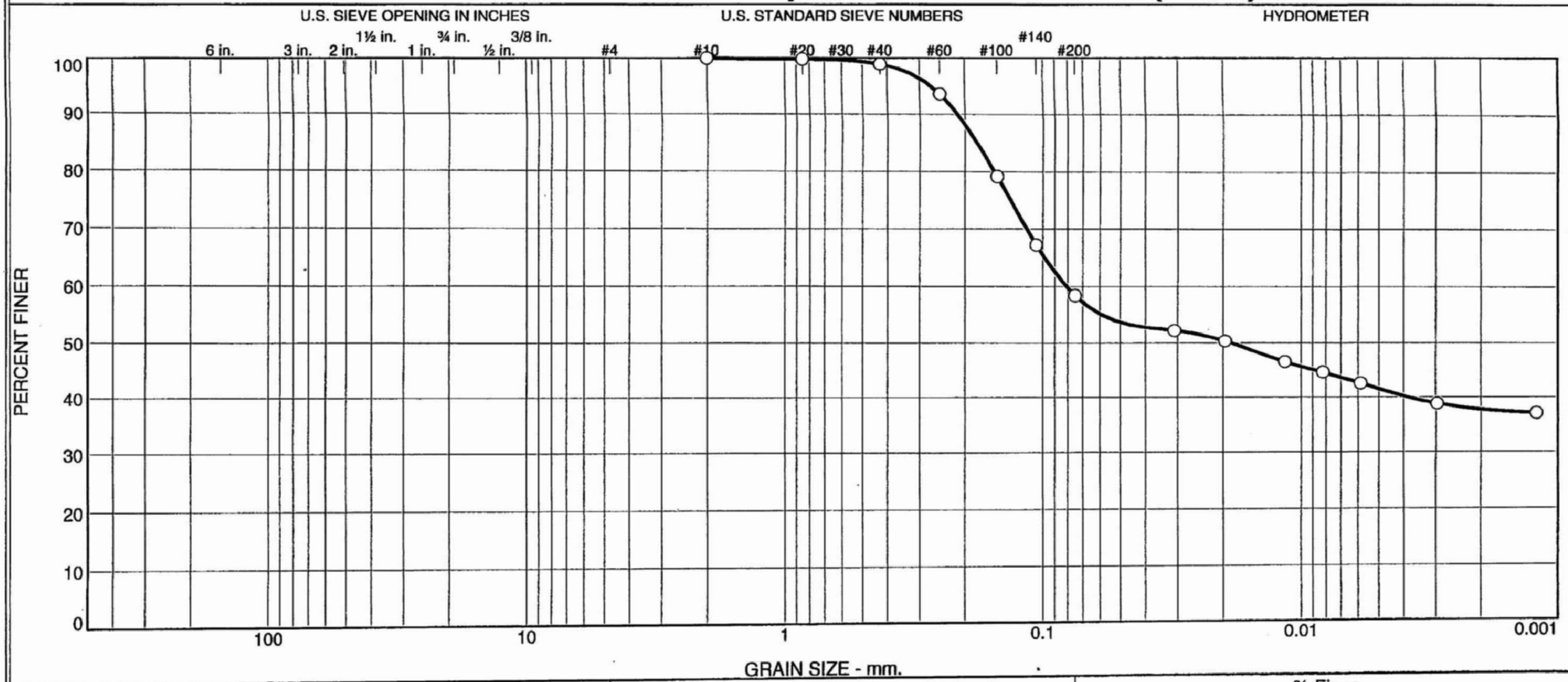
Particle Size Distribution Report / ASTM D422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.1	40.4	17.0	41.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-14	53.5-55.0	12-15-07	CL	Light Gray Sandy Lean CLAY	16.5	41	12

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 53.5-55.0 **Sample Number:** SS-14
Material Description: Light Gray Sandy Lean CLAY
Date: 12-15-07 **Natural Moisture:** 16.5
Liquid Limit: 41 **Plastic Limit:** 12 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
261.82	0.00	0.00	#10	0.00	100.0
52.62	0.00	0.00	#20	0.11	99.8
			#40	0.58	98.9
			#60	3.40	93.5
			#100	10.98	79.1
			#140	17.21	67.3
			#200	21.86	58.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =52.62
Hygroscopic moisture correction:
Moist weight and tare = 28.76
Dry weight and tare = 28.35
Tare weight = 15.71
Hygroscopic moisture = 3.2%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
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
2.00	21.3	32.0	27.0	0.0132	33.0	10.9	0.0309	52.3
5.00	21.3	31.0	26.0	0.0132	32.0	11.0	0.0197	50.4
15.00	21.3	29.0	24.0	0.0132	30.0	11.4	0.0115	46.5
30.00	21.3	28.0	23.0	0.0132	29.0	11.5	0.0082	44.6
60.00	21.1	27.0	21.9	0.0133	28.0	11.7	0.0059	42.5
240.00	21.4	25.0	20.0	0.0132	26.0	12.0	0.0030	38.8
1440.00	21.7	24.0	19.1	0.0132	25.0	12.2	0.0012	37.1

MACTEC, Inc.

