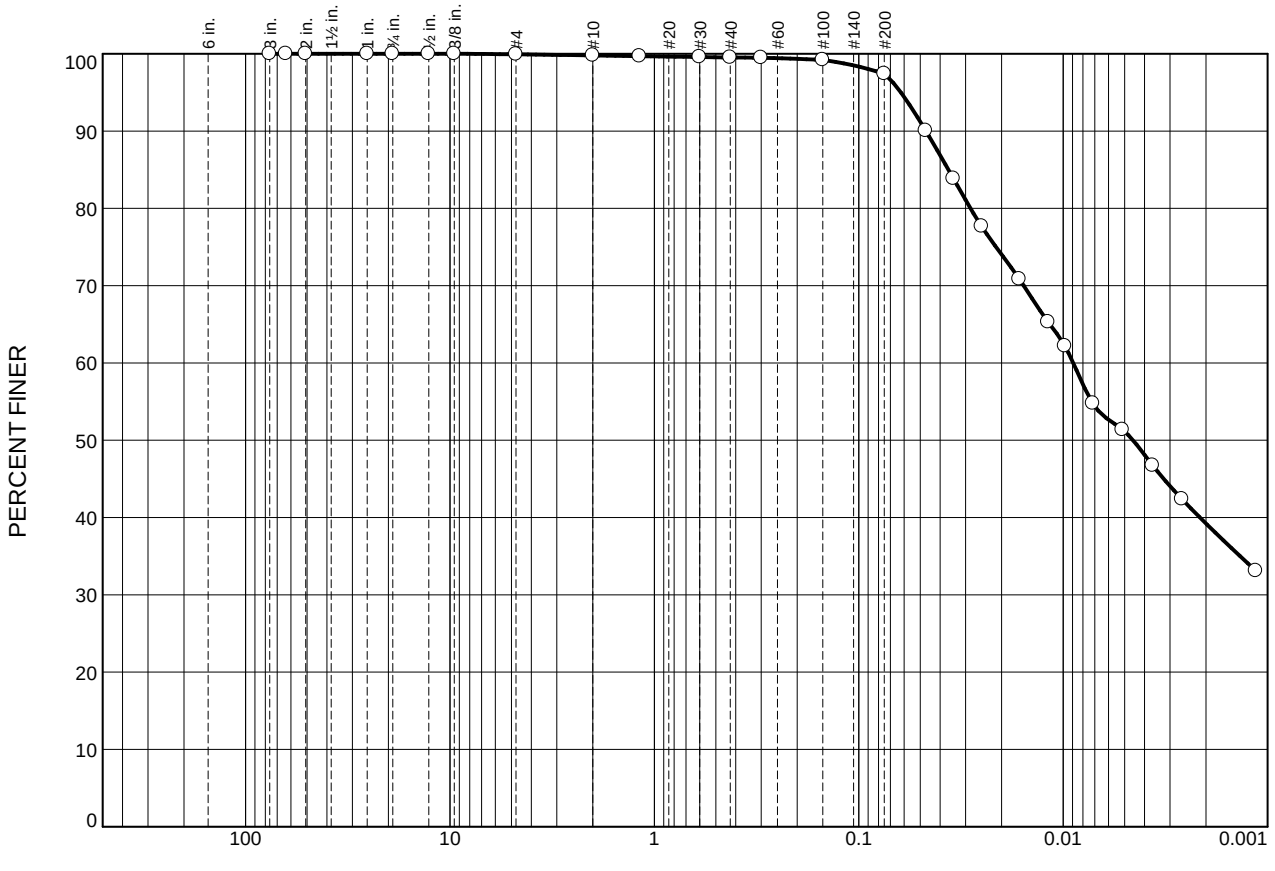
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	0.1	0.3	2.1	46.3	51.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	SHALE	1		fat clay	CH

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Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.0	1.2	3.0	11.6	48.6	34.6

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-01	1	6	lean clay with sand	CL

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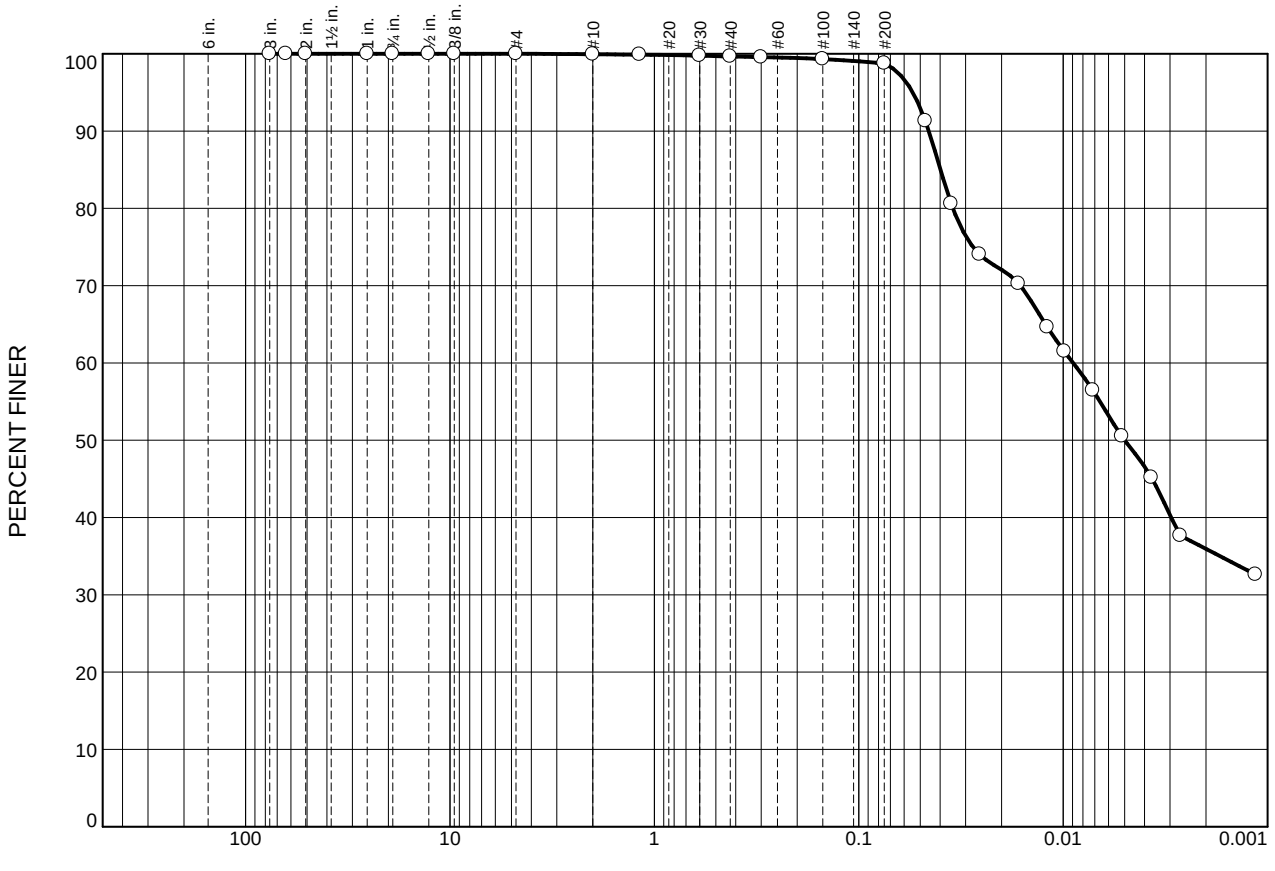
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	0.2	0.9	48.8	50.0

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-04	1	7	fat clay	CH

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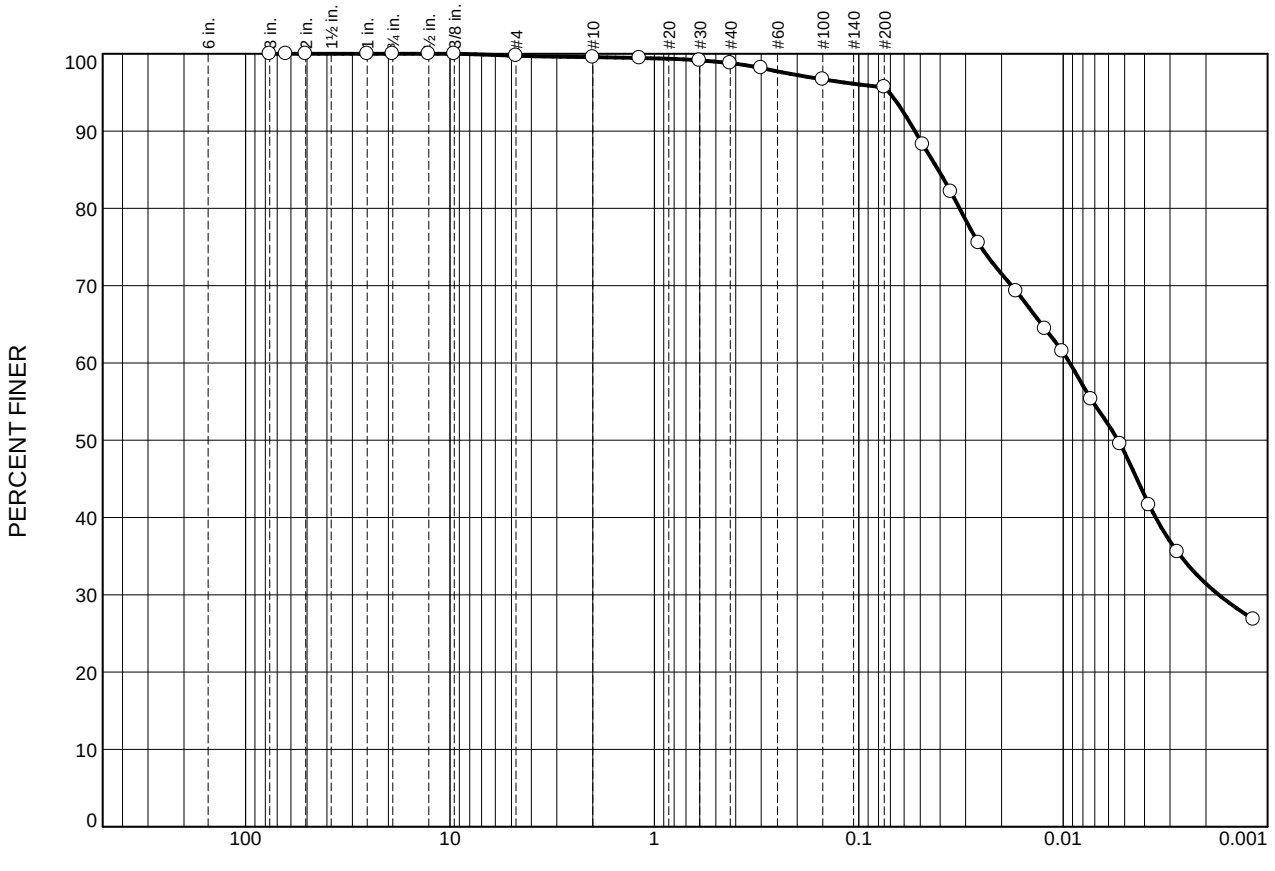
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.3	0.1	0.8	3.1	47.3	48.4

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-05	1	10	fat clay	CH

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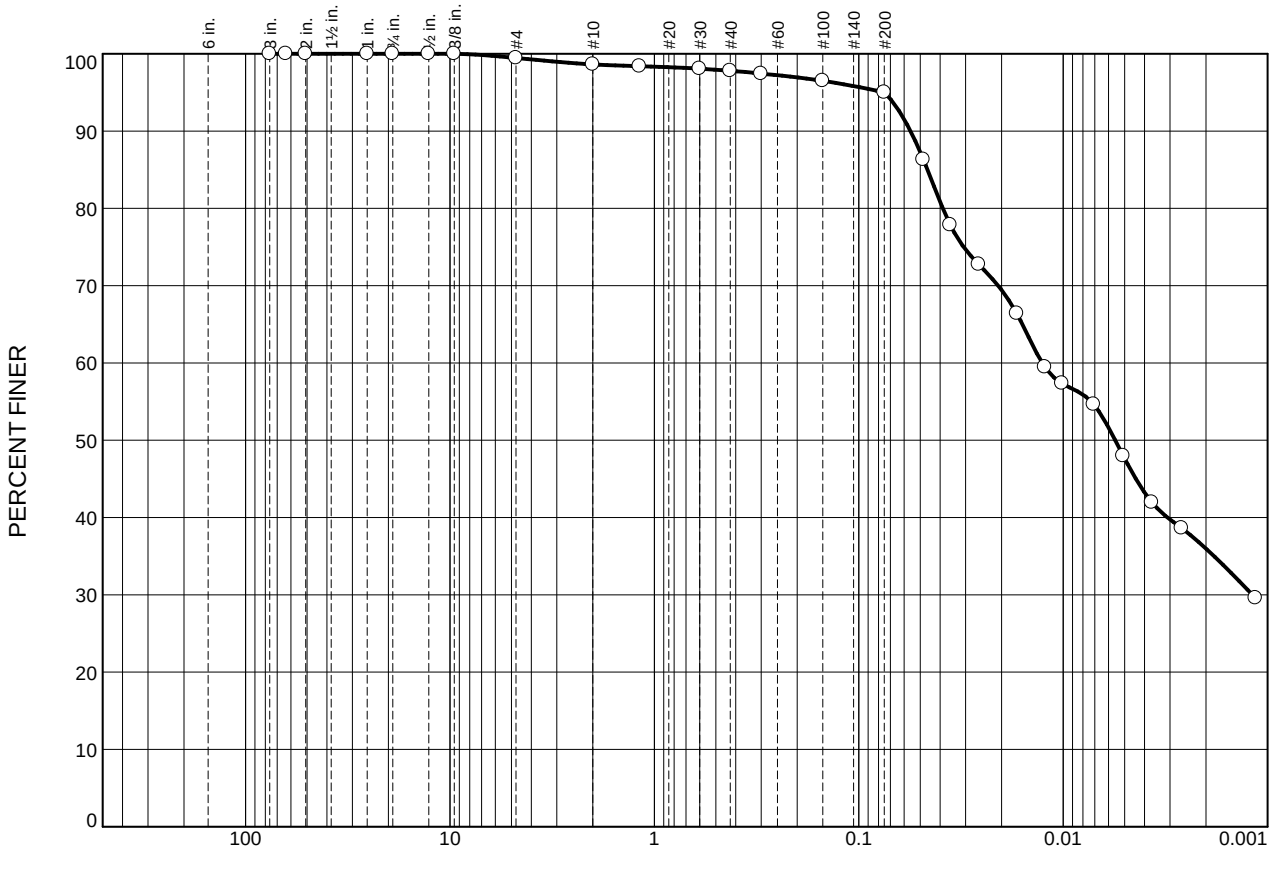
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.5	0.9	0.8	2.8	47.4	47.6

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-06	1	8	fat clay	CH

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Santo Domingo

Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.2	0.7	7.0	18.6	38.4	35.1

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-08	1	5	lean clay with sand	CL

Horizon Consultants

Santo Domingo

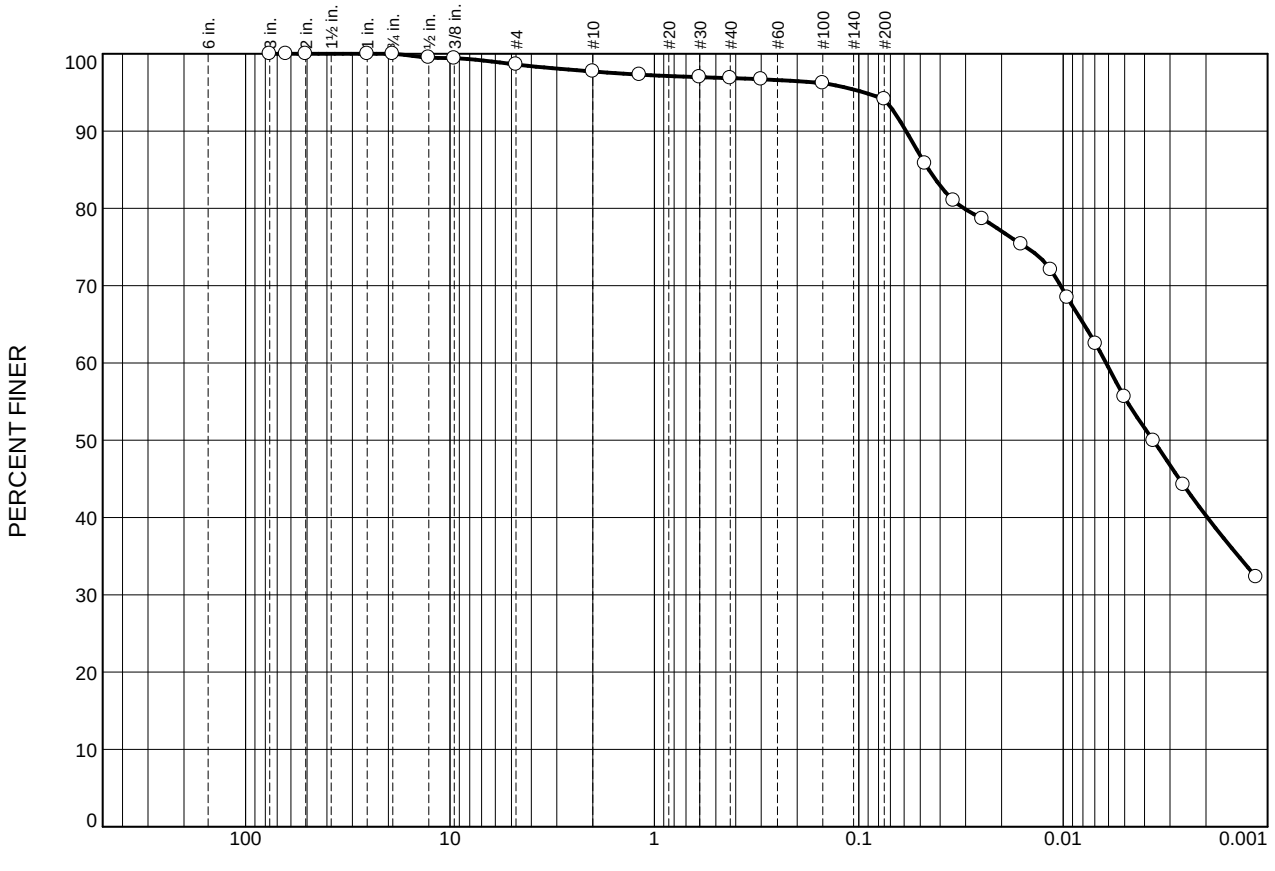
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.4	0.9	0.9	2.7	38.6	55.5

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-09	1	8	fat clay	CH

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Santo Domingo

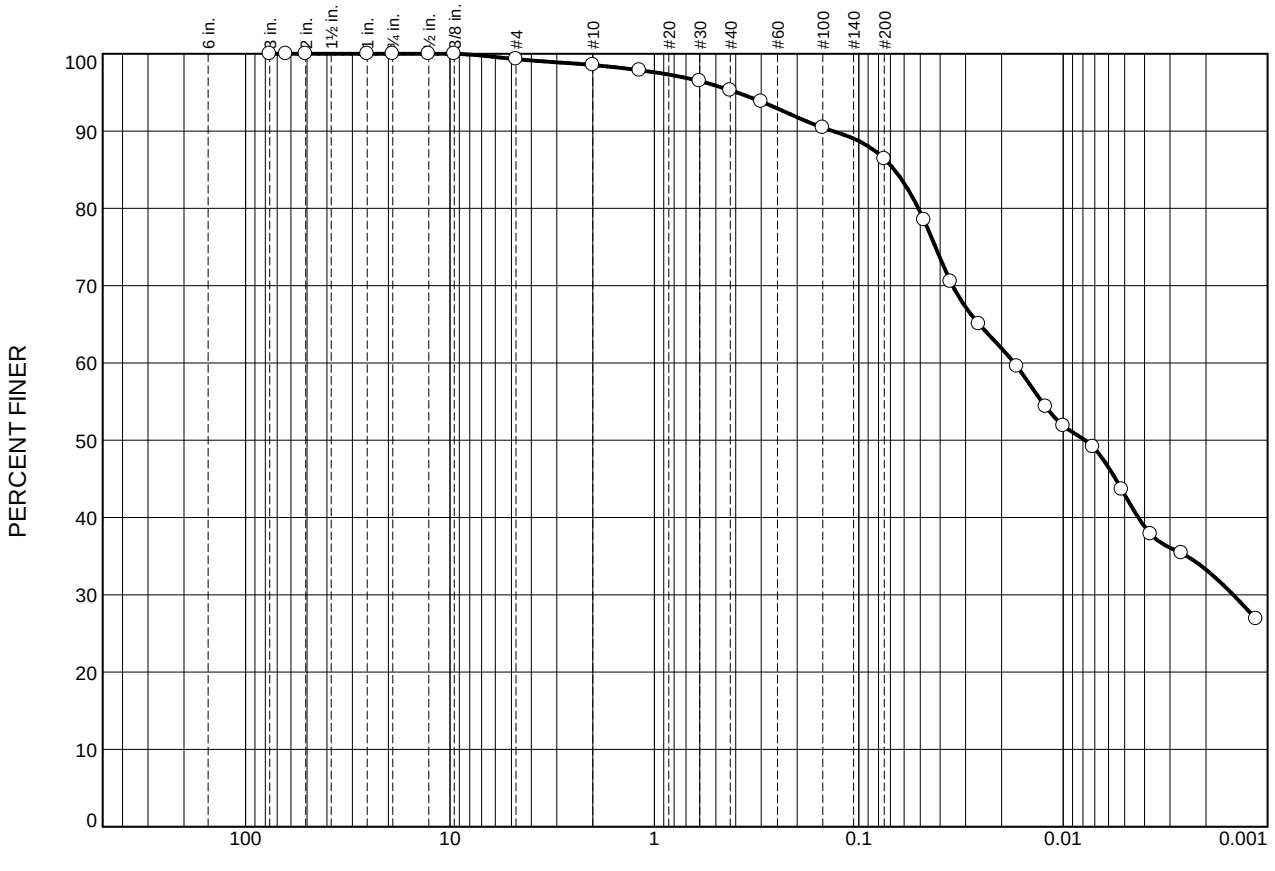
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.7	0.8	3.2	8.9	43.4	43.0

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-12	1	8	lean clay	CL

Horizon Consultants

Santo Domingo

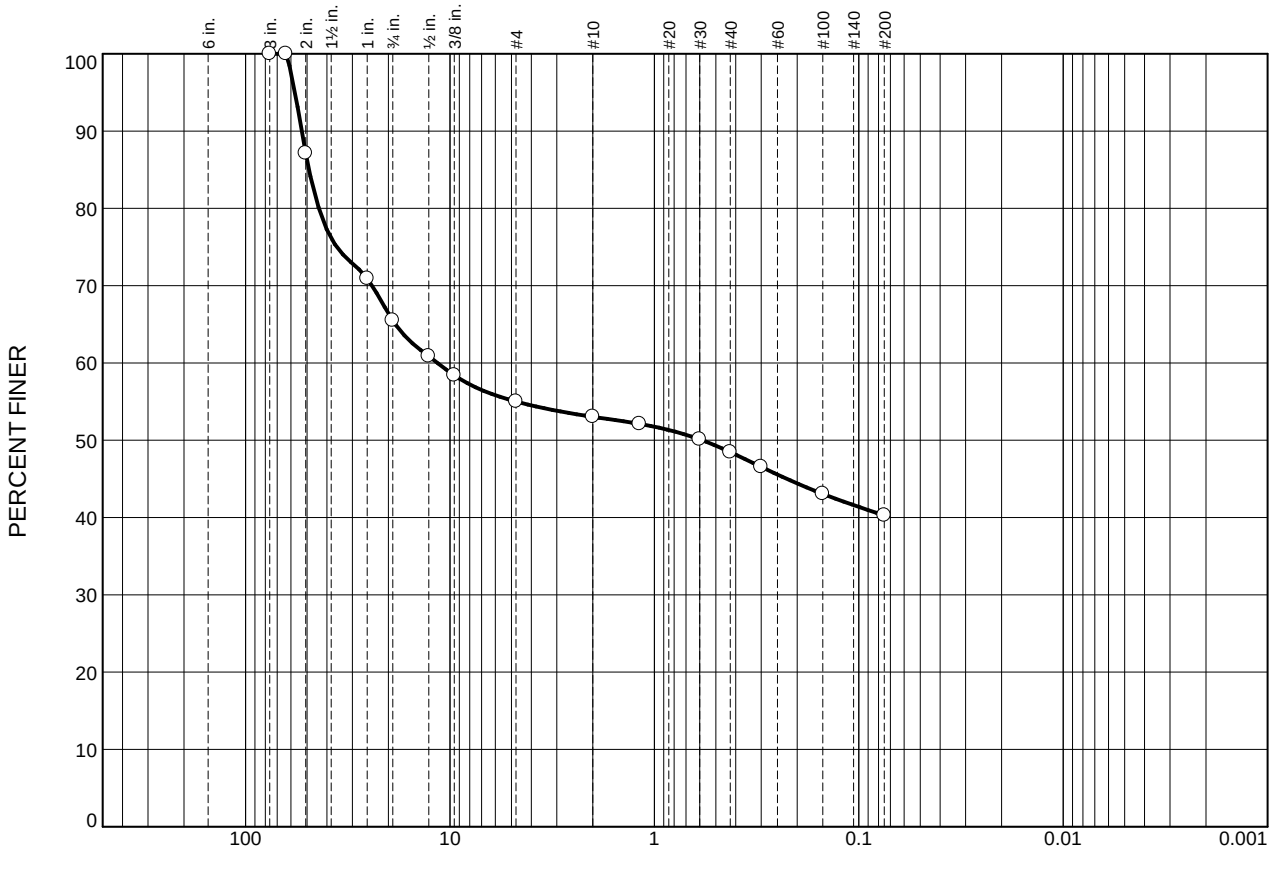
Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	34.5	10.5	2.0	4.5	8.2	40.3	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP-14	1	5	clayey gravel	GC

Horizon Consultants

Santo Domingo

Client: Battelle

Project: San Cristobal Disposal Site

Project No.: 981-18

Figure

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 5 **Sample Number:** 2
Material Description: silty sand
USCS: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 498.30
Tare Wt. = 375.95
Minus #200 from wash = 43.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
591.40	375.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.15	0.00	99.9
		#30	0.15	0.00	99.9
		#40	0.60	0.00	99.6
		#50	2.55	0.00	98.4
		#100	41.30	0.00	79.2
		#200	77.15	0.00	43.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 43.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0571	24.1
1.00	28.0	1.0180	1.0155	0.0122	18.4	11.4	0.0413	21.4
2.00	28.0	1.0170	1.0145	0.0122	17.4	11.7	0.0296	20.0
5.00	28.0	1.0140	1.0115	0.0122	14.4	12.5	0.0193	15.9
10.00	29.0	1.0130	1.0105	0.0121	13.4	12.8	0.0137	14.5
15.00	29.0	1.0120	1.0095	0.0121	12.4	13.0	0.0113	13.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0110	1.0085	0.0121	11.4	13.3	0.0080	11.7
60.00	29.0	1.0105	1.0080	0.0121	10.9	13.4	0.0057	11.0
120.00	29.0	1.0100	1.0075	0.0121	10.4	13.5	0.0041	10.3
240.00	28.0	1.0090	1.0065	0.0122	9.4	13.8	0.0029	9.0
1440.00	28.0	1.0070	1.0045	0.0122	7.4	14.3	0.0012	6.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	56.2	56.6	32.6	10.8	43.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0037	0.0154	0.0296	0.0631	0.0718	0.0821	0.0967	0.1531	0.1757	0.2044	0.2460

Fineness Modulus	C_u	C_c
0.23	26.15	11.14

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 10 **Sample Number:** 3
Material Description: sandy lean clay
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 455.85
Tare Wt. = 375.65
Minus #200 from wash = 69.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
638.50	375.65	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.65	0.00	99.8
		#30	0.60	0.00	99.5
		#40	0.80	0.00	99.2
		#50	4.00	0.00	97.7
		#100	28.10	0.00	87.0
		#200	47.15	0.00	69.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 69.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0290	1.0265	0.0122	29.4	8.5	0.0505	58.1
1.00	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0362	55.9
2.00	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0264	51.6
5.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0172	47.2
10.00	29.0	1.0220	1.0195	0.0121	22.4	10.4	0.0123	42.8
15.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0103	40.6

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0075	34.0
60.00	29.0	1.0170	1.0145	0.0121	17.4	11.7	0.0053	31.8
120.00	28.0	1.0140	1.0115	0.0122	14.4	12.5	0.0039	25.2
240.00	28.0	1.0110	1.0085	0.0122	11.4	13.3	0.0029	18.6
1440.00	29.0	1.0100	1.0075	0.0121	10.4	13.5	0.0012	16.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	30.1	30.9	38.3	30.8	69.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0031	0.0048	0.0100	0.0230	0.0556	0.1104	0.1366	0.1741	0.2349

Fineness Modulus
0.16

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 25 **Sample Number:** 6
Material Description: silty sand
USCS: SM

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 581.15
Tare Wt. = 377.10
Minus #200 from wash = 22.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
641.90	377.10	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.25	0.00	99.9
		#30	2.70	0.00	98.9
		#40	14.90	0.00	93.3
		#50	34.30	0.00	80.3
		#100	98.60	0.00	43.1
		#200	53.35	0.00	22.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 22.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0100	1.0075	0.0122	10.4	13.5	0.0636	5.5
1.00	28.0	1.0090	1.0065	0.0122	9.4	13.8	0.0454	4.7
2.00	28.0	1.0085	1.0060	0.0122	8.9	13.9	0.0323	4.4
5.00	28.0	1.0080	1.0055	0.0122	8.4	14.1	0.0205	4.0
10.00	28.0	1.0075	1.0050	0.0122	7.9	14.2	0.0146	3.6
15.00	29.0	1.0070	1.0045	0.0121	7.4	14.3	0.0118	3.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0070	1.0045	0.0121	7.4	14.3	0.0084	3.3
60.00	28.0	1.0065	1.0040	0.0122	6.9	14.5	0.0060	2.9
120.00	29.0	1.0060	1.0035	0.0121	6.4	14.6	0.0042	2.5
240.00	28.0	1.0060	1.0035	0.0122	6.4	14.6	0.0030	2.5
1440.00	29.0	1.0060	1.0035	0.0121	6.4	14.6	0.0012	2.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	6.7	70.4	77.1	20.2	2.7	22.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0525	0.0669	0.0699	0.0730	0.0812	0.1058	0.1804	0.2149	0.2982	0.3314	0.3789	0.4587

Fineness Modulus	C_u	C_c
0.78	3.21	0.46

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 45 **Sample Number:** 10
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 444.95
Tare Wt. = 376.05
Minus #200 from wash = 77.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
677.40	376.05	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	9.35	0.00	96.9
		1/2"	6.90	0.00	94.6
		3/8"	2.90	0.00	93.6
		#4	8.15	0.00	90.9
		#10	6.65	0.00	88.7
		#16	2.95	0.00	87.8
		#30	6.75	0.00	85.5
		#40	4.80	0.00	83.9
		#50	3.90	0.00	82.6
		#100	5.55	0.00	80.8
		#200	11.15	0.00	77.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 77.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0290	1.0265	0.0121	29.4	8.5	0.0499	64.9
1.00	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0362	62.4
2.00	26.0	1.0260	1.0239	0.0125	26.4	9.3	0.0270	58.5
5.00	24.0	1.0240	1.0222	0.0128	24.4	9.8	0.0180	54.4
10.00	23.0	1.0230	1.0212	0.0130	23.4	10.1	0.0130	51.9
15.00	22.0	1.0220	1.0202	0.0131	22.4	10.4	0.0109	49.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	21.0	1.0210	1.0192	0.0133	21.4	10.6	0.0079	47.0
60.00	18.0	1.0180	1.0162	0.0138	18.4	11.4	0.0060	39.7
120.00	17.0	1.0170	1.0152	0.0140	17.4	11.7	0.0044	37.2
240.00	16.0	1.0160	1.0142	0.0141	16.4	12.0	0.0032	34.8
1440.00	12.0	1.0120	1.0102	0.0149	12.4	13.0	0.0014	25.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	3.1	6.0	9.1	2.2	4.8	6.8	13.8	39.5	37.6	77.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0021	0.0061	0.0114	0.0298	0.1252	0.5374	3.5226	14.1695

Fineness Modulus
0.93

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 55 **Sample Number:** 12
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 421.65
Tare Wt. = 377.35
Minus #200 from wash = 88.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
761.90	377.35	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	4.35	0.00	98.9
		3/8"	2.90	0.00	98.1
		#4	6.05	0.00	96.5
		#10	8.05	0.00	94.4
		#16	1.95	0.00	93.9
		#30	2.65	0.00	93.3
		#40	1.75	0.00	92.8
		#50	2.35	0.00	92.2
		#100	5.95	0.00	90.6
		#200	8.80	0.00	88.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 88.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	27.0	1.0260	1.0237	0.0124	26.4	9.3	0.0534	66.5
1.00	27.0	1.0240	1.0217	0.0124	24.4	9.8	0.0388	60.9
2.00	27.0	1.0230	1.0207	0.0124	23.4	10.1	0.0278	58.1
5.00	28.0	1.0215	1.0190	0.0122	21.9	10.5	0.0177	53.3
10.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0128	49.1
15.00	28.0	1.0190	1.0165	0.0122	19.4	11.2	0.0105	46.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0180	1.0155	0.0122	18.4	11.4	0.0075	43.5
60.00	29.0	1.0170	1.0145	0.0121	17.4	11.7	0.0053	40.7
120.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0039	37.9
240.00	28.0	1.0150	1.0125	0.0122	15.4	12.2	0.0028	35.1
1440.00	27.0	1.0120	1.0097	0.0124	12.4	13.0	0.0012	27.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.5	3.5	2.1	1.6	4.4	8.1	48.3	40.1	88.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0016	0.0049	0.0136	0.0341	0.0658	0.0708	0.1207	2.6338

Fineness Modulus
0.41

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 65 **Sample Number:** 14
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 407.45
Tare Wt. = 372.35
Minus #200 from wash = 90.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
741.55	372.35	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.65	0.00	99.8
		#30	3.35	0.00	98.9
		#40	3.65	0.00	97.9
		#50	4.45	0.00	96.7
		#100	11.20	0.00	93.7
		#200	12.10	0.00	90.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 90.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0290	1.0265	0.0122	29.4	8.5	0.0505	76.1
1.00	28.0	1.0285	1.0260	0.0122	28.9	8.7	0.0360	74.7
2.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0260	70.4
5.00	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0167	67.5
10.00	28.0	1.0248	1.0223	0.0122	25.2	9.6	0.0120	64.0
15.00	28.0	1.0235	1.0210	0.0122	23.9	10.0	0.0100	60.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0221	1.0196	0.0122	22.5	10.3	0.0072	56.3
60.00	29.0	1.0203	1.0178	0.0121	20.7	10.8	0.0051	51.1
120.00	28.0	1.0192	1.0167	0.0122	19.6	11.1	0.0037	48.0
240.00	28.0	1.0185	1.0160	0.0122	18.9	11.3	0.0027	46.0
1440.00	27.0	1.0154	1.0131	0.0124	15.8	12.1	0.0011	37.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.1	7.5	9.6	39.6	50.8	90.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0014	0.0047	0.0098	0.0575	0.0650	0.0740	0.2010

Fineness Modulus
0.11

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 10 **Sample Number:** 3
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 404.05
Tare Wt. = 374.60
Minus #200 from wash = 89.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
643.35	374.60	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	5.10	0.00	98.1
		3/8"	0.00	0.00	98.1
		#4	3.10	0.00	96.9
		#10	2.00	0.00	96.2
		#16	0.95	0.00	95.9
		#30	1.55	0.00	95.3
		#40	1.35	0.00	94.8
		#50	1.80	0.00	94.1
		#100	5.55	0.00	92.0
		#200	7.85	0.00	89.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 89.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0290	1.0265	0.0122	29.4	8.5	0.0505	75.0
1.00	27.0	1.0280	1.0257	0.0124	28.4	8.8	0.0366	72.8
2.00	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0264	66.5
5.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0172	60.9
10.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0125	55.2
15.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0103	52.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0073	52.4
60.00	27.0	1.0210	1.0187	0.0124	21.4	10.6	0.0052	52.9
120.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0037	49.5
240.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0026	49.5
1440.00	27.0	1.0190	1.0167	0.0124	19.4	11.2	0.0011	47.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.1	3.1	0.7	1.4	5.7	7.8	36.4	52.7	89.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0039	0.0162	0.0592	0.0669	0.0907	0.4971

Fineness Modulus
0.31

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 15 **Sample Number:** 4
Material Description: clayey gravel with sand
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 618.95
Tare Wt. = 376.75
Minus #200 from wash = 15.6%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
663.80	376.75	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	95.00	0.00	66.9
		3/4"	0.00	0.00	66.9
		1/2"	16.00	0.00	61.3
		3/8"	24.45	0.00	52.8
		#4	37.85	0.00	39.6
		#10	26.60	0.00	30.4
		#16	11.05	0.00	26.5
		#30	10.45	0.00	22.9
		#40	4.70	0.00	21.2
		#50	4.25	0.00	19.8
		#100	6.45	0.00	17.5
		#200	5.30	0.00	15.7

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 15.7
Weight of hydrometer sample =100
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.1	1.0275	1.0250	0.0118	27.9	8.9	0.0499	6.2
1.00	31.2	1.0260	1.0235	0.0118	26.4	9.3	0.0360	5.8
2.00	31.2	1.0235	1.0210	0.0118	23.9	10.0	0.0264	5.2
5.00	31.3	1.0212	1.0187	0.0118	21.6	10.6	0.0172	4.7
10.00	31.6	1.0195	1.0170	0.0118	19.9	11.0	0.0123	4.2
15.00	31.5	1.0185	1.0160	0.0118	18.9	11.3	0.0102	4.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	32.1	1.0164	1.0139	0.0117	16.8	11.9	0.0073	3.5
60.00	32.5	1.0151	1.0126	0.0116	15.5	12.2	0.0052	3.1
120.00	33.4	1.0133	1.0108	0.0115	13.7	12.7	0.0037	2.7
240.00	32.3	1.0121	1.0096	0.0117	12.5	13.0	0.0027	2.4
1440.00	31.1	1.0089	1.0064	0.0118	9.3	13.8	0.0012	1.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	33.1	27.3	60.4	9.2	9.2	5.5	23.9	12.6	3.1	15.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0239	0.0599	0.0727	0.3167	1.9155	4.8852	8.5629	12.1073	33.8508	36.6793	39.8299	43.7441

Fineness Modulus	C_u	C_c
5.35	202.14	5.06

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 30 **Sample Number:** 7
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 454.05
Tare Wt. = 372.20
Minus #200 from wash = 78.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
750.00	372.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	7.60	0.00	98.0
		#4	12.75	0.00	94.6
		#10	7.60	0.00	92.6
		#16	2.80	0.00	91.9
		#30	3.45	0.00	90.9
		#40	2.25	0.00	90.4
		#50	2.40	0.00	89.7
		#100	6.40	0.00	88.0
		#200	12.30	0.00	84.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 84.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0512	68.7
1.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0368	66.0
2.00	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0264	63.3
5.00	28.0	1.0250	1.0225	0.0122	25.4	9.6	0.0169	60.6
10.00	27.0	1.0240	1.0217	0.0124	24.4	9.8	0.0123	58.4
15.00	27.0	1.0230	1.0207	0.0124	23.4	10.1	0.0102	55.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0190	1.0165	0.0122	19.4	11.2	0.0075	44.4
60.00	28.0	1.0180	1.0155	0.0122	18.4	11.4	0.0053	41.7
120.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0039	36.4
240.00	28.0	1.0150	1.0125	0.0122	15.4	12.2	0.0028	33.7
1440.00	27.0	1.0130	1.0107	0.0124	13.4	12.8	0.0012	28.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	5.4	5.4	2.0	2.2	5.6	9.8	43.8	41.0	84.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0014	0.0047	0.0087	0.0153	0.0670	0.0781	0.3343	5.3499

Fineness Modulus
0.54

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 15 **Sample Number:** 4
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 396.70
Tare Wt. = 375.80
Minus #200 from wash = 94.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
774.90	375.80	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.15	0.00	99.9
		#30	1.05	0.00	99.7
		#40	1.15	0.00	99.4
		#50	1.75	0.00	99.0
		#100	6.95	0.00	97.2
		#200	9.70	0.00	94.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0310	1.0285	0.0121	31.4	8.0	0.0483	85.8
1.00	28.0	1.0300	1.0275	0.0122	30.4	8.3	0.0351	82.8
2.00	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0256	76.8
5.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0164	73.8
10.00	29.0	1.0250	1.0225	0.0121	25.4	9.6	0.0118	67.7
15.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0099	64.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0072	58.7
60.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0052	52.7
120.00	28.0	1.0180	1.0155	0.0122	18.4	11.4	0.0038	46.7
240.00	29.0	1.0160	1.0135	0.0121	16.4	12.0	0.0027	40.6
1440.00	28.0	1.0130	1.0105	0.0122	13.4	12.8	0.0012	31.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	4.6	5.2	42.9	51.9	94.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0026	0.0045	0.0077	0.0303	0.0448	0.0599	0.0791

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 30 **Sample Number:** 7
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 392.50
Tare Wt. = 376.20
Minus #200 from wash = 96.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
806.85	376.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.40	0.00	99.9
		#16	0.30	0.00	99.8
		#30	0.80	0.00	99.7
		#40	0.60	0.00	99.5
		#50	0.90	0.00	99.3
		#100	4.25	0.00	98.3
		#200	8.85	0.00	96.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	27.0	1.0290	1.0267	0.0124	29.4	8.5	0.0510	81.6
1.00	27.0	1.0280	1.0257	0.0124	28.4	8.8	0.0366	78.6
2.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0260	74.9
5.00	29.0	1.0250	1.0225	0.0121	25.4	9.6	0.0167	68.8
10.00	29.0	1.0235	1.0210	0.0121	23.9	10.0	0.0121	64.2
15.00	30.0	1.0220	1.0195	0.0120	22.4	10.4	0.0099	59.6

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.0	1.0200	1.0175	0.0120	20.4	10.9	0.0072	53.5
60.00	29.0	1.0185	1.0160	0.0121	18.9	11.3	0.0052	48.9
120.00	29.0	1.0160	1.0135	0.0121	16.4	12.0	0.0038	41.3
240.00	28.0	1.0150	1.0125	0.0122	15.4	12.2	0.0028	38.2
1440.00	28.0	1.0110	1.0085	0.0122	11.4	13.3	0.0012	26.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.4	3.2	3.7	48.5	47.8	96.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0015	0.0035	0.0056	0.0101	0.0468	0.0566	0.0638	0.0722

Fineness Modulus
0.03

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 35 **Sample Number:** 8
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 389.55
Tare Wt. = 378.20
Minus #200 from wash = 97.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
758.35	378.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.35	0.00	99.9
		#16	0.35	0.00	99.8
		#30	1.40	0.00	99.4
		#40	1.35	0.00	99.1
		#50	1.65	0.00	98.7
		#100	3.60	0.00	97.7
		#200	3.35	0.00	96.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.1	1.0331	1.0306	0.0119	33.5	7.4	0.0461	94.1
1.00	30.2	1.0323	1.0298	0.0119	32.7	7.6	0.0330	91.7
2.00	30.2	1.0311	1.0286	0.0119	31.5	8.0	0.0238	88.0
5.00	30.1	1.0297	1.0272	0.0119	30.1	8.3	0.0154	83.7
10.00	30.3	1.0289	1.0264	0.0119	29.3	8.5	0.0110	81.2
15.00	30.5	1.0268	1.0243	0.0119	27.2	9.1	0.0093	74.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.3	1.0239	1.0214	0.0119	24.3	9.9	0.0068	65.8
60.00	30.1	1.0223	1.0198	0.0119	22.7	10.3	0.0049	60.9
120.00	27.1	1.0202	1.0179	0.0124	20.6	10.8	0.0037	55.0
240.00	29.1	1.0182	1.0157	0.0121	18.6	11.4	0.0026	48.3
1440.00	28.1	1.0135	1.0110	0.0122	13.9	12.6	0.0011	33.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.8	2.3	3.2	35.7	61.1	96.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0016	0.0029	0.0047	0.0106	0.0188	0.0281	0.0528

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 45 **Sample Number:** 10
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 385.35
Tare Wt. = 369.40
Minus #200 from wash = 95.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
716.65	369.40	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.25	0.00	99.9
		#16	0.85	0.00	99.7
		#30	2.10	0.00	99.1
		#40	1.60	0.00	98.6
		#50	1.85	0.00	98.1
		#100	5.85	0.00	96.4
		#200	3.00	0.00	95.5

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.5
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0542	65.2
1.00	28.0	1.0235	1.0210	0.0122	23.9	10.0	0.0386	63.7
2.00	28.0	1.0235	1.0210	0.0122	23.9	10.0	0.0273	63.7
5.00	29.0	1.0230	1.0205	0.0121	23.4	10.1	0.0172	62.2
10.00	30.0	1.0225	1.0200	0.0120	22.9	10.2	0.0121	60.7
15.00	30.0	1.0220	1.0195	0.0120	22.4	10.4	0.0099	59.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0200	1.0175	0.0121	20.4	10.9	0.0073	53.1
60.00	30.0	1.0190	1.0165	0.0120	19.4	11.2	0.0052	50.1
120.00	30.0	1.0160	1.0135	0.0120	16.4	12.0	0.0038	41.0
240.00	30.0	1.0150	1.0125	0.0120	15.4	12.2	0.0027	37.9
1440.00	29.0	1.0120	1.0095	0.0121	12.4	13.0	0.0011	28.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.3	3.1	4.5	46.1	49.4	95.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0013	0.0036	0.0051	0.0107	0.0641	0.0672	0.0705	0.0745

Fineness Modulus
0.07

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 55 **Sample Number:** 12
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 390.30
Tare Wt. = 374.55
Minus #200 from wash = 95.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
750.45	374.55	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	100.0
		#16	0.15	0.00	99.9
		#30	0.70	0.00	99.7
		#40	0.90	0.00	99.5
		#50	1.70	0.00	99.0
		#100	5.05	0.00	97.7
		#200	7.20	0.00	95.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0270	1.0245	0.0121	27.4	9.0	0.0514	74.5
1.00	29.0	1.0260	1.0235	0.0121	26.4	9.3	0.0369	71.5
2.00	30.0	1.0254	1.0229	0.0120	25.8	9.5	0.0260	69.7
5.00	30.0	1.0238	1.0213	0.0120	24.2	9.9	0.0168	64.8
10.00	30.0	1.0225	1.0200	0.0120	22.9	10.2	0.0121	60.9
15.00	30.0	1.0215	1.0190	0.0120	21.9	10.5	0.0100	57.8

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0200	1.0175	0.0121	20.4	10.9	0.0073	53.2
60.00	30.0	1.0186	1.0161	0.0120	19.0	11.3	0.0052	49.0
120.00	29.0	1.0174	1.0149	0.0121	17.8	11.6	0.0038	45.3
240.00	28.0	1.0156	1.0131	0.0122	16.0	12.1	0.0027	39.9
1440.00	28.0	1.0135	1.0110	0.0122	13.9	12.6	0.0011	33.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	3.7	4.2	47.2	48.6	95.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0028	0.0057	0.0114	0.0575	0.0624	0.0675	0.0738

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 10 **Sample Number:** 3
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 423.25
Tare Wt. = 379.25
Minus #200 from wash = 87.7%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
737.65	379.25	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.70	0.00	99.8
		#10	0.65	0.00	99.6
		#16	0.50	0.00	99.5
		#30	3.35	0.00	98.5
		#40	4.05	0.00	97.4
		#50	5.50	0.00	95.9
		#100	13.90	0.00	92.0
		#200	15.95	0.00	87.6

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 87.6
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	1.0280	1.0255	0.0118	28.4	8.8	0.0496	70.9
1.00	30.0	1.0273	1.0248	0.0120	27.7	9.0	0.0358	69.0
2.00	30.0	1.0260	1.0235	0.0120	26.4	9.3	0.0258	65.4
4.00	30.0	1.0240	1.0215	0.0120	24.4	9.8	0.0188	59.8
8.00	31.0	1.0220	1.0195	0.0118	22.4	10.4	0.0135	54.2
15.00	32.0	1.0210	1.0185	0.0117	21.4	10.6	0.0099	51.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0200	1.0175	0.0121	20.4	10.9	0.0073	48.7
60.00	30.0	1.0190	1.0165	0.0120	19.4	11.2	0.0052	45.9
120.00	30.0	1.0182	1.0157	0.0120	18.6	11.4	0.0037	43.7
240.00	30.0	1.0170	1.0145	0.0120	17.4	11.7	0.0026	40.3
1440.00	31.0	1.0140	1.0115	0.0118	14.4	12.5	0.0011	32.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.2	2.2	9.8	12.2	41.9	45.7	87.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0026	0.0084	0.0190	0.0628	0.0702	0.1085	0.2537

Fineness Modulus
0.15

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 20 **Sample Number:** 5
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 388.15
Tare Wt. = 373.70
Minus #200 from wash = 96.7%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
807.10	373.70	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.10	0.00	100.0
		#30	0.15	0.00	99.9
		#40	0.20	0.00	99.9
		#50	0.35	0.00	99.8
		#100	1.60	0.00	99.4
		#200	12.70	0.00	96.5

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.5
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0311	1.0286	0.0122	31.5	8.0	0.0488	87.7
1.00	28.0	1.0305	1.0280	0.0122	30.9	8.1	0.0348	85.8
2.00	28.0	1.0263	1.0238	0.0122	26.7	9.2	0.0263	73.0
5.00	28.0	1.0245	1.0220	0.0122	24.9	9.7	0.0170	67.4
10.00	29.0	1.0240	1.0215	0.0121	24.4	9.8	0.0120	65.9
15.00	28.0	1.0225	1.0200	0.0122	22.9	10.2	0.0101	61.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0203	1.0178	0.0121	20.7	10.8	0.0073	54.6
60.00	29.0	1.0186	1.0161	0.0121	19.0	11.3	0.0052	49.4
120.00	28.0	1.0175	1.0150	0.0122	17.9	11.6	0.0038	46.0
240.00	28.0	1.0156	1.0131	0.0122	16.0	12.1	0.0027	40.2
1440.00	28.0	1.0130	1.0105	0.0122	13.4	12.8	0.0012	32.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	3.4	3.5	47.7	48.8	96.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0027	0.0055	0.0096	0.0304	0.0339	0.0571	0.0700

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 25 **Sample Number:** 6
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 388.05
Tare Wt. = 369.55
Minus #200 from wash = 94.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
680.70	369.55	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.25	0.00	99.9
		#30	0.30	0.00	99.8
		#40	0.40	0.00	99.7
		#50	0.65	0.00	99.5
		#100	3.30	0.00	98.4
		#200	14.05	0.00	93.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 93.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0306	1.0281	0.0120	31.0	8.1	0.0481	83.8
1.00	29.0	1.0281	1.0256	0.0121	28.5	8.8	0.0358	76.4
2.00	30.0	1.0266	1.0241	0.0120	27.0	9.2	0.0256	71.9
4.00	31.0	1.0246	1.0221	0.0118	25.0	9.7	0.0184	65.9
8.00	31.0	1.0235	1.0210	0.0118	23.9	10.0	0.0132	62.6
15.00	30.0	1.0221	1.0196	0.0120	22.5	10.3	0.0099	58.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.0	1.0212	1.0187	0.0120	21.6	10.6	0.0071	55.8
60.00	30.0	1.0195	1.0170	0.0120	19.9	11.0	0.0051	50.7
120.00	30.0	1.0176	1.0151	0.0120	18.0	11.5	0.0037	45.0
240.00	30.5	1.0163	1.0138	0.0119	16.7	11.9	0.0026	41.2
1440.00	30.4	1.0135	1.0110	0.0119	13.9	12.6	0.0011	32.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	5.8	6.1	43.7	50.2	93.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0023	0.0049	0.0111	0.0419	0.0502	0.0614	0.0809

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 40 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 419.45
Tare Wt. = 374.60
Minus #200 from wash = 86.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
702.20	374.60	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	1.60	0.00	99.5
		#30	2.35	0.00	98.8
		#40	2.05	0.00	98.2
		#50	2.70	0.00	97.3
		#100	9.95	0.00	94.3
		#200	25.90	0.00	86.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 86.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0320	1.0295	0.0120	32.4	7.7	0.0470	81.0
1.00	31.0	1.0310	1.0285	0.0118	31.4	8.0	0.0334	78.2
2.00	31.0	1.0280	1.0255	0.0118	28.4	8.8	0.0248	70.0
5.00	31.0	1.0270	1.0245	0.0118	27.4	9.0	0.0159	67.2
10.00	30.0	1.0250	1.0225	0.0120	25.4	9.6	0.0117	61.8
15.00	30.0	1.0240	1.0215	0.0120	24.4	9.8	0.0097	59.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0220	1.0195	0.0121	22.4	10.4	0.0071	53.5
60.00	30.0	1.0210	1.0185	0.0120	21.4	10.6	0.0050	50.8
120.00	29.0	1.0190	1.0165	0.0121	19.4	11.2	0.0037	45.3
240.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0026	42.5
1440.00	28.2	1.0130	1.0105	0.0122	13.4	12.8	0.0011	28.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.8	11.8	13.6	35.7	50.7	86.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0021	0.0048	0.0104	0.0381	0.0680	0.0982	0.1656

Fineness Modulus
0.10

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 419.50
Tare Wt. = 377.20
Minus #200 from wash = 84.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
648.95	377.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	3.00	0.00	98.9
		#10	4.30	0.00	97.3
		#16	1.75	0.00	96.7
		#30	3.75	0.00	95.3
		#40	3.75	0.00	93.9
		#50	5.00	0.00	92.1
		#100	11.85	0.00	87.7
		#200	9.35	0.00	84.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 84.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.1	1.0230	1.0205	0.0122	23.4	10.1	0.0549	54.9
1.00	28.2	1.0225	1.0200	0.0122	22.9	10.2	0.0390	53.5
2.00	28.2	1.0217	1.0192	0.0122	22.1	10.4	0.0279	51.4
5.00	28.2	1.0201	1.0176	0.0122	20.5	10.9	0.0180	47.1
10.00	28.3	1.0193	1.0168	0.0122	19.7	11.1	0.0128	45.0
15.00	28.4	1.0189	1.0164	0.0122	19.3	11.2	0.0105	43.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.2	1.0183	1.0158	0.0119	18.7	11.3	0.0073	42.3
60.00	30.1	1.0278	1.0253	0.0119	28.2	8.8	0.0046	67.7
120.00	28.2	1.0169	1.0144	0.0122	17.3	11.7	0.0038	38.5
240.00	29.3	1.0161	1.0136	0.0121	16.5	11.9	0.0027	36.4
1440.00	28.3	1.0142	1.0117	0.0122	14.6	12.4	0.0011	31.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.1	1.1	1.6	3.4	9.6	14.6	23.6	60.7	84.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0039	0.0247	0.0588	0.0715	0.0884	0.2198	0.5561

Fineness Modulus
0.32

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 10 **Sample Number:** 3
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 385.85
Tare Wt. = 369.10
Minus #200 from wash = 95.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
731.70	369.10	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	100.0
		#16	0.25	0.00	99.9
		#30	0.50	0.00	99.8
		#40	0.45	0.00	99.6
		#50	0.75	0.00	99.4
		#100	4.45	0.00	98.2
		#200	10.50	0.00	95.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.3	1.0321	1.0296	0.0122	32.5	7.7	0.0478	89.6
1.00	28.3	1.0309	1.0284	0.0122	31.3	8.0	0.0345	86.0
2.00	28.4	1.0289	1.0264	0.0122	29.3	8.5	0.0252	79.9
5.00	28.5	1.0259	1.0234	0.0122	26.3	9.3	0.0166	70.8
10.00	28.4	1.0244	1.0219	0.0122	24.8	9.7	0.0120	66.3
15.00	28.5	1.0231	1.0206	0.0122	23.5	10.1	0.0100	62.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.4	1.0219	1.0194	0.0122	22.3	10.4	0.0072	58.7
60.00	30.5	1.0203	1.0178	0.0119	20.7	10.8	0.0051	53.9
120.00	29.3	1.0188	1.0163	0.0121	19.2	11.2	0.0037	49.3
240.00	29.4	1.0171	1.0146	0.0120	17.5	11.7	0.0027	44.2
1440.00	28.2	1.0131	1.0106	0.0122	13.5	12.7	0.0011	32.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	4.3	4.7	41.6	53.7	95.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0020	0.0039	0.0083	0.0253	0.0324	0.0495	0.0729

Fineness Modulus
0.03

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 15 **Sample Number:** 4
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 385.50
Tare Wt. = 374.55
Minus #200 from wash = 97.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
751.30	374.55	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.50	0.00	99.9
		#40	0.65	0.00	99.7
		#50	0.95	0.00	99.4
		#100	3.25	0.00	98.6
		#200	5.75	0.00	97.0

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.0
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.4	1.0312	1.0287	0.0122	31.6	7.9	0.0485	88.5
1.00	28.5	1.0307	1.0282	0.0122	31.1	8.1	0.0345	86.9
2.00	28.4	1.0292	1.0267	0.0122	29.6	8.5	0.0250	82.3
5.00	28.5	1.0271	1.0246	0.0122	27.5	9.0	0.0163	75.8
10.00	28.5	1.0251	1.0226	0.0122	25.5	9.6	0.0119	69.7
15.00	28.4	1.0242	1.0217	0.0122	24.6	9.8	0.0098	66.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.2	1.0221	1.0196	0.0119	22.5	10.3	0.0070	60.4
60.00	30.4	1.0198	1.0173	0.0119	20.2	11.0	0.0051	53.3
120.00	29.2	1.0189	1.0164	0.0121	19.3	11.2	0.0037	50.6
240.00	28.1	1.0178	1.0153	0.0122	18.2	11.5	0.0027	47.2
1440.00	27.2	1.0141	1.0118	0.0123	14.5	12.5	0.0011	36.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	2.7	3.0	43.9	53.1	97.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0015	0.0034	0.0069	0.0214	0.0295	0.0537	0.0675

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 20 **Sample Number:** 5
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 765.70
Tare Wt. = 369.75
Minus #200 from wash = 0.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
765.70	369.75	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	100.0
		#16	0.55	0.00	99.8
		#30	0.85	0.00	99.6
		#40	0.35	0.00	99.5
		#50	0.55	0.00	99.4
		#100	2.80	0.00	98.7
		#200	10.20	0.00	96.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.6	1.0329	1.0304	0.0121	33.3	7.5	0.0470	92.8
1.00	28.4	1.0301	1.0276	0.0122	30.5	8.2	0.0349	84.2
2.00	28.6	1.0284	1.0259	0.0121	28.8	8.7	0.0253	79.1
5.00	28.1	1.0264	1.0239	0.0122	26.8	9.2	0.0166	73.0
10.00	28.5	1.0249	1.0224	0.0122	25.3	9.6	0.0119	68.4
15.00	28.0	1.0236	1.0211	0.0122	24.0	9.9	0.0100	64.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.7	1.0214	1.0189	0.0119	21.8	10.5	0.0070	57.7
60.00	30.3	1.0207	1.0182	0.0119	21.1	10.7	0.0050	55.6
120.00	30.4	1.0189	1.0164	0.0119	19.3	11.2	0.0036	50.1
240.00	30.6	1.0173	1.0148	0.0119	17.7	11.6	0.0026	45.2
1440.00	28.4	1.0136	1.0111	0.0122	14.0	12.6	0.0011	33.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	3.4	3.9	40.6	55.5	96.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0018	0.0036	0.0082	0.0272	0.0359	0.0424	0.0539

Fineness Modulus
0.03

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 25 **Sample Number:** 6
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 386.65
Tare Wt. = 372.15
Minus #200 from wash = 97.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
922.85	372.15	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.80	0.00	99.7
		#16	1.10	0.00	99.5
		#30	1.35	0.00	99.2
		#40	0.70	0.00	99.1
		#50	0.80	0.00	99.0
		#100	2.35	0.00	98.5
		#200	6.80	0.00	97.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.3	1.0301	1.0276	0.0118	30.5	8.2	0.0478	85.3
1.00	31.5	1.0281	1.0256	0.0118	28.5	8.8	0.0348	79.1
2.00	31.4	1.0262	1.0237	0.0118	26.6	9.3	0.0253	73.2
5.00	31.4	1.0243	1.0218	0.0118	24.7	9.8	0.0165	67.4
10.00	31.3	1.0235	1.0210	0.0118	23.9	10.0	0.0118	64.9
15.00	31.5	1.0229	1.0204	0.0118	23.3	10.1	0.0097	63.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.5	1.0212	1.0187	0.0118	21.6	10.6	0.0070	57.8
60.00	31.7	1.0183	1.0158	0.0117	18.7	11.3	0.0051	48.8
120.00	32.9	1.0171	1.0146	0.0116	17.5	11.7	0.0036	45.1
240.00	33.5	1.0152	1.0127	0.0115	15.6	12.2	0.0026	39.2
1440.00	27.2	1.0132	1.0109	0.0123	13.6	12.7	0.0012	33.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	0.6	1.8	2.7	48.9	48.4	97.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0027	0.0054	0.0077	0.0366	0.0473	0.0567	0.0676

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 40 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 384.35
Tare Wt. = 376.25
Minus #200 from wash = 98.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
811.35	376.25	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.15	0.00	99.9
		#40	0.25	0.00	99.9
		#50	0.30	0.00	99.8
		#100	2.15	0.00	99.3
		#200	5.70	0.00	98.0

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 98.0
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.3	1.0312	1.0287	0.0118	31.6	7.9	0.0470	89.4
1.00	31.5	1.0285	1.0260	0.0118	28.9	8.7	0.0346	80.9
2.00	31.4	1.0267	1.0242	0.0118	27.1	9.1	0.0252	75.3
5.00	31.5	1.0239	1.0214	0.0118	24.3	9.9	0.0165	66.6
10.00	31.4	1.0225	1.0200	0.0118	22.9	10.2	0.0119	62.3
15.00	31.5	1.0218	1.0193	0.0118	22.2	10.4	0.0098	60.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.6	1.0195	1.0170	0.0118	19.9	11.0	0.0071	52.9
60.00	31.7	1.0183	1.0158	0.0117	18.7	11.3	0.0051	49.2
120.00	32.8	1.0155	1.0130	0.0116	15.9	12.1	0.0037	40.5
240.00	33.4	1.0139	1.0114	0.0115	14.3	12.5	0.0026	35.5
1440.00	27.3	1.0111	1.0087	0.0123	11.5	13.3	0.0012	27.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	1.9	2.0	49.2	48.8	98.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0015	0.0036	0.0054	0.0098	0.0331	0.0404	0.0481	0.0603

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 10 **Sample Number:** 3
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 378.55
Tare Wt. = 376.00
Minus #200 from wash = 99.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
712.30	376.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.25	0.00	99.9
		#16	0.35	0.00	99.8
		#30	0.25	0.00	99.7
		#40	0.10	0.00	99.7
		#50	0.10	0.00	99.7
		#100	0.90	0.00	99.4
		#200	0.95	0.00	99.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 99.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0320	1.0295	0.0122	32.4	7.7	0.0481	92.9
1.00	28.0	1.0315	1.0290	0.0122	31.9	7.9	0.0343	91.3
2.00	29.0	1.0310	1.0285	0.0121	31.4	8.0	0.0242	89.7
5.00	29.0	1.0300	1.0275	0.0121	30.4	8.3	0.0155	86.6
10.00	29.0	1.0285	1.0260	0.0121	28.9	8.7	0.0112	81.9
15.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0095	77.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	27.0	1.0250	1.0227	0.0124	25.4	9.6	0.0070	71.5
60.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0050	64.6
120.00	30.0	1.0200	1.0175	0.0120	20.4	10.9	0.0036	55.1
240.00	30.0	1.0180	1.0155	0.0120	18.4	11.4	0.0026	48.8
1440.00	27.0	1.0150	1.0127	0.0124	15.4	12.2	0.0011	40.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.9	34.6	64.5	99.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0011	0.0028	0.0043	0.0105	0.0133	0.0253	0.0564

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 20 **Sample Number:** 5
Material Description: lean clay
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 420.15
Tare Wt. = 380.95
Minus #200 from wash = 91.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
836.00	380.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.80	0.00	99.8
		#10	1.75	0.00	99.4
		#16	2.20	0.00	99.0
		#30	5.55	0.00	97.7
		#40	3.95	0.00	96.9
		#50	3.70	0.00	96.1
		#100	9.80	0.00	93.9
		#200	11.80	0.00	91.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 91.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0275	1.0250	0.0122	27.9	8.9	0.0516	72.5
1.00	29.0	1.0265	1.0240	0.0121	26.9	9.2	0.0366	69.6
2.00	29.0	1.0255	1.0230	0.0121	25.9	9.4	0.0263	66.7
5.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0172	62.4
10.00	29.0	1.0220	1.0195	0.0121	22.4	10.4	0.0123	56.6
15.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0103	53.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0195	1.0170	0.0122	19.9	11.0	0.0074	49.3
60.00	28.0	1.0170	1.0145	0.0122	17.4	11.7	0.0054	42.1
120.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0039	39.2
240.00	29.0	1.0140	1.0115	0.0121	14.4	12.5	0.0028	33.4
1440.00	27.0	1.0125	1.0102	0.0124	12.9	12.9	0.0012	29.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.4	2.5	5.6	8.5	50.2	41.1	91.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0013	0.0043	0.0077	0.0148	0.0606	0.0662	0.0728	0.2099

Fineness Modulus
0.14

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 25 **Sample Number:** 6
Material Description: clayey gravel with sand
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 751.50
Tare Wt. = 377.95
Minus #200 from wash = 21.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
851.50	377.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	71.65	0.00	84.9
		3/4"	31.25	0.00	78.3
		1/2"	40.90	0.00	69.6
		3/8"	23.15	0.00	64.7
		#4	46.35	0.00	55.0
		#10	58.90	0.00	42.5
		#16	26.45	0.00	36.9
		#30	36.05	0.00	29.3
		#40	16.65	0.00	25.8
		#50	11.15	0.00	23.5
		#100	13.05	0.00	20.7
		#200	8.30	0.00	18.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 18.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0350	1.0325	0.0120	35.4	6.9	0.0445	19.6
1.00	30.0	1.0340	1.0315	0.0120	34.4	7.2	0.0321	19.0
2.00	30.0	1.0320	1.0295	0.0120	32.4	7.7	0.0235	17.7
5.00	30.0	1.0280	1.0255	0.0120	28.4	8.8	0.0159	15.3
10.00	30.0	1.0260	1.0235	0.0120	26.4	9.3	0.0115	14.1
15.00	30.0	1.0250	1.0225	0.0120	25.4	9.6	0.0096	13.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.0	1.0230	1.0205	0.0120	23.4	10.1	0.0069	12.3
60.00	31.0	1.0220	1.0195	0.0118	22.4	10.4	0.0049	11.7
120.00	30.0	1.0200	1.0175	0.0120	20.4	10.9	0.0036	10.5
240.00	29.0	1.0190	1.0165	0.0121	19.4	11.2	0.0026	9.9
1440.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0011	8.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	21.7	23.3	45.0	12.5	16.7	6.9	36.1	7.1	11.8	18.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0028	0.0148	0.1268	0.6372	1.5936	3.4075	6.8420	20.6103	25.5306	30.7265	37.1706

Fineness Modulus	C_u	C_c
4.51	2484.28	21.55

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 40 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 401.60
Tare Wt. = 376.75
Minus #200 from wash = 92.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
722.25	376.75	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.95	0.00	99.7
		#16	1.35	0.00	99.3
		#30	3.30	0.00	98.4
		#40	2.30	0.00	97.7
		#50	2.60	0.00	97.0
		#100	6.20	0.00	95.2
		#200	8.35	0.00	92.7

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 92.7
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0320	1.0295	0.0121	32.4	7.7	0.0475	86.9
1.00	28.5	1.0305	1.0280	0.0122	30.9	8.1	0.0347	82.5
2.00	28.0	1.0290	1.0265	0.0122	29.4	8.5	0.0252	78.1
5.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0164	72.2
10.00	28.0	1.0245	1.0220	0.0122	24.9	9.7	0.0120	64.8
15.00	29.0	1.0230	1.0205	0.0121	23.4	10.1	0.0099	60.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0074	51.6
60.00	28.0	1.0190	1.0165	0.0122	19.4	11.2	0.0053	48.6
120.00	29.0	1.0155	1.0130	0.0121	15.9	12.1	0.0038	38.3
240.00	30.0	1.0150	1.0125	0.0120	15.4	12.2	0.0027	36.8
1440.00	27.0	1.0130	1.0107	0.0124	13.4	12.8	0.0012	31.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	2.0	5.0	7.3	45.5	47.2	92.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0041	0.0059	0.0098	0.0291	0.0414	0.0592	0.1337

Fineness Modulus
0.10

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-07
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 415.85
Tare Wt. = 376.05
Minus #200 from wash = 83.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
614.10	376.05	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	3.90	0.00	98.4
		#10	7.10	0.00	95.4
		#16	5.65	0.00	93.0
		#30	6.20	0.00	90.4
		#40	3.10	0.00	89.1
		#50	3.00	0.00	87.8
		#100	5.55	0.00	85.5
		#200	5.75	0.00	83.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 83.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.6
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.1	1.0310	1.0285	0.0124	31.4	8.0	0.0498	77.0
1.00	29.2	1.0290	1.0265	0.0124	29.4	8.5	0.0363	71.6
2.00	29.0	1.0270	1.0245	0.0125	27.4	9.0	0.0265	66.2
5.00	29.0	1.0240	1.0215	0.0125	24.4	9.8	0.0175	58.1
10.00	29.0	1.0220	1.0195	0.0125	22.4	10.4	0.0127	52.7
15.00	30.0	1.0210	1.0185	0.0123	21.4	10.6	0.0104	50.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.1	1.0190	1.0165	0.0124	19.4	11.2	0.0076	44.6
60.00	29.2	1.0160	1.0135	0.0124	16.4	12.0	0.0056	36.5
120.00	30.0	1.0150	1.0125	0.0123	15.4	12.2	0.0039	33.8
240.00	28.0	1.0100	1.0075	0.0126	10.4	13.5	0.0030	20.3
1440.00	30.0	1.0080	1.0055	0.0123	8.4	14.1	0.0012	14.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.6	1.6	3.0	6.3	6.0	15.3	47.2	35.9	83.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0012	0.0029	0.0036	0.0065	0.0104	0.0193	0.0596	0.1038	0.5398	1.8322

Fineness Modulus
0.49

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-07
Depth: 25 **Sample Number:** 6
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 376.20
Tare Wt. = 369.50
Minus #200 from wash = 97.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
626.85	369.50	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	99.9
		#16	0.10	0.00	99.9
		#30	0.20	0.00	99.8
		#40	0.05	0.00	99.8
		#50	0.35	0.00	99.7
		#100	1.20	0.00	99.2
		#200	4.80	0.00	97.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0290	1.0265	0.0121	29.4	8.5	0.0499	81.9
1.00	29.0	1.0280	1.0255	0.0121	28.4	8.8	0.0358	78.8
2.00	30.0	1.0270	1.0245	0.0120	27.4	9.0	0.0254	75.8
5.00	30.0	1.0260	1.0235	0.0120	26.4	9.3	0.0163	72.7
10.00	30.0	1.0240	1.0215	0.0120	24.4	9.8	0.0119	66.5
15.00	29.0	1.0230	1.0205	0.0121	23.4	10.1	0.0099	63.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0220	1.0195	0.0121	22.4	10.4	0.0071	60.3
60.00	29.0	1.0210	1.0185	0.0121	21.4	10.6	0.0051	57.2
120.00	29.0	1.0200	1.0175	0.0121	20.4	10.9	0.0036	54.1
240.00	28.0	1.0170	1.0145	0.0122	17.4	11.7	0.0027	44.8
1440.00	28.0	1.0120	1.0095	0.0122	12.4	13.0	0.0012	29.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.1	2.5	2.7	40.2	57.1	97.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0023	0.0031	0.0069	0.0445	0.0550	0.0621	0.0701

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 428.80
Tare Wt. = 377.90
Minus #200 from wash = 76.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
597.95	377.90	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.35	0.00	99.8
		#16	1.00	0.00	99.4
		#30	3.80	0.00	97.7
		#40	3.18	0.00	96.2
		#50	4.65	0.00	94.1
		#100	16.65	0.00	86.5
		#200	21.50	0.00	76.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 76.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	1.0241	1.0216	0.0118	24.5	9.8	0.0524	52.7
1.00	31.3	1.0232	1.0207	0.0118	23.6	10.1	0.0374	50.5
2.00	31.2	1.0221	1.0196	0.0118	22.5	10.3	0.0268	47.8
5.00	31.3	1.0204	1.0179	0.0118	20.8	10.8	0.0173	43.6
10.00	31.0	1.0195	1.0170	0.0118	19.9	11.0	0.0124	41.5
15.00	31.5	1.0192	1.0167	0.0118	19.6	11.1	0.0101	40.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.2	1.0183	1.0158	0.0118	18.7	11.3	0.0073	38.5
60.00	31.0	1.0171	1.0146	0.0118	17.5	11.7	0.0052	35.6
120.00	31.3	1.0164	1.0139	0.0118	16.8	11.9	0.0037	33.9
240.00	31.2	1.0153	1.0128	0.0118	15.7	12.1	0.0027	31.2
1440.00	28.0	1.0141	1.0116	0.0122	14.5	12.5	0.0011	28.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	3.6	19.4	23.2	41.5	35.3	76.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0022	0.0088	0.0351	0.0595	0.0928	0.1330	0.2190	0.3344

Fineness Modulus
0.22

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 10 **Sample Number:** 3
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 480.80
Tare Wt. = 374.45
Minus #200 from wash = 67.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
702.00	374.45	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"			
		3/4"			
		1/2"			
		3/8"			
		#4			
		#10			
		#16			
		#30			
		#40			
		#50			
		#100			
		#200			67.5

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 67.5
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	1.0251	1.0226	0.0118	25.5	9.6	0.0517	48.5
1.00	31.0	1.0242	1.0217	0.0118	24.6	9.8	0.0370	46.5
2.00	31.0	1.0231	1.0206	0.0118	23.5	10.1	0.0266	44.2
5.00	31.0	1.0214	1.0189	0.0118	21.8	10.5	0.0172	40.5
10.00	31.0	1.0205	1.0180	0.0118	20.9	10.8	0.0123	38.6
15.00	31.0	1.0192	1.0167	0.0118	19.6	11.1	0.0102	35.8

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.0	1.0183	1.0158	0.0118	18.7	11.3	0.0073	33.9
60.00	31.0	1.0171	1.0146	0.0118	17.5	11.7	0.0052	31.3
120.00	31.0	1.0164	1.0139	0.0118	16.8	11.9	0.0037	29.8
240.00	31.0	1.0153	1.0128	0.0118	15.7	12.1	0.0027	27.5
1440.00	28.0	1.0141	1.0116	0.0122	14.5	12.5	0.0011	24.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.9	3.6	4.5	3.8	9.4	14.8	28.0	36.4	31.1	67.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0039	0.0148	0.0543	0.0663	0.3121	0.6266	1.4319	4.2029

Fineness Modulus
0.88

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 30 **Sample Number:** 7
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 387.80
Tare Wt. = 376.90
Minus #200 from wash = 96.6%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
694.95	376.90	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.10	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.10	0.00	99.9
		#40	0.15	0.00	99.9
		#50	0.40	0.00	99.7
		#100	3.05	0.00	98.8
		#200	7.10	0.00	96.6

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.6
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0311	1.0286	0.0121	31.5	8.0	0.0483	87.7
1.00	29.0	1.0282	1.0257	0.0121	28.6	8.7	0.0357	78.8
2.00	29.0	1.0262	1.0237	0.0121	26.6	9.3	0.0260	72.7
5.00	29.0	1.0242	1.0217	0.0121	24.6	9.8	0.0169	66.6
10.00	29.0	1.0223	1.0198	0.0121	22.7	10.3	0.0123	60.7
15.00	29.0	1.0214	1.0189	0.0121	21.8	10.5	0.0101	58.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.0	1.0204	1.0179	0.0118	20.8	10.8	0.0071	54.9
60.00	31.0	1.0183	1.0158	0.0118	18.7	11.3	0.0051	48.5
120.00	31.0	1.0163	1.0138	0.0118	16.7	11.9	0.0037	42.3
240.00	31.0	1.0154	1.0129	0.0118	15.8	12.1	0.0027	39.6
1440.00	28.0	1.0123	1.0098	0.0122	12.7	12.9	0.0012	30.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	3.3	3.4	48.8	47.8	96.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0028	0.0055	0.0117	0.0373	0.0441	0.0525	0.0669

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 35 **Sample Number:** 8
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 426.20
Tare Wt. = 374.10
Minus #200 from wash = 87.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
787.80	374.10	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.20	0.00	99.7
		#16	1.00	0.00	99.5
		#30	2.30	0.00	98.9
		#40	4.90	0.00	97.7
		#50	8.50	0.00	95.7
		#100	16.90	0.00	91.6
		#200	17.90	0.00	87.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 87.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0302	1.0277	0.0120	30.6	8.2	0.0484	76.8
1.00	30.0	1.0282	1.0257	0.0120	28.6	8.7	0.0353	71.2
2.00	30.0	1.0273	1.0248	0.0120	27.7	9.0	0.0253	68.7
5.00	30.0	1.0251	1.0226	0.0120	25.5	9.6	0.0165	62.6
10.00	29.0	1.0221	1.0196	0.0121	22.5	10.3	0.0123	54.3
15.00	29.0	1.0203	1.0178	0.0121	20.7	10.8	0.0103	49.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0195	1.0170	0.0121	19.9	11.0	0.0073	47.1
60.00	31.0	1.0182	1.0157	0.0118	18.6	11.4	0.0052	43.5
120.00	31.0	1.0162	1.0137	0.0118	16.6	11.9	0.0037	38.0
240.00	31.0	1.0154	1.0129	0.0118	15.8	12.1	0.0027	35.8
1440.00	28.0	1.0123	1.0098	0.0122	12.7	12.9	0.0012	27.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	2.0	10.4	12.7	44.3	43.0	87.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0014	0.0042	0.0106	0.0149	0.0551	0.0672	0.0936	0.2721

Fineness Modulus
0.15

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 427.90
Tare Wt. = 375.15
Minus #200 from wash = 85.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
733.55	375.15	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	21.00	0.00	94.1
		3/4"	0.00	0.00	94.1
		1/2"	0.00	0.00	94.1
		3/8"	0.00	0.00	94.1
		#4	3.25	0.00	93.2
		#10	4.80	0.00	91.9
		#16	3.30	0.00	91.0
		#30	3.85	0.00	89.9
		#40	2.20	0.00	89.3
		#50	2.10	0.00	88.7
		#100	4.65	0.00	87.4
		#200	7.85	0.00	85.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 85.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0302	1.0277	0.0120	30.6	8.2	0.0484	75.0
1.00	30.3	1.0272	1.0247	0.0119	27.6	9.0	0.0358	66.9
2.00	30.5	1.0263	1.0238	0.0119	26.7	9.2	0.0256	64.4
5.00	30.1	1.0241	1.0216	0.0119	24.5	9.8	0.0167	58.5
10.00	30.5	1.0211	1.0186	0.0119	21.5	10.6	0.0123	50.3
15.00	29.3	1.0193	1.0168	0.0121	19.7	11.1	0.0104	45.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.4	1.0185	1.0160	0.0120	18.9	11.3	0.0074	43.3
60.00	29.8	1.0171	1.0146	0.0120	17.5	11.7	0.0053	39.5
120.00	29.1	1.0152	1.0127	0.0121	15.6	12.2	0.0038	34.4
240.00	31.3	1.0144	1.0119	0.0118	14.8	12.4	0.0027	32.2
1440.00	28.0	1.0113	1.0088	0.0122	11.7	13.2	0.0012	23.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	5.9	0.9	6.8	1.3	2.6	4.1	8.0	46.6	38.6	85.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0020	0.0054	0.0121	0.0181	0.0579	0.0739	0.6361	29.1368

Fineness Modulus
0.72

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 15 **Sample Number:** 4
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 417.70
Tare Wt. = 373.95
Minus #200 from wash = 87.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
716.00	373.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.55	0.00	99.8
		#16	1.35	0.00	99.4
		#30	3.70	0.00	98.4
		#40	3.85	0.00	97.2
		#50	5.55	0.00	95.6
		#100	12.10	0.00	92.1
		#200	16.65	0.00	87.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 87.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.6	1.0311	1.0286	0.0121	31.5	8.0	0.0485	79.2
1.00	28.4	1.0309	1.0284	0.0122	31.3	8.0	0.0345	78.7
2.00	28.3	1.0287	1.0262	0.0122	29.1	8.6	0.0253	72.6
5.00	28.7	1.0253	1.0228	0.0121	25.7	9.5	0.0167	63.2
10.00	28.1	1.0235	1.0210	0.0122	23.9	10.0	0.0122	58.2
15.00	28.9	1.0226	1.0201	0.0121	23.0	10.2	0.0100	55.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.4	1.0210	1.0185	0.0122	21.4	10.6	0.0072	51.2
60.00	28.6	1.0194	1.0169	0.0121	19.8	11.1	0.0052	46.8
120.00	29.4	1.0176	1.0151	0.0120	18.0	11.5	0.0037	41.8
240.00	29.6	1.0167	1.0142	0.0120	17.0	11.8	0.0027	39.2
1440.00	27.6	1.0134	1.0110	0.0123	13.8	12.6	0.0012	30.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	2.6	10.0	12.8	41.0	46.2	87.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0030	0.0066	0.0139	0.0522	0.0673	0.0927	0.2685

Fineness Modulus
0.15

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 20 **Sample Number:** 5
Material Description: lean clay with sand
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 474.40
Tare Wt. = 376.00
Minus #200 from wash = 75.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
772.35	376.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.30	0.00	99.9
		#16	0.40	0.00	99.8
		#30	2.85	0.00	99.1
		#40	6.25	0.00	97.5
		#50	11.05	0.00	94.7
		#100	37.45	0.00	85.3
		#200	39.85	0.00	75.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 75.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	1.0210	1.0185	0.0118	21.4	10.6	0.0546	44.2
1.00	31.0	1.0201	1.0176	0.0118	20.5	10.9	0.0390	42.1
2.00	31.0	1.0191	1.0166	0.0118	19.5	11.1	0.0279	39.7
5.00	30.3	1.0182	1.0157	0.0119	18.6	11.4	0.0180	37.5
10.00	30.5	1.0173	1.0148	0.0119	17.7	11.6	0.0128	35.4
15.00	30.2	1.0261	1.0236	0.0119	26.5	9.3	0.0094	56.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.1	1.0155	1.0130	0.0118	15.9	12.1	0.0075	31.1
60.00	31.6	1.0143	1.0118	0.0118	14.7	12.4	0.0053	28.2
120.00	32.8	1.0132	1.0107	0.0116	13.6	12.7	0.0038	25.6
240.00	33.1	1.0119	1.0094	0.0116	12.3	13.0	0.0027	22.5
1440.00	31.1	1.0102	1.0077	0.0118	10.6	13.5	0.0011	18.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	2.4	22.3	24.8	47.5	27.7	75.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0017	0.0066	0.0294	0.0588	0.0648	0.1036	0.1469	0.2107	0.3059

Fineness Modulus
0.21

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 25 **Sample Number:** 6
Material Description: clayey gravel with sand
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 603.35
Tare Wt. = 371.95
Minus #200 from wash = 45.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
794.80	371.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	73.60	0.00	82.6
		1/2"	50.65	0.00	70.6
		3/8"	16.10	0.00	66.8
		#4	24.45	0.00	61.0
		#10	24.30	0.00	55.3
		#16	11.55	0.00	52.5
		#30	12.50	0.00	49.6
		#40	4.55	0.00	48.5
		#50	3.15	0.00	47.8
		#100	3.90	0.00	46.8
		#200	6.40	0.00	45.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 45.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 **-** 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	28.0	25.5	0.0118	28.4	11.6	0.0571	22.9
1.00	31.0	27.1	24.6	0.0118	27.5	11.8	0.0406	22.1
2.00	30.8	24.9	22.4	0.0119	25.3	12.1	0.0292	20.1
5.00	30.9	22.5	20.0	0.0118	22.9	12.5	0.0188	17.9
10.00	31.2	21.3	18.8	0.0118	21.7	12.7	0.0133	16.9
15.00	31.5	19.8	17.3	0.0118	20.2	13.0	0.0109	15.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.6	18.3	15.8	0.0118	18.7	13.2	0.0078	14.2
60.00	32.2	16.1	13.6	0.0117	16.5	13.6	0.0056	12.2
120.00	32.7	14.3	11.8	0.0116	14.7	13.9	0.0040	10.6
240.00	33.2	12.1	9.6	0.0116	12.5	14.2	0.0028	8.6
1440.00	30.5	9.9	7.4	0.0119	10.3	14.6	0.0012	6.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	17.4	21.6	39.0	5.7	6.8	3.2	15.7	33.6	11.7	45.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0036	0.0098	0.0290	0.0630	0.0703	0.6640	4.0988	18.0961	19.8530	21.4583	23.1838

Fineness Modulus	C_u	C_c
3.37	1149.11	0.27

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 55 **Sample Number:** 12
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 401.05
Tare Wt. = 376.05
Minus #200 from wash = 92.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
724.30	376.05	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.25	0.00	99.9
		#30	0.95	0.00	99.6
		#40	1.05	0.00	99.3
		#50	1.40	0.00	98.9
		#100	5.35	0.00	97.4
		#200	16.70	0.00	92.6

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 92.6
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.0	1.0310	1.0285	0.0118	31.4	8.0	0.0473	83.8
1.00	31.0	1.0291	1.0266	0.0118	29.5	8.5	0.0345	78.2
2.00	31.2	1.0285	1.0260	0.0118	28.9	8.7	0.0246	76.5
5.00	31.3	1.0255	1.0230	0.0118	25.9	9.4	0.0162	67.7
10.00	31.5	1.0235	1.0210	0.0118	23.9	10.0	0.0118	61.8
15.00	31.6	1.0223	1.0198	0.0118	22.7	10.3	0.0097	58.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.5	1.0199	1.0174	0.0118	20.3	10.9	0.0071	51.2
60.00	31.9	1.0185	1.0160	0.0117	18.9	11.3	0.0051	47.1
120.00	32.4	1.0162	1.0137	0.0117	16.6	11.9	0.0037	40.3
240.00	32.6	1.0142	1.0117	0.0116	14.6	12.4	0.0026	34.4
1440.00	30.8	1.0111	1.0086	0.0119	11.5	13.3	0.0011	25.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	6.7	7.4	45.8	46.8	92.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0019	0.0036	0.0065	0.0106	0.0392	0.0499	0.0639	0.0928

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 70 **Sample Number:** 15
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 390.10
Tare Wt. = 376.15
Minus #200 from wash = 96.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
825.45	376.15	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.05	0.00	100.0
		#40	0.10	0.00	100.0
		#50	0.20	0.00	99.9
		#100	1.00	0.00	99.7
		#200	12.60	0.00	96.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.2	1.0273	1.0248	0.0118	27.7	9.0	0.0500	76.3
1.00	30.9	1.0264	1.0239	0.0118	26.8	9.2	0.0359	73.6
2.00	30.9	1.0243	1.0218	0.0118	24.7	9.8	0.0262	67.1
5.00	31.3	1.0231	1.0206	0.0118	23.5	10.1	0.0167	63.4
10.00	31.4	1.0218	1.0193	0.0118	22.2	10.4	0.0120	59.4
15.00	31.5	1.0207	1.0182	0.0118	21.1	10.7	0.0099	56.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.4	1.0198	1.0173	0.0118	20.2	11.0	0.0071	53.2
60.00	32.2	1.0182	1.0157	0.0117	18.6	11.4	0.0051	48.3
120.00	32.3	1.0171	1.0146	0.0117	17.5	11.7	0.0036	44.9
240.00	33.4	1.0153	1.0128	0.0115	15.7	12.1	0.0026	39.4
1440.00	30.5	1.0132	1.0107	0.0119	13.6	12.7	0.0011	32.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.1	48.8	48.1	96.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0027	0.0057	0.0125	0.0549	0.0603	0.0657	0.0720

Fineness Modulus
0.00

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 80 **Sample Number:** 17
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 399.10
Tare Wt. = 374.65
Minus #200 from wash = 94.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
794.10	374.65	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.30	0.00	99.9
		#40	0.30	0.00	99.8
		#50	2.55	0.00	99.2
		#100	7.00	0.00	97.6
		#200	13.65	0.00	94.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.3	1.0312	1.0287	0.0118	31.6	7.9	0.0470	86.0
1.00	30.8	1.0304	1.0279	0.0119	30.8	8.1	0.0338	83.6
2.00	30.7	1.0289	1.0264	0.0119	29.3	8.5	0.0245	79.1
5.00	31.2	1.0268	1.0243	0.0118	27.2	9.1	0.0159	72.8
10.00	31.2	1.0249	1.0224	0.0118	25.3	9.6	0.0116	67.1
15.00	31.3	1.0241	1.0216	0.0118	24.5	9.8	0.0095	64.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.4	1.0211	1.0186	0.0118	21.5	10.6	0.0070	55.7
60.00	31.5	1.0193	1.0168	0.0118	19.7	11.1	0.0051	50.3
120.00	32.2	1.0171	1.0146	0.0117	17.5	11.7	0.0036	43.7
240.00	33.1	1.0149	1.0124	0.0116	15.3	12.2	0.0026	37.1
1440.00	30.5	1.0121	1.0096	0.0119	12.5	13.0	0.0011	28.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	5.5	5.7	44.2	50.1	94.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0014	0.0030	0.0050	0.0081	0.0261	0.0420	0.0596	0.0788

Fineness Modulus
0.03

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 15 **Sample Number:** 4
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 392.65
Tare Wt. = 372.00
Minus #200 from wash = 93.6%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
692.30	372.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.55	0.00	99.5
		#16	0.75	0.00	99.3
		#30	0.70	0.00	99.1
		#40	0.30	0.00	99.0
		#50	0.45	0.00	98.8
		#100	2.90	0.00	97.9
		#200	14.00	0.00	93.6

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 93.6
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	27.0	1.0310	1.0287	0.0124	31.4	8.0	0.0494	85.3
1.00	27.0	1.0300	1.0277	0.0124	30.4	8.3	0.0355	82.3
2.00	27.0	1.0280	1.0257	0.0124	28.4	8.8	0.0259	76.4
5.00	28.0	1.0250	1.0225	0.0122	25.4	9.6	0.0169	66.9
10.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0123	60.9
15.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0102	57.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0073	55.0
60.00	28.0	1.0190	1.0165	0.0122	19.4	11.2	0.0053	49.0
120.00	28.0	1.0170	1.0145	0.0122	17.4	11.7	0.0038	43.1
240.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0027	40.1
1440.00	27.0	1.0130	1.0107	0.0124	13.4	12.8	0.0012	31.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.5	0.5	5.4	6.4	45.7	47.9	93.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0027	0.0055	0.0117	0.0307	0.0483	0.0631	0.0824

Fineness Modulus
0.05

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 20 **Sample Number:** 5
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 389.65
Tare Wt. = 373.95
Minus #200 from wash = 95.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
758.35	373.95	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.35	0.00	99.9
		#30	0.80	0.00	99.7
		#40	0.60	0.00	99.5
		#50	0.70	0.00	99.4
		#100	2.65	0.00	98.7
		#200	10.60	0.00	95.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.1	1.0295	1.0270	0.0118	29.9	8.4	0.0484	82.3
1.00	31.2	1.0280	1.0255	0.0118	28.4	8.8	0.0350	77.7
2.00	31.2	1.0255	1.0230	0.0118	25.9	9.4	0.0257	70.1
5.00	31.3	1.0232	1.0207	0.0118	23.6	10.1	0.0167	63.1
10.00	31.6	1.0215	1.0190	0.0118	21.9	10.5	0.0120	57.9
15.00	31.5	1.0205	1.0180	0.0118	20.9	10.8	0.0100	54.8

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	32.1	1.0184	1.0159	0.0117	18.8	11.3	0.0072	48.4
60.00	32.5	1.0171	1.0146	0.0116	17.5	11.7	0.0051	44.5
120.00	33.4	1.0153	1.0128	0.0115	15.7	12.1	0.0037	39.0
240.00	32.3	1.0131	1.0106	0.0117	13.5	12.7	0.0027	32.3
1440.00	31.1	1.0112	1.0087	0.0118	11.6	13.2	0.0011	26.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	3.6	4.1	51.7	44.2	95.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0023	0.0039	0.0078	0.0137	0.0418	0.0536	0.0621	0.0725

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 25 **Sample Number:** 6
Material Description: lean clay with sand
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 446.30
Tare Wt. = 383.00
Minus #200 from wash = 84.6%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
793.80	383.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	2.60	0.00	99.4
		#10	3.95	0.00	98.4
		#16	2.80	0.00	97.7
		#30	5.80	0.00	96.3
		#40	8.20	0.00	94.3
		#50	8.50	0.00	92.2
		#100	10.90	0.00	89.6
		#200	21.45	0.00	84.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 84.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0301	1.0276	0.0120	30.5	8.2	0.0485	74.0
1.00	30.0	1.0282	1.0257	0.0120	28.6	8.7	0.0353	68.9
2.00	30.1	1.0254	1.0229	0.0119	25.8	9.5	0.0260	61.4
5.00	30.2	1.0223	1.0198	0.0119	22.7	10.3	0.0171	53.1
10.00	30.2	1.0212	1.0187	0.0119	21.6	10.6	0.0123	50.1
15.00	30.3	1.0192	1.0167	0.0119	19.6	11.1	0.0103	44.8

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.1	1.0182	1.0157	0.0119	18.6	11.4	0.0074	42.1
60.00	30.5	1.0162	1.0137	0.0119	16.6	11.9	0.0053	36.7
120.00	31.0	1.0143	1.0118	0.0118	14.7	12.4	0.0038	31.6
240.00	31.5	1.0134	1.0109	0.0118	13.8	12.6	0.0027	29.2
1440.00	28.2	1.0113	1.0088	0.0122	11.7	13.2	0.0012	23.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.6	0.6	1.0	4.1	9.9	15.0	48.8	35.6	84.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0031	0.0063	0.0122	0.0247	0.0624	0.0775	0.1757	0.4737

Fineness Modulus
0.26

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 30 **Sample Number:** 8
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 384.25
Tare Wt. = 374.40
Minus #200 from wash = 96.7%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
668.95	374.40	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.10	0.00	100.0
		#30	0.55	0.00	99.8
		#40	0.30	0.00	99.7
		#50	0.45	0.00	99.5
		#100	1.55	0.00	99.0
		#200	6.55	0.00	96.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.6	1.0323	1.0298	0.0121	32.7	7.6	0.0475	91.6
1.00	28.1	1.0316	1.0291	0.0122	32.0	7.8	0.0342	89.5
2.00	28.6	1.0304	1.0279	0.0121	30.8	8.1	0.0245	85.8
5.00	28.2	1.0287	1.0262	0.0122	29.1	8.6	0.0160	80.5
10.00	28.3	1.0275	1.0250	0.0122	27.9	8.9	0.0115	76.9
15.00	28.4	1.0256	1.0231	0.0122	26.0	9.4	0.0096	71.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.6	1.0231	1.0206	0.0121	23.5	10.1	0.0070	63.3
60.00	29.5	1.0202	1.0177	0.0120	20.6	10.8	0.0051	54.4
120.00	29.6	1.0186	1.0161	0.0120	19.0	11.3	0.0037	49.5
240.00	29.4	1.0179	1.0154	0.0120	18.3	11.5	0.0026	47.3
1440.00	28.6	1.0120	1.0095	0.0121	12.4	13.0	0.0012	29.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	2.9	3.2	42.9	53.9	96.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0017	0.0039	0.0062	0.0146	0.0232	0.0370	0.0640

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 35 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 397.50
Tare Wt. = 376.15
Minus #200 from wash = 94.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
742.65	376.15	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.45	0.00	99.9
		#16	1.15	0.00	99.6
		#30	1.95	0.00	99.0
		#40	0.95	0.00	98.8
		#50	0.95	0.00	98.5
		#100	3.95	0.00	97.4
		#200	11.95	0.00	94.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0311	1.0286	0.0121	31.5	8.0	0.0483	85.6
1.00	29.2	1.0282	1.0257	0.0121	28.6	8.7	0.0356	76.9
2.00	29.6	1.0262	1.0237	0.0120	26.6	9.3	0.0258	70.9
5.00	29.4	1.0242	1.0217	0.0120	24.6	9.8	0.0168	64.9
10.00	29.5	1.0223	1.0198	0.0120	22.7	10.3	0.0122	59.2
15.00	29.3	1.0214	1.0189	0.0121	21.8	10.5	0.0101	56.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.1	1.0204	1.0179	0.0118	20.8	10.8	0.0071	53.5
60.00	31.5	1.0183	1.0158	0.0118	18.7	11.3	0.0051	47.3
120.00	31.0	1.0166	1.0141	0.0118	17.0	11.8	0.0037	42.2
240.00	31.6	1.0154	1.0129	0.0117	15.8	12.1	0.0026	38.6
1440.00	28.5	1.0131	1.0106	0.0122	13.5	12.7	0.0011	31.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.1	4.6	5.8	47.4	46.8	94.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0031	0.0058	0.0127	0.0399	0.0473	0.0580	0.0810

Fineness Modulus
0.06

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 40 **Sample Number:** 10
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 375.55
Tare Wt. = 369.65
Minus #200 from wash = 98.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
760.40	369.65	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.10	0.00	100.0
		#30	0.15	0.00	99.9
		#40	0.15	0.00	99.9
		#50	0.20	0.00	99.8
		#100	1.40	0.00	99.5
		#200	4.20	0.00	98.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 98.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0312	1.0287	0.0122	31.6	7.9	0.0487	89.7
1.00	28.0	1.0305	1.0280	0.0122	30.9	8.1	0.0348	87.5
2.00	27.0	1.0286	1.0263	0.0124	29.0	8.6	0.0257	82.2
5.00	27.0	1.0265	1.0242	0.0124	26.9	9.2	0.0168	75.7
10.00	28.0	1.0252	1.0227	0.0122	25.6	9.5	0.0119	71.0
15.00	28.0	1.0242	1.0217	0.0122	24.6	9.8	0.0099	67.8

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0226	1.0201	0.0122	23.0	10.2	0.0071	62.8
60.00	28.0	1.0203	1.0178	0.0122	20.7	10.8	0.0052	55.6
120.00	28.0	1.0186	1.0161	0.0122	19.0	11.3	0.0037	50.3
240.00	28.0	1.0156	1.0131	0.0122	16.0	12.1	0.0027	41.0
1440.00	27.0	1.0135	1.0112	0.0124	13.9	12.6	0.0012	35.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	1.5	1.6	43.4	55.0	98.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0024	0.0037	0.0063	0.0227	0.0296	0.0498	0.0635

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 5 **Sample Number:** 2
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 384.40
Tare Wt. = 377.90
Minus #200 from wash = 98.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
699.30	377.90	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	1.55	0.00	99.5
		#10	1.75	0.00	99.0
		#16	0.40	0.00	98.8
		#30	0.30	0.00	98.8
		#40	0.15	0.00	98.7
		#50	0.15	0.00	98.7
		#100	1.10	0.00	98.3
		#200	1.45	0.00	97.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0310	1.0285	0.0121	31.4	8.0	0.0483	88.6
1.00	29.0	1.0300	1.0275	0.0121	30.4	8.3	0.0347	85.5
2.00	29.0	1.0290	1.0265	0.0121	29.4	8.5	0.0250	82.4
5.00	29.0	1.0270	1.0245	0.0121	27.4	9.0	0.0163	76.2
10.00	29.0	1.0250	1.0225	0.0121	25.4	9.6	0.0118	69.9
15.00	29.0	1.0230	1.0205	0.0121	23.4	10.1	0.0099	63.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0220	1.0195	0.0121	22.4	10.4	0.0071	60.6
60.00	29.0	1.0200	1.0175	0.0121	20.4	10.9	0.0052	54.4
120.00	29.0	1.0170	1.0145	0.0121	17.4	11.7	0.0038	45.1
240.00	29.0	1.0150	1.0125	0.0121	15.4	12.2	0.0027	38.9
1440.00	28.0	1.0110	1.0085	0.0122	11.4	13.3	0.0012	26.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	0.5	0.3	0.8	1.6	44.4	53.5	97.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0015	0.0029	0.0045	0.0067	0.0210	0.0325	0.0521	0.0648

Fineness Modulus
0.07

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 20 **Sample Number:** 5
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 375.50
Tare Wt. = 368.00
Minus #200 from wash = 98.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
768.00	368.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	100.0
		#16	0.05	0.00	100.0
		#30	0.15	0.00	99.9
		#40	0.30	0.00	99.8
		#50	0.40	0.00	99.7
		#100	1.25	0.00	99.4
		#200	6.05	0.00	97.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
1.00	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0362	79.3
2.00	28.0	1.0270	1.0245	0.0122	27.4	9.0	0.0260	76.2
5.00	28.0	1.0250	1.0225	0.0122	25.4	9.6	0.0169	70.0
10.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0123	63.8
15.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0102	60.6
30.00	29.0	1.0210	1.0185	0.0121	21.4	10.6	0.0072	57.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
60.00	29.0	1.0190	1.0165	0.0121	19.4	11.2	0.0052	51.3
120.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0037	48.2
240.00	28.0	1.0160	1.0135	0.0122	16.4	12.0	0.0027	42.0
1440.00	27.0	1.0110	1.0087	0.0124	11.4	13.3	0.0012	27.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	1.9	2.1	47.1	50.8	97.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0014	0.0025	0.0046	0.0095	0.0377	0.0463	0.0548	0.0655

Fineness Modulus
0.01

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 25 **Sample Number:** 7
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 395.55
Tare Wt. = 382.20
Minus #200 from wash = 95.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
697.90	382.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.15	0.00	100.0
		#16	0.45	0.00	99.8
		#30	0.80	0.00	99.6
		#40	0.80	0.00	99.3
		#50	1.10	0.00	99.0
		#100	4.25	0.00	97.6
		#200	5.65	0.00	95.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
1.00	29.0	1.0300	1.0275	0.0121	30.4	8.3	0.0347	83.7
2.00	29.0	1.0290	1.0265	0.0121	29.4	8.5	0.0250	80.7
5.00	29.0	1.0270	1.0245	0.0121	27.4	9.0	0.0163	74.6
10.00	29.0	1.0260	1.0235	0.0121	26.4	9.3	0.0117	71.5
15.00	29.0	1.0250	1.0225	0.0121	25.4	9.6	0.0097	68.5
30.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0071	62.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
60.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0051	59.4
120.00	28.0	1.0200	1.0175	0.0122	20.4	10.9	0.0037	53.3
240.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0026	47.2
1440.00	28.0	1.0140	1.0115	0.0122	14.4	12.5	0.0011	35.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	3.5	4.2	36.7	59.1	95.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0016	0.0031	0.0054	0.0237	0.0384	0.0515	0.0700

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 35 **Sample Number:** 8
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 389.55
Tare Wt. = 378.20
Minus #200 from wash = 97.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
758.35	378.20	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.35	0.00	99.9
		#16	0.35	0.00	99.8
		#30	1.40	0.00	99.4
		#40	1.35	0.00	99.1
		#50	1.65	0.00	98.7
		#100	3.60	0.00	97.7
		#200	3.35	0.00	96.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 96.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
1.00	28.5	1.0300	1.0275	0.0122	30.4	8.3	0.0349	84.6
2.00	28.0	1.0280	1.0255	0.0122	28.4	8.8	0.0256	78.4
5.00	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0167	72.3
10.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0121	66.1
15.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0100	63.1
30.00	28.0	1.0210	1.0185	0.0122	21.4	10.6	0.0073	56.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
60.00	29.0	1.0190	1.0165	0.0121	19.4	11.2	0.0052	50.8
120.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0037	47.7
240.00	28.0	1.0150	1.0125	0.0122	15.4	12.2	0.0028	38.4
1440.00	27.0	1.0110	1.0087	0.0124	11.4	13.3	0.0012	26.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.8	2.3	3.2	46.4	50.4	96.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0018	0.0029	0.0047	0.0085	0.0280	0.0356	0.0457	0.0626

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 35 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 395.80
Tare Wt. = 376.15
Minus #200 from wash = 94.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
721.60	376.15	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.20	0.00	99.9
		#30	0.65	0.00	99.7
		#40	0.80	0.00	99.5
		#50	1.30	0.00	99.1
		#100	5.25	0.00	97.6
		#200	11.80	0.00	94.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.65
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.1	1.0320	1.0295	0.0123	32.4	7.7	0.0482	89.3
1.00	29.1	1.0310	1.0285	0.0123	31.4	8.0	0.0347	86.2
2.00	29.0	1.0300	1.0275	0.0123	30.4	8.3	0.0249	83.2
5.00	29.2	1.0270	1.0245	0.0122	27.4	9.0	0.0165	74.1
10.00	29.0	1.0250	1.0225	0.0123	25.4	9.6	0.0120	68.1
15.00	29.0	1.0240	1.0215	0.0123	24.4	9.8	0.0099	65.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0220	1.0195	0.0123	22.4	10.4	0.0072	59.0
60.00	30.0	1.0210	1.0185	0.0121	21.4	10.6	0.0051	56.0
120.00	29.0	1.0180	1.0155	0.0123	18.4	11.4	0.0038	46.9
240.00	29.0	1.0160	1.0135	0.0123	16.4	12.0	0.0027	40.8
1440.00	28.0	1.0120	1.0095	0.0124	12.4	13.0	0.0012	28.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	5.3	5.8	38.7	55.5	94.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0013	0.0026	0.0042	0.0077	0.0211	0.0292	0.0515	0.0825

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 40 **Sample Number:** 10
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 390.85
Tare Wt. = 371.80
Minus #200 from wash = 94.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
735.95	371.80	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.05	0.00	100.0
		#16	0.35	0.00	99.9
		#30	0.90	0.00	99.6
		#40	0.80	0.00	99.4
		#50	1.35	0.00	99.1
		#100	6.45	0.00	97.3
		#200	8.90	0.00	94.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.1	1.0310	1.0285	0.0118	31.4	8.0	0.0472	85.9
1.00	31.3	1.0291	1.0266	0.0118	29.5	8.5	0.0344	80.1
2.00	31.2	1.0275	1.0250	0.0118	27.9	8.9	0.0249	75.3
5.00	31.3	1.0245	1.0220	0.0118	24.9	9.7	0.0164	66.3
10.00	31.5	1.0225	1.0200	0.0118	22.9	10.2	0.0119	60.2
15.00	31.6	1.0213	1.0188	0.0118	21.7	10.6	0.0099	56.6

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.5	1.0189	1.0164	0.0118	19.3	11.2	0.0072	49.4
60.00	31.9	1.0175	1.0150	0.0117	17.9	11.6	0.0051	45.2
120.00	32.4	1.0152	1.0127	0.0117	15.6	12.2	0.0037	38.3
240.00	32.6	1.0132	1.0107	0.0116	13.6	12.7	0.0027	32.2
1440.00	30.8	1.0101	1.0076	0.0119	10.5	13.5	0.0011	22.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	4.6	5.2	50.1	44.7	94.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0023	0.0040	0.0074	0.0117	0.0341	0.0453	0.0574	0.0781

Fineness Modulus
0.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 5 **Sample Number:** 2
Material Description: lean clay with sand
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 445.85
Tare Wt. = 375.80
Minus #200 from wash = 78.8%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
706.60	375.80	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	3.95	0.00	98.8
		#4	3.00	0.00	97.9
		#10	1.50	0.00	97.4
		#16	0.80	0.00	97.2
		#30	3.05	0.00	96.3
		#40	3.90	0.00	95.1
		#50	6.95	0.00	93.0
		#100	21.30	0.00	86.6
		#200	25.35	0.00	78.9

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 78.9
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.73
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0280	1.0255	0.0121	28.4	8.8	0.0508	63.5
1.00	28.0	1.0270	1.0245	0.0121	27.4	9.0	0.0365	61.0
2.00	28.0	1.0250	1.0225	0.0121	25.4	9.6	0.0265	56.0
5.00	28.0	1.0240	1.0215	0.0121	24.4	9.8	0.0170	53.5
10.00	29.0	1.0220	1.0195	0.0120	22.4	10.4	0.0122	48.6
15.00	28.0	1.0210	1.0185	0.0121	21.4	10.6	0.0102	46.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	1.0190	1.0165	0.0121	19.4	11.2	0.0074	41.1
60.00	29.0	1.0170	1.0145	0.0120	17.4	11.7	0.0053	36.1
120.00	29.0	1.0160	1.0135	0.0120	16.4	12.0	0.0038	33.6
240.00	28.0	1.0150	1.0125	0.0121	15.4	12.2	0.0027	31.1
1440.00	26.0	1.0120	1.0099	0.0124	12.4	13.0	0.0012	24.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.1	2.1	0.5	2.3	16.2	19.0	43.4	35.5	78.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0024	0.0069	0.0133	0.0336	0.0775	0.0999	0.2241	0.4151

Fineness Modulus
0.33

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 20 **Sample Number:** 5
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 403.90
Tare Wt. = 376.30
Minus #200 from wash = 93.3%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
789.25	376.30	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	1.40	0.00	99.7
		#10	3.35	0.00	98.8
		#16	2.50	0.00	98.2
		#30	3.35	0.00	97.4
		#40	1.90	0.00	97.0
		#50	2.00	0.00	96.5
		#100	5.10	0.00	95.3
		#200	8.75	0.00	93.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 93.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0291	1.0266	0.0122	29.5	8.5	0.0504	78.7
1.00	27.0	1.0283	1.0260	0.0124	28.7	8.7	0.0365	76.9
2.00	28.0	1.0264	1.0239	0.0122	26.8	9.2	0.0262	70.7
5.00	28.0	1.0243	1.0218	0.0122	24.7	9.8	0.0171	64.5
10.00	28.0	1.0223	1.0198	0.0122	22.7	10.3	0.0124	58.6
15.00	28.0	1.0215	1.0190	0.0122	21.9	10.5	0.0102	56.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	27.0	1.0223	1.0200	0.0124	22.7	10.3	0.0072	59.2
60.00	28.0	1.0215	1.0190	0.0122	21.9	10.5	0.0051	56.2
120.00	28.0	1.0209	1.0184	0.0122	21.3	10.7	0.0036	54.4
240.00	28.0	1.0201	1.0176	0.0122	20.5	10.9	0.0026	52.1
1440.00	27.0	1.0190	1.0167	0.0124	19.4	11.2	0.0011	49.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	0.9	1.8	3.9	6.6	37.1	56.0	93.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0016	0.0134	0.0531	0.0609	0.0687	0.1356

Fineness Modulus
0.14

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 40 **Sample Number:** 9
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 393.30
Tare Wt. = 375.35
Minus #200 from wash = 95.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
748.45	375.35	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	1.25	0.00	99.7
		#16	1.40	0.00	99.3
		#30	3.05	0.00	98.5
		#40	2.05	0.00	97.9
		#50	2.05	0.00	97.4
		#100	4.20	0.00	96.2
		#200	4.25	0.00	95.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 **-** 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	32.0	28.0	25.5	0.0117	28.4	11.6	0.0565	48.0
1.00	31.0	28.0	25.5	0.0118	28.4	11.6	0.0404	48.0
2.00	30.5	28.0	25.5	0.0119	28.4	11.6	0.0287	48.0
5.00	28.0	28.0	25.5	0.0122	28.4	11.6	0.0187	48.0
10.00	27.0	28.0	25.7	0.0124	28.4	11.6	0.0133	48.3
15.00	25.0	28.0	26.1	0.0127	28.4	11.6	0.0111	49.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	23.0	28.0	26.2	0.0130	28.4	11.6	0.0081	49.3
60.00	20.0	28.0	26.2	0.0134	28.4	11.6	0.0059	49.3
120.00	18.0	29.0	27.2	0.0138	29.4	11.5	0.0043	51.2
240.00	17.0	28.0	26.2	0.0140	28.4	11.6	0.0031	49.3
1440.00	10.0	27.0	25.2	0.0153	27.4	11.8	0.0014	47.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	1.8	2.8	4.9	44.7	50.4	95.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0575	0.0616	0.0687	0.0705	0.0726	0.0749

Fineness Modulus
0.09

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 5 **Sample Number:** 2
Material Description: sandy lean clay
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 476.80
Tare Wt. = 377.65
Minus #200 from wash = 58.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
618.95	377.65	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	3.15	0.00	98.7
		3/8"	1.50	0.00	98.1
		#4	2.60	0.00	97.0
		#10	4.50	0.00	95.1
		#16	4.40	0.00	93.3
		#30	11.10	0.00	88.7
		#40	10.95	0.00	84.2
		#50	13.65	0.00	78.5
		#100	22.35	0.00	69.2
		#200	26.60	0.00	58.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 58.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 **-** 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	28.4	25.9	0.0122	28.8	11.6	0.0588	29.8
1.00	28.0	26.5	24.0	0.0122	26.9	11.9	0.0422	27.6
2.00	29.0	24.6	22.1	0.0121	25.0	12.2	0.0299	25.5
5.00	29.0	22.3	19.8	0.0121	22.7	12.6	0.0192	22.8
10.00	29.0	20.5	18.0	0.0121	20.9	12.9	0.0137	20.7
15.00	29.0	19.6	17.1	0.0121	20.0	13.0	0.0113	19.7

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.0	17.5	15.0	0.0122	17.9	13.4	0.0082	17.3
60.00	29.0	18.5	16.0	0.0121	18.9	13.2	0.0057	18.4
120.00	28.0	16.5	14.0	0.0122	16.9	13.5	0.0041	16.1
240.00	28.0	15.6	13.1	0.0122	16.0	13.7	0.0029	15.1
1440.00	27.0	13.5	11.2	0.0124	13.9	14.0	0.0012	12.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	3.0	3.0	1.9	10.9	26.0	38.8	40.4	17.8	58.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0028	0.0118	0.0590	0.0648	0.0701	0.0833	0.3248	0.4505	0.6827	1.9116

Fineness Modulus
0.80

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 15 **Sample Number:** 4
Material Description: fat clay with sand
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 473.20
Tare Wt. = 376.85
Minus #200 from wash = 76.9%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
793.45	376.85	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.10	0.00	100.0
		#10	1.15	0.00	99.7
		#16	3.10	0.00	99.0
		#30	16.70	0.00	94.9
		#40	15.70	0.00	91.2
		#50	15.35	0.00	87.5
		#100	25.45	0.00	81.4
		#200	18.95	0.00	76.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 76.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.0	1.0260	1.0235	0.0122	26.4	9.3	0.0528	57.4
1.00	28.0	1.0250	1.0225	0.0122	25.4	9.6	0.0378	54.9
2.00	28.0	1.0240	1.0215	0.0122	24.4	9.8	0.0271	52.5
5.00	28.0	1.0230	1.0205	0.0122	23.4	10.1	0.0174	50.0
10.00	28.0	1.0220	1.0195	0.0122	22.4	10.4	0.0125	47.6
15.00	29.0	1.0215	1.0190	0.0121	21.9	10.5	0.0101	46.4

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.0	1.0205	1.0180	0.0121	20.9	10.8	0.0072	43.9
60.00	28.0	1.0195	1.0170	0.0122	19.9	11.0	0.0052	41.5
120.00	29.0	1.0180	1.0155	0.0121	18.4	11.4	0.0037	37.8
240.00	28.0	1.0170	1.0145	0.0122	17.4	11.7	0.0027	35.4
1440.00	27.0	1.0140	1.0117	0.0124	14.4	12.5	0.0012	28.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	8.5	14.4	23.2	35.8	41.0	76.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0014	0.0046	0.0173	0.0562	0.1243	0.2308	0.3791	0.6032

Fineness Modulus
0.37

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 21 **Sample Number:** 5
Material Description: poorly graded gravel with clay and sand
USCS: GP-GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 597.60
Tare Wt. = 374.40
Minus #200 from wash = 11.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
626.30	374.40	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	44.55	0.00	82.3
		1/2"	34.00	0.00	68.8
		3/8"	12.70	0.00	63.8
		#4	36.00	0.00	49.5
		#10	43.55	0.00	32.2
		#16	17.80	0.00	25.1
		#30	15.05	0.00	19.2
		#40	5.20	0.00	17.1
		#50	3.80	0.00	15.6
		#100	6.15	0.00	13.1
		#200	4.70	0.00	11.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	17.7	32.8	50.5	17.3	15.1	5.8	38.2			11.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.2578	0.6748	1.7341	3.0479	4.8632	7.7924	18.2484	19.9141	21.4857	23.1946

Fineness Modulus
4.96

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 5 **Sample Number:** 2
Material Description: clayey gravel with sand
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 601.80
Tare Wt. = 372.10
Minus #200 from wash = 24.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
674.40	372.10	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	31.95	0.00	89.4
		3/4"	13.55	0.00	84.9
		1/2"	40.55	0.00	71.5
		3/8"	21.85	0.00	64.3
		#4	37.75	0.00	51.8
		#10	26.95	0.00	42.9
		#16	12.95	0.00	38.6
		#30	14.20	0.00	33.9
		#40	6.20	0.00	31.9
		#50	5.80	0.00	30.0
		#100	9.30	0.00	26.9
		#200	8.60	0.00	24.0

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 24.0
Weight of hydrometer sample =100
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.3	1.0210	1.0185	0.0118	21.4	10.6	0.0544	7.1
1.00	31.2	1.0201	1.0176	0.0118	20.5	10.9	0.0389	6.7
2.00	31.1	1.0191	1.0166	0.0118	19.5	11.1	0.0279	6.3
5.00	30.3	1.0182	1.0157	0.0119	18.6	11.4	0.0180	6.0
10.00	30.5	1.0173	1.0148	0.0119	17.7	11.6	0.0128	5.6
15.00	30.2	1.0161	1.0136	0.0119	16.5	11.9	0.0106	5.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.1	1.0155	1.0130	0.0118	15.9	12.1	0.0075	5.0
60.00	31.6	1.0143	1.0118	0.0118	14.7	12.4	0.0053	4.5
120.00	32.8	1.0131	1.0106	0.0116	13.5	12.7	0.0038	4.0
240.00	33.1	1.0119	1.0094	0.0116	12.3	13.0	0.0027	3.6
1440.00	31.1	1.0102	1.0077	0.0118	10.6	13.5	0.0011	2.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	15.1	33.1	48.2	8.9	11.0	7.9	27.8	19.6	4.4	24.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0082	0.0585	0.0640	0.0695	0.3020	1.4068	4.1381	7.7139	16.1613	19.0917	26.3851	34.8005

Fineness Modulus	C_u	C_c
4.29	131.97	0.20

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 10 **Sample Number:** 3
Material Description: clayey gravel with sand
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 460.80
Tare Wt. = 376.35
Minus #200 from wash = 17.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
478.75	376.35	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	15.70	0.00	84.7
		1/2"	9.55	0.00	75.3
		3/8"	10.25	0.00	65.3
		#4	13.10	0.00	52.5
		#10	9.25	0.00	43.5
		#16	3.90	0.00	39.7
		#30	5.75	0.00	34.1
		#40	3.70	0.00	30.5
		#50	3.55	0.00	27.0
		#100	6.30	0.00	20.8
		#200	3.70	0.00	17.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 17.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.3	1.0298	1.0273	0.0118	30.2	8.3	0.0481	14.9
1.00	31.2	1.0291	1.0266	0.0118	29.5	8.5	0.0344	14.6
2.00	31.3	1.0278	1.0253	0.0118	28.2	8.8	0.0248	13.9
5.00	31.4	1.0252	1.0227	0.0118	25.6	9.5	0.0163	12.4
10.00	31.5	1.0239	1.0214	0.0118	24.3	9.9	0.0117	11.7
15.00	31.7	1.0228	1.0203	0.0117	23.2	10.2	0.0097	11.1

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.8	1.0202	1.0177	0.0117	20.6	10.8	0.0071	9.7
60.00	32.3	1.0188	1.0163	0.0117	19.2	11.2	0.0050	8.9
120.00	33.3	1.0161	1.0136	0.0115	16.5	11.9	0.0036	7.4
240.00	33.2	1.0149	1.0124	0.0116	15.3	12.2	0.0026	6.8
1440.00	30.0	1.0123	1.0098	0.0120	12.7	12.9	0.0011	5.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	15.3	32.2	47.5	9.0	13.0	13.3	35.3	8.3	8.9	17.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0076	0.0489	0.1305	0.4061	1.2327	3.7771	7.8901	16.3178	19.1935	21.1140	23.0116

Fineness Modulus	C_u	C_c
4.31	1033.22	2.74

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 15 **Sample Number:** 4
Material Description: poorly graded sand with clay and gravel
USCS: SP-SC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 690.45
Tare Wt. = 377.55
Minus #200 from wash = 9.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
721.75	377.55	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	40.05	0.00	88.4
		1/2"	18.70	0.00	82.9
		3/8"	19.80	0.00	77.2
		#4	60.30	0.00	59.7
		#10	83.15	0.00	35.5
		#16	35.75	0.00	25.1
		#30	26.35	0.00	17.5
		#40	9.30	0.00	14.8
		#50	6.75	0.00	12.8
		#100	8.35	0.00	10.4
		#200	4.80	0.00	9.0

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 9.0
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.2	1.0261	1.0236	0.0118	26.5	9.3	0.0509	6.7
1.00	30.8	1.0225	1.0200	0.0119	22.9	10.2	0.0379	5.7
2.00	30.9	1.0212	1.0187	0.0118	21.6	10.6	0.0272	5.3
5.00	31.3	1.0191	1.0166	0.0118	19.5	11.1	0.0176	4.7
10.00	31.3	1.0178	1.0153	0.0118	18.2	11.5	0.0126	4.4
15.00	31.4	1.0167	1.0142	0.0118	17.1	11.8	0.0104	4.0

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.6	1.0152	1.0127	0.0118	15.6	12.2	0.0075	3.6
60.00	32.1	1.0133	1.0108	0.0117	13.7	12.7	0.0054	3.1
120.00	33.1	1.0121	1.0096	0.0116	12.5	13.0	0.0038	2.7
240.00	33.3	1.0109	1.0084	0.0115	11.3	13.3	0.0027	2.4
1440.00	30.1	1.0082	1.0057	0.0119	8.6	14.0	0.0012	1.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	11.6	28.7	40.3	24.2	20.7	5.8	50.7	6.0	3.0	9.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0213	0.1120	0.4402	0.7857	1.5580	2.3836	3.3917	4.8090	10.7583	16.0963	19.9488	22.4118

Fineness Modulus	C_u	C_c
4.69	42.94	4.51

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 30 **Sample Number:** 7
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 390.30
Tare Wt. = 376.25
Minus #200 from wash = 95.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
682.80	376.25	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.00	0.00	100.0
		#16	0.10	0.00	100.0
		#30	0.45	0.00	99.8
		#40	0.50	0.00	99.7
		#50	0.85	0.00	99.4
		#100	4.10	0.00	98.0
		#200	8.50	0.00	95.3

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.3
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.0	1.0301	1.0276	0.0120	30.5	8.2	0.0485	83.5
1.00	30.0	1.0282	1.0257	0.0120	28.6	8.7	0.0353	77.8
2.00	30.0	1.0264	1.0239	0.0120	26.8	9.2	0.0257	72.3
5.00	30.0	1.0235	1.0210	0.0120	23.9	10.0	0.0169	63.6
10.00	30.0	1.0222	1.0197	0.0120	22.6	10.3	0.0121	59.6
15.00	30.0	1.0202	1.0177	0.0120	20.6	10.8	0.0102	53.6

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.0	1.0192	1.0167	0.0120	19.6	11.1	0.0073	50.5
60.00	31.0	1.0172	1.0147	0.0118	17.6	11.6	0.0052	44.5
120.00	31.0	1.0153	1.0128	0.0118	15.7	12.1	0.0038	38.7
240.00	31.0	1.0144	1.0119	0.0118	14.8	12.4	0.0027	36.0
1440.00	28.0	1.0123	1.0098	0.0122	12.7	12.9	0.0012	29.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	4.4	4.7	51.7	43.6	95.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0041	0.0069	0.0123	0.0407	0.0514	0.0611	0.0740

Fineness Modulus
0.03

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SHALE
Sample Number: 1
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 394.05
Tare Wt. = 372.00
Minus #200 from wash = 97.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1215.05	372.00	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.60	0.00	99.9
		#10	1.20	0.00	99.8
		#16	0.85	0.00	99.7
		#30	0.85	0.00	99.6
		#40	0.50	0.00	99.5
		#50	0.40	0.00	99.5
		#100	2.35	0.00	99.2
		#200	15.05	0.00	97.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 97.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.6	1.0316	1.0291	0.0119	32.0	7.8	0.0470	90.0
1.00	30.4	1.0296	1.0271	0.0119	30.0	8.4	0.0344	83.9
2.00	30.6	1.0276	1.0251	0.0119	28.0	8.9	0.0250	77.7
5.00	30.4	1.0254	1.0229	0.0119	25.8	9.5	0.0164	70.9
10.00	30.6	1.0236	1.0211	0.0119	24.0	9.9	0.0119	65.3
15.00	30.6	1.0226	1.0201	0.0119	23.0	10.2	0.0098	62.2

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.4	1.0202	1.0177	0.0119	20.6	10.8	0.0072	54.8
60.00	30.6	1.0191	1.0166	0.0119	19.5	11.1	0.0051	51.4
120.00	31.6	1.0176	1.0151	0.0118	18.0	11.5	0.0036	46.7
240.00	31.4	1.0162	1.0137	0.0118	16.6	11.9	0.0026	42.4
1440.00	28.6	1.0132	1.0107	0.0121	13.6	12.7	0.0011	33.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.1	0.3	2.1	2.5	46.3	51.1	97.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0021	0.0046	0.0089	0.0284	0.0364	0.0469	0.0622

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-01
Depth: 6 **Sample Number:** 1
Material Description: lean clay with sand
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 531.35
Tare Wt. = 375.40
Minus #200 from wash = 83.1%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1297.75	375.40	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	3.10	0.00	99.7
		3/8"	1.25	0.00	99.5
		#4	5.20	0.00	99.0
		#10	10.50	0.00	97.8
		#16	6.50	0.00	97.1
		#30	8.60	0.00	96.2
		#40	13.05	0.00	94.8
		#50	23.10	0.00	92.3
		#100	43.60	0.00	87.5
		#200	40.50	0.00	83.2

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 83.2
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	28.2	1.0274	1.0249	0.0122	27.8	8.9	0.0516	65.8
1.00	28.1	1.0261	1.0236	0.0122	26.5	9.3	0.0372	62.3
2.00	27.8	1.0245	1.0220	0.0123	24.9	9.7	0.0270	58.2
5.00	27.8	1.0222	1.0197	0.0123	22.6	10.3	0.0176	52.1
10.00	27.5	1.0205	1.0181	0.0123	20.9	10.8	0.0128	47.8
15.00	28.1	1.0195	1.0170	0.0122	19.9	11.0	0.0105	44.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.3	1.0174	1.0149	0.0122	17.8	11.6	0.0076	39.4
60.00	28.3	1.0161	1.0136	0.0122	16.5	11.9	0.0054	35.9
120.00	28.3	1.0140	1.0115	0.0122	14.4	12.5	0.0039	30.4
240.00	28.5	1.0131	1.0106	0.0122	13.5	12.7	0.0028	28.0
1440.00	28.4	1.0099	1.0074	0.0122	10.3	13.6	0.0012	19.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.0	1.0	1.2	3.0	11.6	15.8	48.6	34.6	83.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0012	0.0038	0.0079	0.0150	0.0303	0.0698	0.1011	0.2164	0.4435

Fineness Modulus
0.30

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-04
Depth: 7 **Sample Number:** 1
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 385.10
Tare Wt. = 372.70
Minus #200 from wash = 98.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1224.45	372.70	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	0.00	0.00	100.0
		#10	0.50	0.00	99.9
		#16	0.50	0.00	99.9
		#30	1.05	0.00	99.8
		#40	0.90	0.00	99.7
		#50	0.85	0.00	99.6
		#100	2.05	0.00	99.3
		#200	4.70	0.00	98.8

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 98.8
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.3	1.0316	1.0291	0.0119	32.0	7.8	0.0472	91.3
1.00	30.1	1.0282	1.0257	0.0119	28.6	8.7	0.0353	80.6
2.00	30.6	1.0261	1.0236	0.0119	26.5	9.3	0.0256	74.0
5.00	30.2	1.0249	1.0224	0.0119	25.3	9.6	0.0165	70.3
10.00	30.4	1.0231	1.0206	0.0119	23.5	10.1	0.0120	64.6
15.00	30.6	1.0221	1.0196	0.0119	22.5	10.3	0.0099	61.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.1	1.0205	1.0180	0.0119	20.9	10.8	0.0072	56.5
60.00	30.4	1.0186	1.0161	0.0119	19.0	11.3	0.0052	50.5
120.00	31.0	1.0169	1.0144	0.0118	17.3	11.7	0.0037	45.2
240.00	31.6	1.0145	1.0120	0.0118	14.9	12.4	0.0027	37.6
1440.00	28.6	1.0129	1.0104	0.0121	13.3	12.8	0.0011	32.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.2	0.9	1.2	48.8	50.0	98.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0030	0.0050	0.0089	0.0346	0.0398	0.0454	0.0544

Fineness Modulus
0.02

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-05
Depth: 10 **Sample Number:** 1
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 421.30
Tare Wt. = 382.80
Minus #200 from wash = 95.7%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1279.75	382.80	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	2.30	0.00	99.7
		#10	1.60	0.00	99.6
		#16	1.00	0.00	99.5
		#30	2.70	0.00	99.2
		#40	3.30	0.00	98.8
		#50	5.60	0.00	98.2
		#100	13.20	0.00	96.7
		#200	9.10	0.00	95.7

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.7
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	27.8	1.0315	1.0290	0.0123	31.9	7.9	0.0486	88.3
1.00	27.8	1.0295	1.0270	0.0123	29.9	8.4	0.0355	82.2
2.00	27.7	1.0273	1.0249	0.0123	27.7	9.0	0.0260	75.6
5.00	27.5	1.0252	1.0228	0.0123	25.6	9.5	0.0170	69.3
10.00	27.5	1.0236	1.0212	0.0123	24.0	9.9	0.0123	64.4
15.00	27.8	1.0227	1.0202	0.0123	23.1	10.2	0.0101	61.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	28.1	1.0207	1.0182	0.0122	21.1	10.7	0.0073	55.3
60.00	28.3	1.0188	1.0163	0.0122	19.2	11.2	0.0053	49.5
120.00	29.2	1.0162	1.0137	0.0121	16.6	11.9	0.0038	41.6
240.00	28.8	1.0142	1.0117	0.0121	14.6	12.4	0.0028	35.6
1440.00	27.9	1.0113	1.0088	0.0122	11.7	13.2	0.0012	26.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	0.1	0.8	3.1	4.0	47.3	48.4	95.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0017	0.0035	0.0054	0.0093	0.0321	0.0409	0.0531	0.0709

Fineness Modulus
0.07

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-06
Depth: 8 **Sample Number:** 1
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 407.35
Tare Wt. = 369.40
Minus #200 from wash = 95.0%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1128.70	369.40	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	4.10	0.00	99.5
		#10	6.30	0.00	98.6
		#16	1.80	0.00	98.4
		#30	2.45	0.00	98.1
		#40	2.10	0.00	97.8
		#50	2.85	0.00	97.4
		#100	7.00	0.00	96.5
		#200	11.30	0.00	95.0

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 95.0
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.0	1.0311	1.0286	0.0121	31.5	8.0	0.0483	86.3
1.00	29.0	1.0283	1.0258	0.0121	28.7	8.7	0.0357	77.9
2.00	29.0	1.0266	1.0241	0.0121	27.0	9.2	0.0259	72.7
5.00	29.0	1.0245	1.0220	0.0121	24.9	9.7	0.0168	66.4
10.00	29.0	1.0222	1.0197	0.0121	22.6	10.3	0.0123	59.5
15.00	29.0	1.0215	1.0190	0.0121	21.9	10.5	0.0101	57.3

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	31.0	1.0206	1.0181	0.0118	21.0	10.7	0.0071	54.6
60.00	32.0	1.0184	1.0159	0.0117	18.8	11.3	0.0051	48.0
120.00	32.0	1.0164	1.0139	0.0117	16.8	11.9	0.0037	41.9
240.00	32.0	1.0153	1.0128	0.0117	15.7	12.1	0.0026	38.6
1440.00	29.1	1.0123	1.0098	0.0121	12.7	12.9	0.0011	29.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	0.9	0.8	2.8	4.5	47.4	47.6	95.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0031	0.0056	0.0127	0.0388	0.0461	0.0558	0.0749

Fineness Modulus
0.11

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-08
Depth: 5 **Sample Number:** 1
Material Description: lean clay with sand
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 590.10
Tare Wt. = 374.25
Minus #200 from wash = 73.5%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1189.60	374.25	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	1.60	0.00	99.8
		#10	5.70	0.00	99.1
		#16	5.85	0.00	98.4
		#30	22.85	0.00	95.6
		#40	28.15	0.00	92.1
		#50	34.80	0.00	87.9
		#100	68.70	0.00	79.4
		#200	48.15	0.00	73.5

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 73.5
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	31.1	1.0241	1.0216	0.0118	24.5	9.8	0.0524	50.5
1.00	31.3	1.0232	1.0207	0.0118	23.6	10.1	0.0374	48.4
2.00	31.5	1.0221	1.0196	0.0118	22.5	10.3	0.0268	45.8
5.00	32.3	1.0204	1.0179	0.0117	20.8	10.8	0.0171	41.8
10.00	32.1	1.0196	1.0171	0.0117	20.0	11.0	0.0123	39.9
15.00	32.6	1.0194	1.0169	0.0116	19.8	11.1	0.0100	39.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	32.4	1.0186	1.0161	0.0117	19.0	11.3	0.0071	37.6
60.00	32.6	1.0176	1.0151	0.0116	18.0	11.5	0.0051	35.3
120.00	32.4	1.0164	1.0139	0.0117	16.8	11.9	0.0037	32.5
240.00	32.6	1.0156	1.0131	0.0116	16.0	12.1	0.0026	30.6
1440.00	28.6	1.0142	1.0117	0.0121	14.6	12.4	0.0011	27.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.7	7.0	18.6	26.3	38.4	35.1	73.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0023	0.0125	0.0484	0.0616	0.1583	0.2423	0.3518	0.5608

Fineness Modulus
0.40

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-09
Depth: 8 **Sample Number:** 1
Material Description: fat clay
USCS: CH

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 427.45
Tare Wt. = 375.60
Minus #200 from wash = 94.2%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1263.65	375.60	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	4.35	0.00	99.5
		3/8"	0.80	0.00	99.4
		#4	7.15	0.00	98.6
		#10	8.00	0.00	97.7
		#16	3.75	0.00	97.3
		#30	2.75	0.00	97.0
		#40	1.20	0.00	96.8
		#50	1.25	0.00	96.7
		#100	4.35	0.00	96.2
		#200	18.45	0.00	94.1

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 94.1
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	30.3	1.0312	1.0287	0.0119	31.6	7.9	0.0475	85.8
1.00	30.4	1.0296	1.0271	0.0119	30.0	8.4	0.0344	81.0
2.00	29.6	1.0288	1.0263	0.0120	29.2	8.6	0.0249	78.6
5.00	29.4	1.0277	1.0252	0.0120	28.1	8.9	0.0160	75.4
10.00	29.5	1.0266	1.0241	0.0120	27.0	9.2	0.0115	72.1
15.00	29.6	1.0254	1.0229	0.0120	25.8	9.5	0.0095	68.5

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	29.6	1.0234	1.0209	0.0120	23.8	10.0	0.0069	62.5
60.00	30.1	1.0211	1.0186	0.0119	21.5	10.6	0.0050	55.6
120.00	30.6	1.0192	1.0167	0.0119	19.6	11.1	0.0036	49.9
240.00	31.6	1.0173	1.0148	0.0118	17.7	11.6	0.0026	44.3
1440.00	28.7	1.0133	1.0108	0.0121	13.7	12.7	0.0011	32.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.4	1.4	0.9	0.9	2.7	4.5	38.6	55.5	94.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0020	0.0036	0.0062	0.0306	0.0454	0.0587	0.0943

Fineness Modulus
0.17

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-12
Depth: 8 **Sample Number:** 1
Material Description: lean clay
USCS: CL

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 466.70
Tare Wt. = 382.25
Minus #200 from wash = 86.4%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1001.85	382.25	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	0.00	0.00	100.0
		1"	0.00	0.00	100.0
		3/4"	0.00	0.00	100.0
		1/2"	0.00	0.00	100.0
		3/8"	0.00	0.00	100.0
		#4	4.30	0.00	99.3
		#10	4.70	0.00	98.5
		#16	4.20	0.00	97.9
		#30	8.70	0.00	96.5
		#40	7.35	0.00	95.3
		#50	9.10	0.00	93.8
		#100	20.80	0.00	90.5
		#200	25.10	0.00	86.4

Hydrometer Test Data

Hydrometer test uses material passing #200
Percent passing #200 based upon complete sample = 86.4
Weight of hydrometer sample =50
Table of composite correction values:

Temp., deg. C:	24.5	28.0
Comp. corr.:	-1.8	-2.5

Meniscus correction only = 0.4
Specific gravity of solids = 2.7
Hydrometer type = 151H
Hydrometer effective depth equation: L = 16.294964 **-** 0.2645 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
0.50	29.6	1.0311	1.0286	0.0120	31.5	8.0	0.0479	78.5
1.00	29.4	1.0282	1.0257	0.0120	28.6	8.7	0.0356	70.5
2.00	29.6	1.0262	1.0237	0.0120	26.6	9.3	0.0258	65.0
5.00	29.4	1.0242	1.0217	0.0120	24.6	9.8	0.0168	59.6
10.00	29.6	1.0223	1.0198	0.0120	22.7	10.3	0.0122	54.3
15.00	30.4	1.0214	1.0189	0.0119	21.8	10.5	0.0100	51.9

Hydrometer Test Data (continued)

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
30.00	30.4	1.0204	1.0179	0.0119	20.8	10.8	0.0071	49.1
60.00	30.4	1.0184	1.0159	0.0119	18.8	11.3	0.0052	43.6
120.00	30.6	1.0163	1.0138	0.0119	16.7	11.9	0.0037	37.9
240.00	31.6	1.0154	1.0129	0.0118	15.8	12.1	0.0026	35.4
1440.00	29.6	1.0123	1.0098	0.0120	12.7	12.9	0.0011	26.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.7	0.7	0.8	3.2	8.9	12.9	43.4	43.0	86.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0015	0.0043	0.0078	0.0174	0.0510	0.0670	0.1335	0.3956

Fineness Modulus
0.23

GRAIN SIZE DISTRIBUTION TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-14
Depth: 5 **Sample Number:** 1
Material Description: clayey gravel
USCS: GC

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 1359.55
Tare Wt. = 370.45
Minus #200 from wash = 33.6%

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
1859.90	370.45	3"	0.00	0.00	100.0
		2.5"	0.00	0.00	100.0
		2"	191.80	0.00	87.1
		1"	241.30	0.00	70.9
		3/4"	80.85	0.00	65.5
		1/2"	68.90	0.00	60.9
		3/8"	36.65	0.00	58.4
		#4	50.60	0.00	55.0
		#10	29.50	0.00	53.0
		#16	13.65	0.00	52.1
		#30	29.80	0.00	50.1
		#40	24.70	0.00	48.5
		#50	28.40	0.00	46.5
		#100	52.00	0.00	43.1
		#200	41.35	0.00	40.3

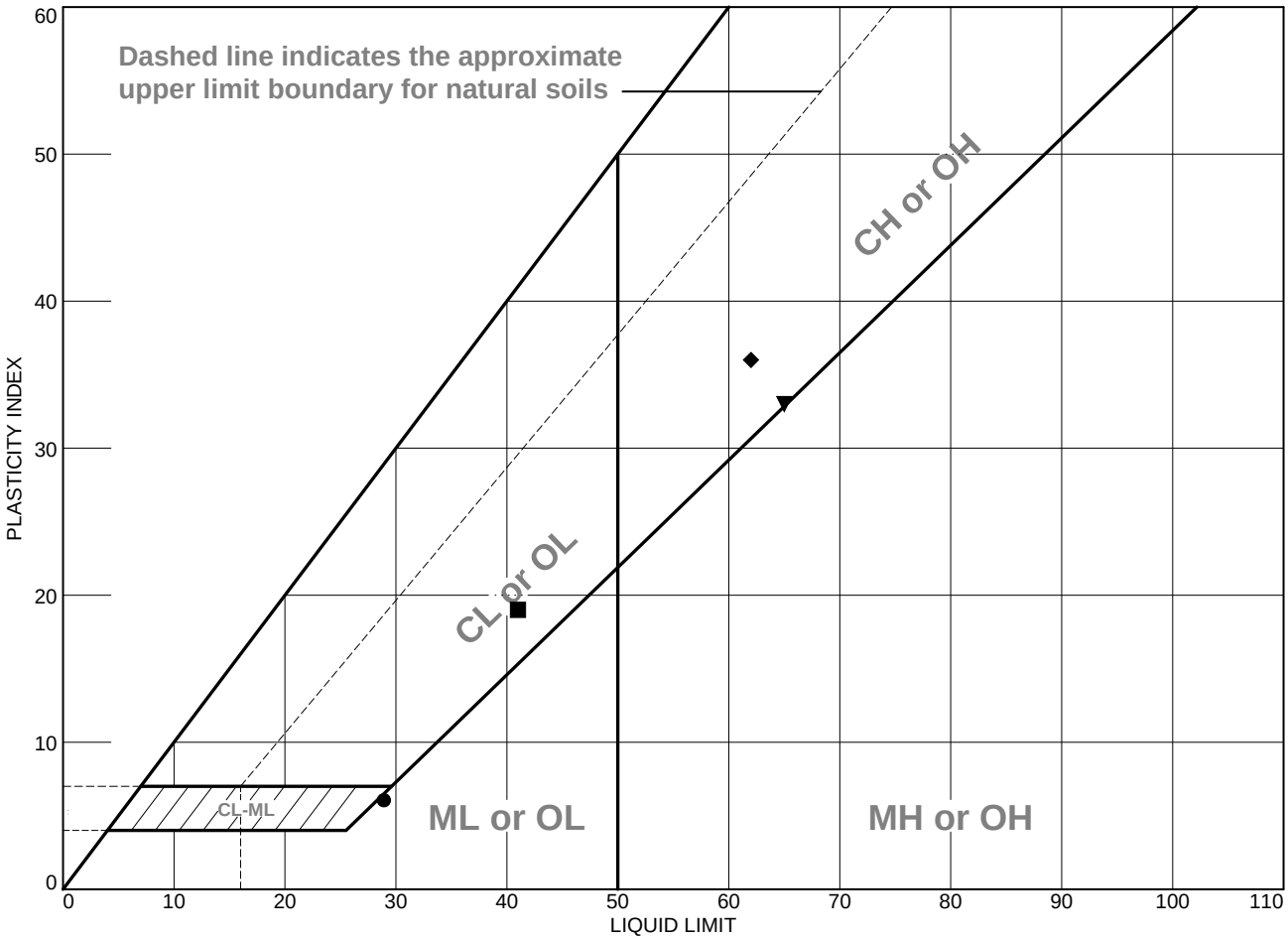
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	34.5	10.5	45.0	2.0	4.5	8.2	14.7			40.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.5843	11.5118	43.8076	48.9631	53.1189	57.2897

Fineness Modulus
4.00

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	silty sand	29	23	6	99.6	43.4	SM
■	sandy lean clay	41	22	19	99.2	69.1	CL
▲	silty sand	NV	NP	NP	93.3	22.9	SM
◆	fat clay with sand	62	26	36	83.9	77.1	CH
▼	fat clay	65	32	33	92.8	88.4	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-01 **Depth:** 5 **Sample Number:** 2
■**Source of Sample:** SB-01 **Depth:** 10 **Sample Number:** 3
▲**Source of Sample:** SB-01 **Depth:** 25 **Sample Number:** 6
◆**Source of Sample:** SB-01 **Depth:** 45 **Sample Number:** 10
▼**Source of Sample:** SB-01 **Depth:** 55 **Sample Number:** 12

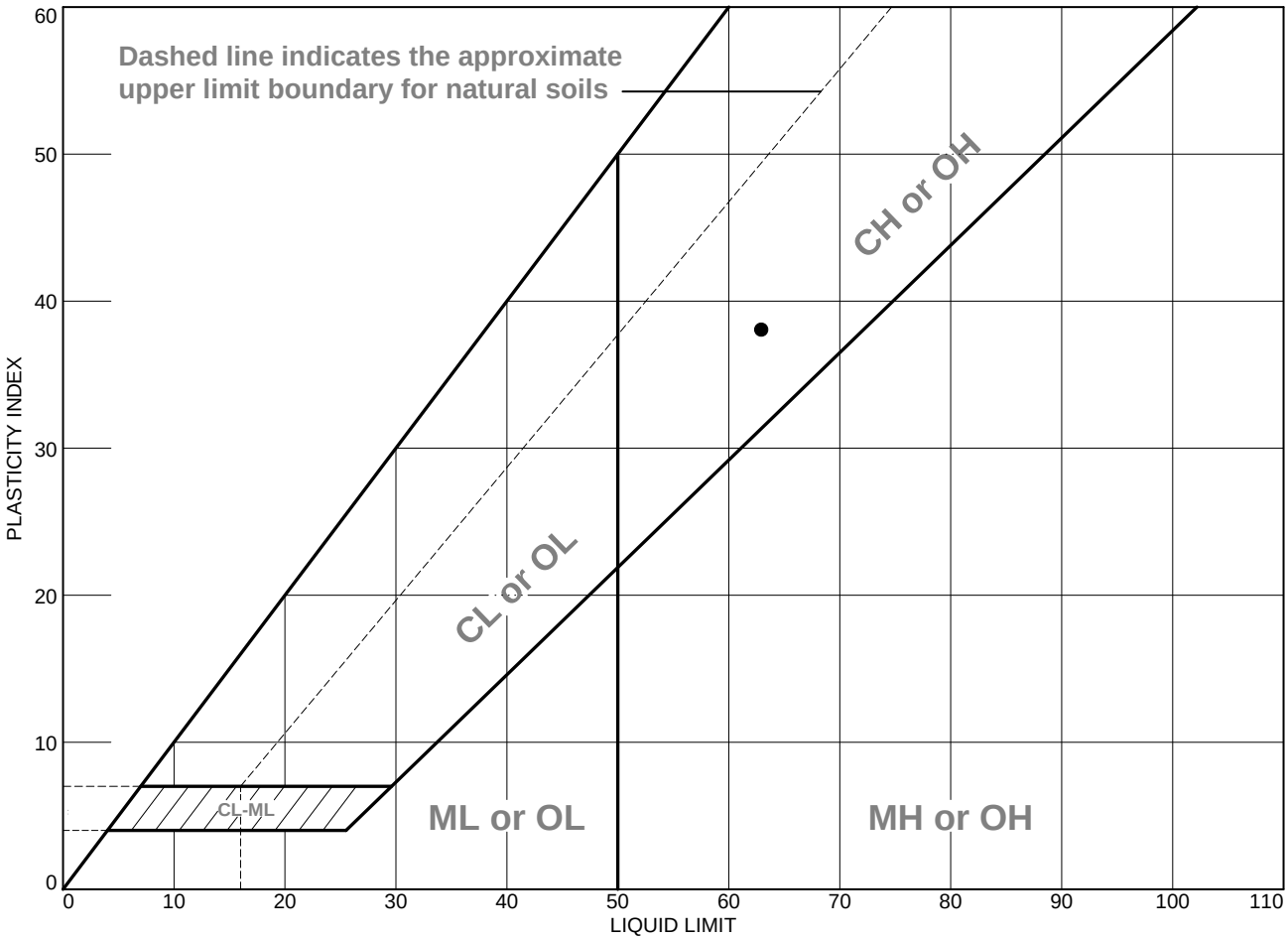
Horizon Consultants

Santo Domingo

Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	63	25	38	97.9	90.4	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-01 **Depth:** 65 **Sample Number:** 14

Remarks:

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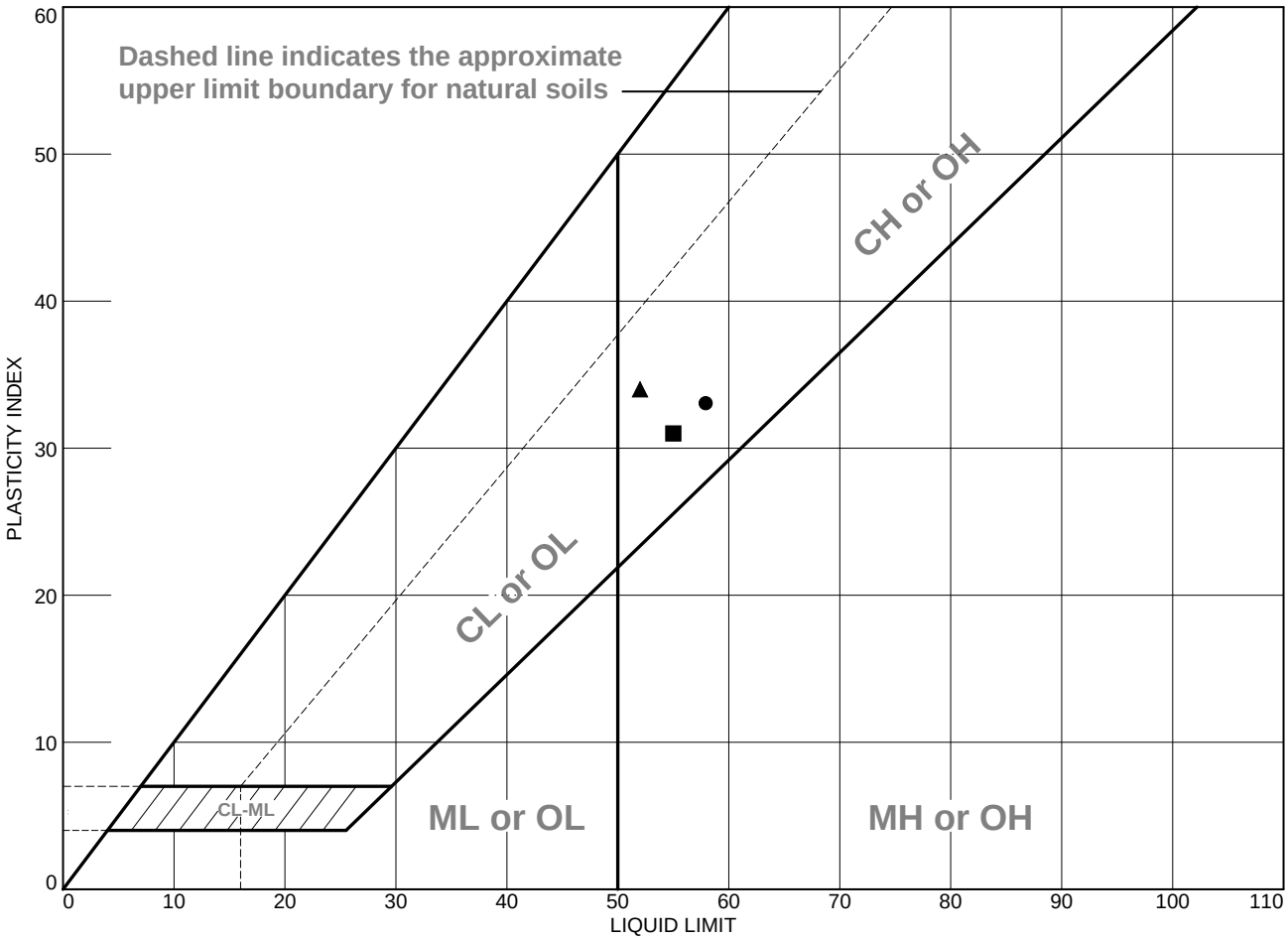
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	58	25	33	94.8	89.1	CH
■	clayey gravel with sand	55	24	31	21.2	15.7	GC
▲	fat clay with sand	52	18	34	90.4	84.8	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-02 **Depth:** 10 **Sample Number:** 3

■**Source of Sample:** SB-02 **Depth:** 15 **Sample Number:** 4

▲**Source of Sample:** SB-02 **Depth:** 30 **Sample Number:** 7

Remarks:

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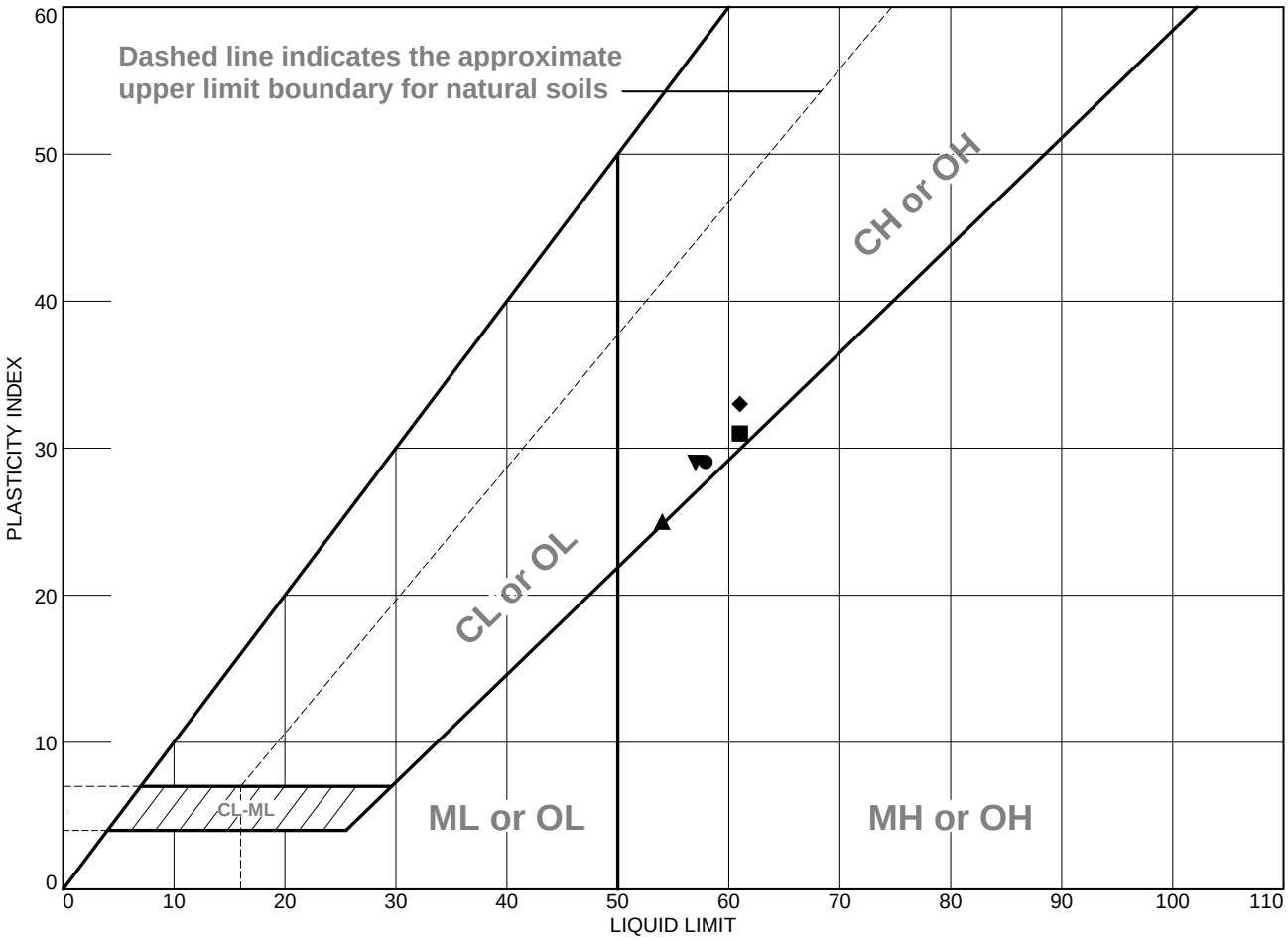
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	58	29	29	99.4	94.8	CH
■	fat clay	61	30	31	99.5	96.3	CH
▲	fat clay	54	29	25	99.1	96.8	CH
◆	fat clay	61	28	33	98.6	95.5	CH
▼	fat clay	57	28	29	99.5	95.8	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-03 **Depth:** 15 **Sample Number:** 4
■**Source of Sample:** SB-03 **Depth:** 30 **Sample Number:** 7
▲**Source of Sample:** SB-03 **Depth:** 35 **Sample Number:** 8
◆**Source of Sample:** SB-03 **Depth:** 45 **Sample Number:** 10
▼**Source of Sample:** SB-03 **Depth:** 55 **Sample Number:** 12

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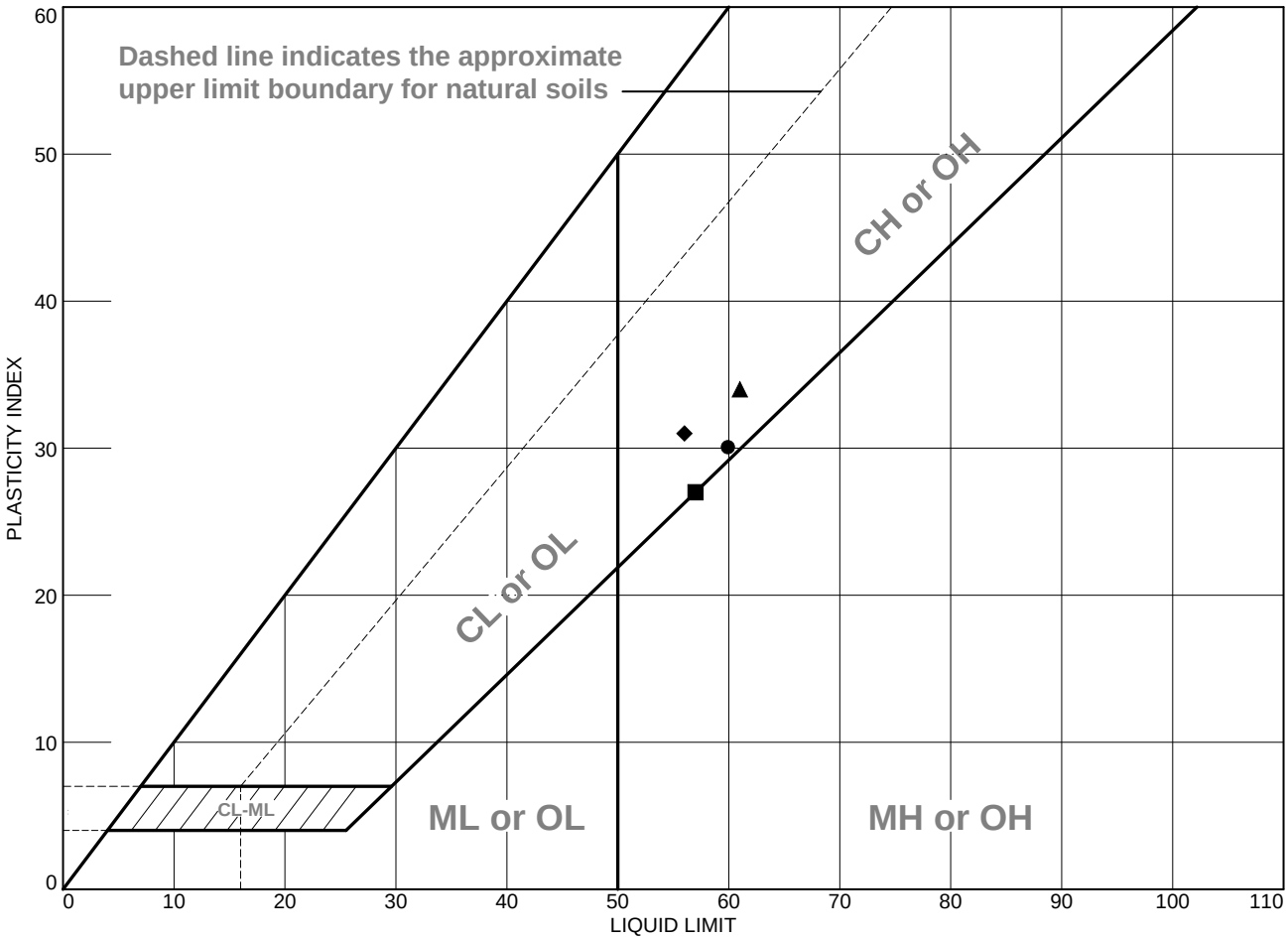
Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	60	30	30	97.4	87.6	CH
■	fat clay	57	30	27	99.9	96.5	CH
▲	fat clay	61	27	34	99.7	93.9	CH
◆	fat clay	56	25	31	98.2	86.4	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-04 **Depth:** 10 **Sample Number:** 3
■**Source of Sample:** SB-04 **Depth:** 20 **Sample Number:** 5
▲**Source of Sample:** SB-04 **Depth:** 25 **Sample Number:** 6
◆**Source of Sample:** SB-04 **Depth:** 40 **Sample Number:** 9

Remarks:

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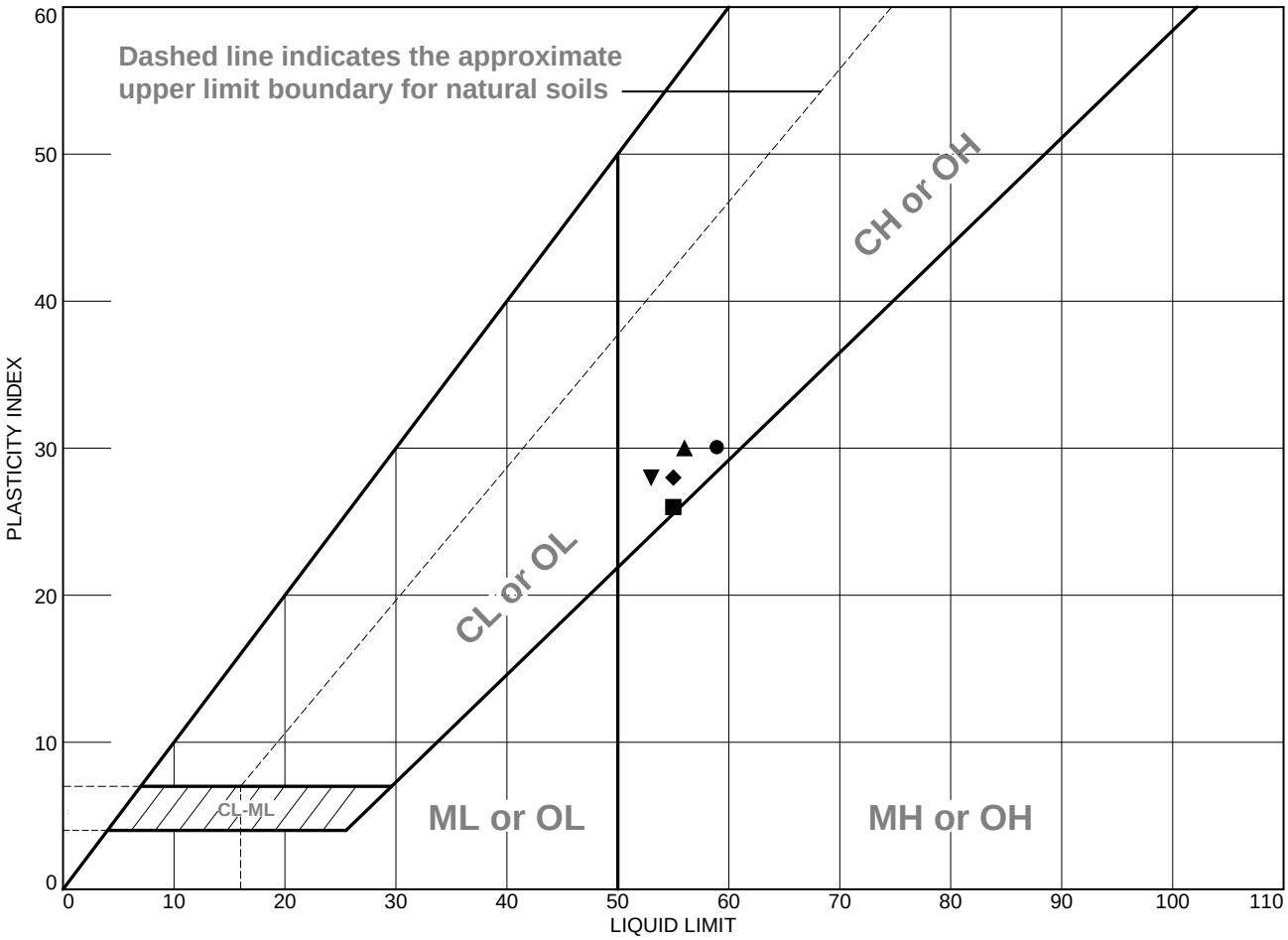
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay with sand	59	29	30	93.9	84.3	CH
■	fat clay	55	29	26	99.6	95.3	CH
▲	fat clay	56	26	30	99.7	97.0	CH
◆	fat clay	55	27	28	99.5	96.1	CH
▼	fat clay	53	25	28	99.1	97.3	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-05 **Depth:** 5 **Sample Number:** 2
■**Source of Sample:** SB-05 **Depth:** 10 **Sample Number:** 3
▲**Source of Sample:** SB-05 **Depth:** 15 **Sample Number:** 4
◆**Source of Sample:** SB-05 **Depth:** 20 **Sample Number:** 5
▼**Source of Sample:** SB-05 **Depth:** 25 **Sample Number:** 6

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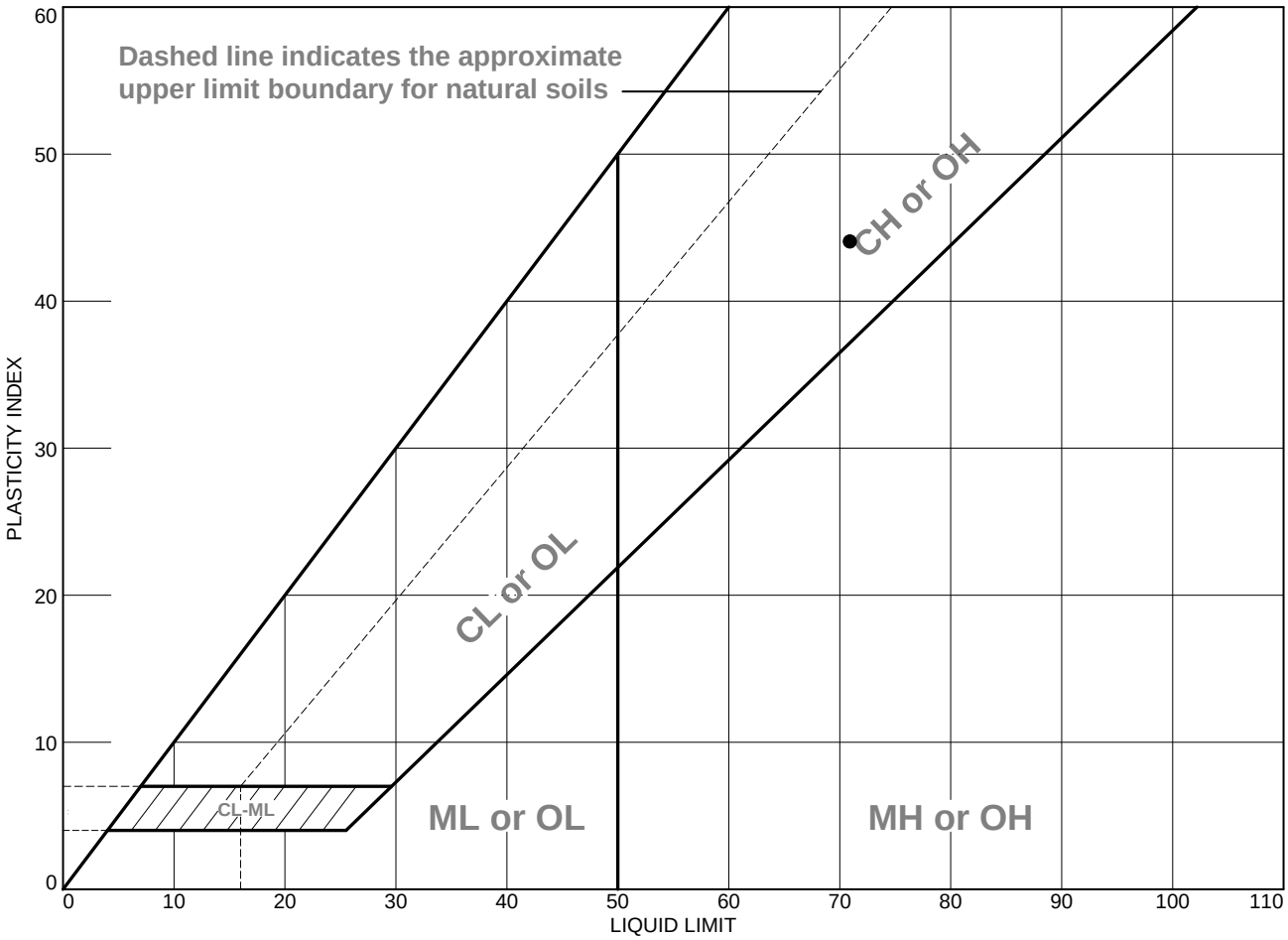
Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	71	27	44	99.9	98.0	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-05 **Depth:** 40 **Sample Number:** 9

Remarks:

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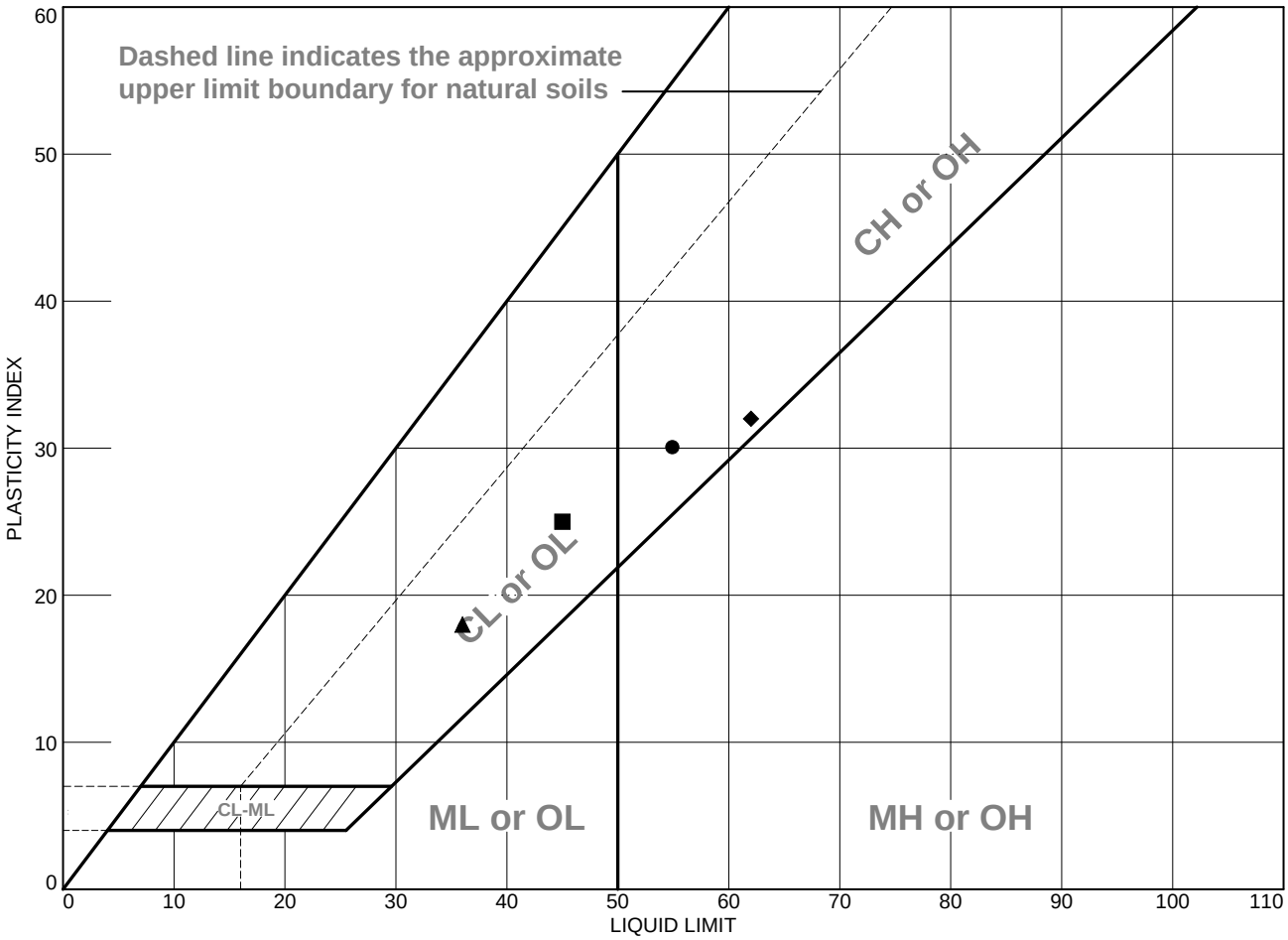
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	55	25	30	99.7	99.1	CH
■	lean clay	45	20	25	96.9	91.3	CL
▲	clayey gravel with sand	36	18	18	25.8	18.9	GC
◆	fat clay	62	30	32	97.7	92.7	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-06 **Depth:** 10 **Sample Number:** 3
■**Source of Sample:** SB-06 **Depth:** 20 **Sample Number:** 5
▲**Source of Sample:** SB-06 **Depth:** 25 **Sample Number:** 6
◆**Source of Sample:** SB-06 **Depth:** 40 **Sample Number:** 9

Remarks:

Horizon Consultants

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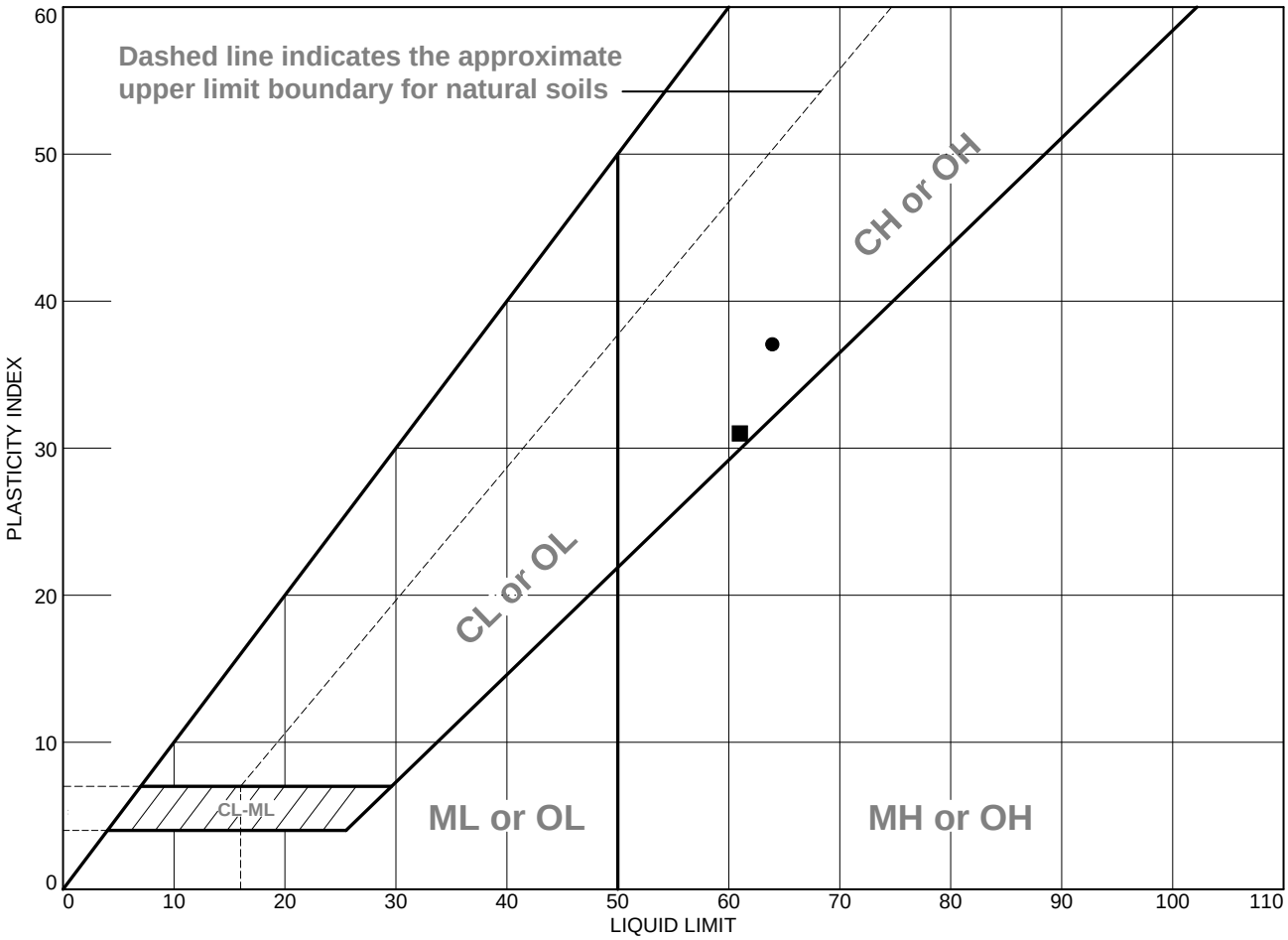
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay with sand	64	27	37	89.1	83.1	CH
■	fat clay	61	30	31	99.8	97.3	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-07 **Depth:** 5 **Sample Number:** 2

■**Source of Sample:** SB-07 **Depth:** 25 **Sample Number:** 6

Remarks:

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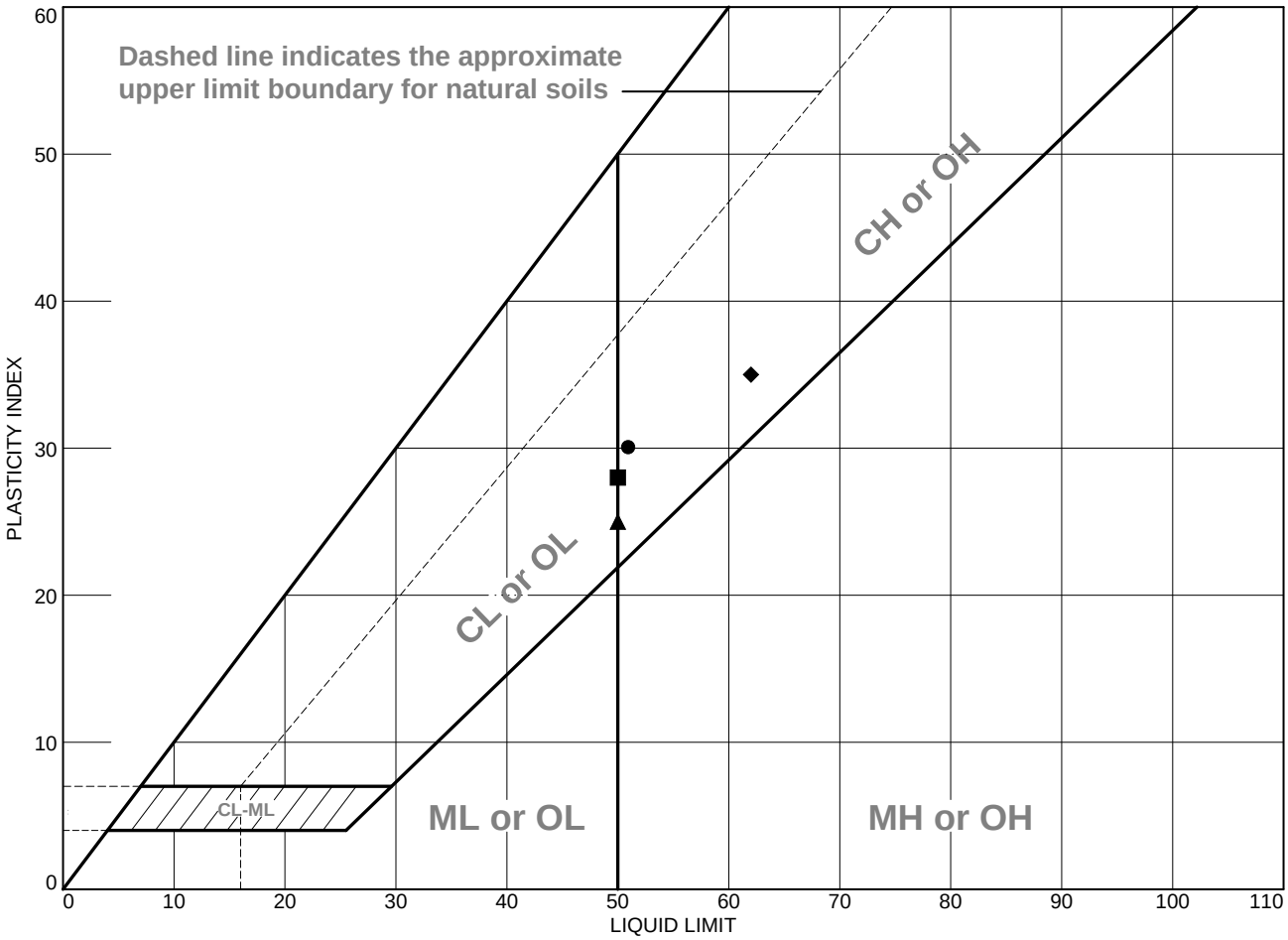
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay with sand	51	21	30	96.2	76.8	CH
■	fat clay	50	22	28	82.3	67.5	CH
▲	fat clay	50	25	25	99.9	96.6	CH
◆	fat clay	62	27	35	97.7	87.3	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-08 **Depth:** 5 **Sample Number:** 2
■**Source of Sample:** SB-08 **Depth:** 10 **Sample Number:** 3
▲**Source of Sample:** SB-08 **Depth:** 30 **Sample Number:** 7
◆**Source of Sample:** SB-08 **Depth:** 35 **Sample Number:** 8

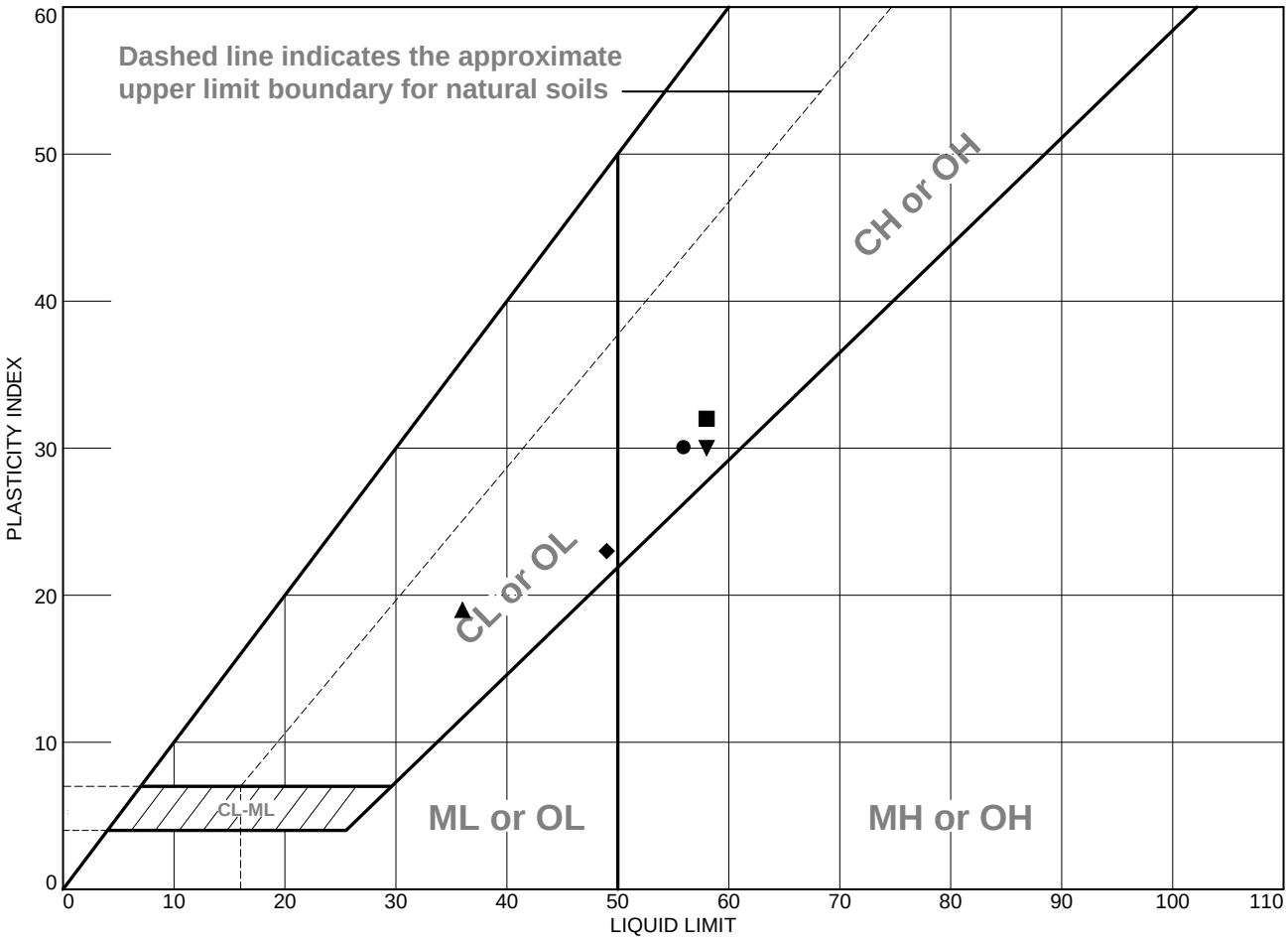
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay with sand	56	26	30	89.3	85.2	CH
■	fat clay	58	26	32	97.2	87.2	CH
▲	lean clay with sand	36	17	19	97.5	75.2	CL
◆	clayey gravel with sand	49	26	23	48.5	45.3	GC
▼	fat clay	58	28	30	99.3	92.6	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-09 **Depth:** 5 **Sample Number:** 2
■**Source of Sample:** SB-09 **Depth:** 15 **Sample Number:** 4
▲**Source of Sample:** SB-09 **Depth:** 20 **Sample Number:** 5
◆**Source of Sample:** SB-09 **Depth:** 25 **Sample Number:** 6
▼**Source of Sample:** SB-09 **Depth:** 55 **Sample Number:** 12

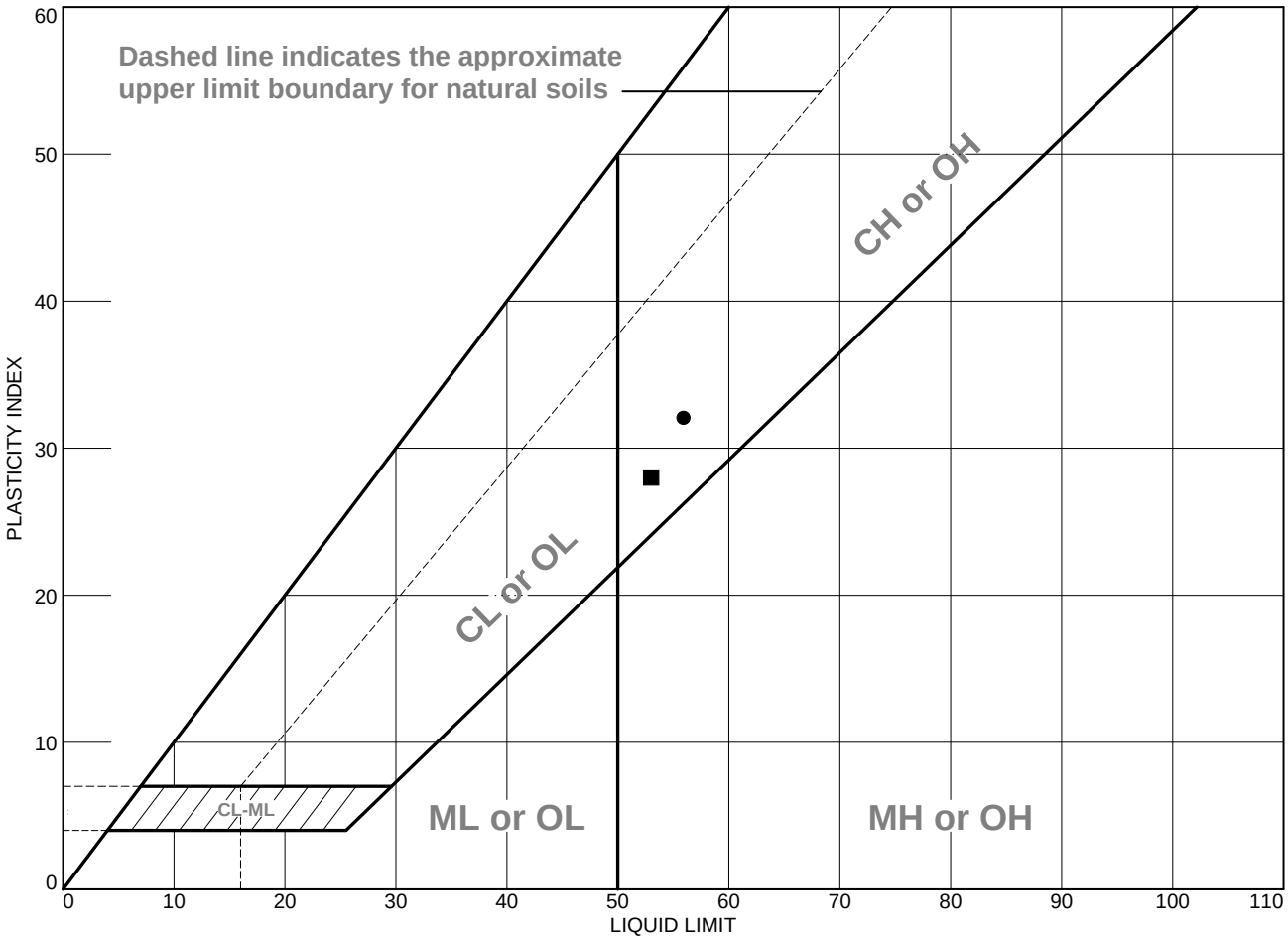
Horizon Consultants

Santo Domingo

Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	56	24	32	100.0	96.9	CH
■	fat clay	53	25	28	99.8	94.3	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-09 **Depth:** 70 **Sample Number:** 15

■**Source of Sample:** SB-09 **Depth:** 80 **Sample Number:** 17

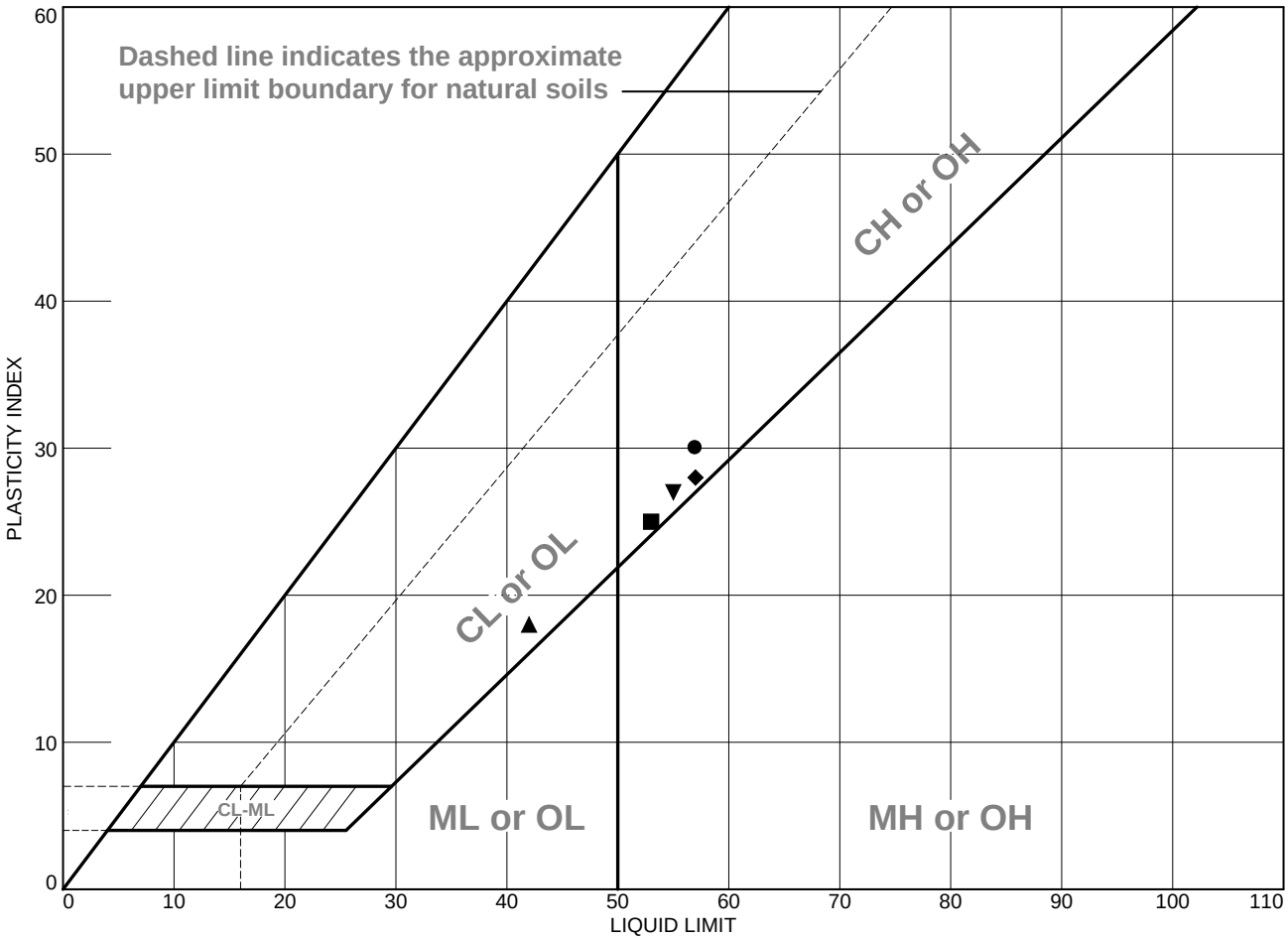
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	57	27	30	99.0	93.6	CH
■	fat clay	53	28	25	99.5	95.9	CH
▲	lean clay with sand	42	24	18	94.3	84.4	CL
◆	fat clay	57	29	28	99.7	96.8	CH
▼	fat clay	55	28	27	98.8	94.2	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-10 **Depth:** 15 **Sample Number:** 4
■**Source of Sample:** SB-10 **Depth:** 20 **Sample Number:** 5
▲**Source of Sample:** SB-10 **Depth:** 25 **Sample Number:** 6
◆**Source of Sample:** SB-10 **Depth:** 30 **Sample Number:** 8
▼**Source of Sample:** SB-10 **Depth:** 35 **Sample Number:** 9

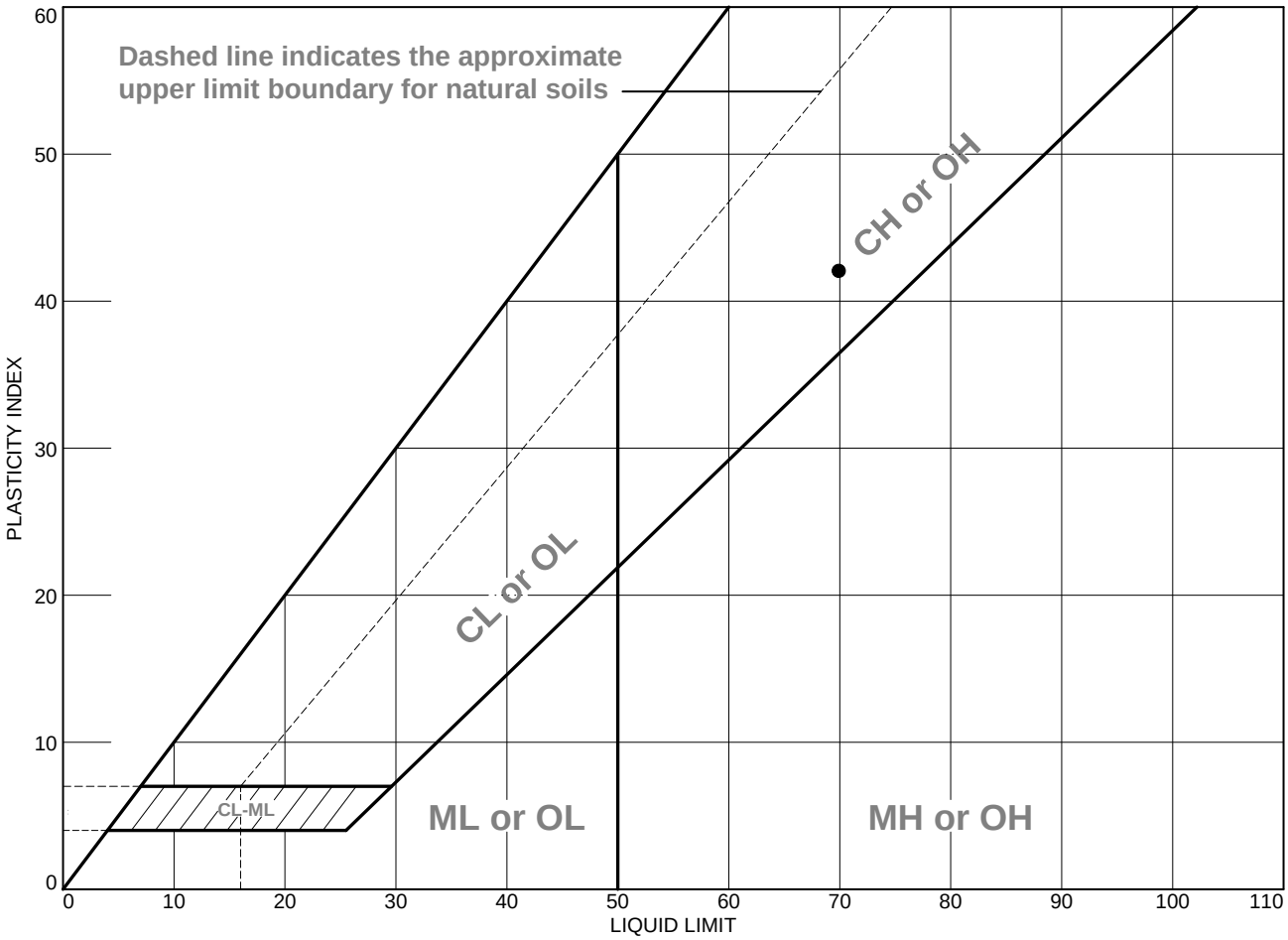
Horizon Consultants

Santo Domingo

Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	70	28	42	99.9	98.4	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-10 **Depth:** 40 **Sample Number:** 10

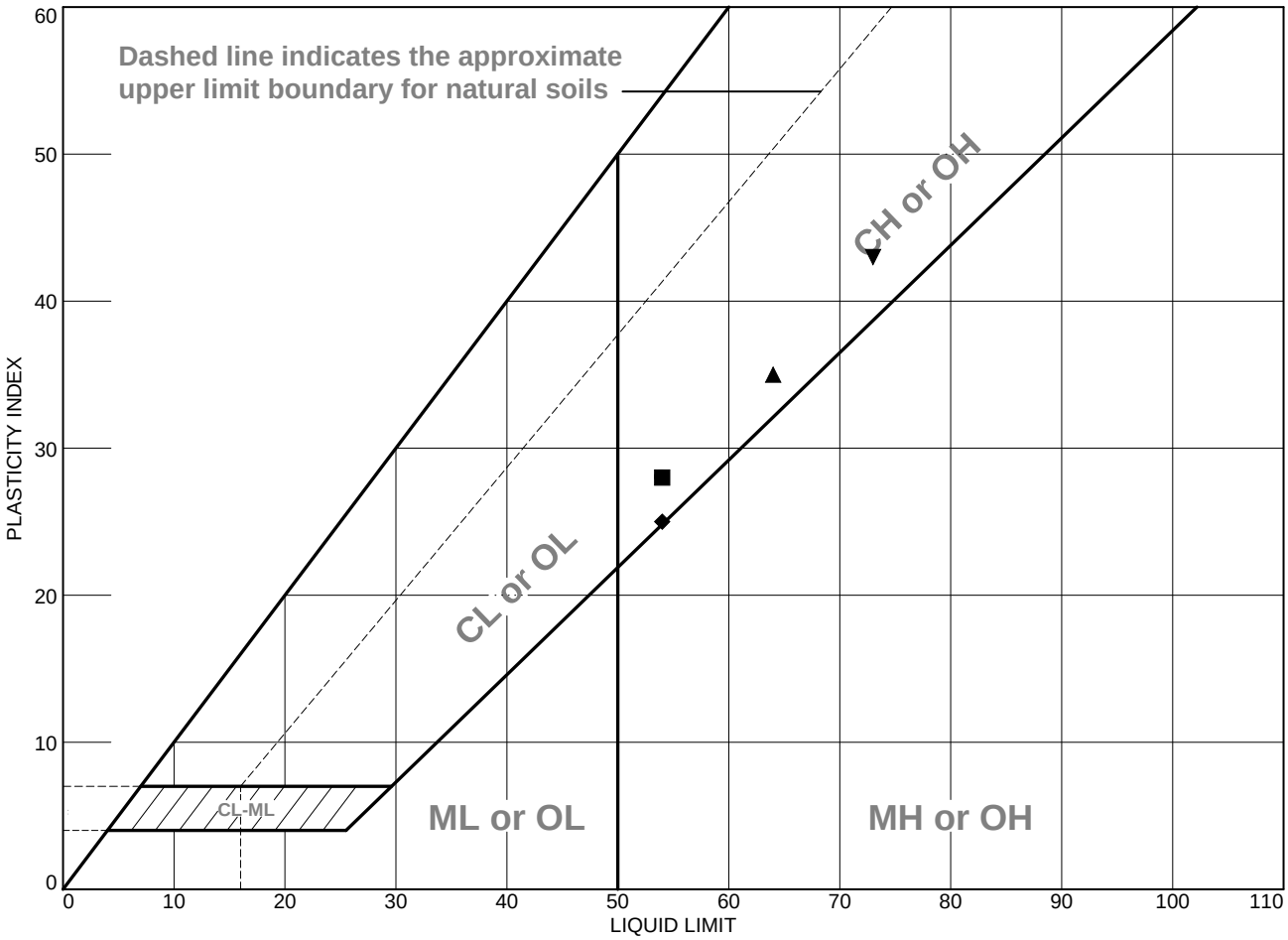
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	54	26	28	98.7	97.9	CH
■	fat clay	54	26	28	99.8	97.9	CH
▲	fat clay	64	29	35	99.3	95.8	CH
◆	fat clay	54	29	25	99.1	96.8	CH
▼	fat clay	73	30	43	99.5	94.2	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-11 **Depth:** 5 **Sample Number:** 2
■**Source of Sample:** SB-11 **Depth:** 20 **Sample Number:** 5
▲**Source of Sample:** SB-11 **Depth:** 25 **Sample Number:** 7
◆**Source of Sample:** SB-11 **Depth:** 35 **Sample Number:** 8
▼**Source of Sample:** SB-11 **Depth:** 35 **Sample Number:** 9

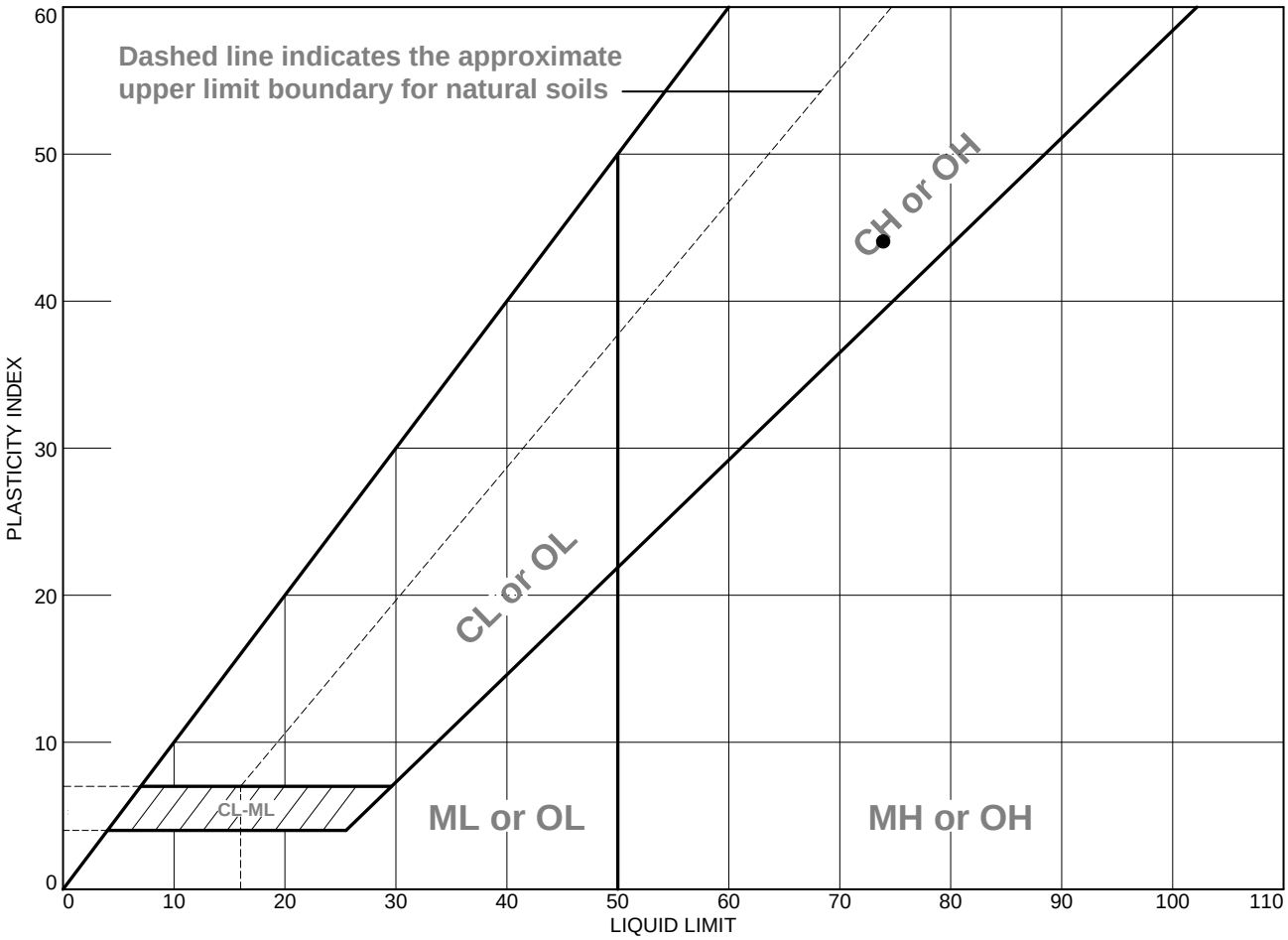
Horizon Consultants

Santo Domingo

Remarks:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	74	30	44	99.4	94.8	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-11 **Depth:** 40 **Sample Number:** 10

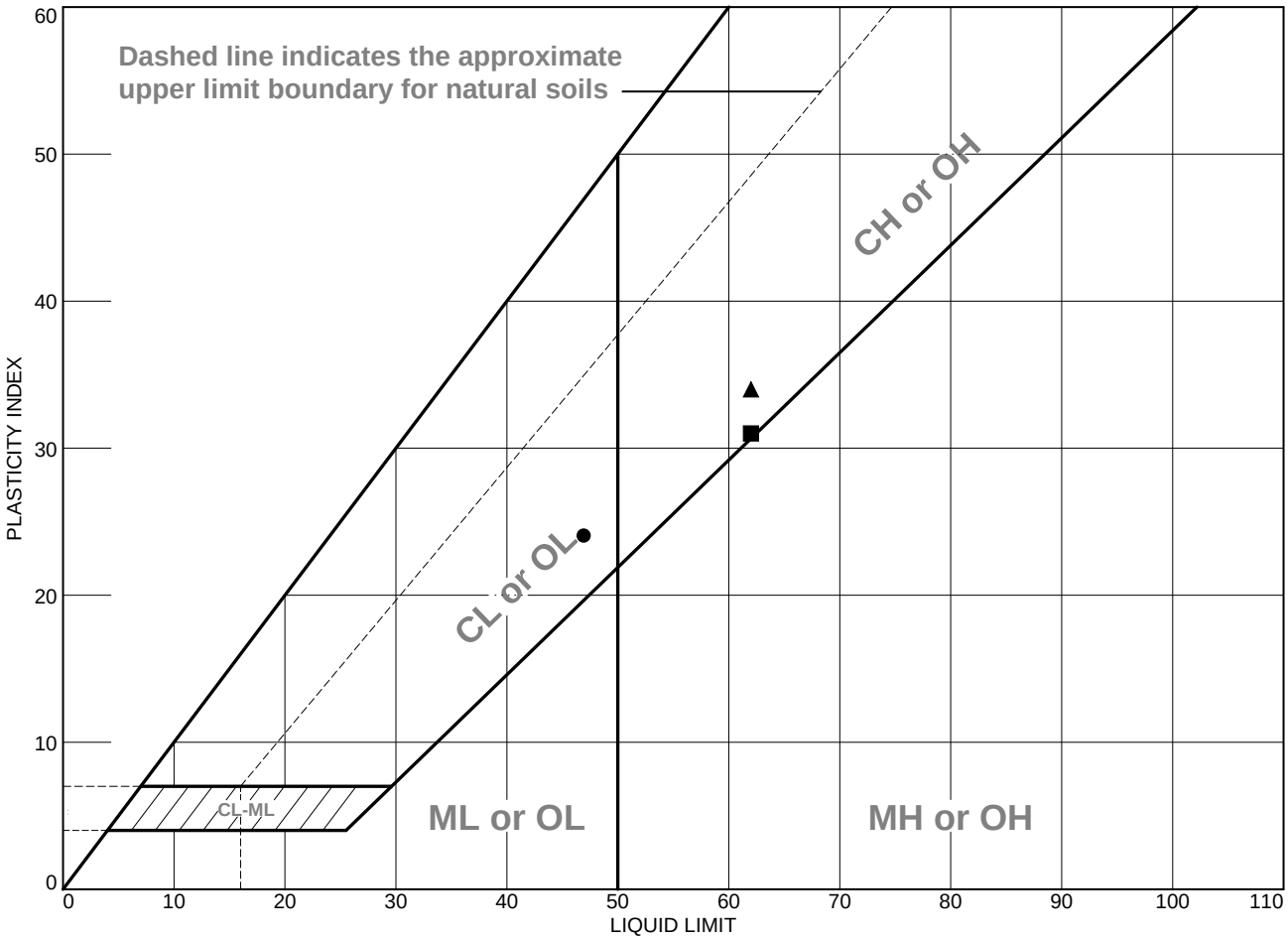
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	lean clay with sand	47	23	24	95.1	78.9	CL
■	fat clay	62	31	31	97.0	93.1	CH
▲	fat clay	62	28	34	97.9	95.1	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-12 **Depth:** 5 **Sample Number:** 2

■**Source of Sample:** SB-12 **Depth:** 20 **Sample Number:** 5

▲**Source of Sample:** SB-12 **Depth:** 40 **Sample Number:** 9

Remarks:

Horizon Consultants

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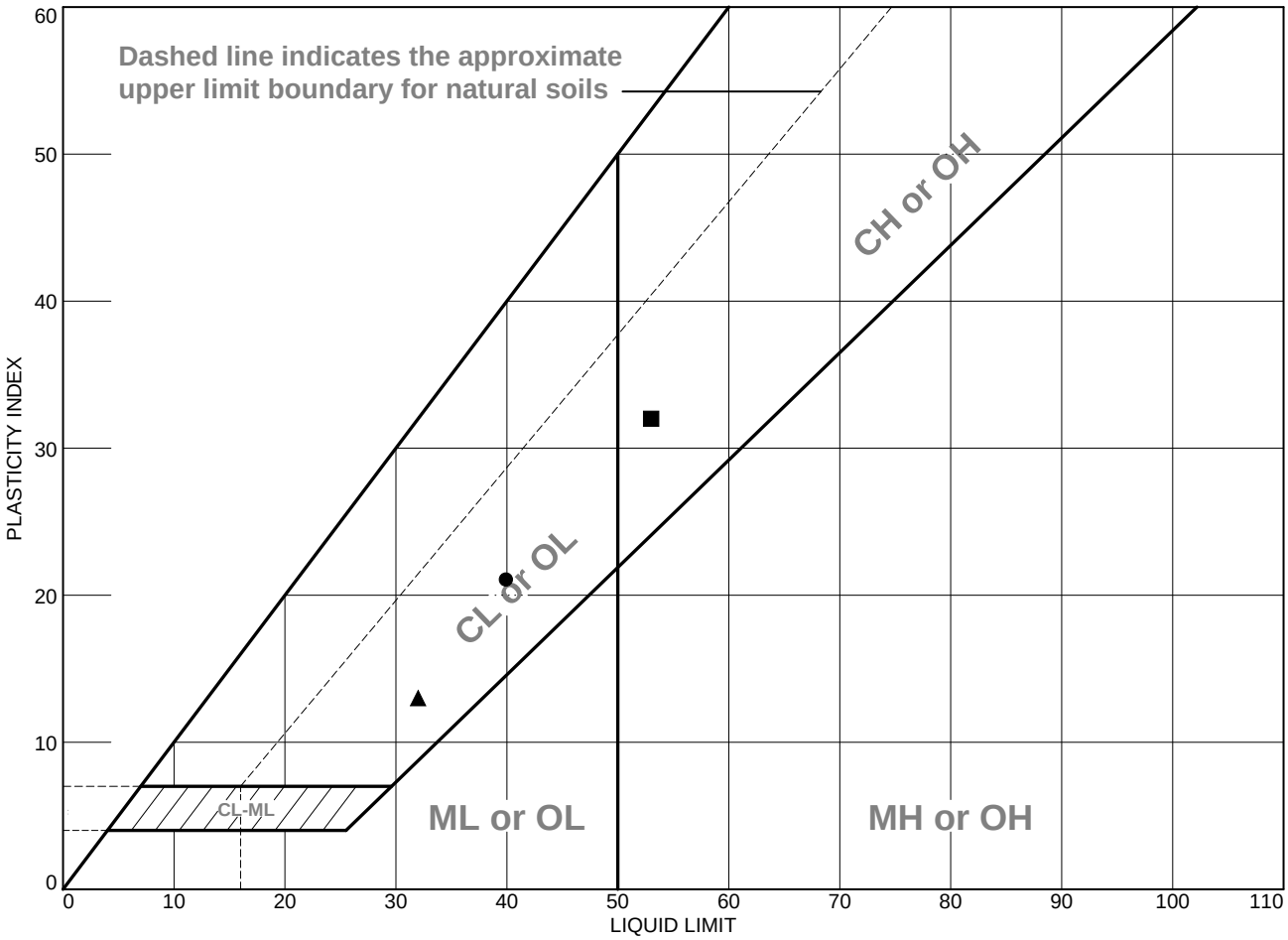
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	sandy lean clay	40	19	21	84.2	58.2	CL
■	fat clay with sand	53	21	32	91.2	76.8	CH
▲	poorly graded gravel with clay and sand	32	19	13	17.1	11.3	GP-GC

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-13 **Depth:** 5 **Sample Number:** 2

■**Source of Sample:** SB-13 **Depth:** 15 **Sample Number:** 4

▲**Source of Sample:** SB-13 **Depth:** 21 **Sample Number:** 5

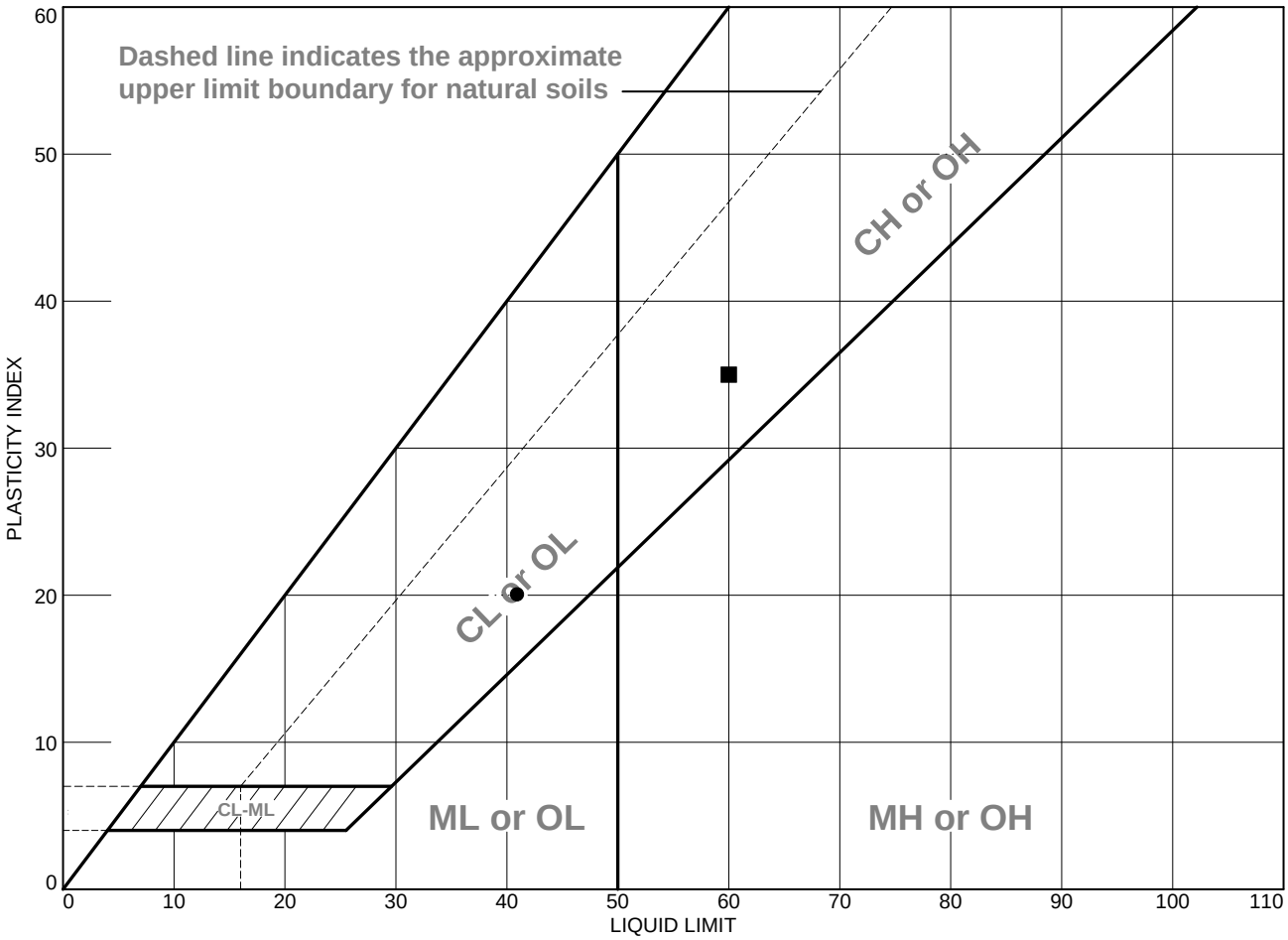
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	clayey gravel with sand	41	21	20	31.9	24.0	GC
■	fat clay	60	25	35	99.7	95.3	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SB-14 **Depth:** 5 **Sample Number:** 2

■**Source of Sample:** SB-14 **Depth:** 30 **Sample Number:** 7

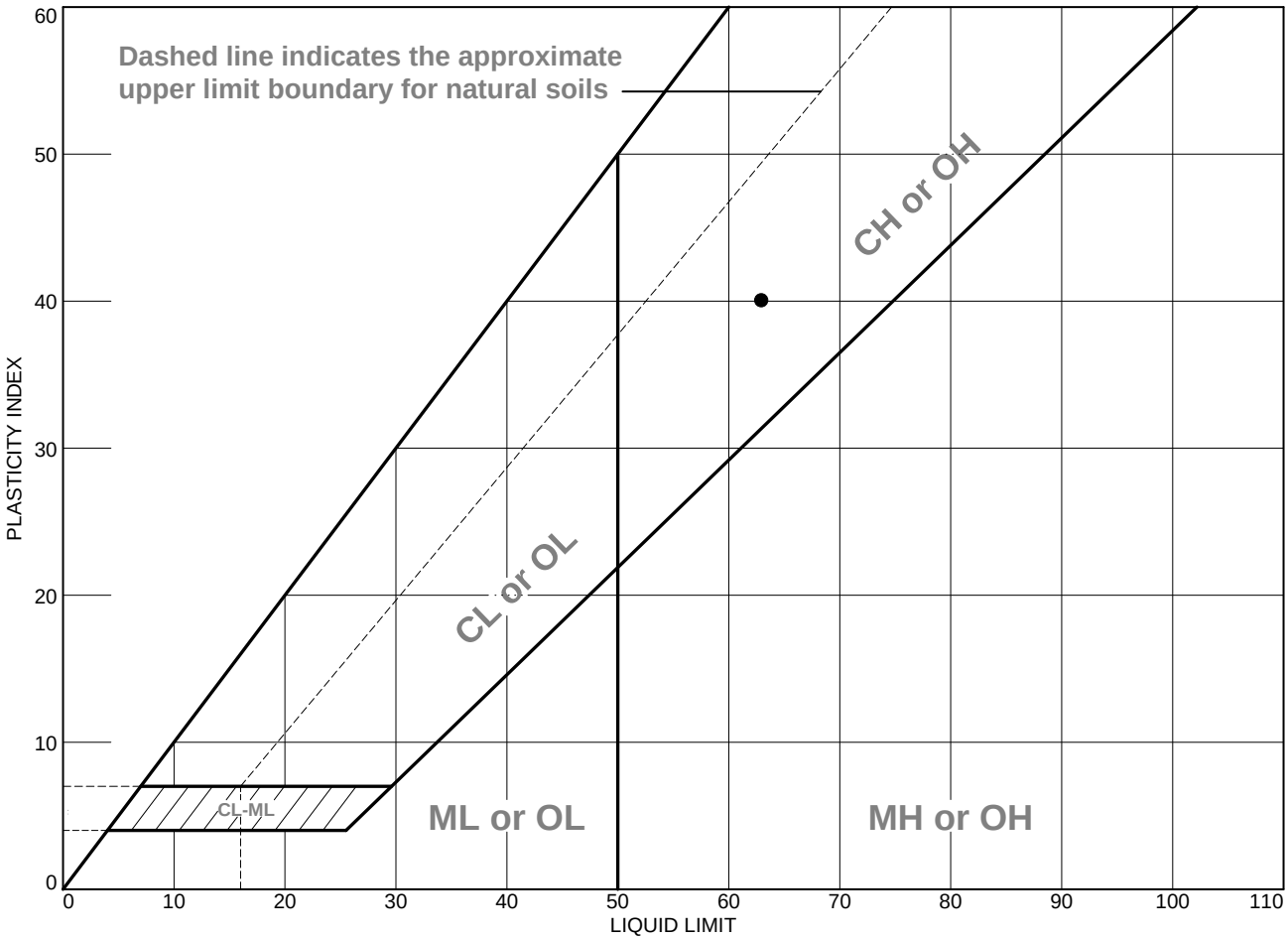
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	63	23	40	99.5	97.4	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** SHALE **Sample Number:** 1

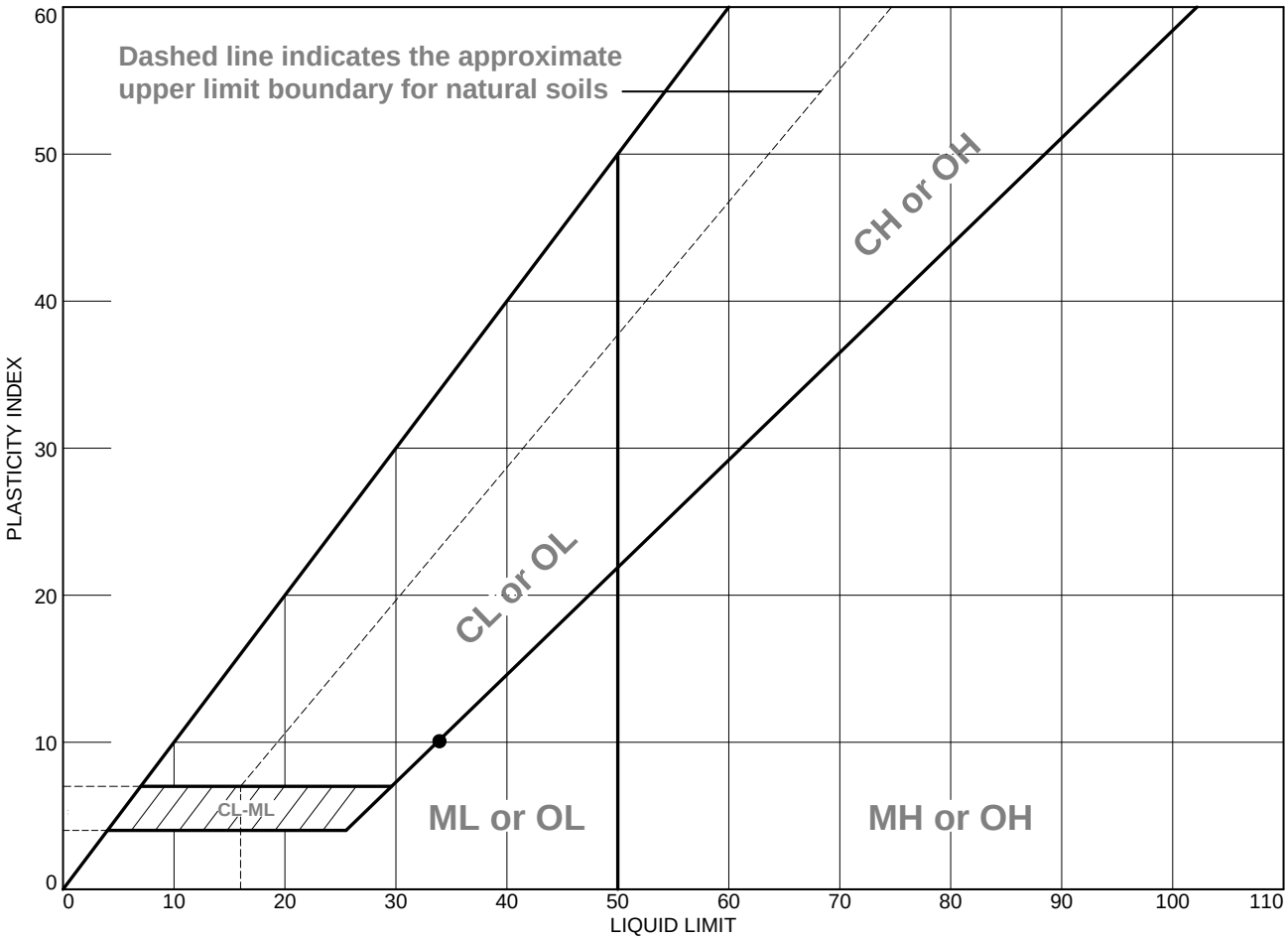
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	lean clay with sand	34	24	10	94.8	83.2	CL

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-01 **Depth:** 6 **Sample Number:** 1

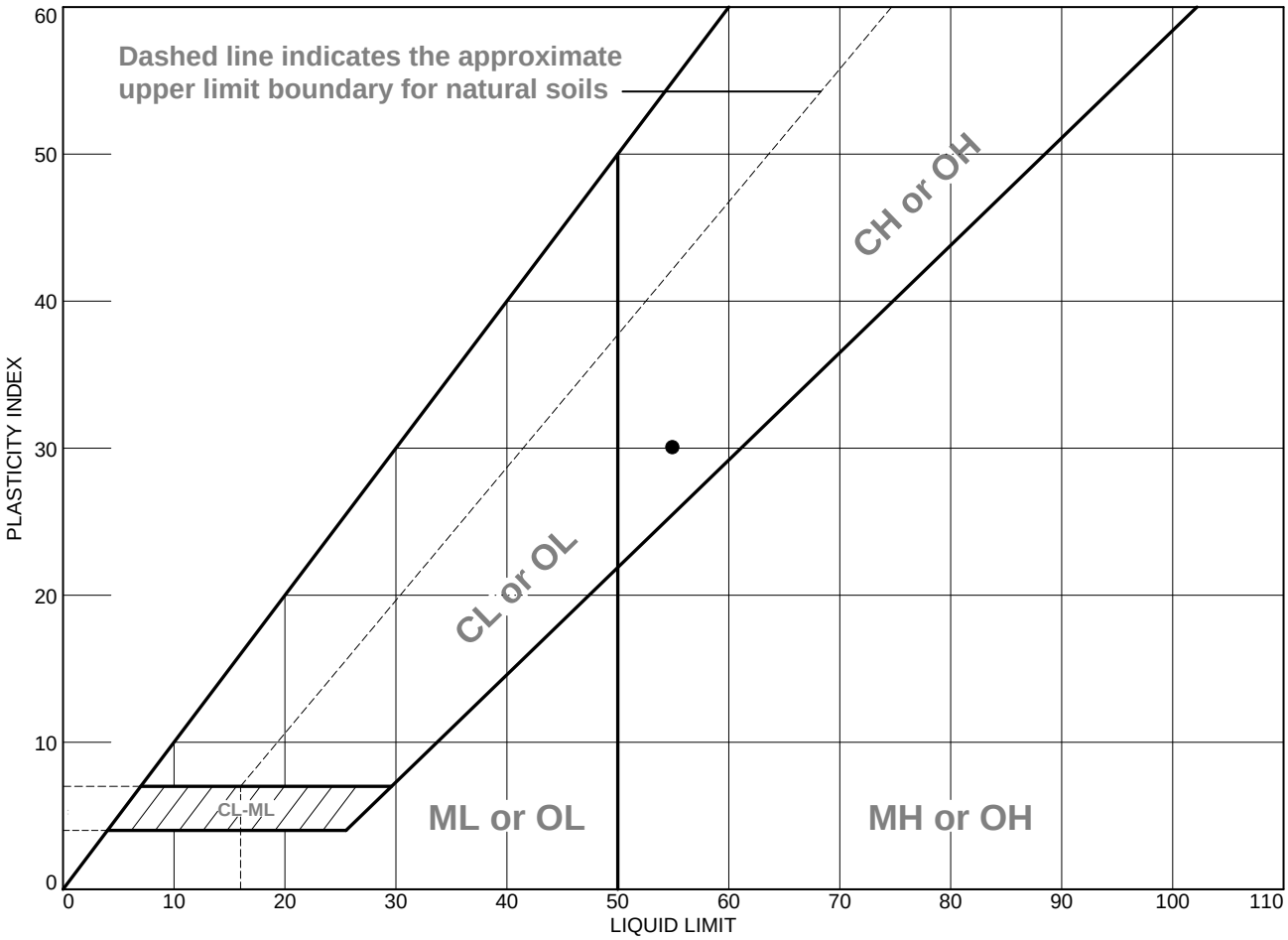
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	55	25	30	99.7	98.8	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-04 **Depth:** 7 **Sample Number:** 1

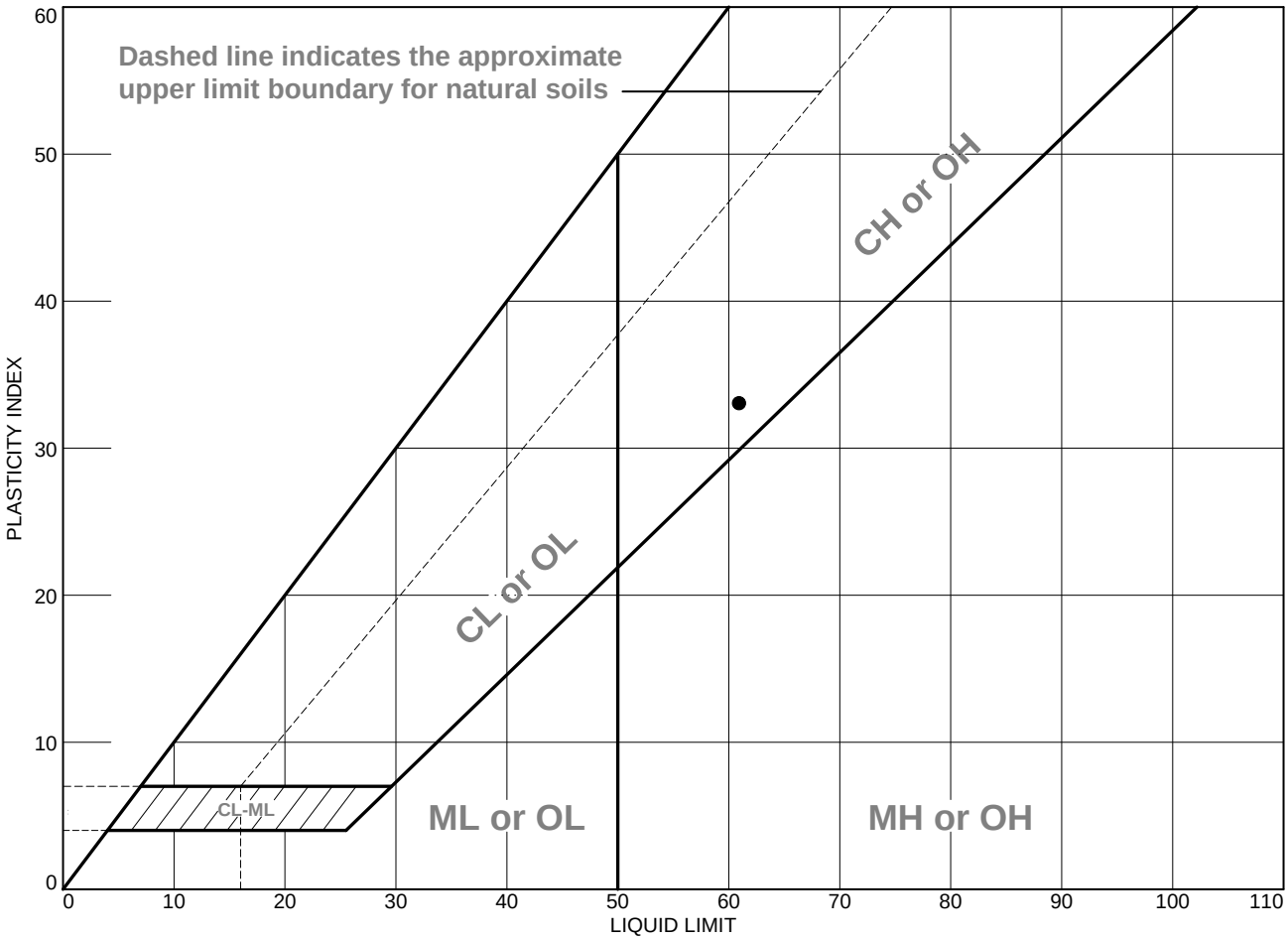
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	61	28	33	98.8	95.7	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-05 **Depth:** 10 **Sample Number:** 1

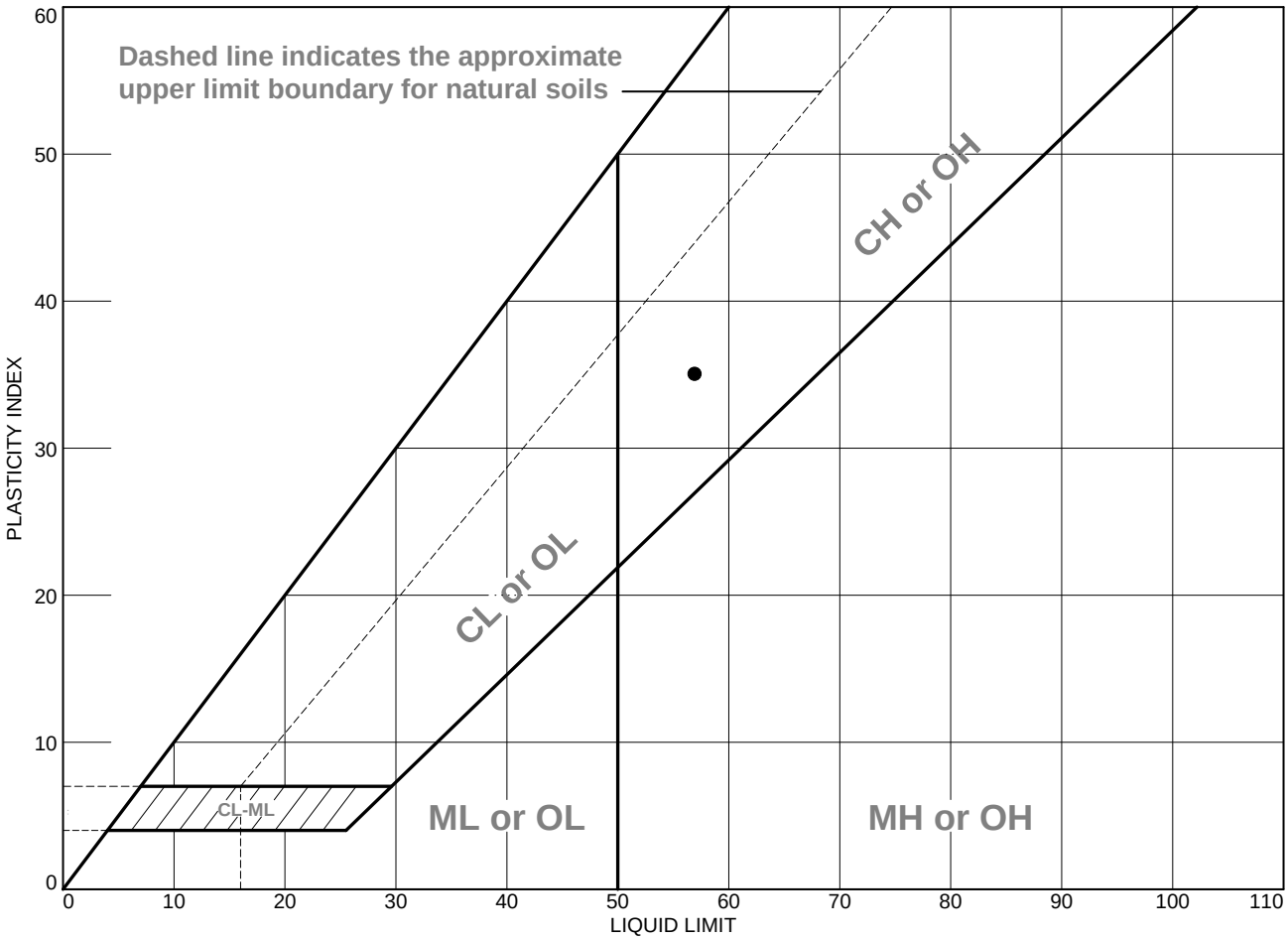
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	57	22	35	97.8	95.0	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-06 **Depth:** 8 **Sample Number:** 1

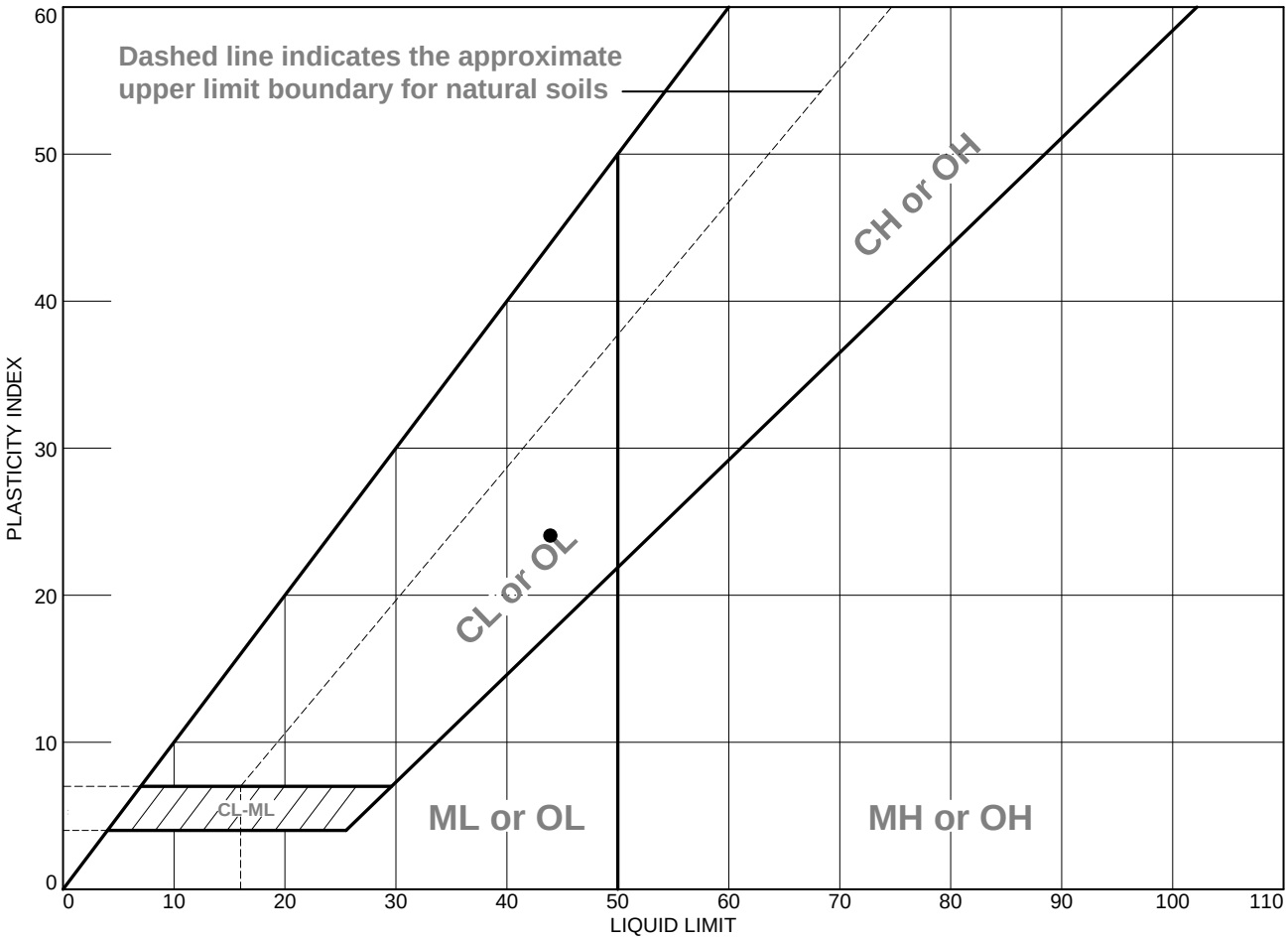
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	lean clay with sand	44	20	24	92.1	73.5	CL

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-08 **Depth:** 5 **Sample Number:** 1

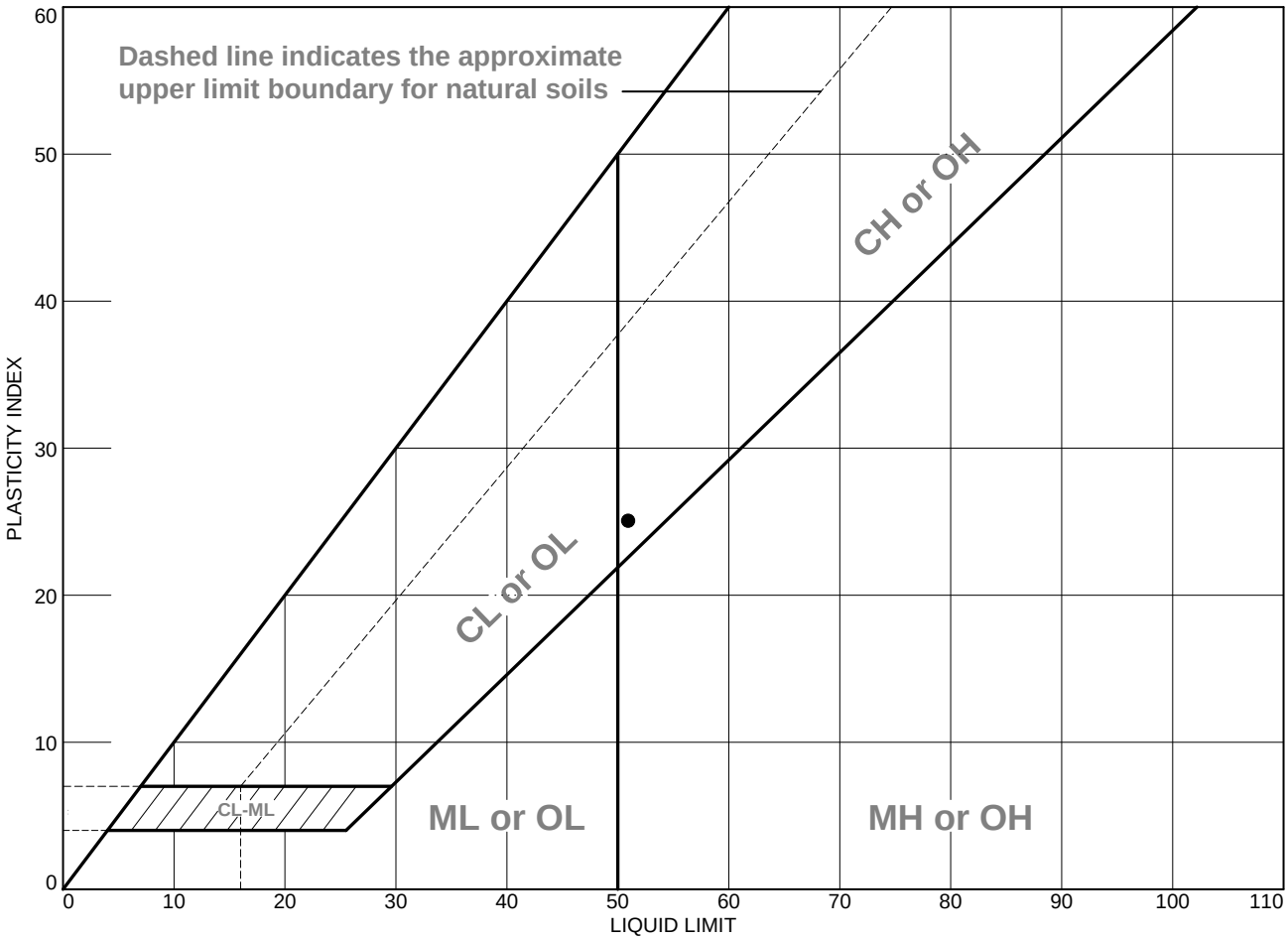
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	fat clay	51	26	25	96.8	94.1	CH

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-09 **Depth:** 8 **Sample Number:** 1

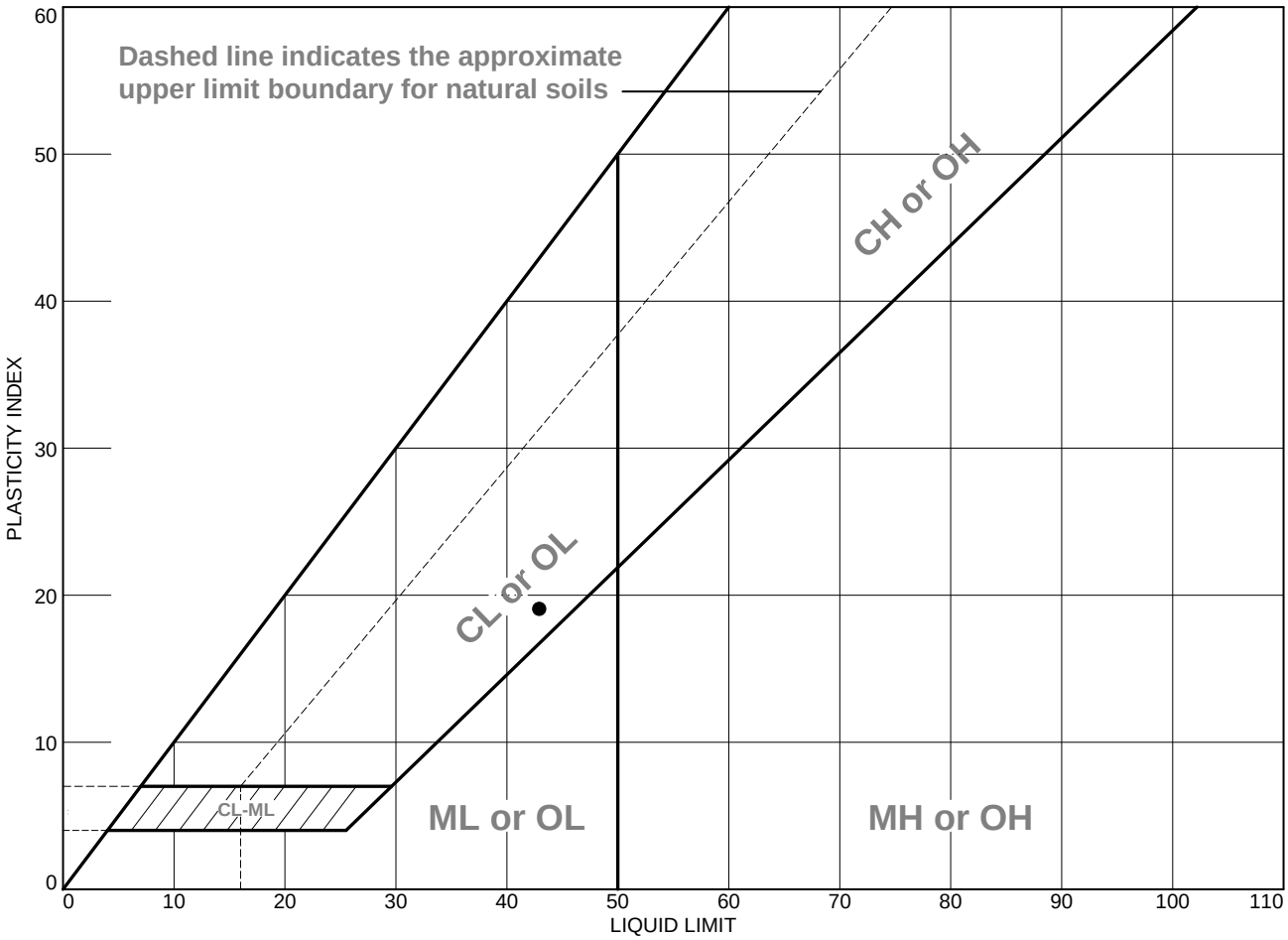
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	lean clay	43	24	19	95.3	86.4	CL

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-12 **Depth:** 8 **Sample Number:** 1

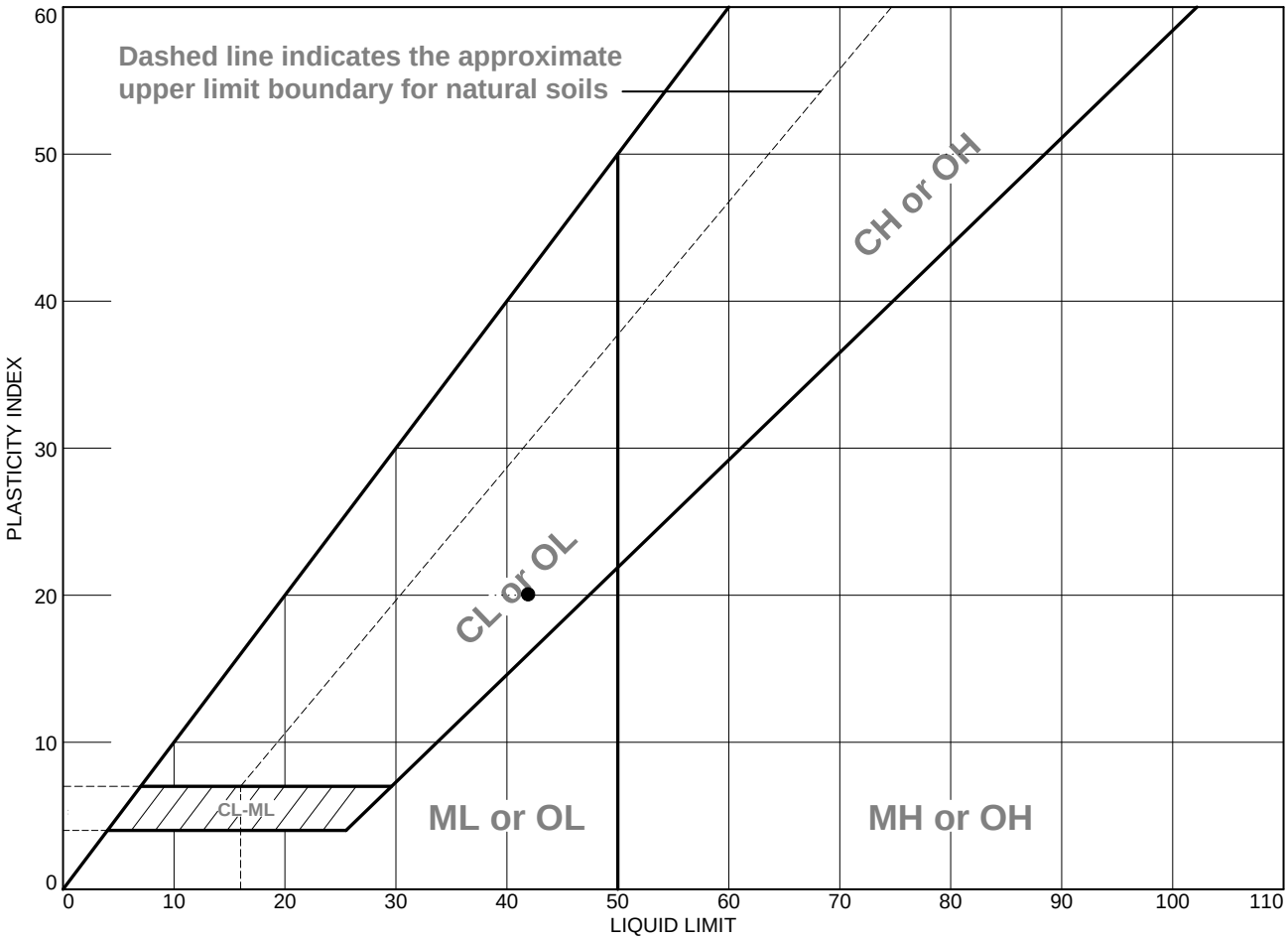
Remarks:

Horizon Consultants

Santo Domingo

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	clayey gravel	42	22	20	48.5	40.3	GC

Project No. 981-18 **Client:** Battelle

Project: San Cristobal Disposal Site

●**Source of Sample:** TP-14 **Depth:** 5 **Sample Number:** 1

Remarks:

Horizon Consultants

Santo Domingo

Figure

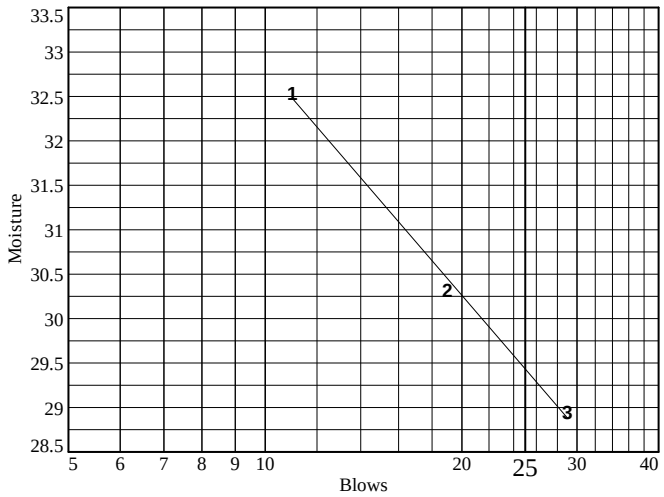
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 5 **Sample Number:** 2
Material Description: silty sand
%<#40: 99.6 **%<#200:** 43.4 **USCS:** SM **AASHTO:** A-4(0)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.4	25.55	24.75			
Dry+Tare	19.95	20.35	19.9			
Tare	3.2	3.2	3.15			
# Blows	11	19	29			
Moisture	32.5	30.3	29.0			



Liquid Limit= 29
Plastic Limit= 23
Plasticity Index= 6

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.2	12.9	12.95		
Dry+Tare	10.5	11.05	11.15		
Tare	3.15	3.25	3.15		
Moisture	23.1	23.7	22.5		

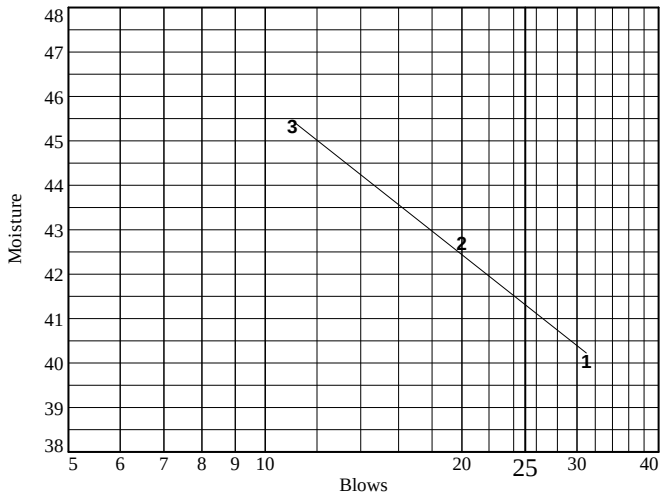
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 10 **Sample Number:** 3
Material Description: sandy lean clay
%<#40: 99.2 **%<#200:** 69.1 **USCS:** CL **AASHTO:** A-7-6(12)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.3	25.15	25.7			
Dry+Tare	18.95	18.55	18.65			
Tare	3.1	3.1	3.1			
# Blows	31	20	11			
Moisture	40.1	42.7	45.3			



Liquid Limit= 41
Plastic Limit= 22
Plasticity Index= 19

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.3	12.35	13.1		
Dry+Tare	10.7	10.75	11.15		
Tare	3.05	3.1	3.1		
Moisture	20.9	20.9	24.2		

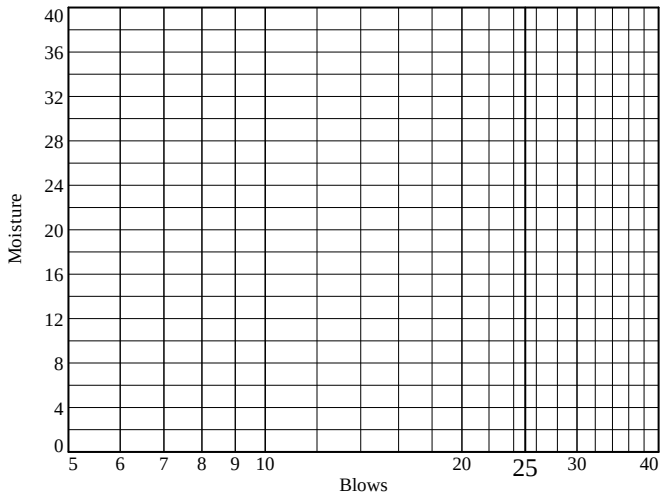
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 25 **Sample Number:** 6
Material Description: silty sand
%<#40: 93.3 **%<#200:** 22.9 **USCS:** SM **AASHTO:** A-2-4(0)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare					
Dry+Tare					
Tare					
Moisture					

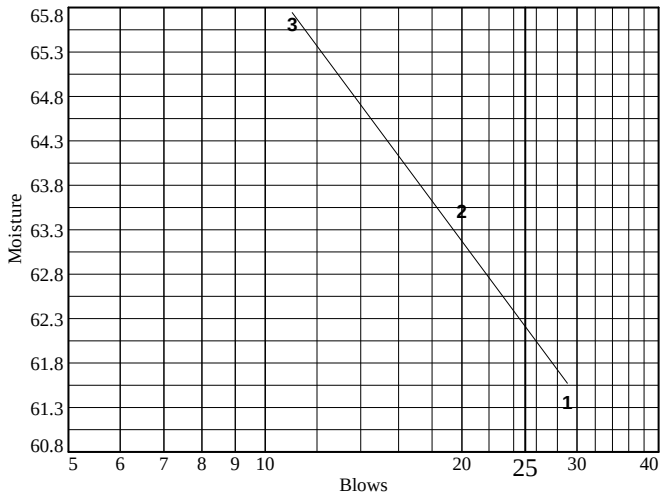
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 45 **Sample Number:** 10
Material Description: fat clay with sand
%<#40: 83.9 **%<#200:** 77.1 **USCS:** CH **AASHTO:** A-7-6(29)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.45	26.4	26.65			
Dry+Tare	16.35	17.35	17.3			
Tare	3.15	3.1	3.05			
# Blows	29	20	11			
Moisture	61.4	63.5	65.6			



Liquid Limit= 62
Plastic Limit= 26
Plasticity Index= 36

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.55	12.75	13.4		
Dry+Tare	11.3	10.85	11.4		
Tare	3.15	3.15	3.2		
Moisture	27.6	24.7	24.4		

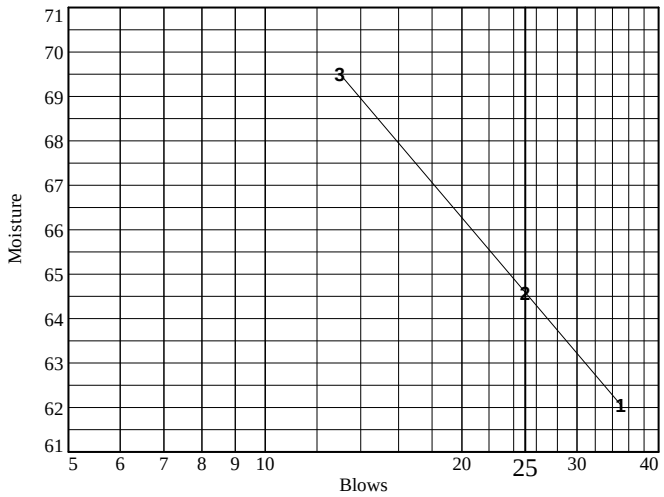
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 55 **Sample Number:** 12
Material Description: fat clay
%<#40: 92.8 **%<#200:** 88.4 **USCS:** CH **AASHTO:** A-7-5(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.25	25.35	25.9			
Dry+Tare	16.15	16.6	16.55			
Tare	3.1	3.05	3.1			
# Blows	35	25	13			
Moisture	62.1	64.6	69.5			



Liquid Limit= 65
Plastic Limit= 32
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	20.9	20.95			
Dry+Tare	18.8	18.75			
Tare	12.05	12			
Moisture	31.1	32.6			

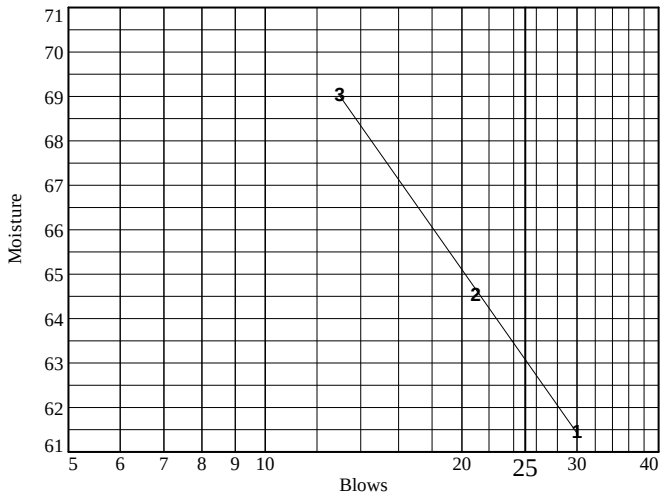
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-01
Depth: 65 **Sample Number:** 14
Material Description: fat clay
%<#40: 97.9 **%<#200:** 90.4 **USCS:** CH **AASHTO:** A-7-6(38)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.9	24.1	25.6			
Dry+Tare	16	15.9	16.45			
Tare	3.15	3.2	3.2			
# Blows	30	21	13			
Moisture	61.5	64.6	69.1			



Liquid Limit= 63
Plastic Limit= 25
Plasticity Index= 38

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.65	12.25	12.4		
Dry+Tare	10.7	10.45	10.65		
Tare	3.15	3.1	3.2		
Moisture	25.8	24.5	23.5		

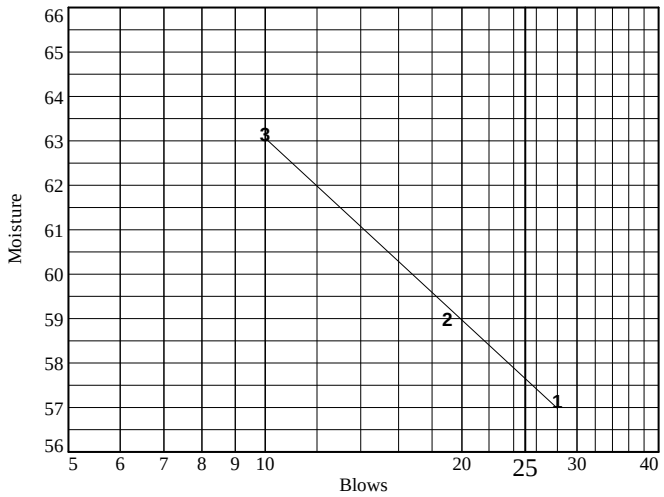
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 10 **Sample Number:** 3
Material Description: fat clay
%<#40: 94.8 **%<#200:** 89.1 **USCS:** CH **AASHTO:** A-7-6(33)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.65	25.6	26.4			
Dry+Tare	17.45	17.25	17.4			
Tare	3.1	3.1	3.15			
# Blows	28	19	10			
Moisture	57.1	59.0	63.2			



Liquid Limit= 58
Plastic Limit= 25
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	20.5	21.5	20.9		
Dry+Tare	18.7	19.65	18.95		
Tare	11.7	12.15	11.35		
Moisture	25.7	24.7	25.7		

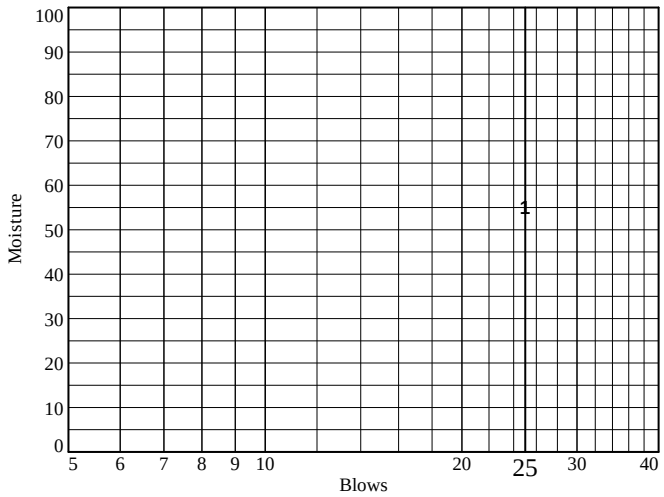
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 15 **Sample Number:** 4
Material Description: clayey gravel with sand
%<#40: 21.2 **%<#200:** 15.7 **USCS:** GC **AASHTO:** A-2-7(0)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	19.85					
Dry+Tare	13.9					
Tare	3.1					
# Blows	25					
Moisture	55.1					



Liquid Limit= 55
Plastic Limit= 24
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	10.6	10.4			
Dry+Tare	9.1	9			
Tare	3.15	3.1			
Moisture	25.2	23.7			

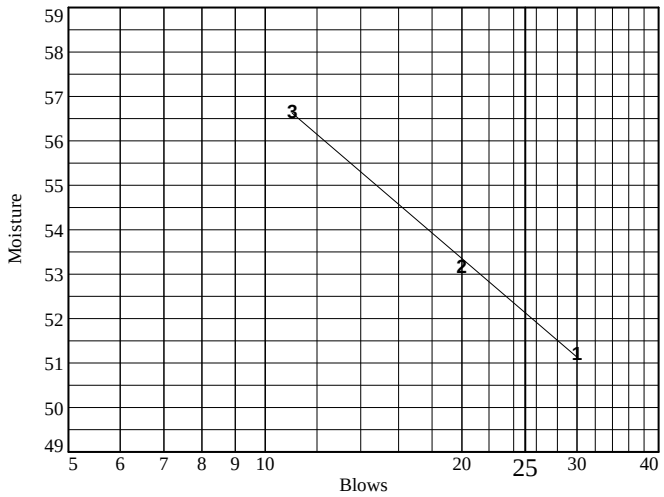
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-02
Depth: 30 **Sample Number:** 7
Material Description: fat clay with sand
%<#40: 90.4 **%<#200:** 84.8 **USCS:** CH **AASHTO:** A-7-6(30)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.65	24.7	25.4			
Dry+Tare	17.35	17.2	17.35			
Tare	3.1	3.1	3.15			
# Blows	30	20	11			
Moisture	51.2	53.2	56.7			



Liquid Limit= 52
Plastic Limit= 18
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	11.50	12.9	13.65		
Dry+Tare	11.3	10.9	11.5		
Tare	3.05	3.1	3.2		
Moisture	2.4	25.6	25.9		

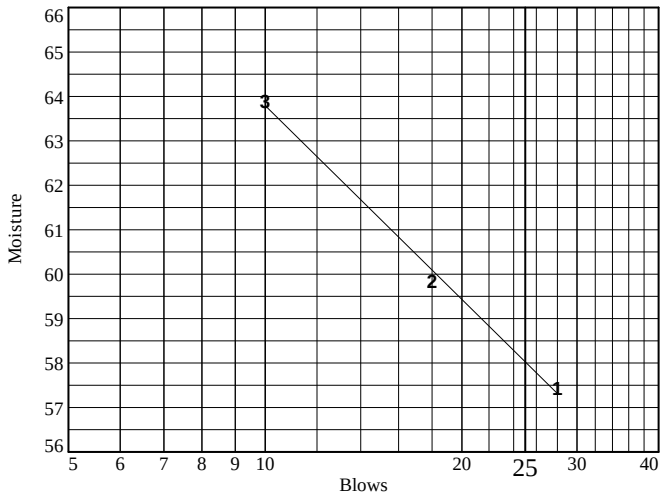
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 15 **Sample Number:** 4
Material Description: fat clay
%<#40: 99.4 **%<#200:** 94.8 **USCS:** CH **AASHTO:** A-7-6(33)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.8	24.25	25.8			
Dry+Tare	16.9	16.35	16.95			
Tare	3.15	3.15	3.1			
# Blows	28	18	10			
Moisture	57.5	59.8	63.9			



Liquid Limit= 58
Plastic Limit= 29
Plasticity Index= 29

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.7	13.65	13.3		
Dry+Tare	11.25	11.25	11.05		
Tare	3.1	3.1	3.1		
Moisture	30.1	29.4	28.3		

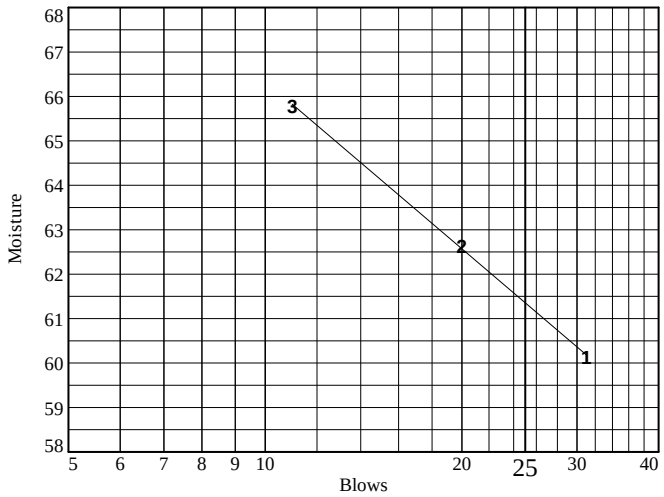
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 30 **Sample Number:** 7
Material Description: fat clay
%<#40: 99.5 **%<#200:** 96.3 **USCS:** CH **AASHTO:** A-7-5(36)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.8	25.3	25.4			
Dry+Tare	16.65	16.75	16.55			
Tare	3.1	3.1	3.1			
# Blows	31	20	11			
Moisture	60.1	62.6	65.8			



Liquid Limit= 61
Plastic Limit= 30
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.5	13.1	12.8		
Dry+Tare	11.1	10.8	10.6		
Tare	3.1	3.1	3.05		
Moisture	30.0	29.9	29.1		

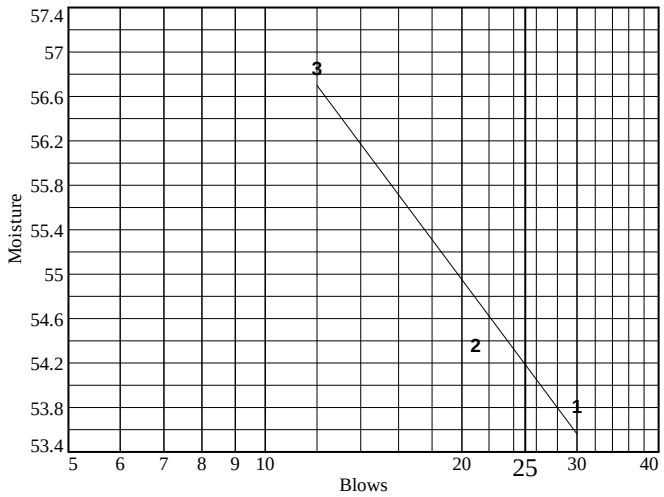
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 35 **Sample Number:** 8
Material Description: fat clay
%<#40: 99.1 **%<#200:** 96.8 **USCS:** CH **AASHTO:** A-7-6(29)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.25	26.2	27.1			
Dry+Tare	17.5	18.1	18.4			
Tare	3.1	3.2	3.1			
# Blows	30	21	12			
Moisture	53.8	54.4	56.9			



Liquid Limit= 54
Plastic Limit= 29
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.65	12.35	12.2		
Dry+Tare	10.5	10.25	10.15		
Tare	3.1	3.1	3.1		
Moisture	29.1	29.4	29.1		

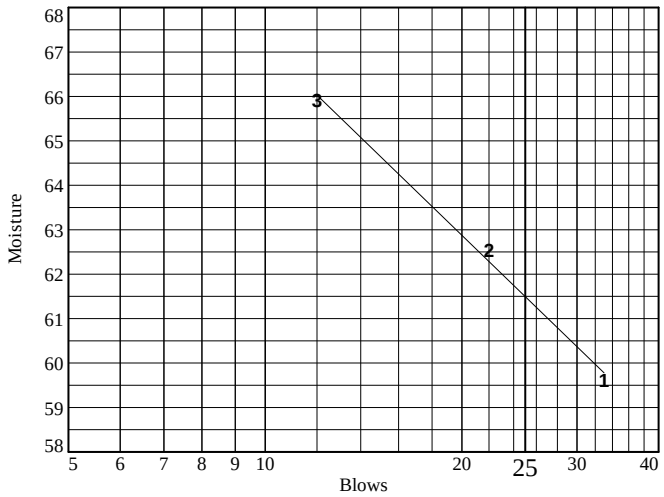
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 45 **Sample Number:** 10
Material Description: fat clay
%<#40: 98.6 **%<#200:** 95.5 **USCS:** CH **AASHTO:** A-7-6(37)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.25	24.8	25.5			
Dry+Tare	16.35	16.45	16.6			
Tare	3.1	3.1	3.1			
# Blows	33	22	12			
Moisture	59.6	62.5	65.9			



Liquid Limit= 61
Plastic Limit= 28
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.4	13.4	13.05		
Dry+Tare	11.25	11.15	10.85		
Tare	3.15	3.25	3.1		
Moisture	26.5	28.5	28.4		

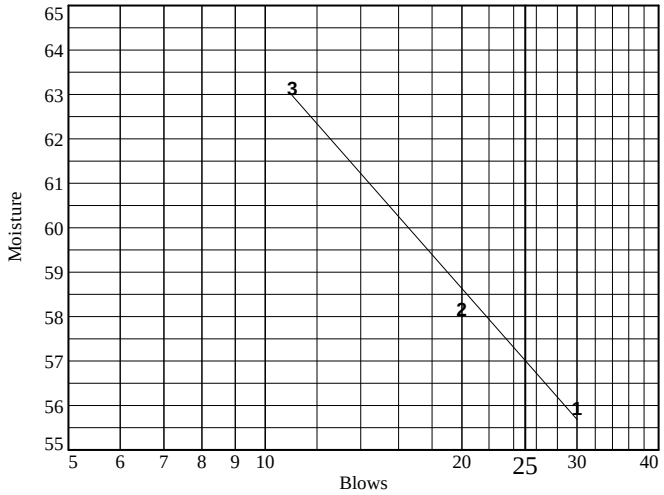
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-03
Depth: 55 **Sample Number:** 12
Material Description: fat clay
%<#40: 99.5 **%<#200:** 95.8 **USCS:** CH **AASHTO:** A-7-6(33)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.75	24.85	26.35			
Dry+Tare	17	16.85	17.35			
Tare	3.15	3.1	3.1			
# Blows	30	20	11			
Moisture	56.0	58.2	63.2			



Liquid Limit= 57
Plastic Limit= 28
Plasticity Index= 29

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.05	13.6	12.6		
Dry+Tare	10.9	11.2	10.6		
Tare	3.1	3.05	3.1		
Moisture	27.6	29.4	26.7		

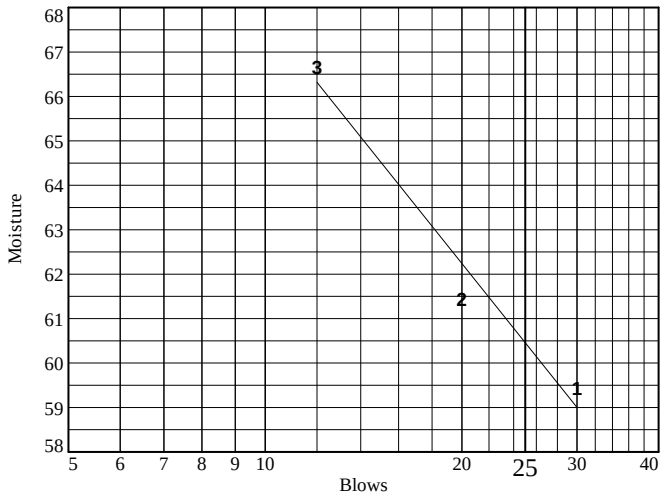
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 10 **Sample Number:** 3
Material Description: fat clay
%<#40: 97.4 **%<#200:** 87.6 **USCS:** CH **AASHTO:** A-7-5(30)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.9	25.3	26.9			
Dry+Tare	17.4	16.85	17.4			
Tare	3.1	3.1	3.15			
# Blows	30	20	12			
Moisture	59.4	61.5	66.7			



Liquid Limit= 60
Plastic Limit= 30
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.75	13.05	13.25		
Dry+Tare	10.2	10.9	11.2		
Tare	3.1	3.1	3.1		
Moisture	35.9	27.6	25.3		

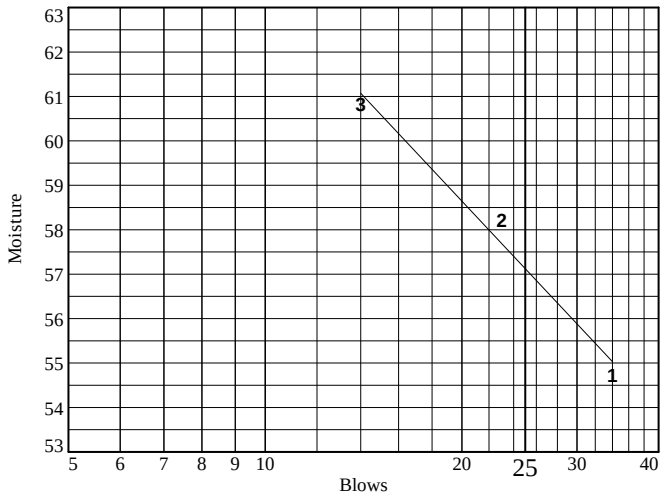
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 20 **Sample Number:** 5
Material Description: fat clay
%<#40: 99.9 **%<#200:** 96.5 **USCS:** CH **AASHTO:** A-7-5(31)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.2	26.2	26.2			
Dry+Tare	17.4	17.7	17.5			
Tare	3.15	3.1	3.2			
# Blows	34	23	14			
Moisture	54.7	58.2	60.8			



Liquid Limit= 57
Plastic Limit= 30
Plasticity Index= 27

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.2	13.1	14.3		
Dry+Tare	10.85	10.8	11.7		
Tare	3.1	3.25	3.1		
Moisture	30.3	30.5	30.2		

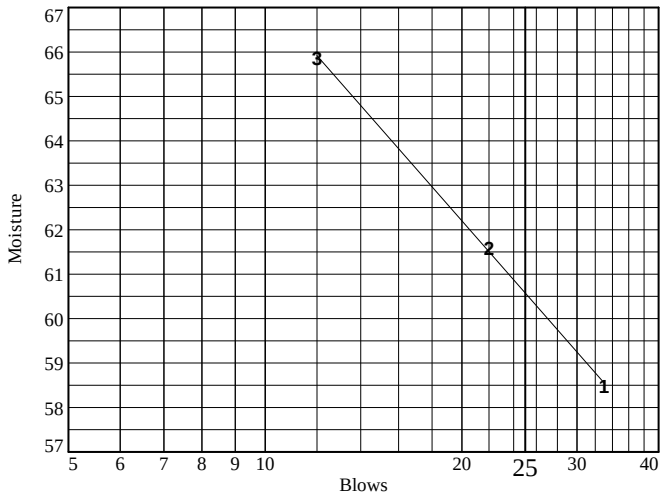
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 25 **Sample Number:** 6
Material Description: fat clay
%<#40: 99.7 **%<#200:** 93.9 **USCS:** CH **AASHTO:** A-7-6(37)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.15	24.35	24.25			
Dry+Tare	15.75	16.25	15.85			
Tare	3.1	3.1	3.1			
# Blows	33	22	12			
Moisture	58.5	61.6	65.9			



Liquid Limit= 61
Plastic Limit= 27
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	14.5	13.6	13.35		
Dry+Tare	12	11.45	11.2		
Tare	3.1	3.1	3.15		
Moisture	28.1	25.7	26.7		

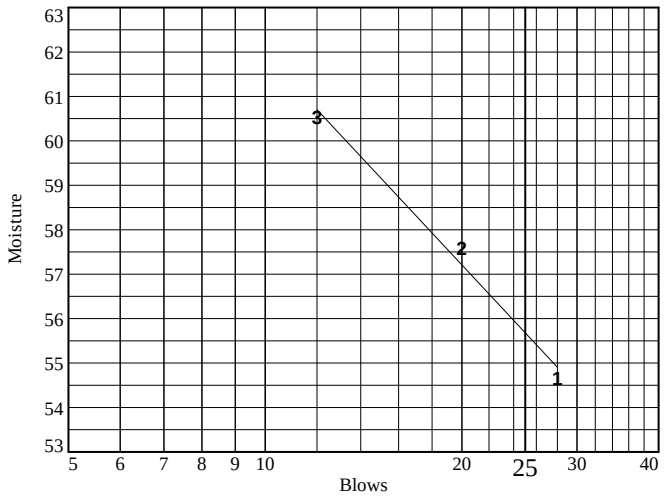
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-04
Depth: 40 **Sample Number:** 9
Material Description: fat clay
%<#40: 98.2 **%<#200:** 86.4 **USCS:** CH **AASHTO:** A-7-6(29)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.6	25.95	26.25			
Dry+Tare	17	17.6	17.5			
Tare	3.1	3.1	3.05			
# Blows	28	20	12			
Moisture	54.7	57.6	60.6			



Liquid Limit= 56
Plastic Limit= 25
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.65	13.25	14		
Dry+Tare	11.6	11.3	11.7		
Tare	3.05	3.1	3.05		
Moisture	24.0	23.8	26.6		

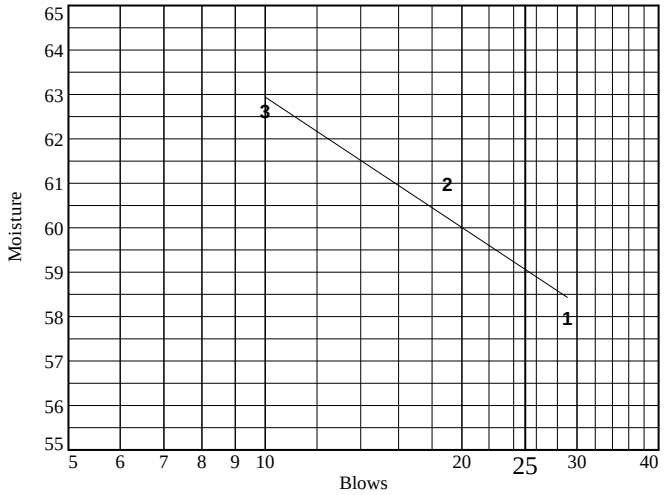
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
%<#40: 93.9 **%<#200:** 84.3 **USCS:** CH **AASHTO:** A-7-6(28)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.75	34.45	34.75			
Dry+Tare	26.2	25.85	25.95			
Tare	11.45	11.75	11.9			
# Blows	29	19	10			
Moisture	58.0	61.0	62.6			



Liquid Limit= 59
Plastic Limit= 29
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	19.95	20.6	20.6		
Dry+Tare	18.25	18.65	18.4		
Tare	12.05	11.55	11.8		
Moisture	27.4	27.5	33.3		

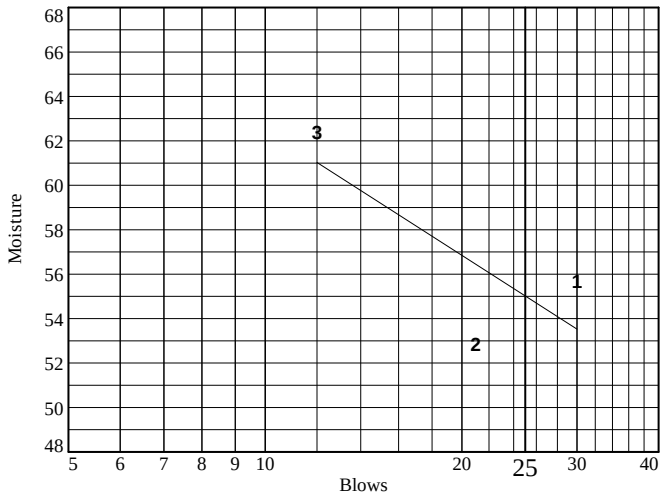
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 10 **Sample Number:** 3
Material Description: fat clay
%<#40: 99.6 **%<#200:** 95.3 **USCS:** CH **AASHTO:** A-7-6(29)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.6	35.9	36.7			
Dry+Tare	26.55	27.6	27.15			
Tare	12.1	11.9	11.85			
# Blows	30	21	12			
Moisture	55.7	52.9	62.4			



Liquid Limit= 55
Plastic Limit= 29
Plasticity Index= 26

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.2	13.3	14		
Dry+Tare	11	11	11.5		
Tare	3.2	3.25	3.2		
Moisture	28.2	29.7	30.1		

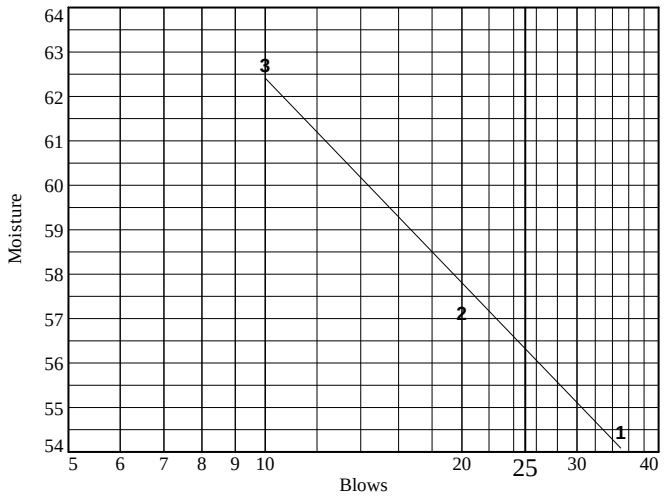
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 15 **Sample Number:** 4
Material Description: fat clay
%<#40: 99.7 **%<#200:** 97.0 **USCS:** CH **AASHTO:** A-7-6(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.3	35.3	36.3			
Dry+Tare	26.35	26.7	26.8			
Tare	11.75	11.65	11.65			
# Blows	35	20	10			
Moisture	54.5	57.1	62.7			



Liquid Limit= 56
Plastic Limit= 26
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.55	20.9	21.2		
Dry+Tare	19.5	18.9	19.25		
Tare	11.45	11.2	11.7		
Moisture	25.5	26.0	25.8		

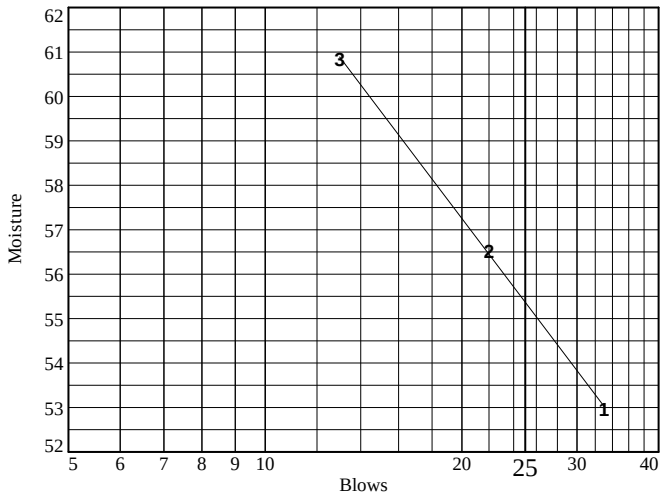
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 20 **Sample Number:** 5
Material Description: fat clay
%<#40: 99.5 **%<#200:** 96.1 **USCS:** CH **AASHTO:** A-7-6(31)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.45	35.2	36.05			
Dry+Tare	25.9	26.75	26.8			
Tare	11.65	11.8	11.6			
# Blows	33	22	13			
Moisture	53.0	56.5	60.9			



Liquid Limit= 55
Plastic Limit= 27
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.5	21.2	21.5		
Dry+Tare	19.4	19.2	19.5		
Tare	11.7	11.85	11.75		
Moisture	27.3	27.2	25.8		

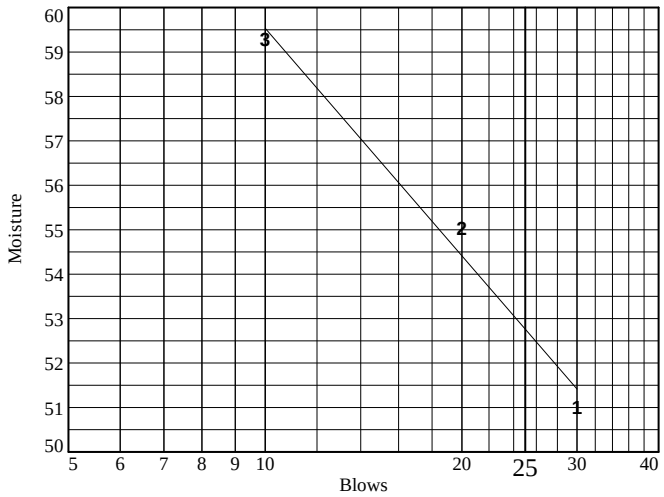
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 25 **Sample Number:** 6
Material Description: fat clay
%<#40: 99.1 **%<#200:** 97.3 **USCS:** CH **AASHTO:** A-7-6(31)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.75	34	34.4			
Dry+Tare	26.2	26.1	25.95			
Tare	11.4	11.75	11.7			
# Blows	30	20	10			
Moisture	51.0	55.1	59.3			



Liquid Limit= 53
Plastic Limit= 25
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.3	13.5	21.4		
Dry+Tare	11.25	11.45	19.4		
Tare	3.25	3.15	11.65		
Moisture	25.6	24.7	25.8		

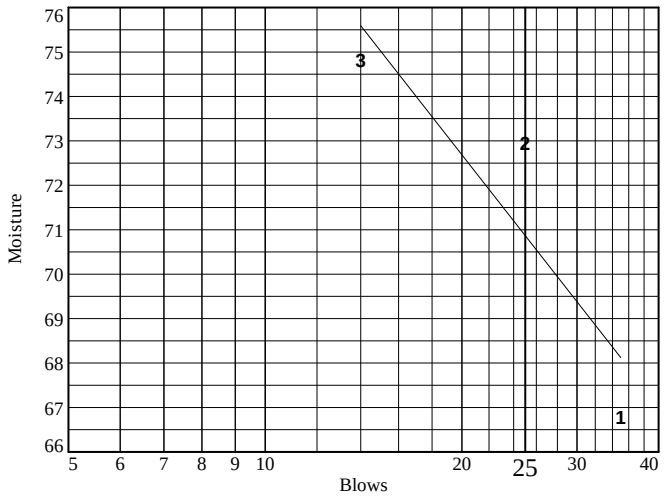
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-05
Depth: 40 **Sample Number:** 9
Material Description: fat clay
%<#40: 99.9 **%<#200:** 98.0 **USCS:** CH **AASHTO:** A-7-6(51)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.95	34.9	36.2			
Dry+Tare	24.5	25.05	25.65			
Tare	11.85	11.55	11.55			
# Blows	35	25	14			
Moisture	66.8	73.0	74.8			



Liquid Limit= 71
Plastic Limit= 27
Plasticity Index= 44

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.55	21.25	21.15		
Dry+Tare	19.4	19.2	19.1		
Tare	11.65	11.4	11.55		
Moisture	27.7	26.3	27.2		

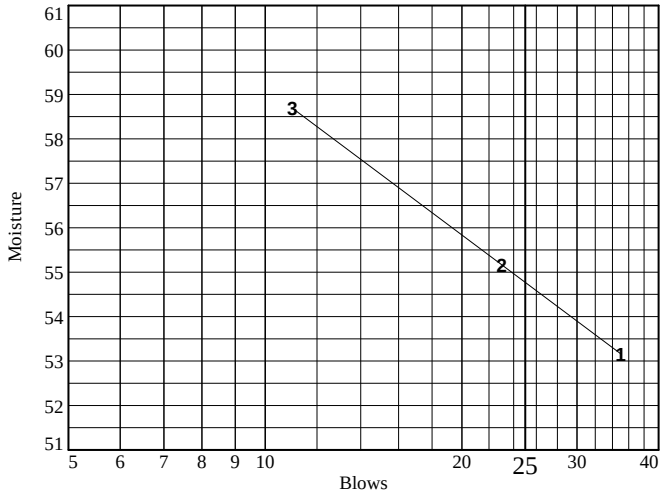
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 10 **Sample Number:** 3
Material Description: fat clay
%<#40: 99.7 **%<#200:** 99.1 **USCS:** CH **AASHTO:** A-7-6(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.85	24.95	25			
Dry+Tare	17.3	17.2	16.9			
Tare	3.1	3.15	3.1			
# Blows	35	23	11			
Moisture	53.2	55.2	58.7			



Liquid Limit= 55
Plastic Limit= 25
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.4	12.5	12.65		
Dry+Tare	10.55	10.6	10.8		
Tare	3.1	3.1	3.15		
Moisture	24.8	25.3	24.2		

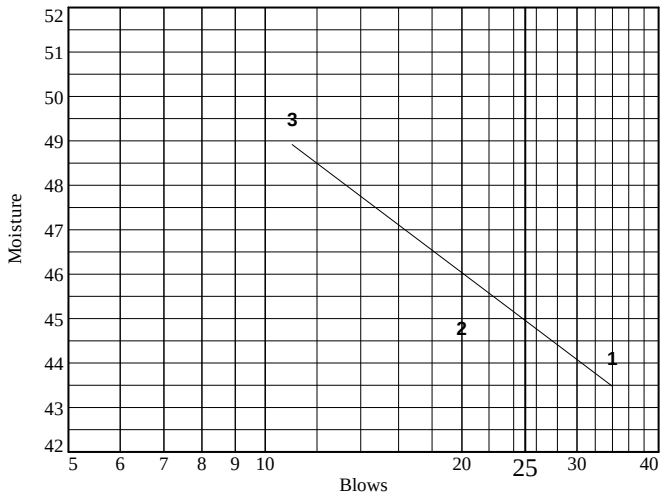
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 20 **Sample Number:** 5
Material Description: lean clay
%<#40: 96.9 **%<#200:** 91.3 **USCS:** CL **AASHTO:** A-7-6(24)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.85	25.4	25.35			
Dry+Tare	18.9	18.5	18			
Tare	3.15	3.1	3.15			
# Blows	34	20	11			
Moisture	44.1	44.8	49.5			



Liquid Limit= 45
Plastic Limit= 20
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.5	13.95	21.9		
Dry+Tare	11.9	12.1	20.15		
Tare	3.1	3.15	11.4		
Moisture	18.2	20.7	20.0		

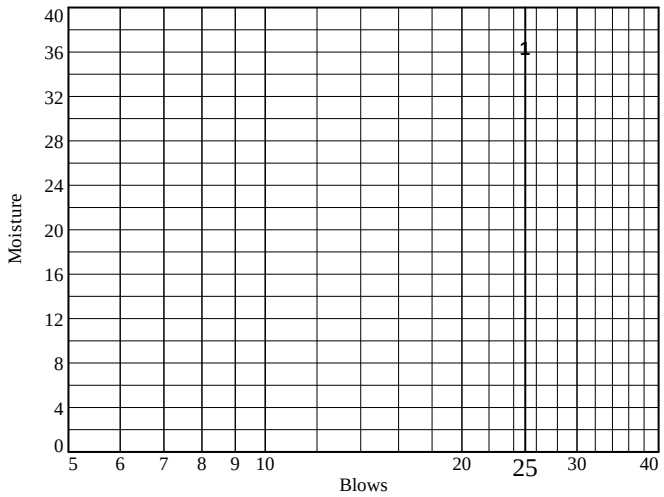
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 25 **Sample Number:** 6
Material Description: clayey gravel with sand
%<#40: 25.8 **%<#200:** 18.9 **USCS:** GC **AASHTO:** A-2-6(0)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.1					
Dry+Tare	18.5					
Tare	3.1					
# Blows	25					
Moisture	36.4					



Liquid Limit= 36
Plastic Limit= 18
Plasticity Index= 18

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.2	12.25	12.5		
Dry+Tare	10.85	10.9	11.05		
Tare	3.25	3.1	3.15		
Moisture	17.8	17.3	18.4		

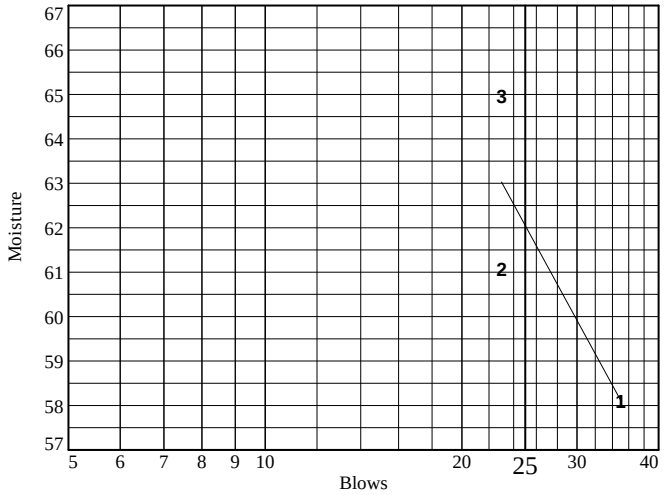
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-06
Depth: 40 **Sample Number:** 9
Material Description: fat clay
%<#40: 97.7 **%<#200:** 92.7 **USCS:** CH **AASHTO:** A-7-5(35)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.05	25.2	25.75			
Dry+Tare	16.35	16.8	16.85			
Tare	3.1	3.05	3.15			
# Blows	35	23	23			
Moisture	58.1	61.1	65.0			



Liquid Limit= 62
Plastic Limit= 30
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.2	13.8	14.1		
Dry+Tare	10.9	11.3	11.5		
Tare	3.2	3.05	3.15		
Moisture	29.9	30.3	31.1		

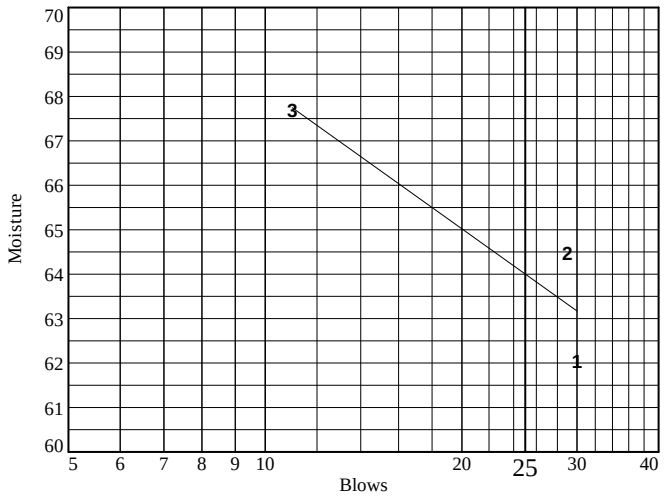
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-07
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
%<#40: 89.1 **%<#200:** 83.1 **USCS:** CH **AASHTO:** A-7-6(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.05	34.35	35.5			
Dry+Tare	25.55	25.45	25.75			
Tare	11.85	11.65	11.35			
# Blows	30	29	11			
Moisture	62.0	64.5	67.7			



Liquid Limit= 64
Plastic Limit= 27
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.1	21.6	21.6		
Dry+Tare	19.1	19.4	19.4		
Tare	11.35	11.5	11.25		
Moisture	25.8	27.8	27.0		

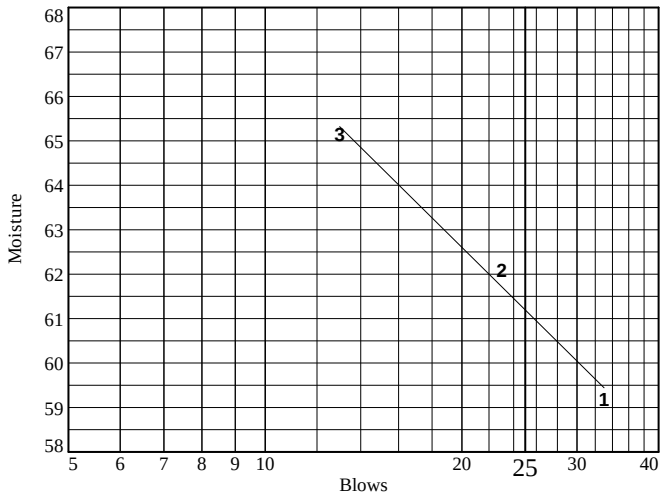
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-07
Depth: 25 **Sample Number:** 6
Material Description: fat clay
%<#40: 99.8 **%<#200:** 97.3 **USCS:** CH **AASHTO:** A-7-5(36)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34	34.95	35.75			
Dry+Tare	25.8	26.1	26.3			
Tare	11.95	11.85	11.8			
# Blows	33	23	13			
Moisture	59.2	62.1	65.2			



Liquid Limit= 61
Plastic Limit= 30
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.6	21.4	22.45		
Dry+Tare	19.3	19.2	20.05		
Tare	11.55	11.9	12.05		
Moisture	29.7	30.1	30.0		

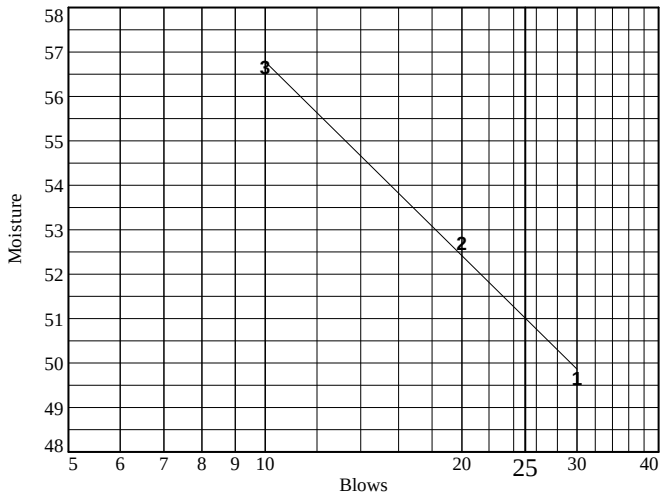
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
%<#40: 96.2 **%<#200:** 76.8 **USCS:** CH **AASHTO:** A-7-6(23)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.15	34.65	35.45			
Dry+Tare	26.6	26.9	26.95			
Tare	11.4	12.2	11.95			
# Blows	30	20	10			
Moisture	49.7	52.7	56.7			



Liquid Limit= 51
Plastic Limit= 21
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.3	21.9	22.4		
Dry+Tare	20.4	20.2	20.55		
Tare	11.6	11.9	11.7		
Moisture	21.6	20.5	20.9		

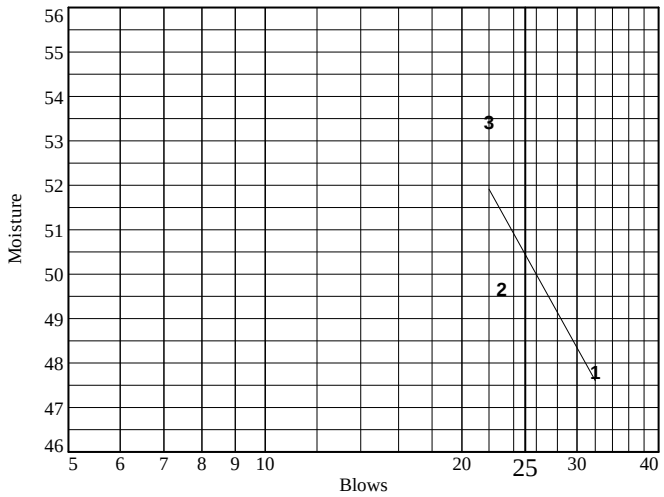
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 10 **Sample Number:** 3
Material Description: fat clay
%<#40: 82.3 **%<#200:** 67.5 **USCS:** CH **AASHTO:** A-7-6(18)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.45	34.65	34.8			
Dry+Tare	26.35	27.1	26.65			
Tare	11.5	11.9	11.4			
# Blows	32	23	22			
Moisture	47.8	49.7	53.4			



Liquid Limit= 50
Plastic Limit= 22
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.9	22.75	22.2		
Dry+Tare	20	20.75	20.3		
Tare	11.5	11.7	11.5		
Moisture	22.4	22.1	21.6		

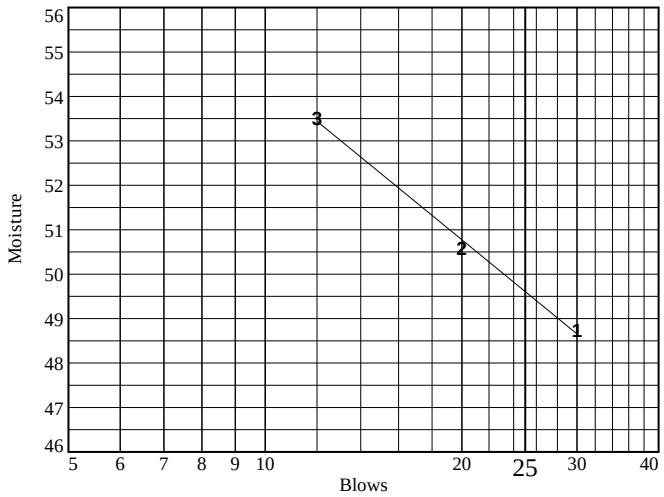
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 30 **Sample Number:** 7
Material Description: fat clay
%<#40: 99.9 **%<#200:** 96.6 **USCS:** CH **AASHTO:** A-7-6(28)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	35.75	37	36.45			
Dry+Tare	27.95	28.6	27.7			
Tare	11.95	12	11.35			
# Blows	30	20	12			
Moisture	48.8	50.6	53.5			



Liquid Limit= 50
Plastic Limit= 25
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.1	22.3	22.2		
Dry+Tare	20.15	20.25	20.05		
Tare	12.25	12.2	11.6		
Moisture	24.7	25.5	25.4		

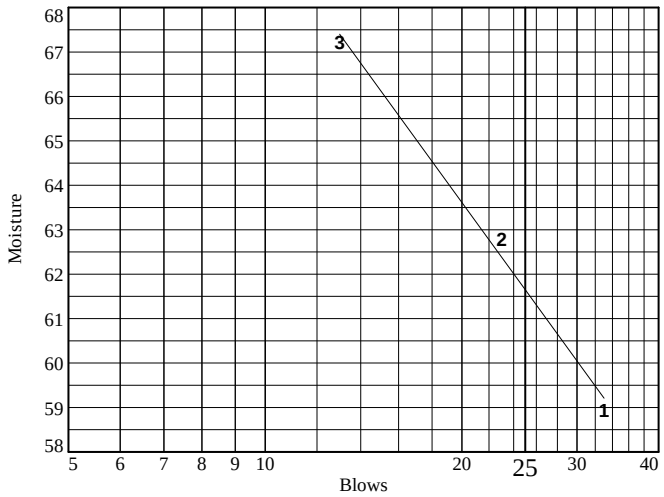
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-08
Depth: 35 **Sample Number:** 8
Material Description: fat clay
%<#40: 97.7 **%<#200:** 87.3 **USCS:** CH **AASHTO:** A-7-6(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.25	35	35.9			
Dry+Tare	25.85	26.05	26.05			
Tare	11.6	11.8	11.4			
# Blows	33	23	13			
Moisture	58.9	62.8	67.2			



Liquid Limit= 62
Plastic Limit= 27
Plasticity Index= 35

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23	21.8	22.45		
Dry+Tare	20.65	19.65	20.2		
Tare	11.7	11.75	11.65		
Moisture	26.3	27.2	26.3		

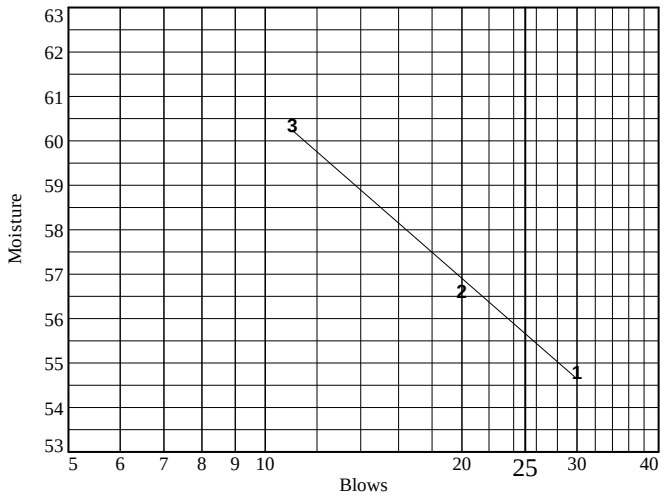
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 5 **Sample Number:** 2
Material Description: fat clay with sand
%<#40: 89.3 **%<#200:** 85.2 **USCS:** CH **AASHTO:** A-7-6(28)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24	24.35	25.6			
Dry+Tare	16.6	16.65	17.15			
Tare	3.1	3.05	3.15			
# Blows	30	20	11			
Moisture	54.8	56.6	60.4			



Liquid Limit= 56
Plastic Limit= 26
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.65	13.15	13.6		
Dry+Tare	11.45	11.1	11.45		
Tare	3.05	3.1	3.15		
Moisture	26.2	25.6	25.9		

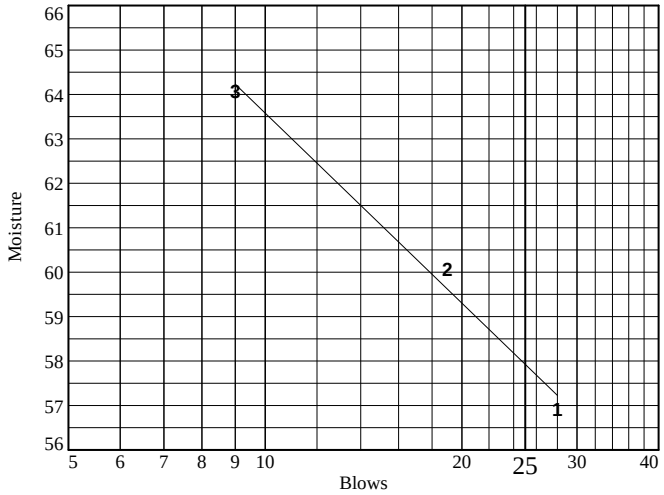
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 15 **Sample Number:** 4
Material Description: fat clay
%<#40: 97.2 **%<#200:** 87.2 **USCS:** CH **AASHTO:** A-7-6(31)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.05	24.55	25.25			
Dry+Tare	16.45	16.5	16.6			
Tare	3.1	3.1	3.1			
# Blows	28	19	9			
Moisture	56.9	60.1	64.1			



Liquid Limit= 58
Plastic Limit= 26
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.25	12.85	12.3		
Dry+Tare	10.35	10.85	10.45		
Tare	3.1	3.1	3.1		
Moisture	26.2	25.8	25.2		

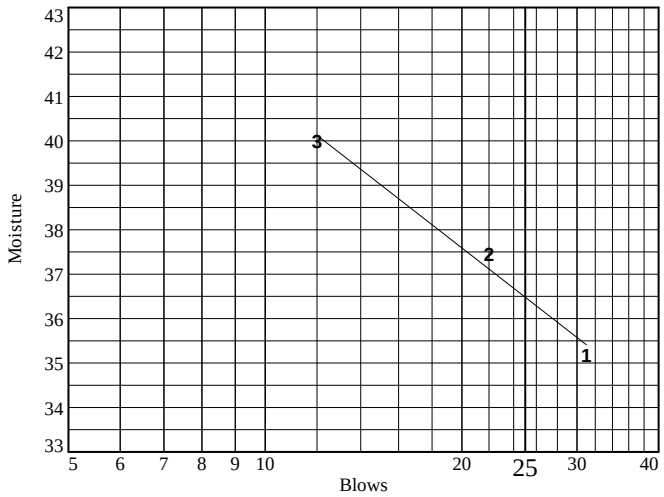
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 20 **Sample Number:** 5
Material Description: lean clay with sand
%<#40: 97.5 **%<#200:** 75.2 **USCS:** CL **AASHTO:** A-6(13)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.15	27	26.9			
Dry+Tare	20.15	20.5	20.1			
Tare	3.1	3.15	3.1			
# Blows	31	22	12			
Moisture	35.2	37.5	40.0			



Liquid Limit= 36
Plastic Limit= 17
Plasticity Index= 19

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.45	14.45	13.4		
Dry+Tare	11.9	12.9	11.95		
Tare	3.15	3.15	3.1		
Moisture	17.7	15.9	16.4		

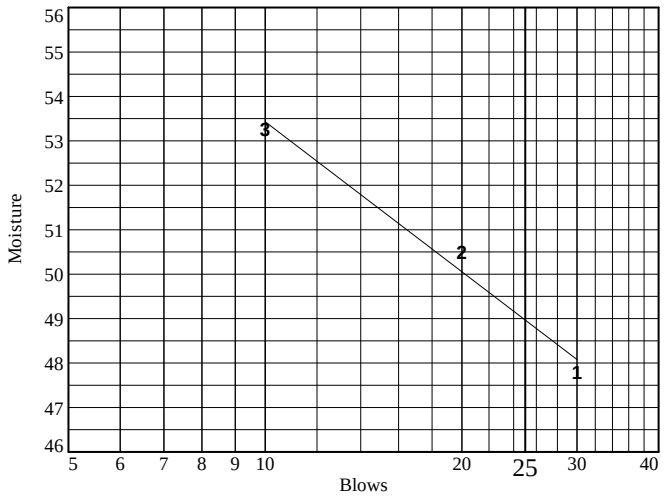
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 25 **Sample Number:** 6
Material Description: clayey gravel with sand
%<#40: 48.5 **%<#200:** 45.3 **USCS:** GC **AASHTO:** A-7-6(6)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.9	25.7	25.45			
Dry+Tare	17.85	18.1	17.7			
Tare	3.1	3.05	3.15			
# Blows	30	20	10			
Moisture	47.8	50.5	53.3			



Liquid Limit= 49
Plastic Limit= 26
Plasticity Index= 23

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.3	13.5	13.25		
Dry+Tare	11.15	11.35	11.2		
Tare	3.15	3.15	3.15		
Moisture	26.9	26.2	25.5		

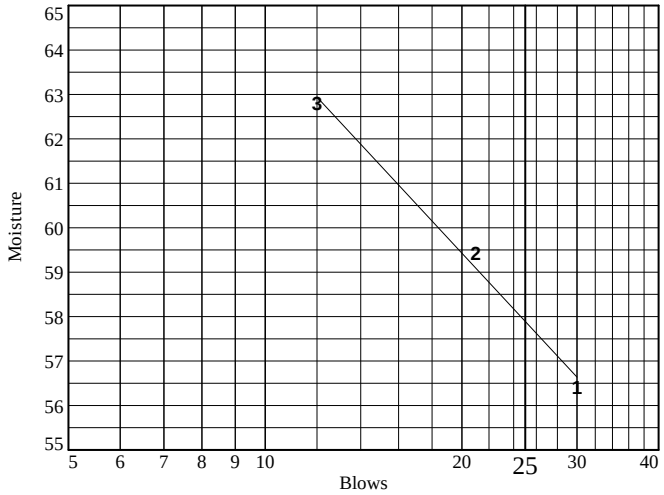
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 55 **Sample Number:** 12
Material Description: fat clay
%<#40: 99.3 **%<#200:** 92.6 **USCS:** CH **AASHTO:** A-7-6(32)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25	25.45	26.3			
Dry+Tare	17.1	17.1	17.35			
Tare	3.1	3.05	3.1			
# Blows	30	21	12			
Moisture	56.4	59.4	62.8			



Liquid Limit= 58
Plastic Limit= 28
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.7	13.3	13.3		
Dry+Tare	10.6	11.05	11.1		
Tare	3.1	3.1	3.05		
Moisture	28.0	28.3	27.3		

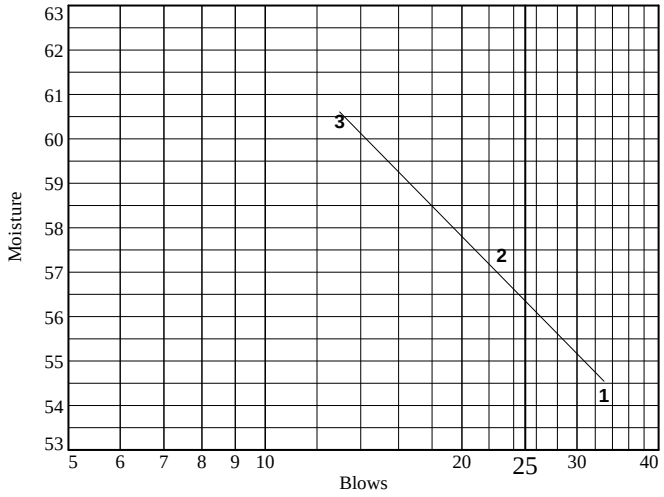
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 70 **Sample Number:** 15
Material Description: fat clay
%<#40: 100.0 **%<#200:** 96.9 **USCS:** CH **AASHTO:** A-7-6(35)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24	25.95	26.2			
Dry+Tare	16.65	17.6	17.5			
Tare	3.1	3.05	3.1			
# Blows	33	23	13			
Moisture	54.2	57.4	60.4			



Liquid Limit= 56
Plastic Limit= 24
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.4	13.5	14.05		
Dry+Tare	11.45	11.5	11.95		
Tare	3.15	3.1	3.15		
Moisture	23.5	23.8	23.9		

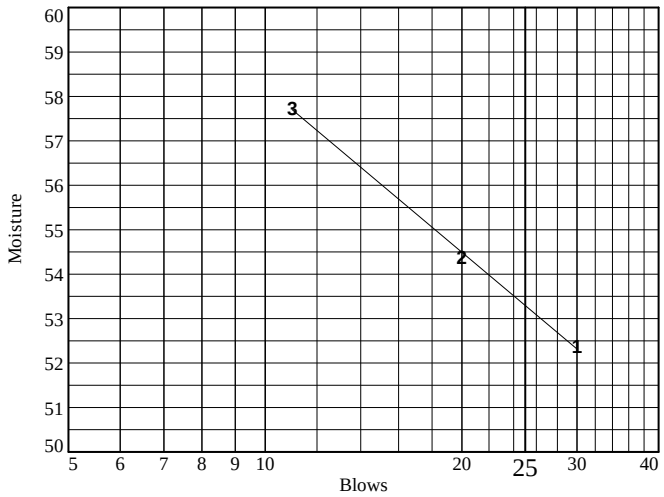
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-09
Depth: 80 **Sample Number:** 17
Material Description: fat clay
%<#40: 99.8 **%<#200:** 94.3 **USCS:** CH **AASHTO:** A-7-6(30)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.9	25.25	25.6			
Dry+Tare	16.75	17.5	17.4			
Tare	3.1	3.25	3.2			
# Blows	30	20	11			
Moisture	52.4	54.4	57.7			



Liquid Limit= 53
Plastic Limit= 25
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.95	13.55	13.25		
Dry+Tare	10.95	11.45	11.2		
Tare	3.15	3.1	3.15		
Moisture	25.6	25.1	25.5		

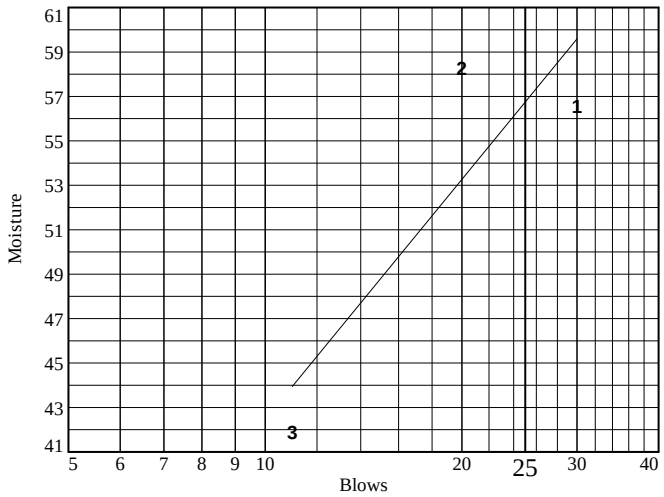
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 15 **Sample Number:** 4
Material Description: fat clay
%<#40: 99.0 **%<#200:** 93.6 **USCS:** CH **AASHTO:** A-7-6(33)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.4	24.55	25.45			
Dry+Tare	16.1	16.65	18.85			
Tare	3.2	3.1	3.1			
# Blows	30	20	11			
Moisture	56.6	58.3	41.9			



Liquid Limit= 57
Plastic Limit= 27
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.5	12.45	13.4		
Dry+Tare	10.5	10.5	11.25		
Tare	3.1	3.15	3.05		
Moisture	27.0	26.5	26.2		

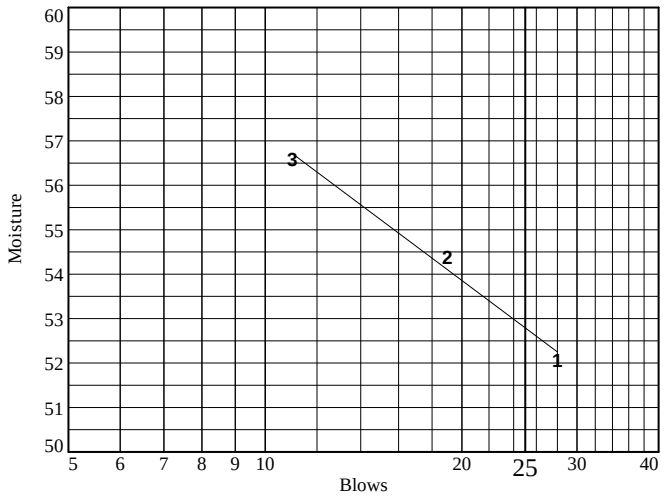
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 20 **Sample Number:** 5
Material Description: fat clay
%<#40: 99.5 **%<#200:** 95.9 **USCS:** CH **AASHTO:** A-7-6(28)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.9	26.85	27.5			
Dry+Tare	18.75	18.5	18.7			
Tare	3.1	3.15	3.15			
# Blows	28	19	11			
Moisture	52.1	54.4	56.6			



Liquid Limit= 53
Plastic Limit= 28
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	14.1	14.35	14.35		
Dry+Tare	11.75	11.9	11.9		
Tare	3.15	3.1	3.1		
Moisture	27.3	27.8	27.8		

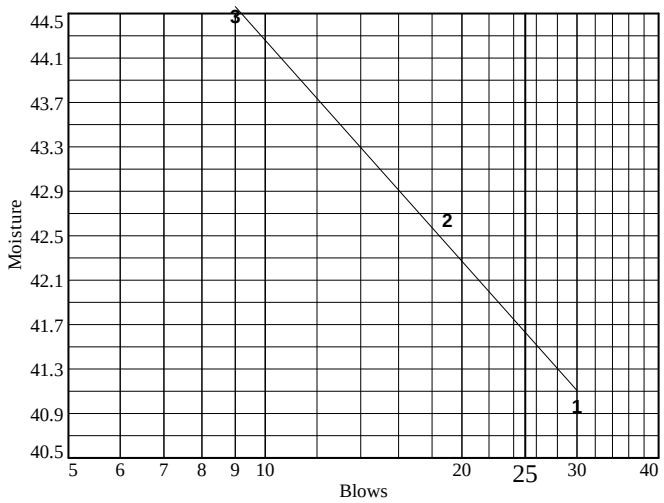
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 25 **Sample Number:** 6
Material Description: lean clay with sand
%<#40: 94.3 **%<#200:** 84.4 **USCS:** CL **AASHTO:** A-7-6(16)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25	26.8	27.3			
Dry+Tare	18.65	19.7	19.85			
Tare	3.15	3.05	3.1			
# Blows	30	19	9			
Moisture	41.0	42.6	44.5			



Liquid Limit= 42
Plastic Limit= 24
Plasticity Index= 18

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13	13.65	13.05		
Dry+Tare	11.05	11.6	11.1		
Tare	3.05	3.15	3.15		
Moisture	24.4	24.3	24.5		

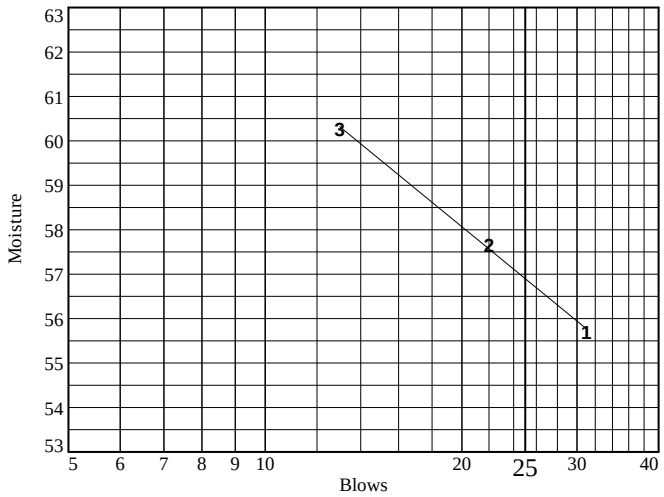
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 30 **Sample Number:** 8
Material Description: fat clay
%<#40: 99.7 **%<#200:** 96.8 **USCS:** CH **AASHTO:** A-7-6(32)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.85	24.7	25.85			
Dry+Tare	17.05	16.8	17.35			
Tare	3.05	3.1	3.25			
# Blows	31	22	13			
Moisture	55.7	57.7	60.3			



Liquid Limit= 57
Plastic Limit= 29
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.55	13.6	13.4		
Dry+Tare	10.45	11.25	11.15		
Tare	3.1	3.1	3.15		
Moisture	28.6	28.8	28.1		

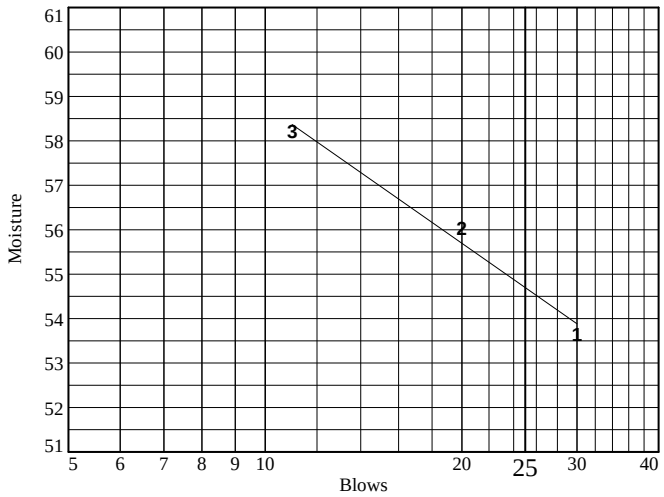
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 35 **Sample Number:** 9
Material Description: fat clay
%<#40: 98.8 **%<#200:** 94.2 **USCS:** CH **AASHTO:** A-7-6(30)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.1	25.7	26.25			
Dry+Tare	18.05	17.6	17.75			
Tare	3.05	3.15	3.15			
# Blows	30	20	11			
Moisture	53.7	56.1	58.2			



Liquid Limit= 55
Plastic Limit= 28
Plasticity Index= 27

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.95	14.05	13.9		
Dry+Tare	11.65	11.7	11.55		
Tare	3.15	3.2	3.1		
Moisture	27.1	27.6	27.8		

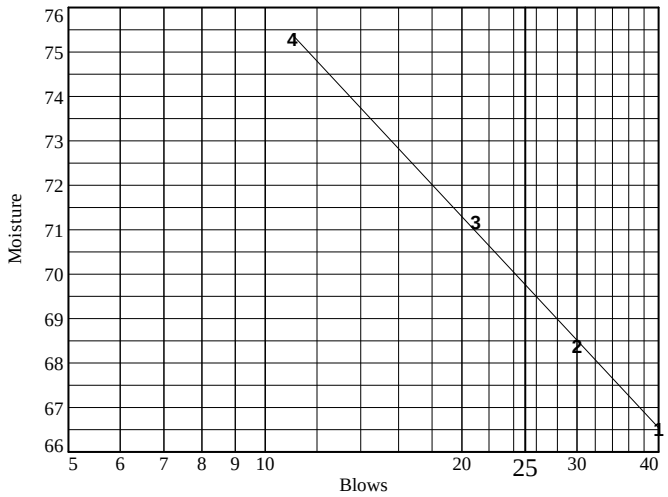
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-10
Depth: 40 **Sample Number:** 10
Material Description: fat clay
%<#40: 99.9 **%<#200:** 98.4 **USCS:** CH **AASHTO:** A-7-6(49)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22	22.55	23.3	24.45		
Dry+Tare	14.45	14.65	14.9	15.3		
Tare	3.1	3.1	3.1	3.15		
# Blows	40	30	21	11		
Moisture	66.5	68.4	71.2	75.3		



Liquid Limit= 70
Plastic Limit= 28
Plasticity Index= 42

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.4	13.3	14		
Dry+Tare	11.15	11.1	11.65		
Tare	3.1	3.15	3.15		
Moisture	28.0	27.7	27.6		

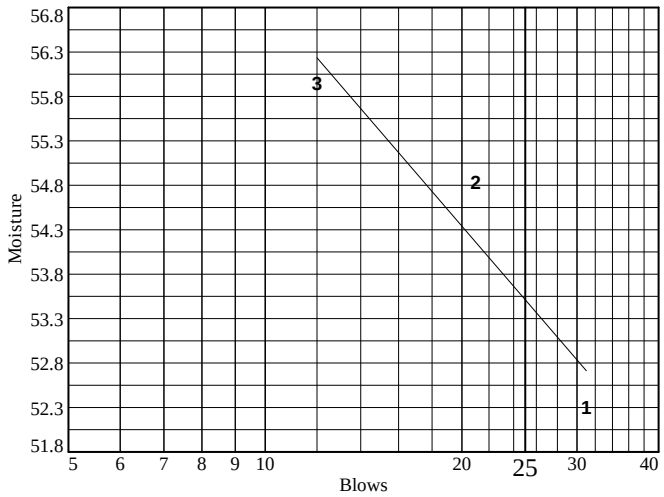
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 5 **Sample Number:** 2
Material Description: fat clay
%<#40: 98.7 **%<#200:** 97.9 **USCS:** CH **AASHTO:** A-7-6(32)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.5	24.7	24.7			
Dry+Tare	17.15	17.05	16.95			
Tare	3.1	3.1	3.1			
# Blows	31	21	12			
Moisture	52.3	54.8	56.0			



Liquid Limit= 54
Plastic Limit= 26
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.4	13.7	12.8		
Dry+Tare	11.25	11.5	10.8		
Tare	3.1	3.2	3.15		
Moisture	26.4	26.5	26.1		

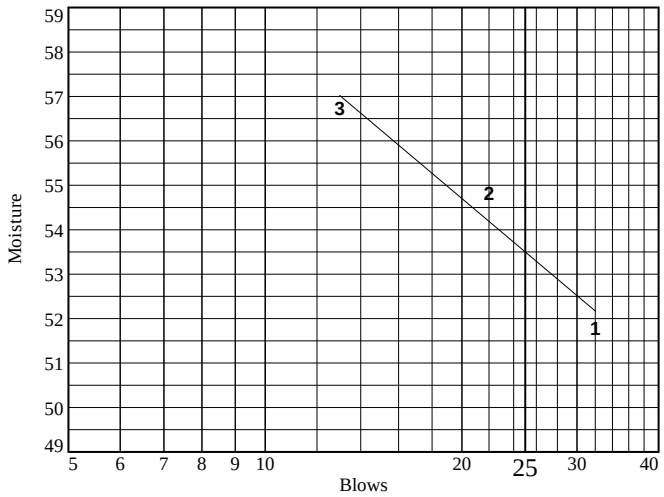
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 20 **Sample Number:** 5
Material Description: fat clay
%<#40: 99.8 **%<#200:** 97.9 **USCS:** CH **AASHTO:** A-7-6(32)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.15	25.6	26.4			
Dry+Tare	16.95	17.65	18			
Tare	3.05	3.15	3.2			
# Blows	32	22	13			
Moisture	51.8	54.8	56.8			



Liquid Limit= 54
Plastic Limit= 26
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.05	12.45	13.25		
Dry+Tare	10.95	10.55	11.15		
Tare	3.2	3.15	3.15		
Moisture	27.1	25.7	26.2		

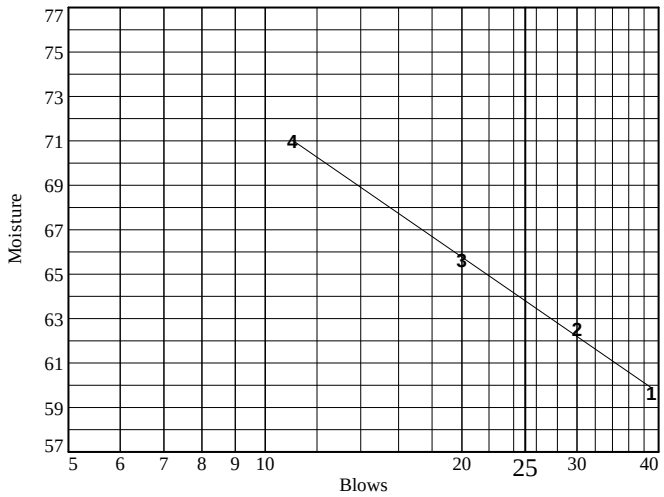
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 25 **Sample Number:** 7
Material Description: fat clay
%<#40: 99.3 **%<#200:** 95.8 **USCS:** CH **AASHTO:** A-7-6(40)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.6	23.55	24.5	24.8		
Dry+Tare	15.35	15.7	16	15.85		
Tare	3.2	3.15	3.05	3.25		
# Blows	39	30	20	11		
Moisture	59.7	62.5	65.6	71.0		



Liquid Limit= 64
Plastic Limit= 29
Plasticity Index= 35

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.15	13.6	13.6		
Dry+Tare	10.9	11.25	11.25		
Tare	3.15	3.1	3.2		
Moisture	29.0	28.8	29.2		

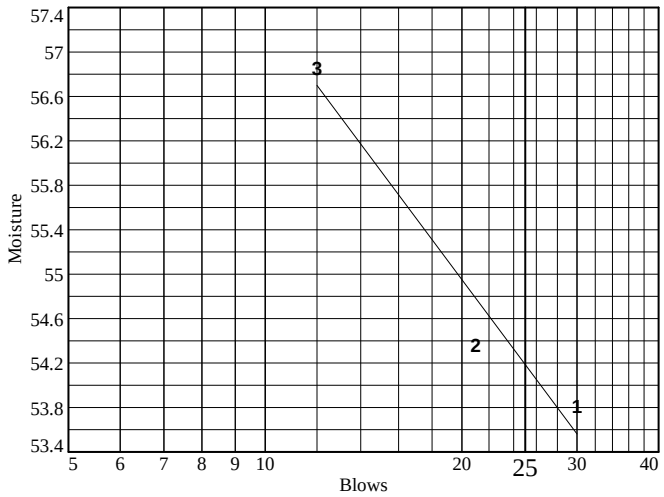
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 35 **Sample Number:** 8
Material Description: fat clay
%<#40: 99.1 **%<#200:** 96.8 **USCS:** CH **AASHTO:** A-7-6(29)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.25	26.2	27.1			
Dry+Tare	17.5	18.1	18.4			
Tare	3.1	3.2	3.1			
# Blows	30	21	12			
Moisture	53.8	54.4	56.9			



Liquid Limit= 54
Plastic Limit= 29
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.65	12.35	12.2		
Dry+Tare	10.5	10.25	10.15		
Tare	3.1	3.1	3.1		
Moisture	29.1	29.4	29.1		

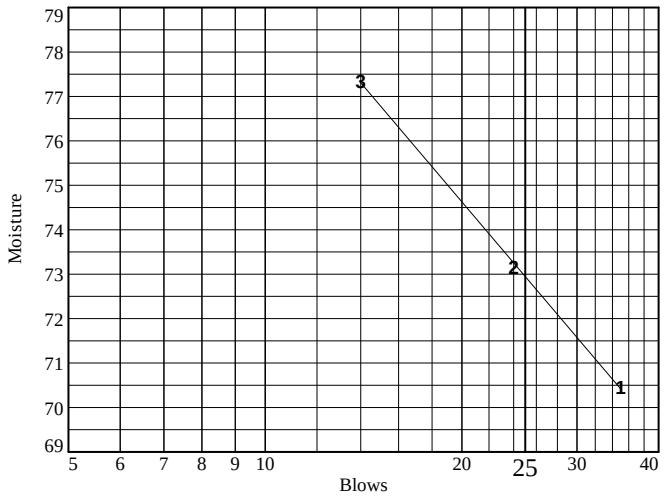
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 35 **Sample Number:** 9
Material Description: fat clay
%<#40: 99.5 **%<#200:** 94.2 **USCS:** CH **AASHTO:** A-7-5(48)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.35	24.4	25.8			
Dry+Tare	15	15.4	15.9			
Tare	3.15	3.1	3.1			
# Blows	35	24	14			
Moisture	70.5	73.2	77.3			



Liquid Limit= 73
Plastic Limit= 30
Plasticity Index= 43

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13	13.5	13.4		
Dry+Tare	10.75	11.1	11		
Tare	3.1	3.1	3.1		
Moisture	29.4	30.0	30.4		

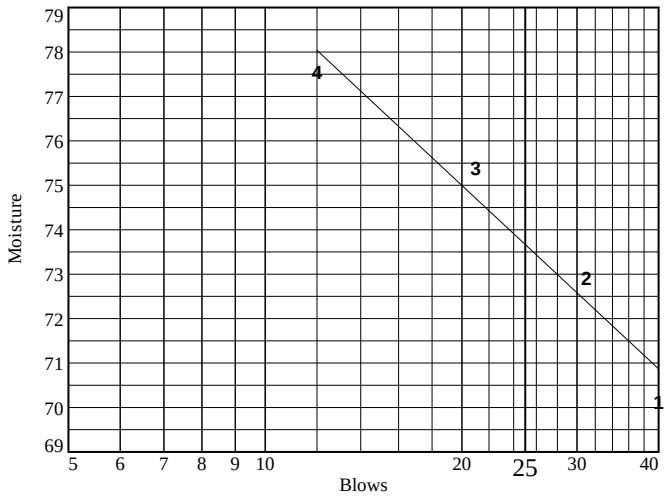
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-11
Depth: 40 **Sample Number:** 10
Material Description: fat clay
%<#40: 99.4 **%<#200:** 94.8 **USCS:** CH **AASHTO:** A-7-5(49)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.6	23.85	24.85	24.8		
Dry+Tare	15.15	15.1	15.5	15.3		
Tare	3.1	3.1	3.1	3.05		
# Blows	40	31	21	12		
Moisture	70.1	72.9	75.4	77.6		



Liquid Limit= 74
Plastic Limit= 30
Plasticity Index= 44

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.35	13.15	14.1		
Dry+Tare	10.9	10.85	11.6		
Tare	3.1	3.152	3.05		
Moisture	31.4	29.9	29.2		

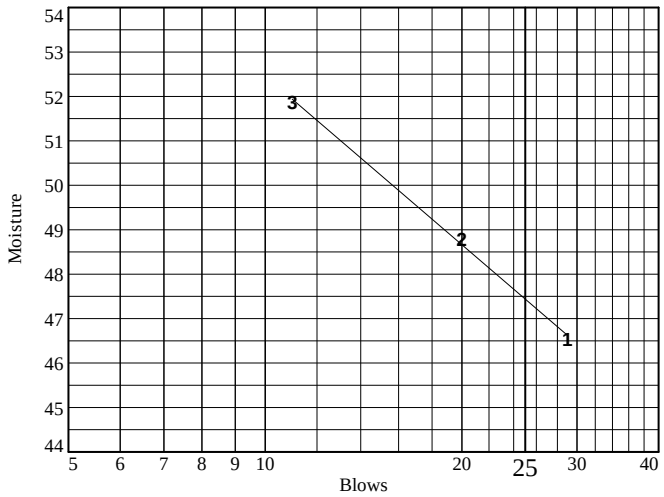
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 5 **Sample Number:** 2
Material Description: lean clay with sand
%<#40: 95.1 **%<#200:** 78.9 **USCS:** CL **AASHTO:** A-7-6(19)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.3	24.65	25.2			
Dry+Tare	16.9	17.6	17.65			
Tare	3.15	3.15	3.1			
# Blows	29	20	11			
Moisture	46.5	48.8	51.9			



Liquid Limit= 47
Plastic Limit= 23
Plasticity Index= 24

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.95	13.45	13.45		
Dry+Tare	11.55	11.35	11.35		
Tare	3.2	3.1	3.1		
Moisture	16.8	25.5	25.5		

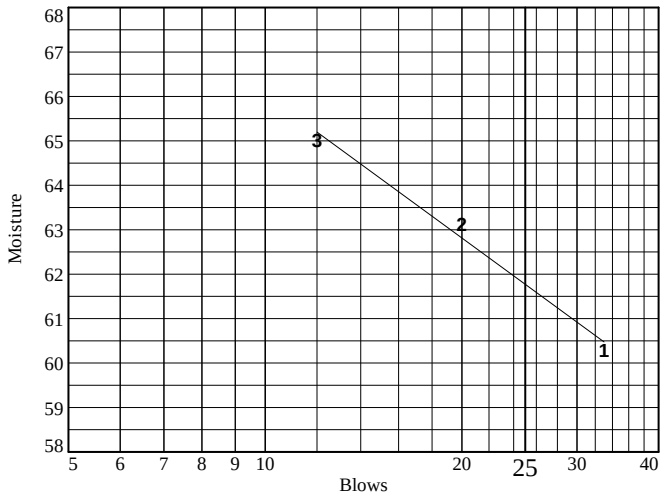
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 20 **Sample Number:** 5
Material Description: fat clay
%<#40: 97.0 **%<#200:** 93.1 **USCS:** CH **AASHTO:** A-7-5(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.8	23.95	25.05			
Dry+Tare	16.05	15.9	16.4			
Tare	3.2	3.15	3.1			
# Blows	33	20	12			
Moisture	60.3	63.1	65.0			



Liquid Limit= 62
Plastic Limit= 31
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.2	13.3	13.3		
Dry+Tare	10.8	10.9	10.95		
Tare	3.15	3.15	3.1		
Moisture	31.4	31.0	29.9		

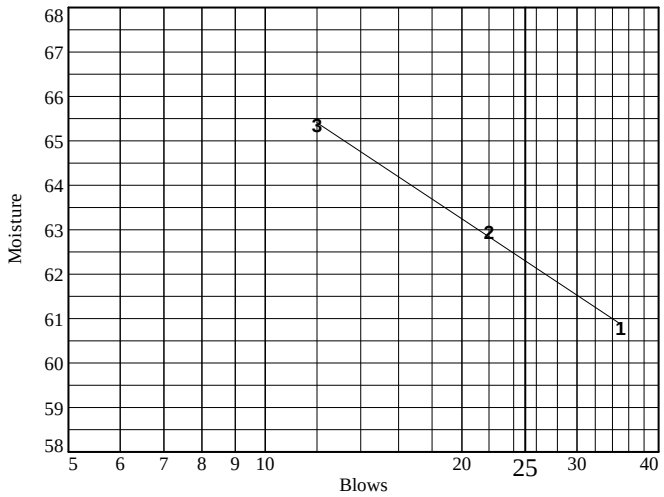
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-12
Depth: 40 **Sample Number:** 9
Material Description: fat clay
%<#40: 97.9 **%<#200:** 95.1 **USCS:** CH **AASHTO:** A-7-6(38)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25	25.05	26.3			
Dry+Tare	16.7	16.55	17.15			
Tare	3.05	3.05	3.15			
# Blows	35	22	12			
Moisture	60.8	63.0	65.4			



Liquid Limit= 62
Plastic Limit= 28
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.5	13.3	14.1		
Dry+Tare	11.2	11	11.85		
Tare	3.25	3.05	3.15		
Moisture	28.9	28.9	25.9		

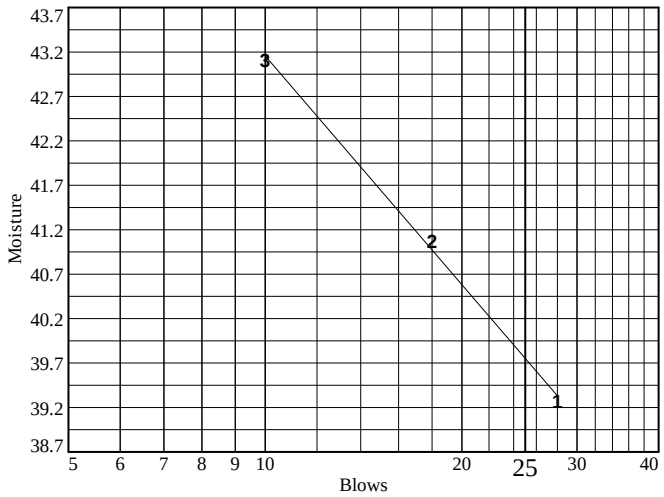
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 5 **Sample Number:** 2
Material Description: sandy lean clay
%<#40: 84.2 **%<#200:** 58.2 **USCS:** CL **AASHTO:** A-6(9)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.2	26.9	27			
Dry+Tare	19.7	20	19.8			
Tare	3.15	3.2	3.1			
# Blows	28	18	10			
Moisture	39.3	41.1	43.1			



Liquid Limit= 40
Plastic Limit= 19
Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.95	13.25	13.2		
Dry+Tare	12.15	11.7	11.6		
Tare	3.2	3.05	3.1		
Moisture	20.1	17.9	18.8		

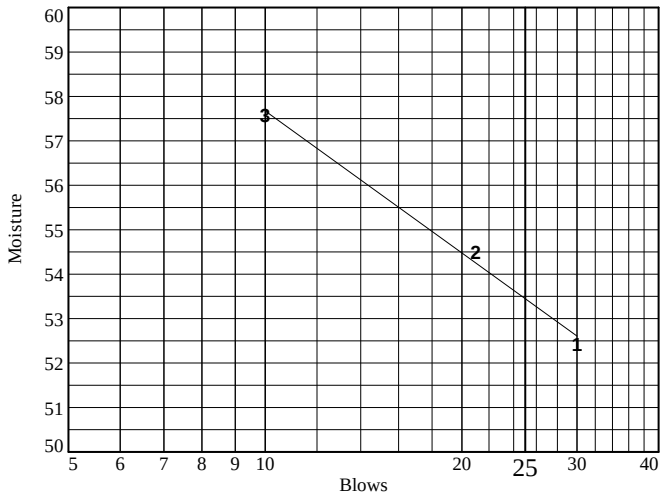
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 15 **Sample Number:** 4
Material Description: fat clay with sand
%<#40: 91.2 **%<#200:** 76.8 **USCS:** CH **AASHTO:** A-7-6(25)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.05	25.35	25.95			
Dry+Tare	17.5	17.5	17.6			
Tare	3.1	3.1	3.1			
# Blows	30	21	10			
Moisture	52.4	54.5	57.6			



Liquid Limit= 53
Plastic Limit= 21
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	14.1	12	12.8		
Dry+Tare	12.2	10.4	11.1		
Tare	3.05	3.05	3.1		
Moisture	20.8	21.8	21.3		

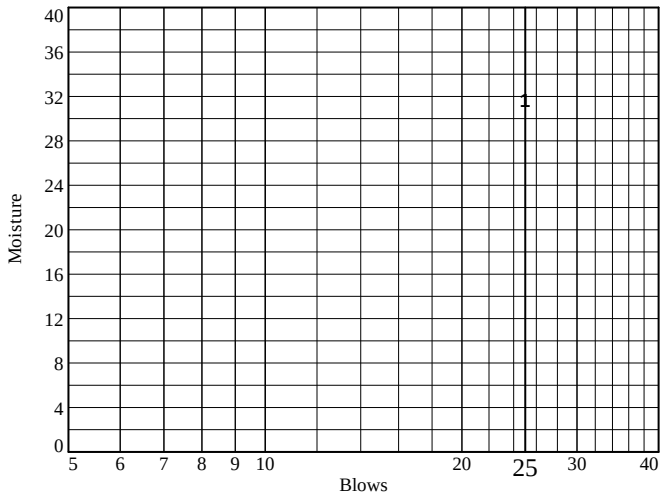
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-13
Depth: 21 **Sample Number:** 5
Material Description: poorly graded gravel with clay and sand
%<#40: 17.1 **%<#200:** 11.3 **USCS:** GP-GC **AASHTO:** A-2-6(0)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	19.3					
Dry+Tare	15.4					
Tare	3.1					
# Blows	25					
Moisture	31.7					



Liquid Limit= 32
Plastic Limit= 19
Plasticity Index= 13

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	10.65	10.35			
Dry+Tare	9.5	9.2			
Tare	3.2	3.15			
Moisture	18.3	19.0			

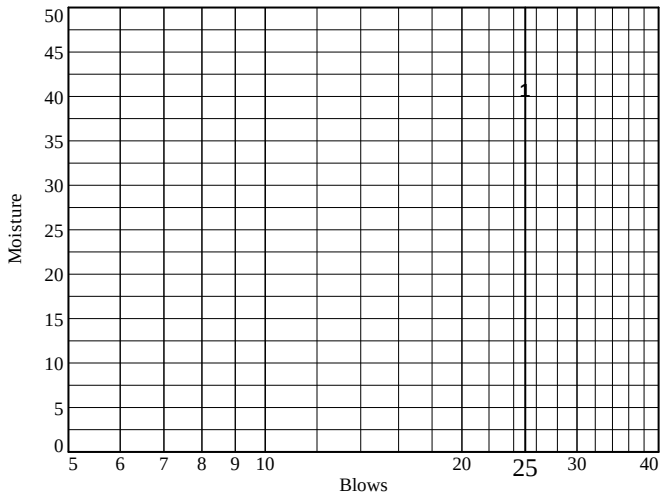
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 5 **Sample Number:** 2
Material Description: clayey gravel with sand
%<#40: 31.9 **%<#200:** 24.0 **USCS:** GC **AASHTO:** A-2-7(1)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.15					
Dry+Tare	18.1					
Tare	3.25					
# Blows	25					
Moisture	40.7					



Liquid Limit= 41
Plastic Limit= 21
Plasticity Index= 20

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	12.45	12.5	11.3		
Dry+Tare	10.8	10.9	9.9		
Tare	3.2	3.15	3.15		
Moisture	21.7	20.6	20.7		

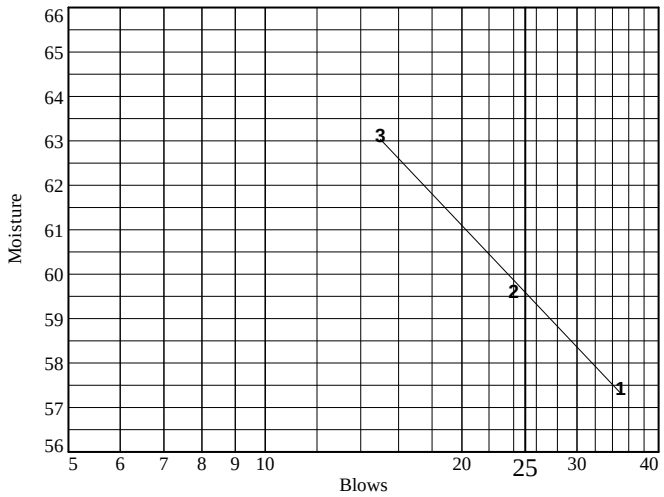
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SB-14
Depth: 30 **Sample Number:** 7
Material Description: fat clay
%<#40: 99.7 **%<#200:** 95.3 **USCS:** CH **AASHTO:** A-7-6(38)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34	34	35.65			
Dry+Tare	25.9	25.8	26.4			
Tare	11.8	12.05	11.75			
# Blows	35	24	15			
Moisture	57.4	59.6	63.1			



Liquid Limit= 60
Plastic Limit= 25
Plasticity Index= 35

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.1	22.4	22.9		
Dry+Tare	20	20.25	20.65		
Tare	11.35	11.7	11.85		
Moisture	24.3	25.1	25.6		

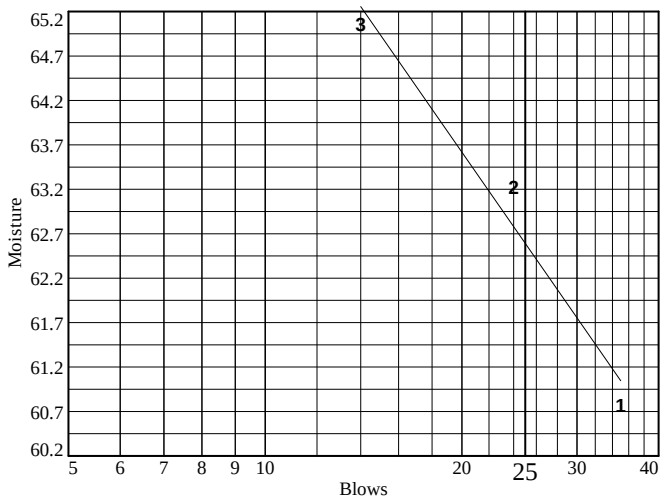
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: SHALE
Sample Number: 1
Material Description: fat clay
%<#40: 99.5 **%<#200:** 97.4 **USCS:** CH **AASHTO:** A-7-6(44)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.9	25.3	27.15			
Dry+Tare	17.3	16.7	17.65			
Tare	3.15	3.1	3.05			
# Blows	35	24	14			
Moisture	60.8	63.2	65.1			



Liquid Limit= 63
Plastic Limit= 23
Plasticity Index= 40
Natural Moisture= 17
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.1	13.85	12.95		
Dry+Tare	11.25	11.85	11.1		
Tare	3.1	3.05	3.05		
Moisture	22.7	22.7	23.0		

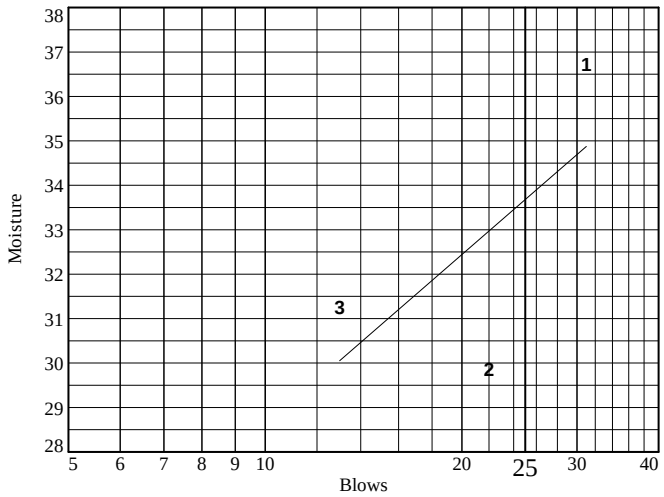
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-01
Depth: 6 **Sample Number:** 1
Material Description: lean clay with sand
%<#40: 94.8 **%<#200:** 83.2 **USCS:** CL **AASHTO:** A-4(8)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.55	25.75	25.35			
Dry+Tare	18.8	20.55	20.05			
Tare	3.15	3.15	3.1			
# Blows	31	22	13			
Moisture	36.7	29.9	31.3			



Liquid Limit= 34
Plastic Limit= 24
Plasticity Index= 10
Natural Moisture= 23
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.3	13.4	13.05		
Dry+Tare	11.35	11.45	11.1		
Tare	3.1	3.05	3.1		
Moisture	23.6	23.2	24.4		

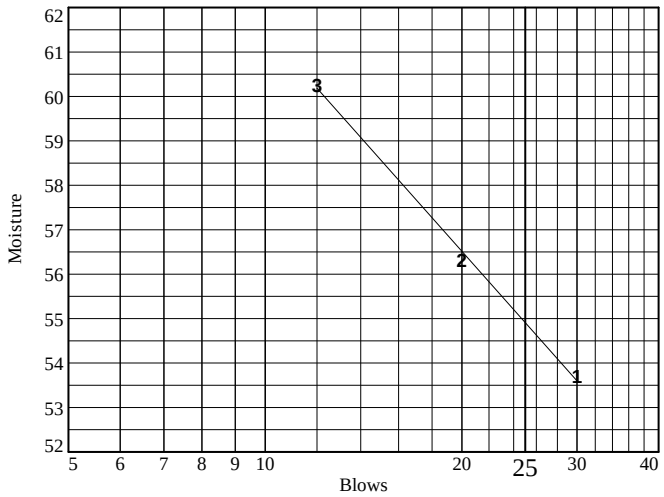
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-04
Depth: 7 **Sample Number:** 1
Material Description: fat clay
%<#40: 99.7 **%<#200:** 98.8 **USCS:** CH **AASHTO:** A-7-6(34)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.8	24.8	26.55			
Dry+Tare	17.2	17	17.75			
Tare	3.05	3.15	3.15			
# Blows	30	20	12			
Moisture	53.7	56.3	60.3			



Liquid Limit= 55
Plastic Limit= 25
Plasticity Index= 30
Natural Moisture= 22
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.4	13.6	13.35		
Dry+Tare	11.3	11.4	11.4		
Tare	3.2	3.2	3.15		
Moisture	25.9	26.8	23.6		

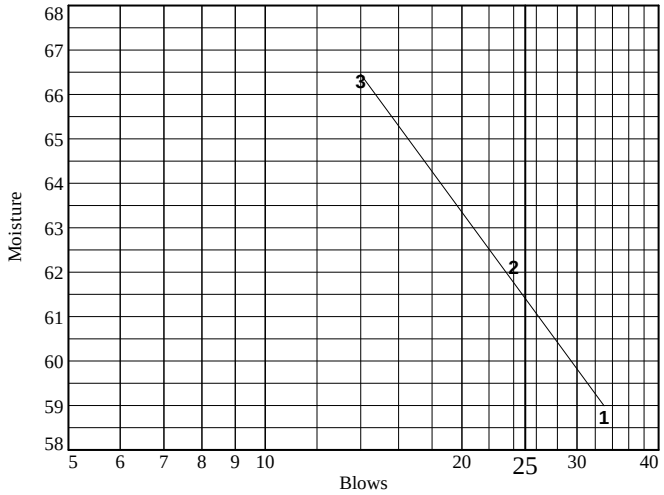
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-05
Depth: 10 **Sample Number:** 1
Material Description: fat clay
%<#40: 98.8 **%<#200:** 95.7 **USCS:** CH **AASHTO:** A-7-6(37)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.85	25.2	26.8			
Dry+Tare	16.8	16.75	17.35			
Tare	3.1	3.15	3.1			
# Blows	33	24	14			
Moisture	58.8	62.1	66.3			



Liquid Limit= 61
Plastic Limit= 28
Plasticity Index= 33
Natural Moisture= 23
Liquidity Index= -0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.3	13.6	13.95		
Dry+Tare	11.1	11.3	11.6		
Tare	3.1	3.15	3.15		
Moisture	27.5	28.2	27.8		

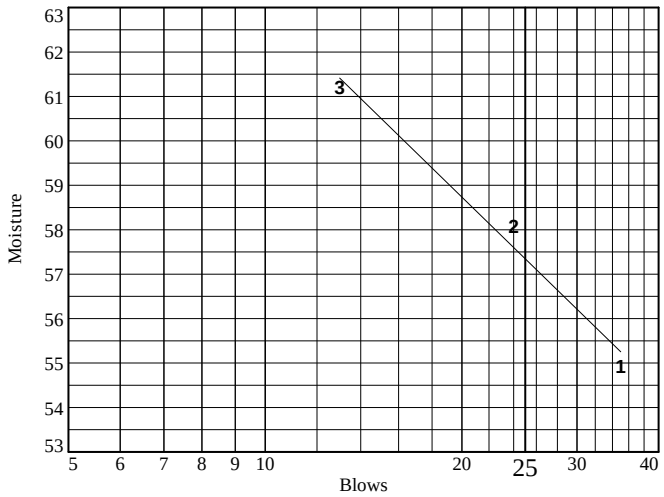
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-06
Depth: 8 **Sample Number:** 1
Material Description: fat clay
%<#40: 97.8 **%<#200:** 95.0 **USCS:** CH **AASHTO:** A-7-6(37)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.25	25.5	26.8			
Dry+Tare	16.75	17.25	17.8			
Tare	3.1	3.05	3.1			
# Blows	35	24	13			
Moisture	54.9	58.1	61.2			



Liquid Limit= 57
Plastic Limit= 22
Plasticity Index= 35
Natural Moisture= 20
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	13.35	13	13.05		
Dry+Tare	11.15	10.9	11.9		
Tare	3.1	3.05	3.05		
Moisture	27.3	26.8	13.0		

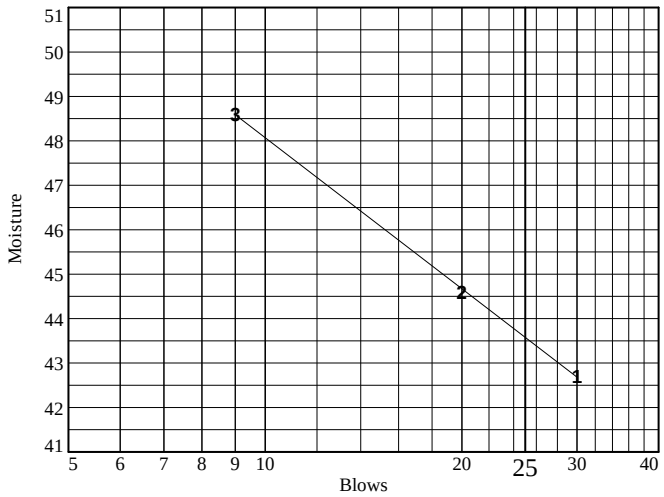
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-08
Depth: 5 **Sample Number:** 1
Material Description: lean clay with sand
%<#40: 92.1 **%<#200:** 73.5 **USCS:** CL **AASHTO:** A-7-6(17)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.15	26.65	27.1			
Dry+Tare	18.55	19.4	19.25			
Tare	3.1	3.15	3.1			
# Blows	30	20	9			
Moisture	42.7	44.6	48.6			



Liquid Limit= 44
Plastic Limit= 20
Plasticity Index= 24
Natural Moisture= 20
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	14.55	14.15	14.35		
Dry+Tare	12.65	12.3	12.45		
Tare	3.25	3.1	3.15		
Moisture	20.2	20.1	20.4		

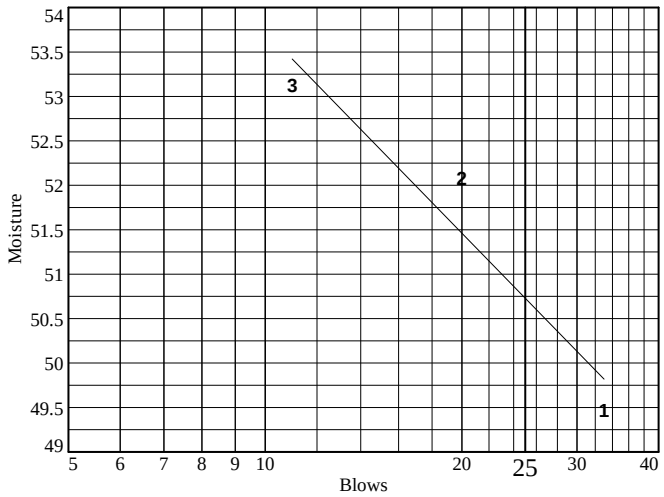
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-09
Depth: 8 **Sample Number:** 1
Material Description: fat clay
%<#40: 96.8 **%<#200:** 94.1 **USCS:** CH **AASHTO:** A-7-6(27)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.45	35.15	35.4			
Dry+Tare	26.35	27.05	27.35			
Tare	12	11.5	12.2			
# Blows	33	20	11			
Moisture	49.5	52.1	53.1			



Liquid Limit= 51
Plastic Limit= 26
Plasticity Index= 25
Natural Moisture= 21
Liquidity Index= -0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.1	21.95	21.6		
Dry+Tare	20.8	19.8	19.5		
Tare	12	11.45	11.45		
Moisture	26.1	25.7	26.1		

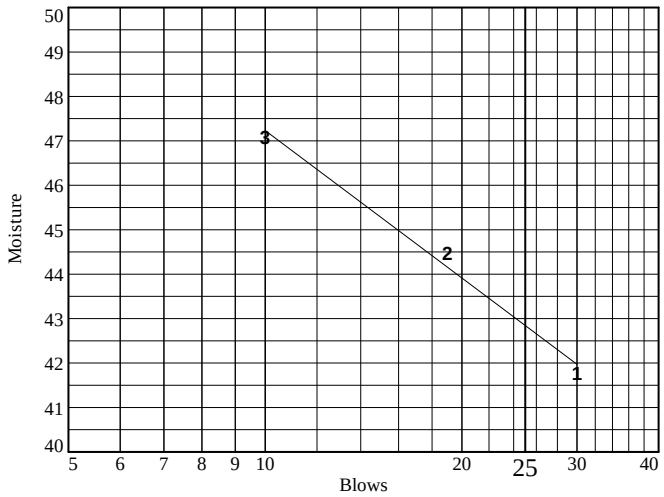
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-12
Depth: 8 **Sample Number:** 1
Material Description: lean clay
%<#40: 95.3 **%<#200:** 86.4 **USCS:** CL **AASHTO:** A-7-6(17)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.9	25.45	25.9			
Dry+Tare	17.8	18.6	18.6			
Tare	3.2	3.2	3.1			
# Blows	30	19	10			
Moisture	41.8	44.5	47.1			



Liquid Limit= 43
Plastic Limit= 24
Plasticity Index= 19
Natural Moisture= 20
Liquidity Index= -0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	20.4	20.65	21.2		
Dry+Tare	18.6	18.9	19.35		
Tare	11.35	11.6	11.75		
Moisture	24.8	24.0	24.3		

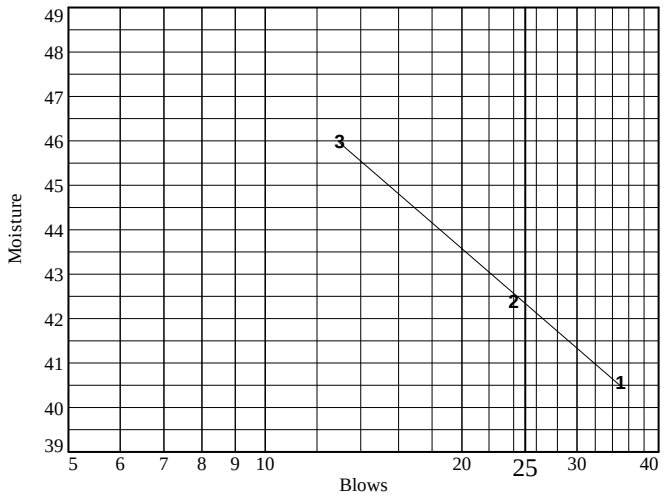
LIQUID AND PLASTIC LIMIT TEST DATA

7/19/2018

Client: Battelle
Project: San Cristobal Disposal Site
Project Number: 981-18
Location: TP-14
Depth: 5 **Sample Number:** 1
Material Description: clayey gravel
%<#40: 48.5 **%<#200:** 40.3 **USCS:** GC **AASHTO:** A-7-6(4)

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.1	26.1	26.9			
Dry+Tare	18.75	19.25	19.4			
Tare	3.1	3.1	3.1			
# Blows	35	24	13			
Moisture	40.6	42.4	46.0			

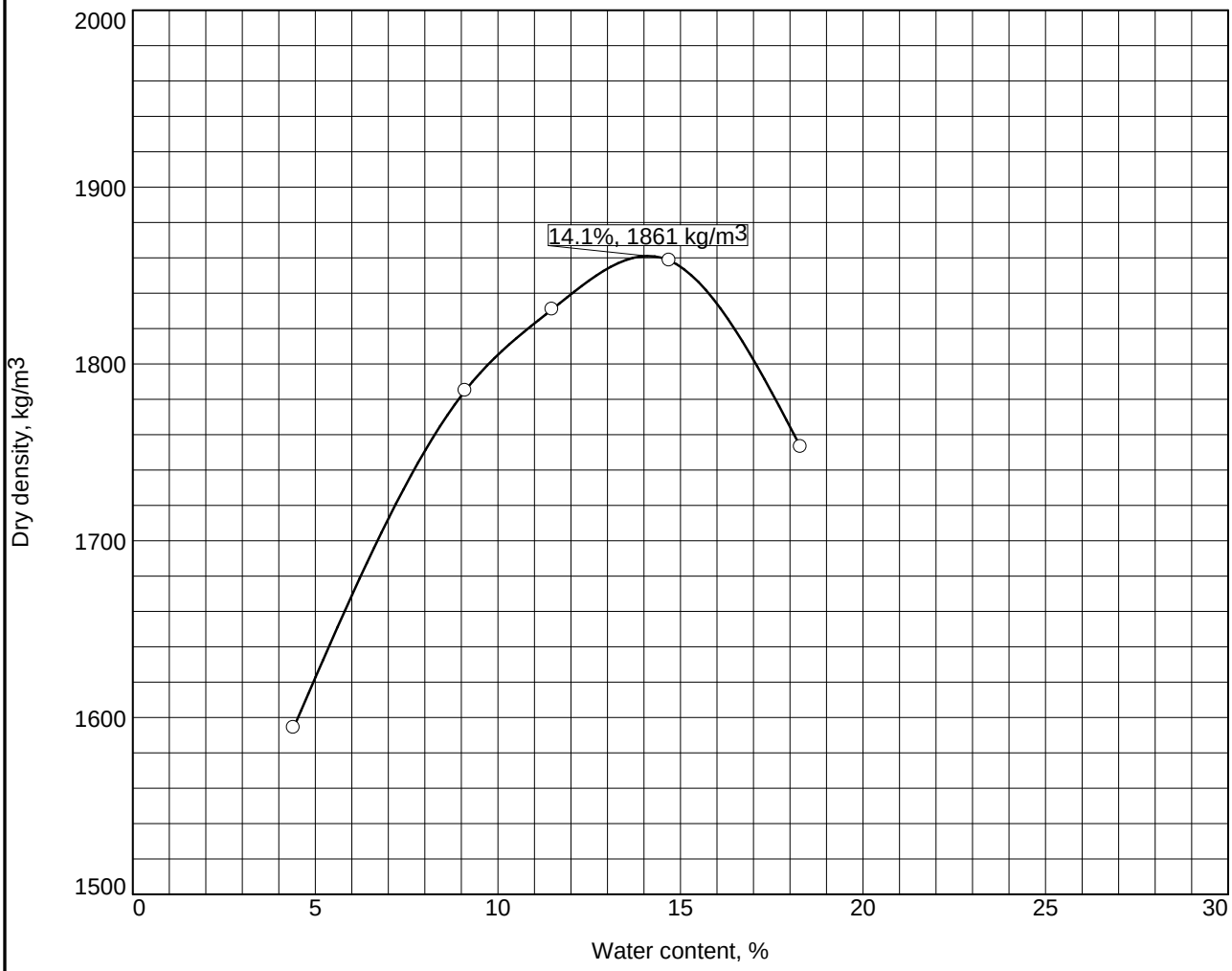


Liquid Limit= 42
Plastic Limit= 22
Plasticity Index= 20
Natural Moisture= 14
Liquidity Index= -0.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	14.55	14.3	14.4		
Dry+Tare	12.4	12.3	12.35		
Tare	3.15	3.15	3.1		
Moisture	23.2	21.9	22.2		

COMPACTION TEST REPORT

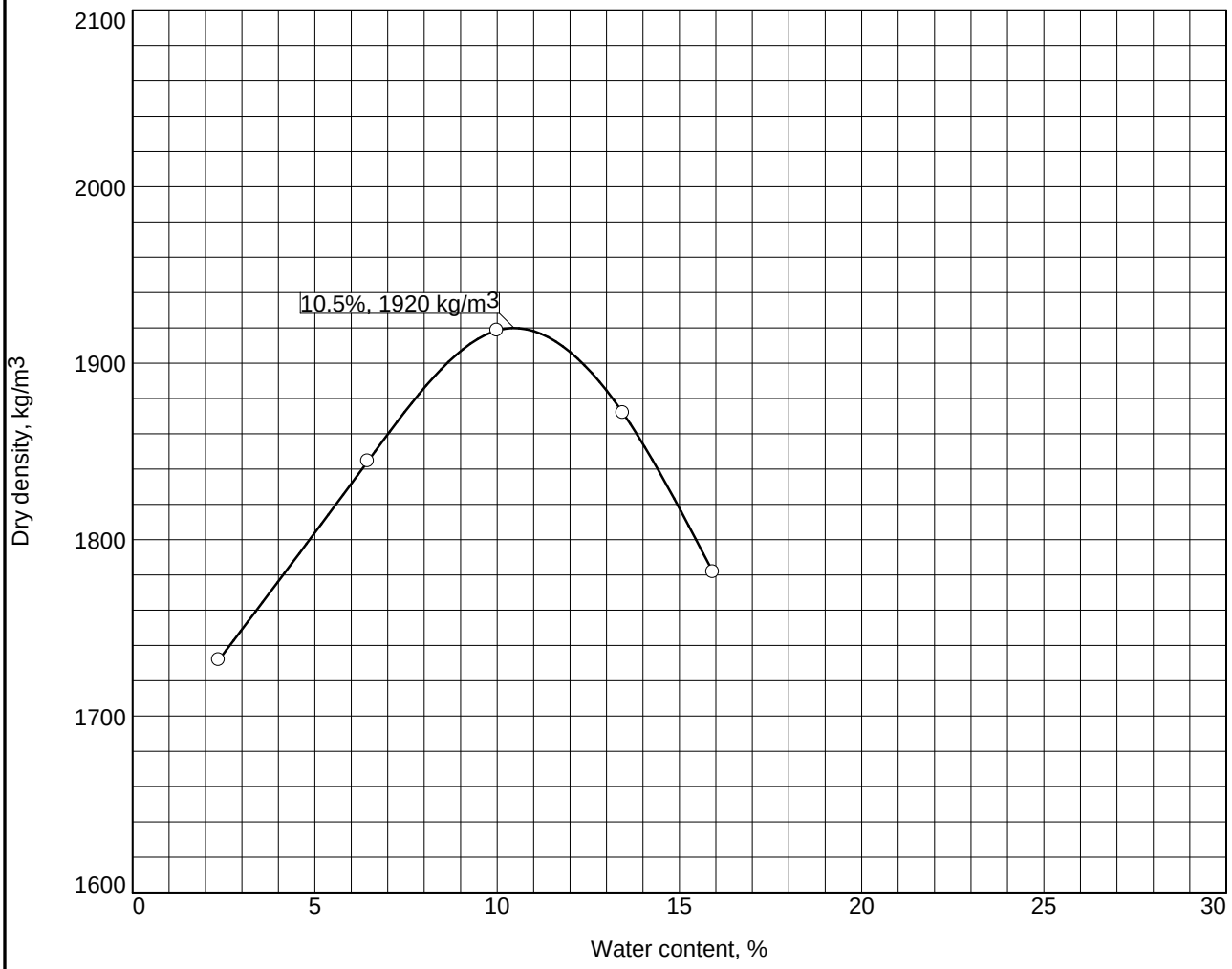


Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	CH	A-7-6(44)	17		63	40	0.0	97.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1861 kg/m3 Optimum moisture = 14.1 %	fat clay
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** SHALE **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
6	CL	A-4(8)	23		34	10	0.0	83.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1920 kg/m3 Optimum moisture = 10.5 %	lean clay with sand

Project No. 981-18 **Client:** Battelle
Project: San Cristobal Disposal Site

○**Source of Sample:** TP-01 **Sample Number:** 1

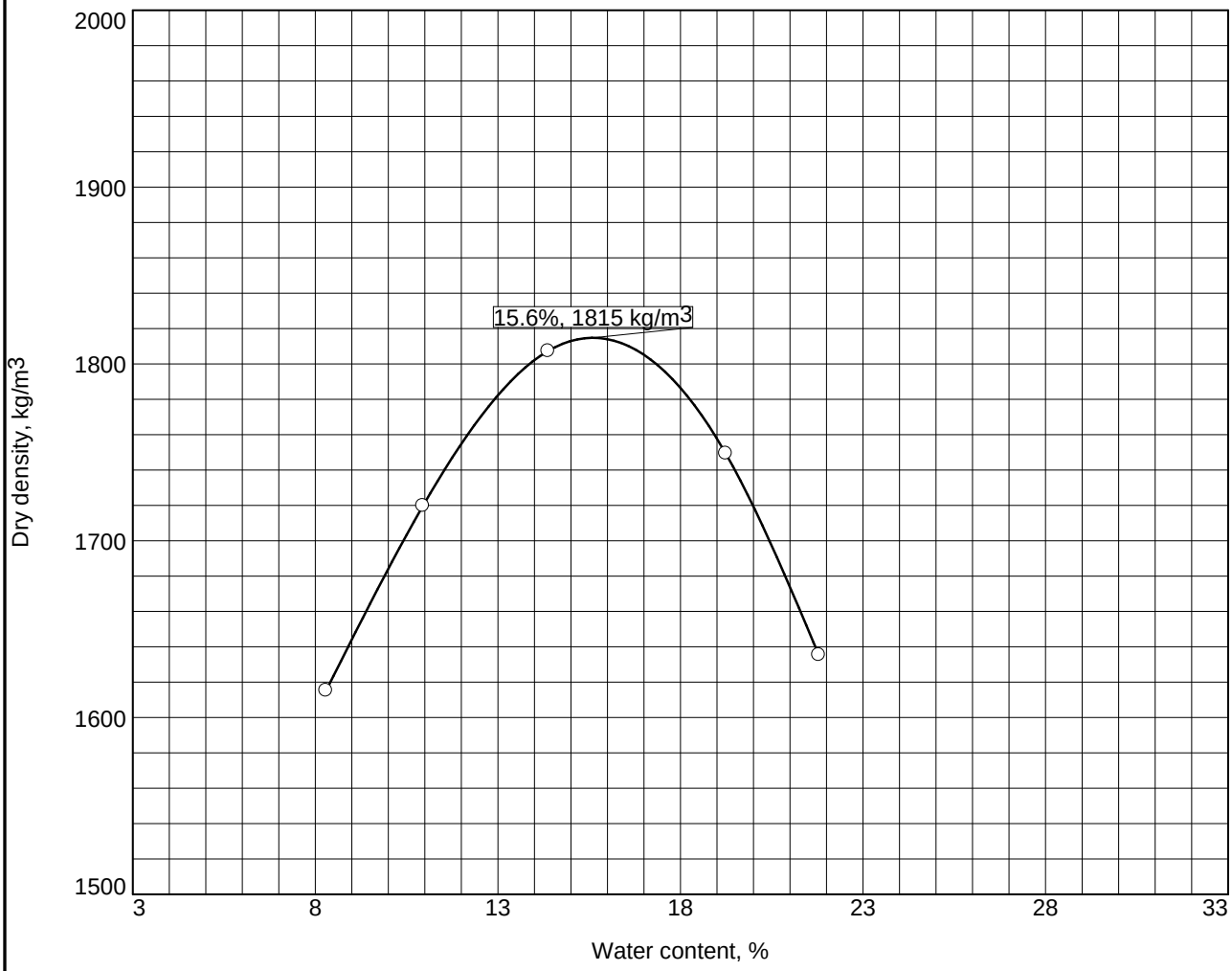
Remarks:

Horizon Consultants

Santo Domingo

Figure

COMPACTION TEST REPORT

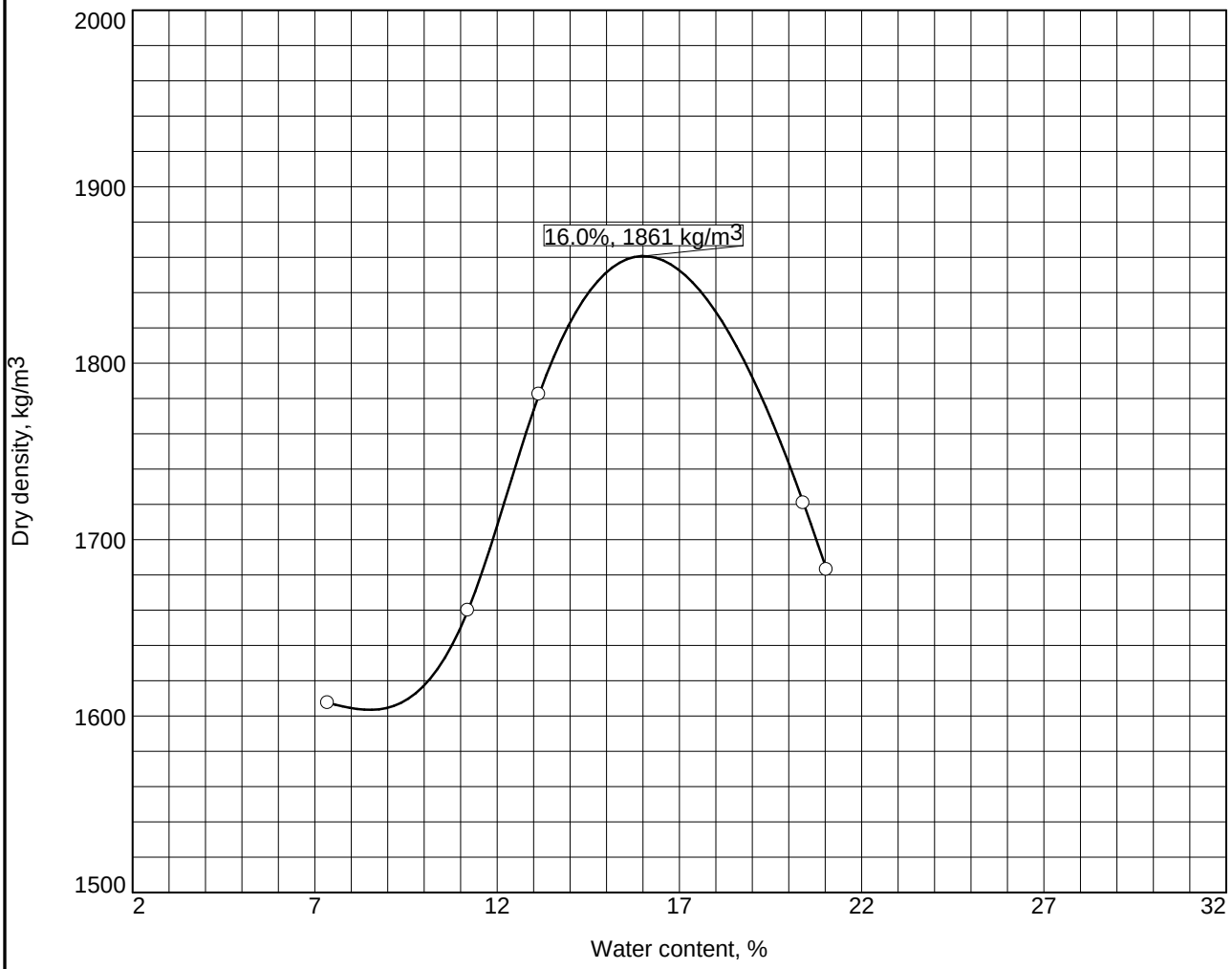


Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
7	CH	A-7-6(34)	22		55	30	0.0	98.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1815 kg/m3 Optimum moisture = 15.6 %	fat clay
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** TP-04 **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

COMPACTION TEST REPORT

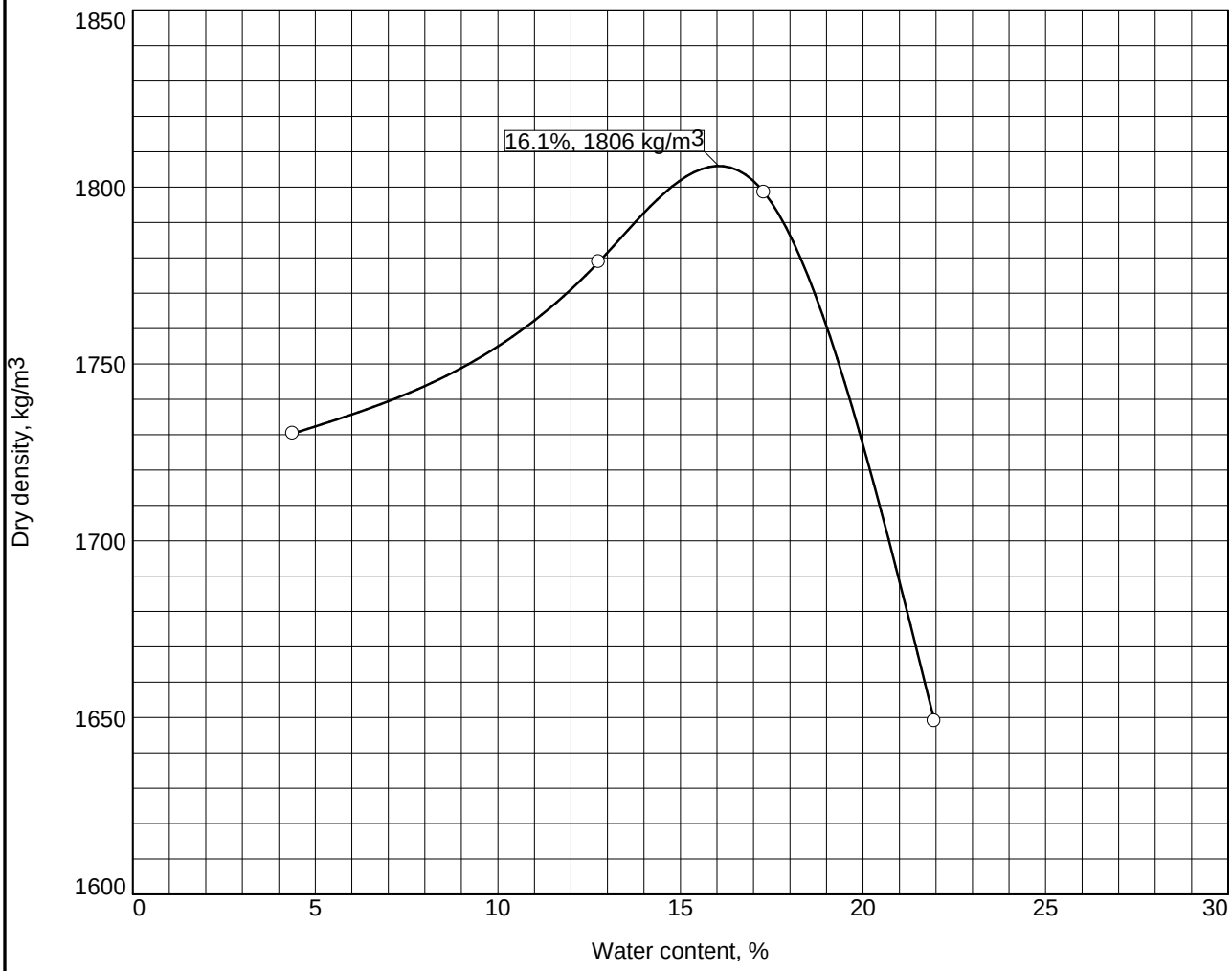


Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
10	CH	A-7-6(37)	23		61	33	0.0	95.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1861 kg/m3 Optimum moisture = 16.0 %	fat clay
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** TP-05 **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
8	CH	A-7-6(37)	20		57	35	0.0	95.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1806 kg/m3 Optimum moisture = 16.1 %	fat clay

Project No. 981-18 **Client:** Battelle
Project: San Cristobal Disposal Site

○**Source of Sample:** TP-06 **Sample Number:** 1

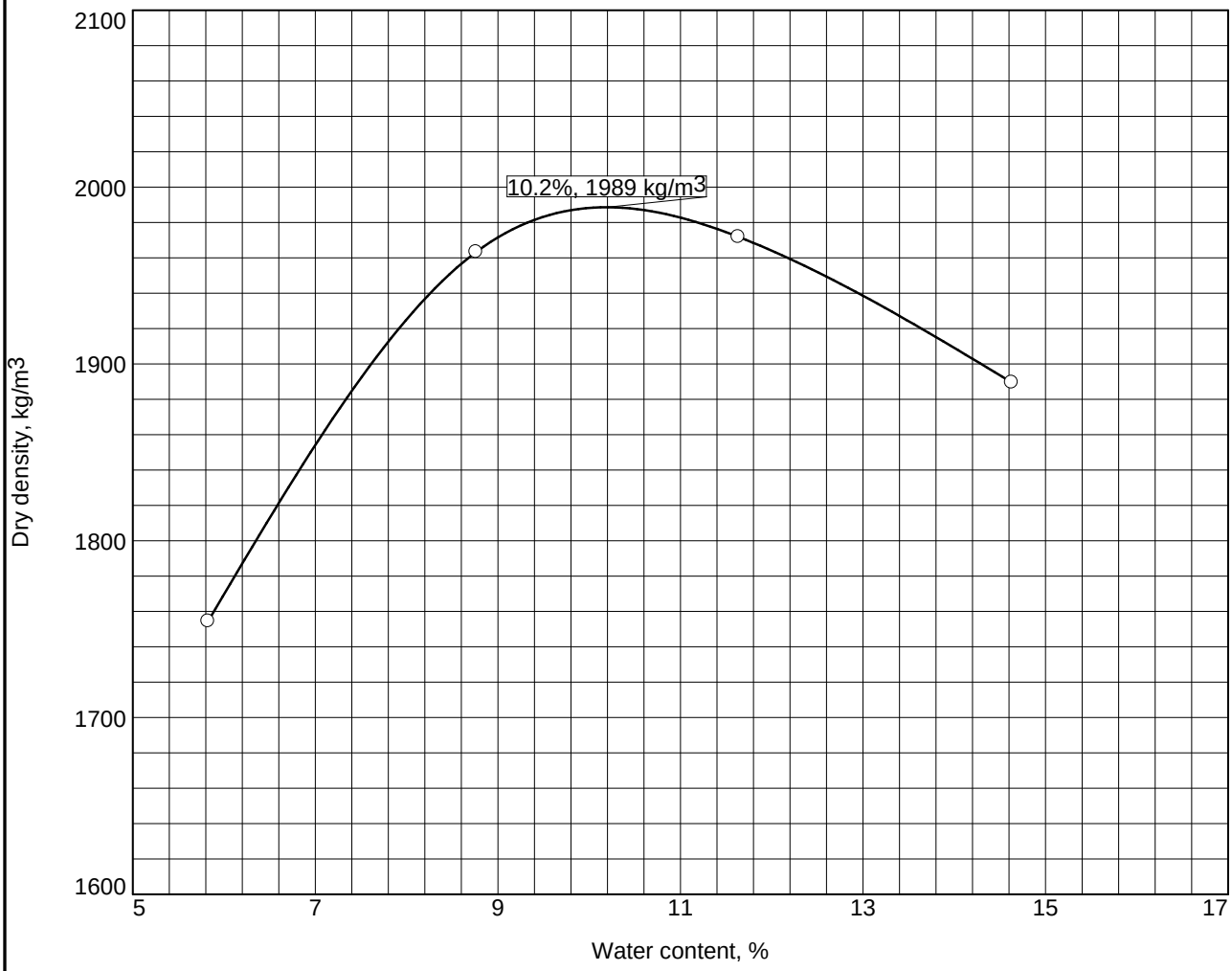
Remarks:

Horizon Consultants

Santo Domingo

Figure

COMPACTION TEST REPORT

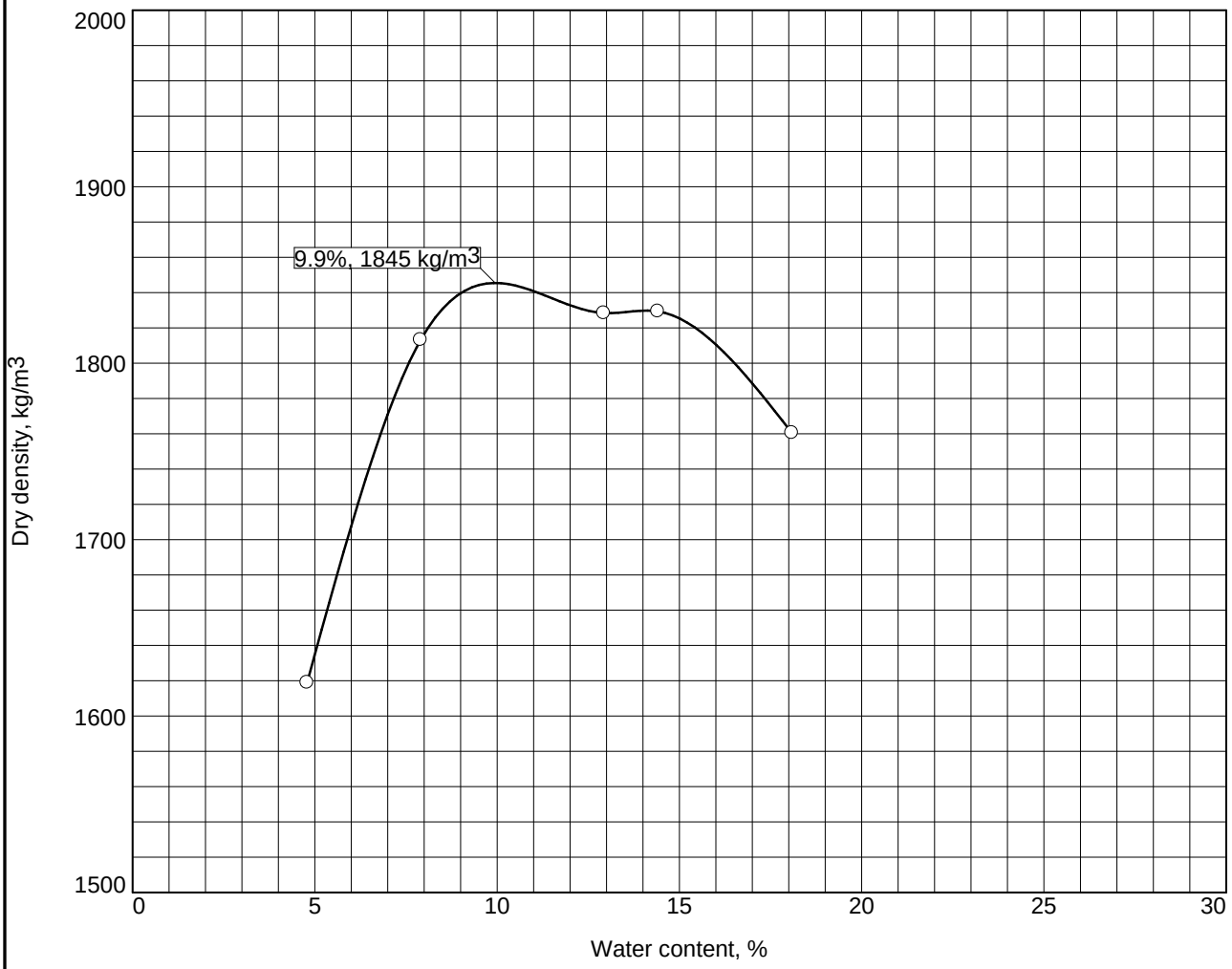


Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
5	CL	A-7-6(17)	20		44	24	0.0	73.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1989 kg/m3 Optimum moisture = 10.2 %	lean clay with sand
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** TP-08 **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

COMPACTION TEST REPORT

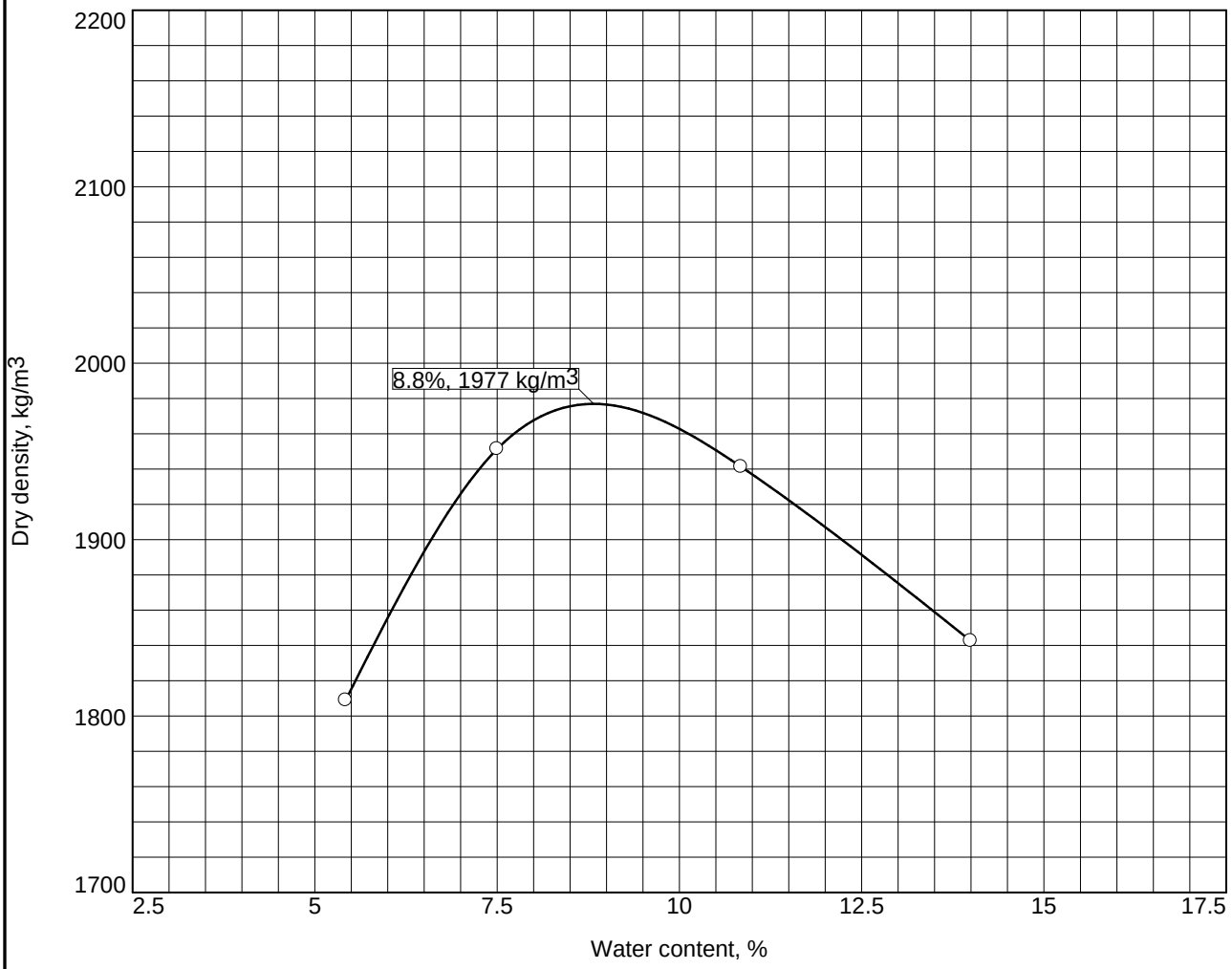


Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
8	CH	A-7-6(27)	21		51	25	0.0	94.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1845 kg/m3 Optimum moisture = 9.9 %	fat clay
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** TP-09 **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
8	CL	A-7-6(17)	20		43	19	0.0	86.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 1977 kg/m3 Optimum moisture = 8.8 %	lean clay

Project No. 981-18 **Client:** Battelle
Project: San Cristobal Disposal Site

○**Source of Sample:** TP-12 **Sample Number:** 1

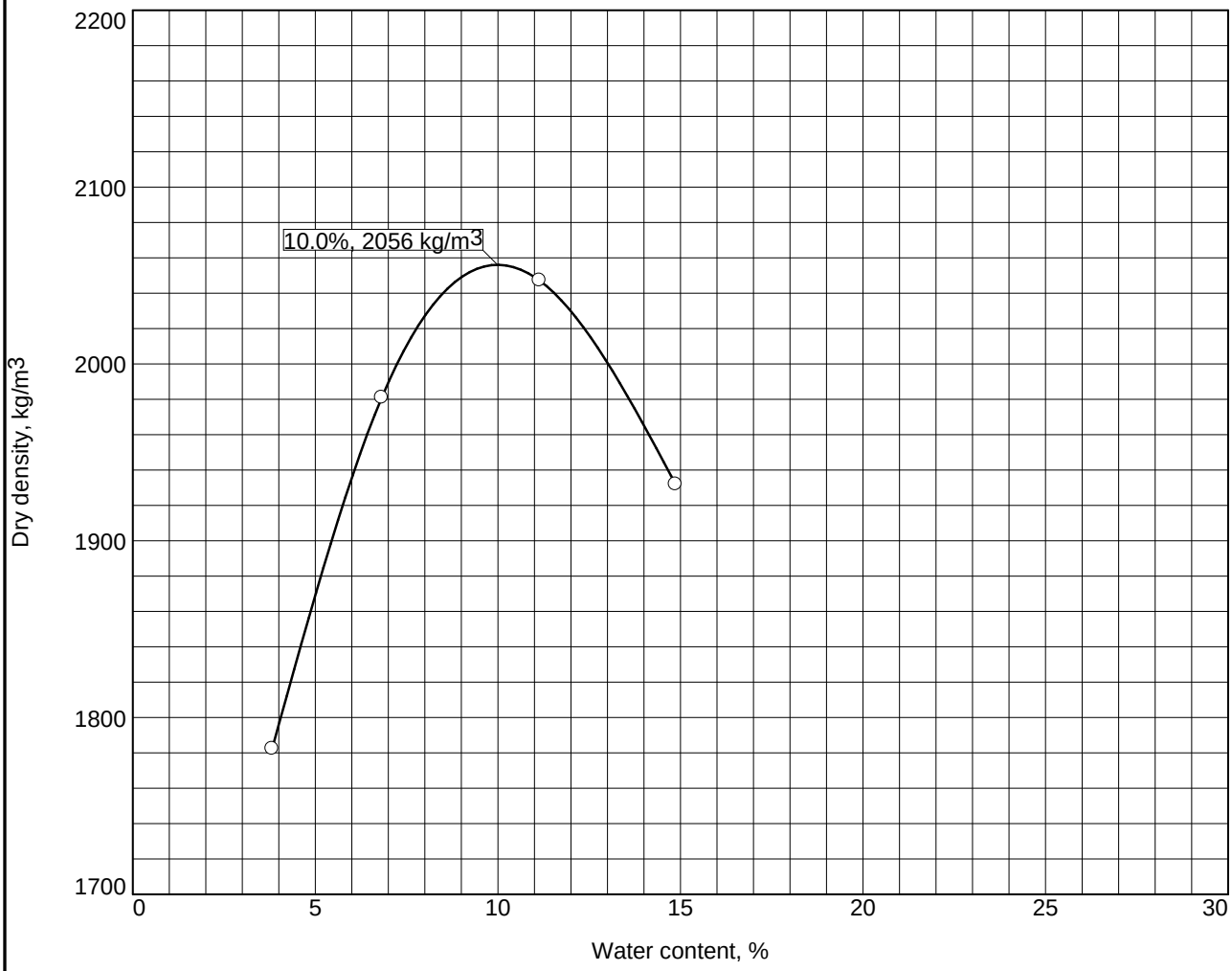
Remarks:

Horizon Consultants

Santo Domingo

Figure

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
5	GC	A-7-6(4)	14		42	20	34.5	40.3

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 2056 kg/m3 Optimum moisture = 10.0 %	clayey gravel
Project No. 981-18 **Client:** Battelle **Project:** San Cristobal Disposal Site ○**Source of Sample:** TP-14 **Sample Number:** 1	**Remarks:**
Horizon Consultants **Santo Domingo**	**Figure**

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/18/2018	Tested By:	jck
End Date:	7/23/2018	Checked By:	emm
Boring #:	SB-1		
Sample #:	M-13		
Depth:	60 ft.		
Visual Description:	Moist,dark gray clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type: Remold Permeant Fluid: De-aired Distilled water

Orientation: Vertical Cell #: 4/4

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.53	2.51
Diameter, in	2.85	2.84
Area, in^2	6.38	6.34
Volume, in^3	16.1	15.9
Mass, g	534.6	543.9
Bulk Density, pcf	126.0	130.0
Moisture Content, %	21.2	23.3
Dry Density, pcf	103.9	105.4
Degree of Saturation, %	87	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.02
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.92	Sample Pressure Increment, psi:	4.91
				B Coefficient:	0.98

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/23	1	90.0	80.0	12.0	11.7	0.3	23	23.7	4.3E-07	19.5	1.013	4.3E-07
7/23	2	90.0	80.0	12.0	11.7	0.3	24	23.7	4.1E-07	19.5	1.013	4.2E-07
7/23	3	90.0	80.0	12.0	11.7	0.3	24	23.7	4.1E-07	19.5	1.013	4.2E-07
7/23	4	90.0	80.0	12.0	11.7	0.3	24	23.7	4.1E-07	19.5	1.013	4.2E-07

PERMEABILITY AT 20° C: 4.2 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/18/2018	Tested By:	jck
End Date:	7/23/2018	Checked By:	emm
Boring #:	SB-2		
Sample #:	M-5		
Depth:	20 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.61	2.52
Diameter, in	2.85	2.79
Area, in^2	6.38	6.11
Volume, in^3	16.6	15.4
Mass, g	492.2	510.4
Bulk Density, pcf	112.6	125.8
Moisture Content, %	22.7	27.3
Dry Density, pcf	91.7	98.8
Degree of Saturation, %	70	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.02
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.33	Sample Pressure Increment, psi:	4.33
				B Coefficient:	0.86

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/23	1	90.0	80.0	14.0	10.0	4.0	75	27.5	1.8E-06	19.5	1.013	1.9E-06
7/23	2	90.0	80.0	14.0	10.0	4.0	77	27.5	1.8E-06	19.5	1.013	1.8E-06
7/23	3	90.0	80.0	14.0	10.0	4.0	75	27.5	1.8E-06	19.5	1.013	1.9E-06
7/23	4	90.0	80.0	14.0	10.0	4.0	76	27.5	1.8E-06	19.5	1.013	1.8E-06

PERMEABILITY AT 20° C: 1.8 x 10^{-6} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/10/2018	Tested By:	jck
End Date:	7/12/2018	Checked By:	emm
Boring #:	SB-03		
Sample #:	SH-1		
Depth:	20 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Test specimen compacted to the as-received density and moisture content. Trimmings moisture content = 25.4%

Assumed Specific Gravity: 2.70

Parameter	Initial	Final
Height, in	4.00	3.93
Diameter, in	2.85	2.76
Area, in^2	6.39	6.00
Volume, in^3	25.6	23.6
Mass, g	688.6	728.3
Bulk Density, pcf	102.4	117.6
Moisture Content, %	26.1	33.4
Dry Density, pcf	81.2	88.1
Degree of Saturation, %	66	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.09	Cell Pressure Increment, psi:	5.09
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.89	Sample Pressure Increment, psi:	4.89
				B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/11	1	90.0	80.0	21.0	20.5	0.5	34	26.5	4.6E-07	19.5	1.013	4.6E-07
7/11	2	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07
7/11	3	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07
7/11	4	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07

PERMEABILITY AT 20° C: 4.5 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/13/2018	Tested By:	jck
End Date:	7/19/2018	Checked By:	emm
Boring #:	SB-5		
Sample #:	M-11		
Depth:	50 ft		
Visual Description:	Moist, gray clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type: Remolded

Permeant Fluid: De-aired Distilled water

Orientation: Vertical

Cell #: 5/23

Sample Preparation: Target Compaction: 121.1 pcf at 16% moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing (0%).Trimmings moisture content = 15.9%

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	1.00	1.00
Diameter, in	2.85	2.85
Area, in^2	6.39	6.38
Volume, in^3	6.4	6.4
Mass, g	222.9	229.9
Bulk Density, pcf	132.5	137.0
Moisture Content, %	13.7	17.3
Dry Density, pcf	116.5	116.8
Degree of Saturation, %	77	98

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.05	Cell Pressure Increment, psi:	5.05
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.94	Sample Pressure Increment, psi:	4.94
				B Coefficient:	0.98

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/18	1	90.0	80.0	6.0	5.9	0.1	33	29.8	7.8E-08	19.7	1.008	7.9E-08
7/18	2	90.0	80.0	6.0	5.9	0.1	32	29.8	8.1E-08	19.7	1.008	8.1E-08
7/18	3	90.0	80.0	6.0	5.9	0.1	34	29.8	7.6E-08	19.7	1.008	7.7E-08
7/18	4	90.0	80.0	6.0	5.9	0.1	34	29.8	7.6E-08	19.7	1.008	7.7E-08

PERMEABILITY AT 20° C: 7.8 x 10^{-8} cm/sec (@ 5 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/31/2018	Tested By:	jck
End Date:	8/7/2018	Checked By:	emm
Boring #:	SB-6		
Sample #:	M-8		
Depth:	35-37 ft		
Visual Description:	Moist, light yellowish brown clay with sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	---

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.76	2.73
Diameter, in	2.86	2.84
Area, in^2	6.42	6.33
Volume, in^3	17.7	17.2
Mass, g	477.9	539.5
Bulk Density, pcf	102.7	118.9
Moisture Content, %	18.2	33.5
Dry Density, pcf	86.9	89.1
Degree of Saturation, %	50	97

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.00	Cell Pressure Increment, psi:	5.00
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.07	Sample Pressure Increment, psi:	4.07
				B Coefficient:	0.81

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
8/2	1	90.0	80.0	14.0	13.5	0.5	22	25.5	7.0E-07	19.5	1.013	7.1E-07
8/2	2	90.0	80.0	14.0	13.5	0.5	25	25.5	6.2E-07	19.5	1.013	6.2E-07
8/2	3	90.0	80.0	14.0	13.5	0.5	25	25.5	6.2E-07	19.5	1.013	6.2E-07
8/2	4	90.0	80.0	14.0	13.5	0.5	25	25.5	6.2E-07	19.5	1.013	6.2E-07

PERMEABILITY AT 20° C: 6.5 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/26/2018	Tested By:	jck
End Date:	8/1/2018	Checked By:	emm
Boring #:	SB-7		
Sample #:	M-9		
Depth:	40 ft.		
Visual Description:	Moist, light yellowish brown clay with sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	5/23

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.80	2.77
Diameter, in	2.85	2.83
Area, in^2	6.38	6.31
Volume, in^3	17.8	17.5
Mass, g	493.6	545.1
Bulk Density, pcf	105.2	118.6
Moisture Content, %	21.8	34.5
Dry Density, pcf	86.4	88.2
Degree of Saturation, %	60	98

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.02
Sample Pressure, psi:	85.00	Corresponding Sample Pressure, psi:	89.19	Sample Pressure Increment, psi:	4.19
				B Coefficient:	0.83

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/30	1	90.0	85.0	16.0	15.7	0.3	47	28.7	1.7E-07	19.7	1.008	1.7E-07
7/30	2	90.0	85.0	16.0	15.7	0.3	47	28.7	1.7E-07	19.7	1.008	1.7E-07
7/30	3	90.0	85.0	16.0	15.7	0.3	47	28.7	1.7E-07	19.7	1.008	1.7E-07
7/30	4	90.0	85.0	16.0	15.7	0.3	48	28.7	1.7E-07	19.7	1.008	1.7E-07

PERMEABILITY AT 20° C: 1.7 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	6/26/2018	Tested By:	jck
End Date:	7/11/2018	Checked By:	emm
Boring #:	SB-07		
Sample #:	SH-1		
Depth:	20 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type: Remold

Permeant Fluid: De-aired Distilled water

Orientation: Vertical

Cell #: ---

Sample Preparation: Test specimen compacted to the as-received density and moisture content. Trimmings moisture content = 27.3%

Assumed Specific Gravity: 2.70

Parameter	Initial	Final
Height, in	1.63	1.63
Diameter, in	2.85	2.85
Area, in^2	6.38	6.36
Volume, in^3	10.4	10.4
Mass, g	270.0	296.3
Bulk Density, pcf	98.7	108.6
Moisture Content, %	30.2	42.9
Dry Density, pcf	75.8	76.0
Degree of Saturation, %	67	95

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.09	Cell Pressure Increment, psi:	5.09
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.89	Sample Pressure Increment, psi:	4.89
				B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/10	1	90.0	80.0	10.0	9.0	1.0	36	30.4	7.4E-07	19.5	1.013	7.5E-07
7/10	2	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07
7/10	3	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07
7/10	4	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07

PERMEABILITY AT 20° C: 7.30 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/13/2018	Tested By:	jck
End Date:	7/19/2018	Checked By:	emm
Boring #:	SB-8		
Sample #:	M-6		
Depth:	25 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Target Compaction: 121.1 pcf at 11% moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing (0%).Trimmings moisture content = 10.9%

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	1.10	1.10
Diameter, in	2.85	2.85
Area, in^2	6.38	6.38
Volume, in^3	7.0	7.0
Mass, g	232.0	248.2
Bulk Density, pcf	125.6	134.4
Moisture Content, %	11.1	18.9
Dry Density, pcf	113.0	113.0
Degree of Saturation, %	57	97

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.02
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.33	Sample Pressure Increment, psi:	4.33
				B Coefficient:	0.86

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/18	1	90.0	80.0	6.0	5.9	0.1	43	27.1	6.6E-08	19.5	1.013	6.7E-08
7/18	2	90.0	80.0	6.0	5.9	0.1	43	27.1	6.6E-08	19.5	1.013	6.7E-08
7/18	3	90.0	80.0	6.0	5.9	0.1	42	27.1	6.8E-08	19.5	1.013	6.9E-08
7/18	4	90.0	80.0	6.0	5.9	0.1	43	27.1	6.6E-08	19.5	1.013	6.7E-08

PERMEABILITY AT 20° C: 6.7 x 10^{-8} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants. SA		
Project Name:	Battelle		
Project Location:	San Cristobel		
GTX #:	308345		
Start Date:	7/31/2018	Tested By:	jck
End Date:	8/6/2018	Checked By:	emm
Boring #:	SB-10		
Sample #:	M-2		
Depth:	50 ft.		
Visual Description:	Moist, light yellowish brown clay with sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.50	2.43
Diameter, in	2.85	2.87
Area, in^2	6.38	6.47
Volume, in^3	15.9	15.7
Mass, g	493	512
Bulk Density, pcf	117.6	124.1
Moisture Content, %	22.1	26.8
Dry Density, pcf	96.3	97.8
Degree of Saturation, %	76	96

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.01
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.83	Sample Pressure Increment, psi:	4.83
				B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
8/2	1	90.0	80.0	12.0	11.8	0.2	31	24.5	2.0E-07	19.5	1.013	2.0E-07
8/2	2	90.0	80.0	12.0	11.8	0.2	32	24.5	1.9E-07	19.5	1.013	2.0E-07
8/2	3	90.0	80.0	12.0	11.8	0.2	31	24.5	2.0E-07	19.5	1.013	2.0E-07
8/2	4	90.0	80.0	12.0	11.8	0.2	31	24.5	2.0E-07	19.5	1.013	2.0E-07

PERMEABILITY AT 20° C: 2.0 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/13/2018	Tested By:	jck
End Date:	7/19/2018	Checked By:	emm
Boring #:	SB-11		
Sample #:	M-4		
Depth:	15-17 ft		
Visual Description:	Moist, yellowish brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.42	2.40
Diameter, in	2.85	2.85
Area, in^2	6.38	6.37
Volume, in^3	15.4	15.3
Mass, g	478.3	505.4
Bulk Density, pcf	117.8	125.6
Moisture Content, %	20.4	27.2
Dry Density, pcf	97.8	98.7
Degree of Saturation, %	73	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.01	Cell Pressure Increment, psi:	5.01
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.73	Sample Pressure Increment, psi:	4.73
				B Coefficient:	0.94

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/23	1	90.0	80.0	12.0	11.0	1.0	34	24.8	9.5E-07	19.5	1.013	9.6E-07
7/23	2	90.0	80.0	12.0	11.0	1.0	34	24.8	9.5E-07	19.5	1.013	9.6E-07
7/23	3	90.0	80.0	12.0	11.0	1.0	35	24.8	9.2E-07	19.5	1.013	9.3E-07
7/23	4	90.0	80.0	12.0	11.0	1.0	35	24.8	9.2E-07	19.5	1.013	9.3E-07

PERMEABILITY AT 20° C: 9.5 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/13/2018	Tested By:	jck
End Date:	7/19/2018	Checked By:	emm
Boring #:	SB-12		
Sample #:	M-6		
Depth:	25 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type: Remold Permeant Fluid: De-aired Distilled water

Orientation: Vertical Cell #: 4/4

Sample Preparation: Target Compaction: 121.1 pcf at 9% moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing (0%).Trimmings moisture content = 9.6%

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	1.10	1.10
Diameter, in	2.85	2.85
Area, in^2	6.38	6.38
Volume, in^3	7.0	7.0
Mass, g	247.1	256.8
Bulk Density, pcf	133.9	139.1
Moisture Content, %	12.0	16.4
Dry Density, pcf	119.5	119.5
Degree of Saturation, %	73	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.02	Cell Pressure Increment, psi:	5.02
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.92	Sample Pressure Increment, psi:	4.92
				B Coefficient:	0.98

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/18	1	90.0	80.0	6.0	5.9	0.1	32	27.1	8.9E-08	19.5	1.013	9.0E-08
7/18	2	90.0	80.0	6.0	5.9	0.1	32	27.1	8.9E-08	19.5	1.013	9.0E-08
7/18	3	90.0	80.0	6.0	5.9	0.1	33	27.1	8.6E-08	19.5	1.013	8.7E-08
7/18	4	90.0	80.0	6.0	5.9	0.1	32	27.1	8.9E-08	19.5	1.013	9.0E-08

PERMEABILITY AT 20° C: 8.9 x 10^{-8} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/26/2018	Tested By:	JCK
End Date:	8/6/2018	Checked By:	emm
Boring #:	SB-13		
Sample #:	M-7		
Depth:	30 ft		
Visual Description:	Moist, yellowish brown clay with sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	5/23

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.42	2.38
Diameter, in	2.85	2.83
Area, in^2	6.38	6.29
Volume, in^3	15.4	15.0
Mass, g	467.9	500.8
Bulk Density, pcf	115.2	127.1
Moisture Content, %	17.4	25.7
Dry Density, pcf	98.1	101.1
Degree of Saturation, %	62	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.01	Cell Pressure Increment, psi:	5.01
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.03	Sample Pressure Increment, psi:	4.03
				B Coefficient:	0.80

*B value did not increase with increase in pressure. Final degree of saturation >95%.

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/30	1	90.0	80.0	14.0	13.0	1.0	52	29.2	5.3E-07	19.7	1.008	5.3E-07
7/30	2	90.0	80.0	14.0	13.0	1.0	52	29.2	5.3E-07	19.7	1.008	5.3E-07
7/30	3	90.0	80.0	14.0	13.0	1.0	53	29.2	5.2E-07	19.7	1.008	5.2E-07
7/30	4	90.0	80.0	14.0	13.0	1.0	52	29.2	5.3E-07	19.7	1.008	5.3E-07

PERMEABILITY AT 20° C: 5.3 x 10^{-7} cm/sec (@ 5 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/31/2018	Tested By:	jck
End Date:	8/7/2018	Checked By:	emm
Boring #:	SB-14		
Sample #:	M-8		
Depth:	35-37 ft		
Visual Description:	Moist, dark gray clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Target Compaction: 121.0 pcf at the as-received moisture content. Values specified by client. Material >3/8-inch screened out of sample prior to testing. GTX was unable to achieve the requested density.

Assumed Specific Gravity: 2.80

Parameter	Initial	Final
Height, in	2.62	2.60
Diameter, in	2.85	2.82
Area, in^2	6.39	6.23
Volume, in^3	16.7	16.2
Mass, g	492.4	524.6
Bulk Density, pcf	111.8	123.2
Moisture Content, %	21.2	29.2
Dry Density, pcf	92.3	95.4
Degree of Saturation, %	66	98

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.04	Increased Cell Pressure, psi:	95.03	Cell Pressure Increment, psi:	4.99
Sample Pressure, psi:	80.04	Corresponding Sample Pressure, psi:	85.00	Sample Pressure Increment, psi:	4.96
				B Coefficient:	0.99

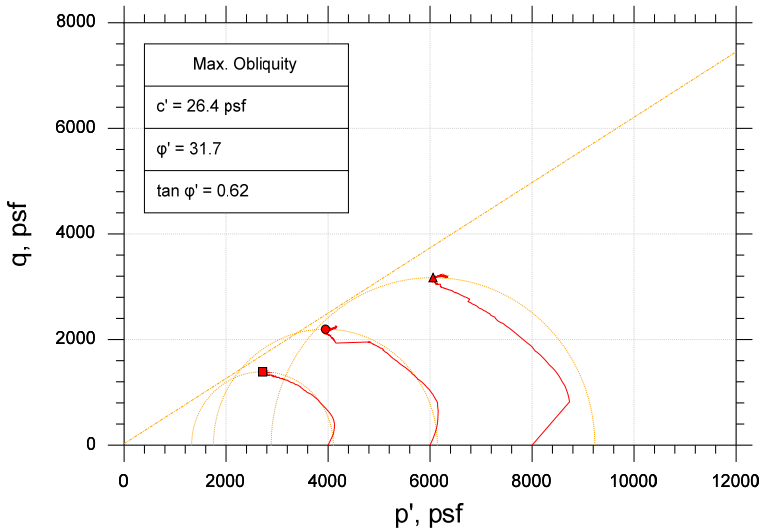
FLOW DATA

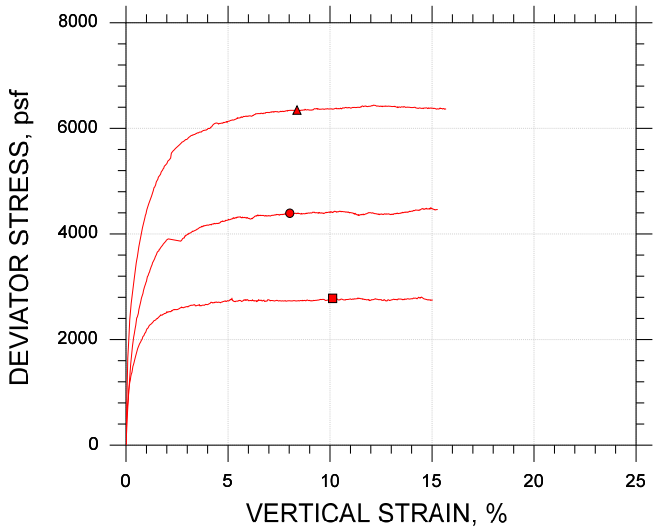
Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
8/2	1	90.0	80.0	14.0	13.7	0.5	54	26.7	2.8E-07	19.5	1.013	2.8E-07
8/2	2	90.0	80.0	14.0	13.7	0.5	53	26.7	2.8E-07	19.5	1.013	2.8E-07
8/2	3	90.0	80.0	14.0	13.7	0.5	56	26.7	2.7E-07	19.5	1.013	2.7E-07
8/2	4	90.0	80.0	14.0	13.7	0.5	57	26.7	2.6E-07	19.5	1.013	2.6E-07

PERMEABILITY AT 20° C: 2.7 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client: Horizon Consultants, SA	
Project Name: Brattelle	
Project Location: San Cristobel, DR	
Project Number: GTX-308345	
Tested By: md	Checked By: mcm
Boring ID: SB-03	
Preparation: remold	
Description: Moist, brown clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

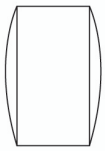


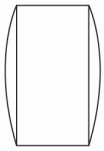


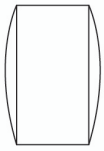
Symbol		■	●	▲	
Sample ID		SH-1	SH-1	SH-1	
Depth, ft		32 ft	32 ft	32 ft	
Test Number		CU-2-1	CU-2-2	CU-2-3	
Initial	Height, in	4.050	4.050	4.050	
	Diameter, in	2.000	2.000	2.000	
	Moisture Content (from Cuttings), %	25.6	25.4	25.2	
	Dry Density, pcf	82.1	82.3	82.4	
	Saturation (Wet Method), %	65.8	65.5	65.2	
	Void Ratio	1.05	1.05	1.05	
Before Shear	Moisture Content, %	32.6	27.1	27.7	
	Dry Density, pcf	89.7	97.3	96.4	
	Cross-sectional Area (Method A), in²	2.955	2.808	2.823	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	0.879	0.732	0.748	
	Back Pressure, psf	2.174e+004	2.175e+004	2.174e+004	
Vertical Effective Consolidation Stress, psf		3968.	5943.	7941.	
Horizontal Effective Consolidation Stress, psf		3999.	6000.	8001.	
Vertical Strain after Consolidation, %		2.721	4.744	5.069	
Volumetric Strain after Consolidation, %		8.640	13.55	14.90	
Time to 50% Consolidation, min		1.000	5.760	4.410	
Shear Strength, psf		1390.	2196.	3174.	
Strain at Failure, %		10.1	8.03	8.38	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		2780.	4392.	6347.	
Effective Minor Principal Stress at Failure, psf		1326.	1752.	2884.	
Effective Major Principal Stress at Failure, psf		4106.	6144.	9232.	
B-Value		0.95	0.96	0.95	

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Remarks:

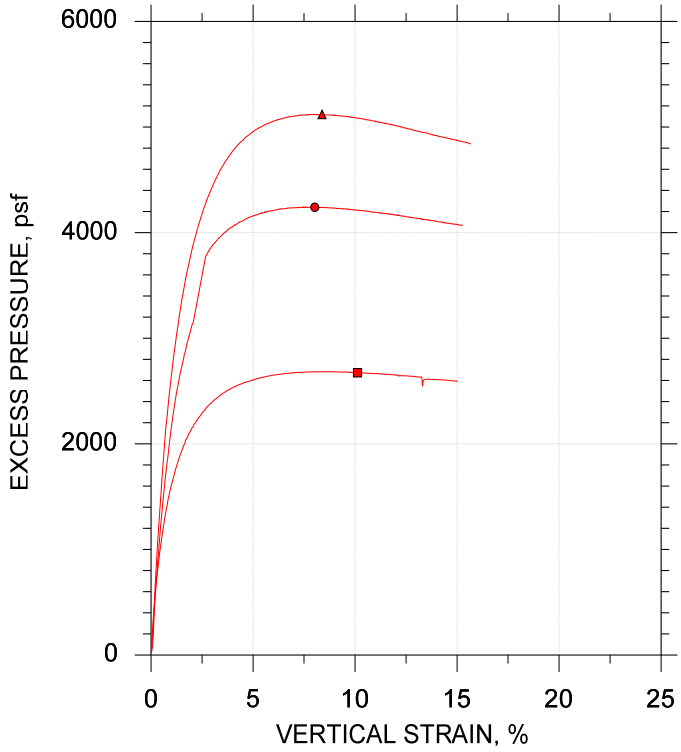


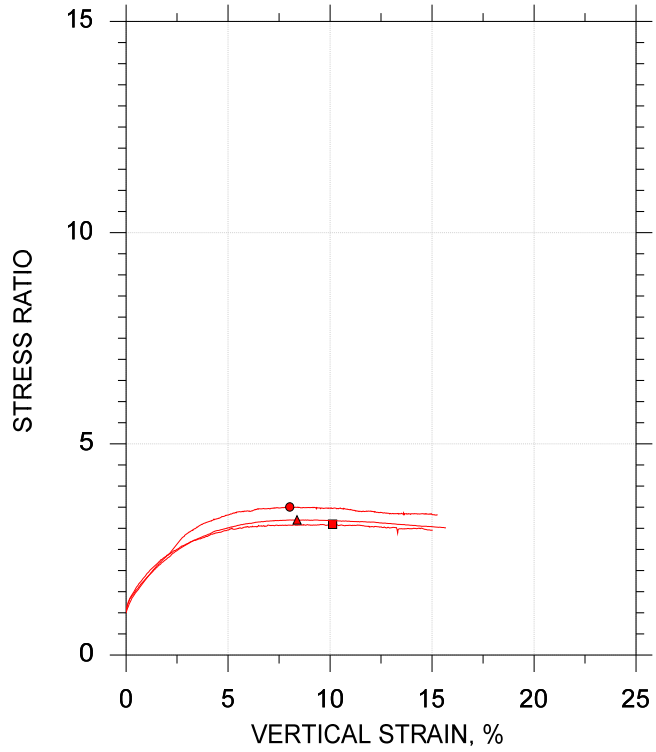


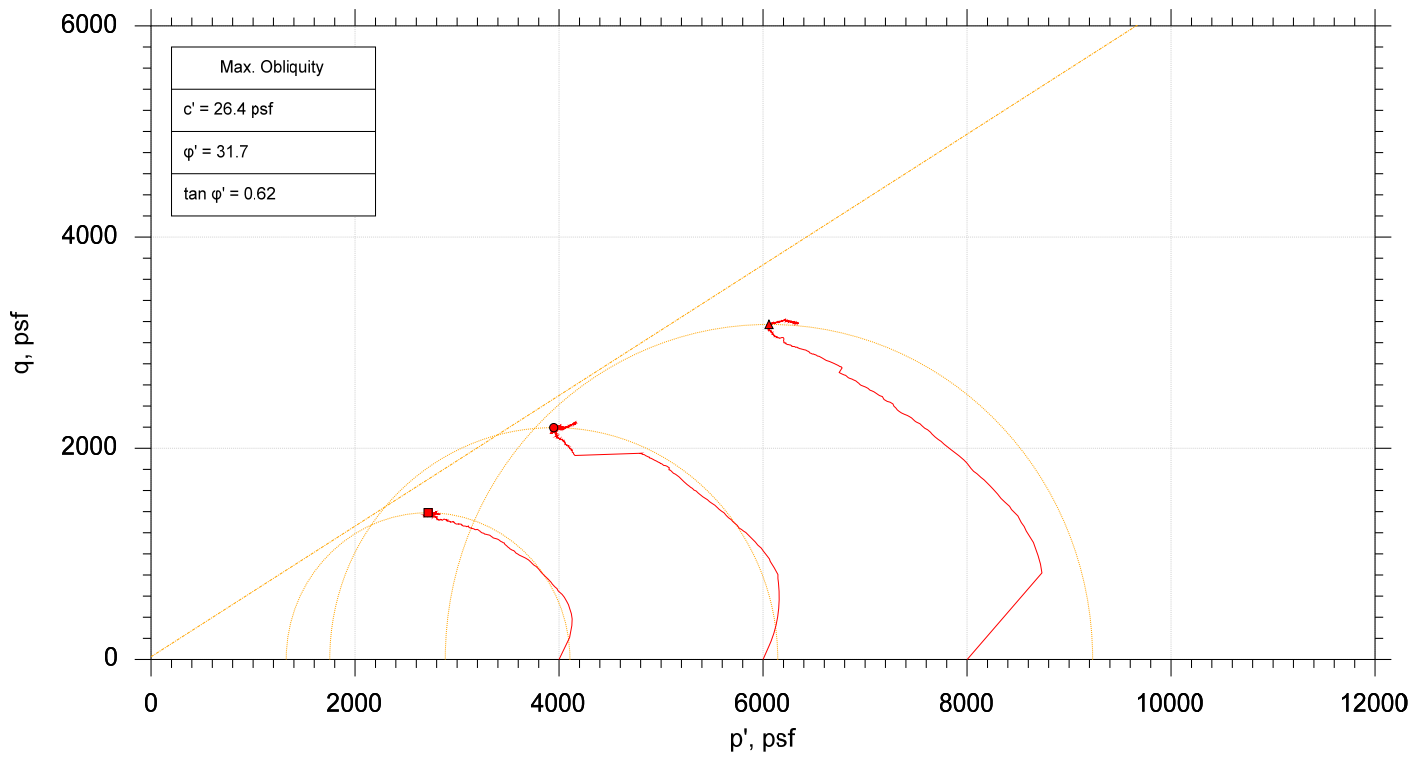


System II, Note: Test specimens were remolded to the the as-received density, as requested by client.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







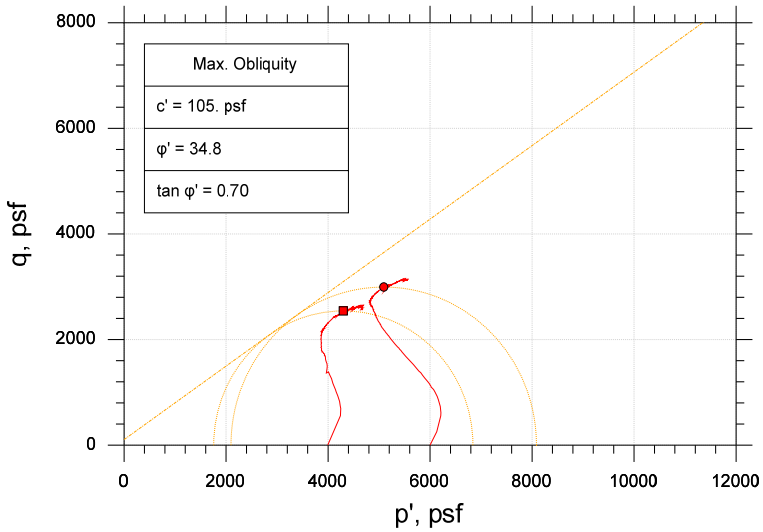
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	SH-1	CU-2-1	32 ft	md	07/06/18	mcm	7/12/18	308345-CU-2-1m.dat
●	SH-1	CU-2-2	32 ft	md	07/06/18	mcm	7/12/18	308345-CU-2-2m.dat
▲	SH-1	CU-2-3	32 ft	md	07/06/18	mcm	7/12/18	308345-CU-2-3m.dat

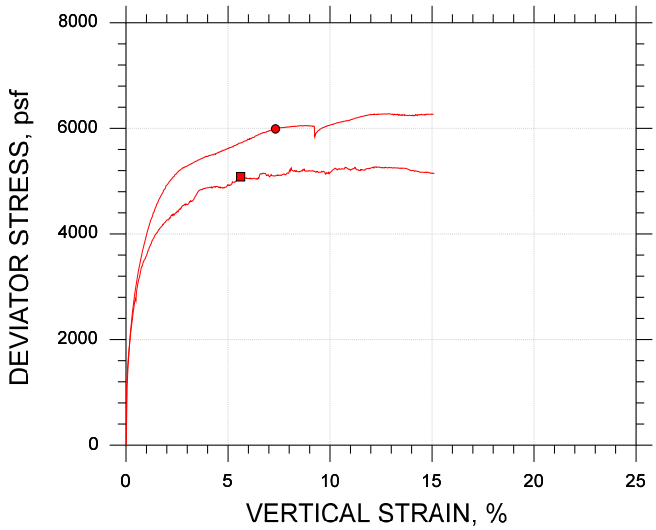
GeoTesting EXPRESS

Project: Brattelle	Location: San Cristobel, DR	Project No.: GTX-308345
Boring No.: SB-03	Sample Type: remold	
Description: Moist, brown clay		
Remarks: System II, Note: Test specimens were remolded to the the as-received density, as requested by client.		

Client: Horizon Consultants, SA	
Project Name: Battelle	
Project Location: San Cristobel, DR	
Project Number: GTX-308345	
Tested By: md	Checked By: mcm
Boring ID: SB-10	
Preparation: remold	
Description: Moist, brown clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

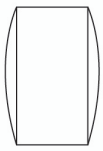
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

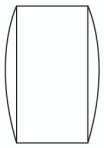




Symbol		■	●		
Sample ID		M-7	M-7		
Depth, ft		27 ft	27 ft		
Test Number		CU-1-1	CU-1-2		
Initial	Height, in	4.300	4.300		
	Diameter, in	2.000	2.000		
	Moisture Content (from Cuttings), %	22.4	21.6		
	Dry Density, pcf	97.0	97.7		
	Saturation (Wet Method), %	82.0	80.2		
	Void Ratio	0.738	0.726		
Before Shear	Moisture Content, %	24.6	22.8		
	Dry Density, pcf	101.	104.		
	Cross-sectional Area (Method A), in²	3.043	3.017		
	Saturation, %	100.0	100.0		
	Void Ratio	0.664	0.616		
	Back Pressure, psf	2.173e+004	2.200e+004		
Vertical Effective Consolidation Stress, psf		3983.	5969.		
Horizontal Effective Consolidation Stress, psf		3994.	5997.		
Vertical Strain after Consolidation, %		1.242	2.441		
Volumetric Strain after Consolidation, %		4.515	6.220		
Time to 50% Consolidation, min		0.8100	2.000		
Shear Strength, psf		2542.	2995.		
Strain at Failure, %		5.62	7.32		
Strain Rate, %/min		0.01600	0.01600		
Deviator Stress at Failure, psf		5084.	5990.		
Effective Minor Principal Stress at Failure, psf		1757.	2097.		
Effective Major Principal Stress at Failure, psf		6841.	8087.		
B-Value		0.95	0.95		

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

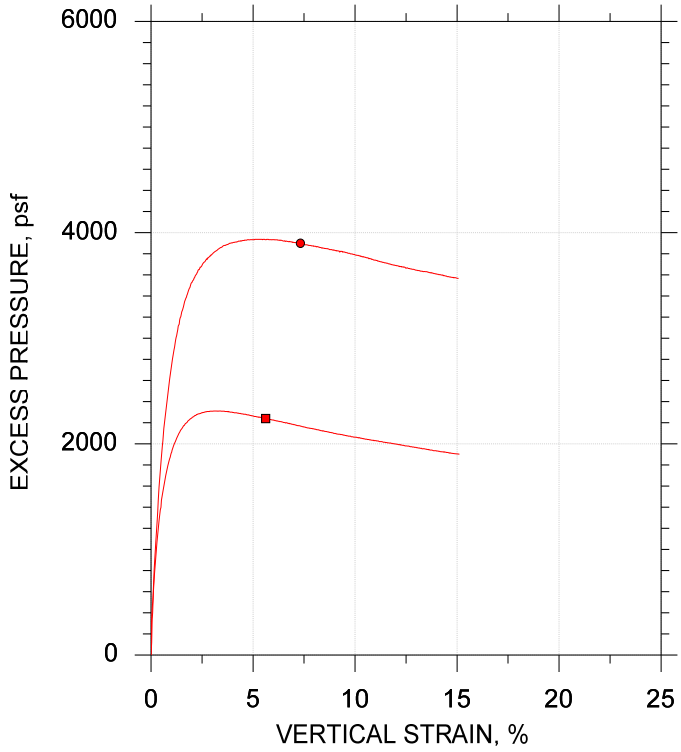


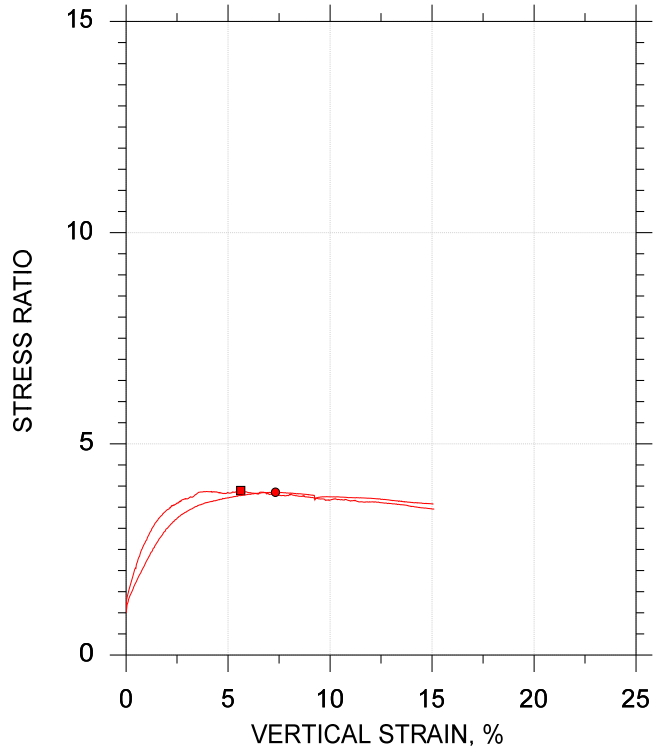


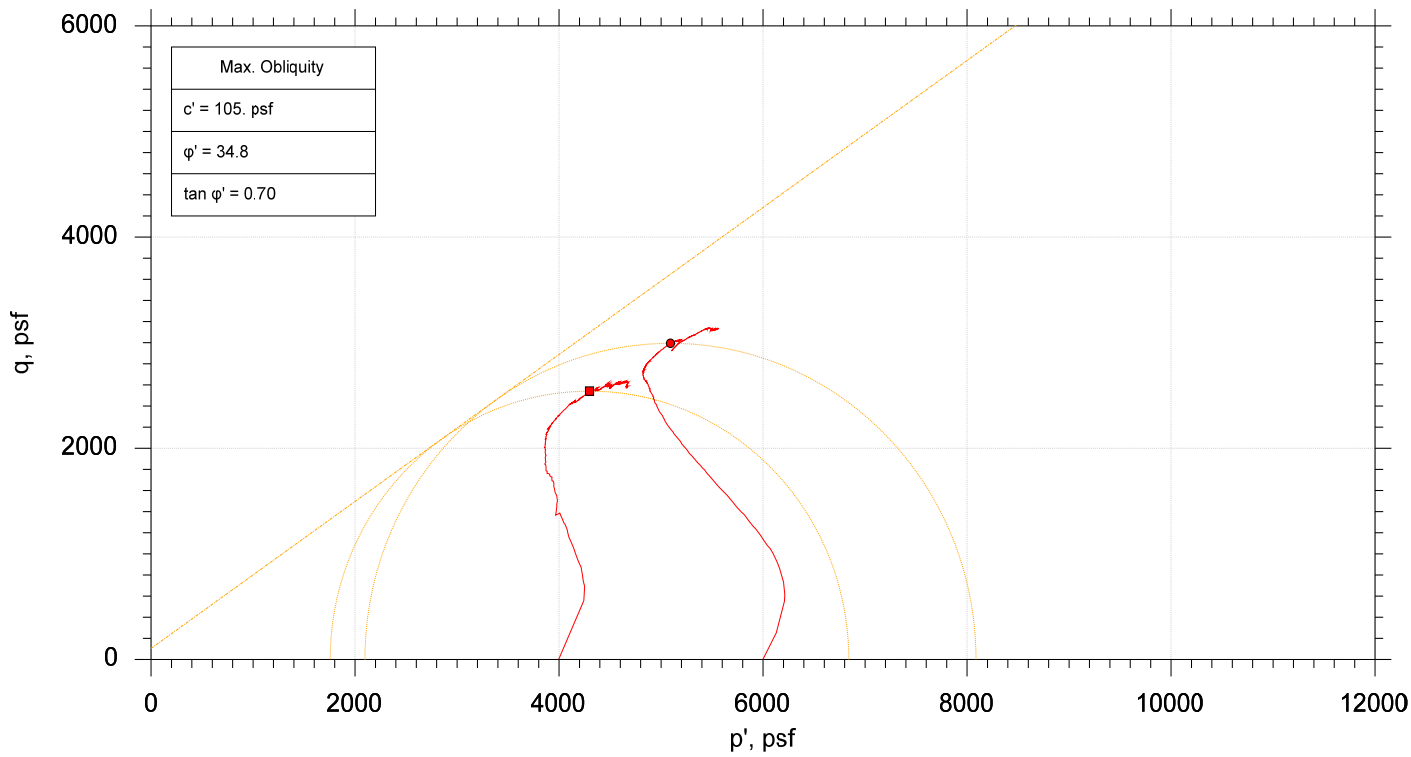
Remarks:

System K, Note: Test specimens were remolded to the the as-received density, as requested by client.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	M-7	CU-1-1	27 ft	md	07/06/18	mcm	7/12/18	308345-CU-1-1m.dat
●	M-7	CU-1-2	27 ft	md	07/06/18	mcm	7/12/18	308345-CU-1-2m.dat

GeoTesting EXPRESS

Project: Battelle	Location: San Cristobel, DR	Project No.: GTX-308345
Boring No.: SB-10	Sample Type: remold	
Description: Moist, brown clay		
Remarks: System K, Note: Test specimens were remolded to the the as-received density, as requested by client.		

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	7/10/2018	Tested By:	jck
End Date:	7/12/2018	Checked By:	emm
Boring #:	SB-03		
Sample #:	SH-1		
Depth:	20 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type:	Remold	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	4/4

Sample Preparation: Test specimen compacted to the as-received density and moisture content. Trimmings moisture content = 25.4%

Assumed Specific Gravity: 2.70

Parameter	Initial	Final
Height, in	4.00	3.93
Diameter, in	2.85	2.76
Area, in^2	6.39	6.00
Volume, in^3	25.6	23.6
Mass, g	688.6	728.3
Bulk Density, pcf	102.4	117.6
Moisture Content, %	26.1	33.4
Dry Density, pcf	81.2	88.1
Degree of Saturation, %	66	99

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.09	Cell Pressure Increment, psi:	5.09
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.89	Sample Pressure Increment, psi:	4.89
				B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/11	1	90.0	80.0	21.0	20.5	0.5	34	26.5	4.6E-07	19.5	1.013	4.6E-07
7/11	2	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07
7/11	3	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07
7/11	4	90.0	80.0	21.0	20.5	0.5	35	26.5	4.4E-07	19.5	1.013	4.5E-07

PERMEABILITY AT 20° C: 4.5 x 10^{-7} cm/sec (@ 10 psi effective stress)

Client:	Horizon Consultants, SA		
Project Name:	Battelle		
Project Location:	San Cristobel, DR		
GTX #:	308345		
Start Date:	6/26/2018	Tested By:	jck
End Date:	7/11/2018	Checked By:	emm
Boring #:	SB-04/07		
Sample #:	---		
Depth:	20 ft		
Visual Description:	Moist, brown clay		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084

Constant Volume

Sample Type: Remold

Permeant Fluid: De-aired Distilled water

Orientation: Vertical

Cell #: ---

Sample Preparation: Test specimen compacted to the as-received density and moisture content. Trimmings moisture content = 27.3%

Assumed Specific Gravity: 2.70

Parameter	Initial	Final
Height, in	1.63	1.63
Diameter, in	2.85	2.85
Area, in^2	6.38	6.36
Volume, in^3	10.4	10.4
Mass, g	270.0	296.3
Bulk Density, pcf	98.7	108.6
Moisture Content, %	30.2	42.9
Dry Density, pcf	75.8	76.0
Degree of Saturation, %	67	95

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	95.09	Cell Pressure Increment, psi:	5.09
Sample Pressure, psi:	80.00	Corresponding Sample Pressure, psi:	84.89	Sample Pressure Increment, psi:	4.89
				B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi Cell	Pressure, psi Sample	Manometer Readings Z_1	Manometer Readings Z_2	Manometer Readings Z_1-Z_2	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
7/10	1	90.0	80.0	10.0	9.0	1.0	36	30.4	7.4E-07	19.5	1.013	7.5E-07
7/10	2	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07
7/10	3	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07
7/10	4	90.0	80.0	10.0	9.0	1.0	37	30.4	7.2E-07	19.5	1.013	7.3E-07

PERMEABILITY AT 20° C: 7.30 x 10^{-7} cm/sec (@ 10 psi effective stress)

APPENDIX C

In Situ Slug Test

HorizonConsultants
Soluciones en Ingeniería Geotécnica

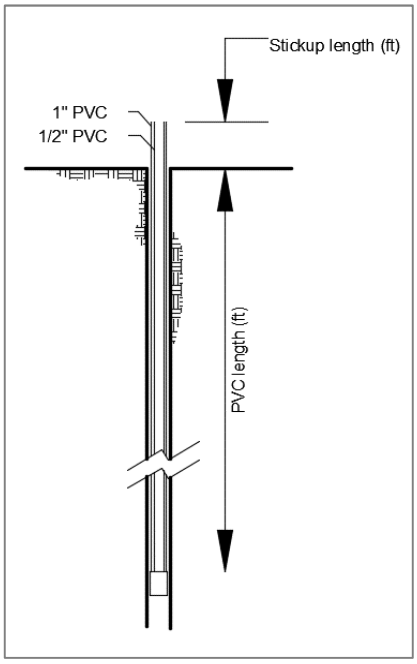
Slug Test (ASTM D4044)

PIEZOMETER ID	SB01	REMARKS:
Date	6/29/2018	
Pretest Water Level (ft)	12.75	
Time at Reading	12:45	

Slug Description
Water was displaced with a 1/2" PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 25.87 Stickup length (ft) 1.87

	Elapsed Time			
Entry	Hour	Minute	Second	Reading (ft)
1	0	0	30	16.63
2	0	0	50	15.13
3	0	1	17	14.58
4	0	2	0	14.43
5	0	2	30	14.33
6	0	3	0	14.23
7	0	4	0	14.13
8	0	5	0	13.91
9	0	6	0	13.81
10	0	7	0	13.72
11	0	8	0	13.61
12	0	9	0	13.53
13	0	10	0	13.45
14	0	11	0	13.38
15	0	12	0	13.33
16	0	13	0	13.25
17	0	14	0	13.18
18	0	15	0	13.13
19	0	16	0	13.09
20	0	18	0	13.01
21	0	20	0	12.93
22	0	21	0	12.91
23	0	22	0	12.88
24	0	23	0	12.85
25	0	25	0	12.83
26	0	27	0	12.81
27	0	28	0	12.78
28	0	29	0	12.75
29	0	30	0	12.75



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Soluciones en Ingeniería Geotécnica

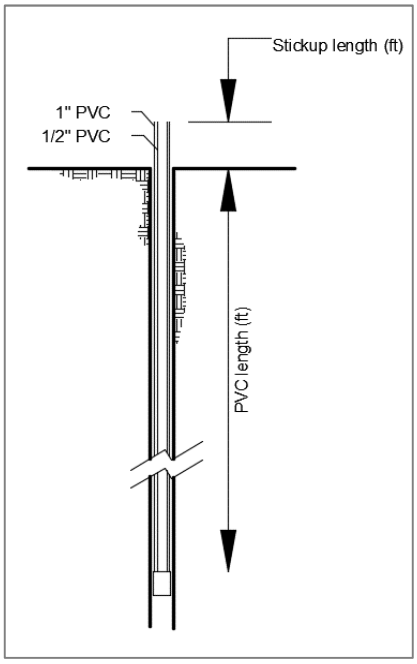
Slug Test (ASTM D4044)

PIEZOMETER ID	SB03	REMARKS:
Date	7/11/2018	
Pretest Water Level (ft)	6.86	
Time at Reading	10:15	

Slug Description
Water was displaced by inserting a 1/2 PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 18.48 Stickup length (ft) 0.42

	Elapsed Time			
Entry	Hour	Minute	Second	Reading (ft)
1	0	0	32	8.58
2	0	0	51	8.38
3	0	1	0	7.98
4	0	2	0	7.78
5	0	3	0	7.48
6	0	4	0	7.38
7	0	5	0	7.29
8	0	6	0	7.28
9	0	7	0	7.21
10	0	8	0	7.16
11	0	9	0	7.13
12	0	10	0	7.12
13	0	11	0	7.12
14	0	12	0	7.11
15	0	13	0	7.11
16	0	14	0	7.11
17	0	15	0	7.09
18	0	17	0	7.08
19	0	19	0	7.07
20	0	21	0	7.06
21	0	23	0	7.05
22	0	25	0	7.04
23	0	30	0	7.03
24	0	35	0	7.02
25	0	40	0	7.01
26	0	45	0	6.99
27	0	50	0	6.98
28	0	55	0	6.96
29	0	60	0	6.94
30	1	15	0	6.93



Entry	Elapsed Time Hour	Minute	Second	Reading (ft)
31	1	30	0	6.90
32	2	0	0	6.88

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Soluciones en Ingeniería Geotécnica

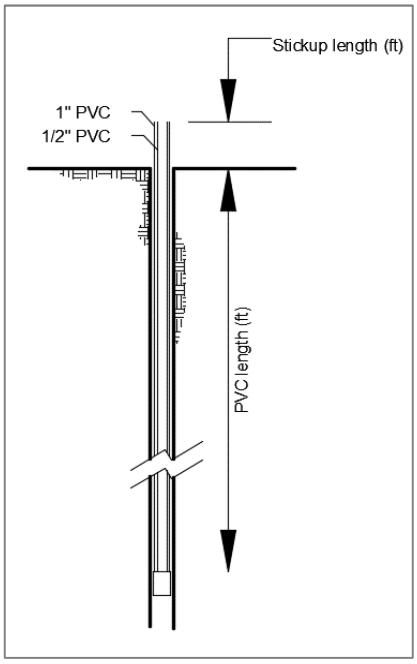
Slug Test (ASTM D4044)

PIEZOMETER ID	SB05	REMARKS:
Date	6/29/2018	
Pretest Water Level (ft)	8.29	
Time at Reading	10:14	

Slug Description
Water was displaced by inserting a 1/2 PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 27.11 Stickup length (ft) 0.49

	Elapsed Time			
Entry	Hour	Minute	Second	Reading (ft)
1	0	0	15	11.31
2	0	0	38	11.11
3	0	0	50	10.96
4	0	1	20	10.81
5	0	2	0	10.71
6	0	3	0	10.56
7	0	4	0	10.31
8	0	5	0	10.16
9	0	6	0	10.05
10	0	7	0	9.92
11	0	8	0	9.73
12	0	9	0	9.63
13	0	10	0	9.56
14	0	11	0	9.51
15	0	12	0	9.43
16	0	13	0	9.36
17	0	14	0	9.29
18	0	15	0	9.23
19	0	17	0	9.13
20	0	19	0	9.01
21	0	21	0	8.96
22	0	23	0	8.89
23	0	25	0	8.82
24	0	30	0	8.70
25	0	35	0	8.61
26	0	40	0	8.53
27	0	45	0	8.49
28	0	50	0	8.46
29	0	55	0	8.46
30	0	60	0	8.42



Entry	Elapsed Time Hour	Minute	Second	Reading (ft)
31	1	10	0	8.42
32	1	20	0	8.42
33	1	40	0	8.39
34	2	0	0	8.38
35	2	15	0	8.36
36	2	30	0	8.32
37	3	30	0	8.29

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Soluciones en Ingeniería Geotécnica

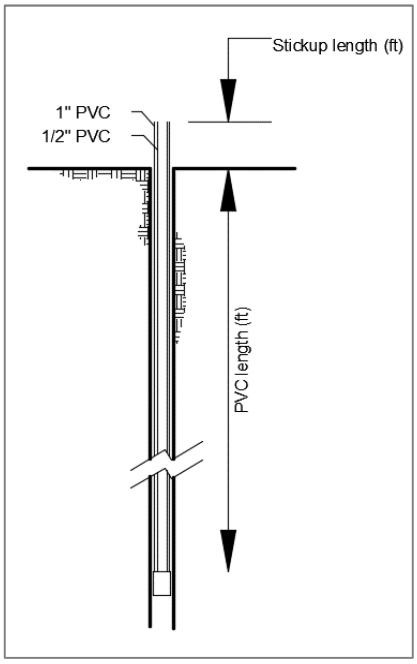
Slug Test (ASTM D4044)

PIEZOMETER ID	SB09	REMARKS:
Date	7/11/2018	
Pretest Water Level (ft)	25.38	
Time at Reading	7:30	

Slug Description
Water was displaced by inserting a 1/2 PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 37.00 Stickup length (ft) 1.00

	Elapsed Time			
Entry	Hour	Minute	Second	Reading (ft)
1	0	0	30	28.30
2	0	0	50	28.00
3	0	1	0	27.75
4	0	2	0	27.60
5	0	3	0	27.44
6	0	4	0	27.24
7	0	5	0	27.04
8	0	6	0	26.94
9	0	7	0	26.79
10	0	8	0	26.67
11	0	9	0	26.60
12	0	10	0	26.55
13	0	11	0	26.48
14	0	12	0	26.42
15	0	13	0	26.36
16	0	14	0	26.30
17	0	15	0	26.25
18	0	17	0	26.19
19	0	19	0	26.15
20	0	21	0	26.12
21	0	23	0	26.08
22	0	25	0	26.03
23	0	30	0	25.98
24	0	35	0	25.95
25	0	40	0	25.92
26	0	45	0	25.88
27	0	50	0	25.85
28	0	55	0	25.81
29	0	60	0	25.78
30	1	15	0	25.72



Entry	Elapsed Time Hour	Minute	Second	Reading (ft)
31	1	30	0	25.64
32	2	0	0	25.54
33	2	30	0	25.51
34	3	0	0	25.47
35	3	30	0	25.44
36	4	0	0	25.41
37	4	30	0	25.38

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Soluciones en Ingeniería Geotécnica

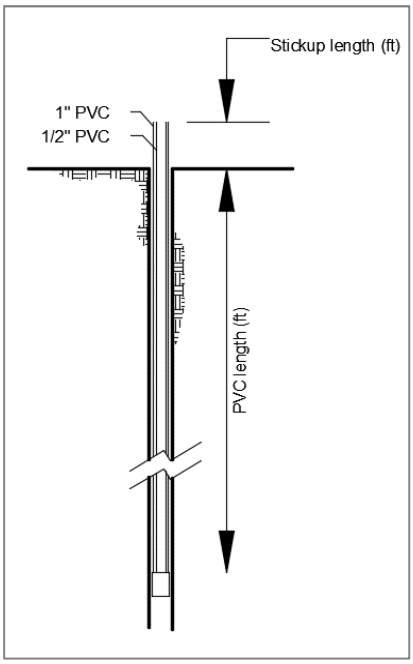
Slug Test (ASTM D4044)

PIEZOMETER ID	SB12	REMARKS:
Date	6/28/2018	
Pretest Water Level (ft)	18.31	
Time at Reading	13:20	

Slug Description
Water was displaced by inserting a 1/2 PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 30.66 Stickup length (ft) 0.89

	Elapsed Time			
Entry	**Hour**	**Minute**	**Second**	**Reading (ft)**
1	0	0	42	21.46
2	0	0	55	21.05
3	0	1	15	20.72
4	0	2	0	20.42
5	0	3	0	20.15
6	0	4	0	19.96
7	0	5	0	19.83
8	0	6	0	19.74
9	0	7	0	19.64
10	0	8	0	19.57
11	0	9	0	19.52
12	0	10	0	19.46
13	0	11	0	19.41
14	0	12	0	19.37
15	0	13	0	19.33
16	0	14	0	19.23
17	0	15	0	19.15
18	0	16	0	19.10
19	0	17	0	19.06
20	0	18	0	19.04
21	0	19	0	19.01
22	0	20	0	18.97
23	0	25	0	18.95
24	0	30	0	18.89
25	0	35	0	18.85
26	0	40	0	18.81
27	0	45	0	18.77
28	0	50	0	18.73
29	1	0	0	18.68
30	1	30	0	18.63



Entry	Elapsed Time Hour	Minute	Second	Reading (ft)
31	2	0	0	18.59
32	2	30	0	18.53
33	3	0	0	18.48
34	3	30	0	18.41
35	4	0	0	18.35
36	4	30	0	18.31

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Soluciones en Ingeniería Geotécnica

Slug Test (ASTM D4044)

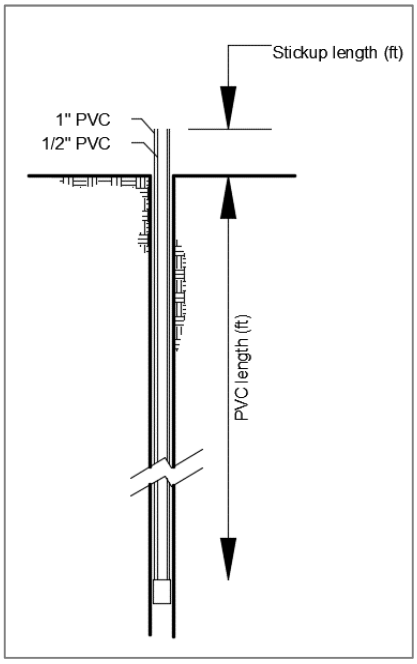
PIEZOMETER ID	SB14	REMARKS:
Date	6/29/2018	Very high conductivity.
Pretest Water Level (ft)	10.85	
Time at Reading	13:52	

Slug Description

Water was displaced by inserting a 1/2 PVC pipe of the exact same length of the piezometer stick.

PVC 1/2" length (ft) 18.24 Stickup length (ft) 0.59

	Elapsed Time			
Entry	**Hour**	**Minute**	**Second**	**Reading (ft)**
1	0	0	15	11.20
2	0	0	20	11.15
3	0	1	30	10.90
4	0	2	45	10.85



APPENDIX D

Field Work Photo Sequence

SB-01

SB-02

SB-03

SB-03

SB-04

SB-04

SB-05

SB-05

SB-06

SB-06

SB-08

Horizon Consultants
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FC03
Horizon
Horizon

SB-10

SB-10

SB-11

SB-13

SB-14

SB-14

SB-03

SB-03

SB-05

SB-09

SB-12

SB-14

SB-01

SB-05

SB-06

SB-08

SB-09

SB-12

SB-12

SB-14