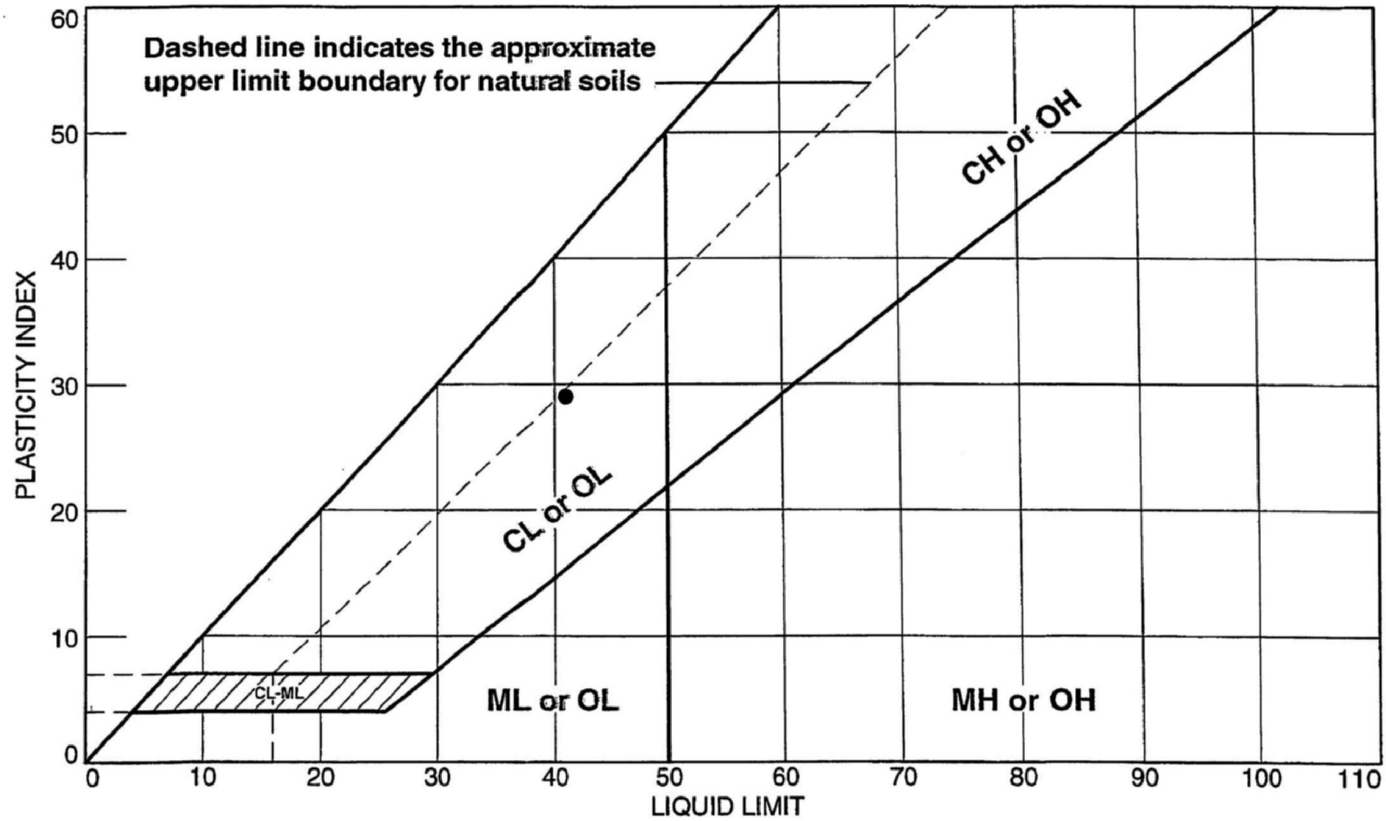
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.1	40.4	41.5	17.0	41.5	58.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0186	0.0809	0.1539	0.1794	0.2138	0.2719

Fineness Modulus
0.25

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-14	53.5-55.0	16.5	12	41	29	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 2-27-08

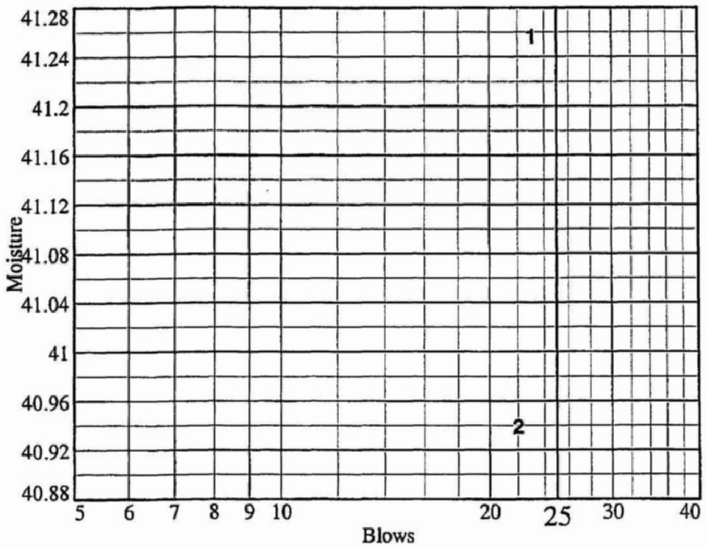
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 53.5-55.0 **Sample Number:** SS-14
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(13)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.83	28.21				
Dry+Tare	22.81	24.55				
Tare	15.49	15.61				
# Blows	23	22				
Moisture	41.3	40.9				



Liquid Limit= 41
Plastic Limit= 12
Plasticity Index= 29
Natural Moisture= 16.5
Liquidity Index= 0.2

Plastic Limit Data

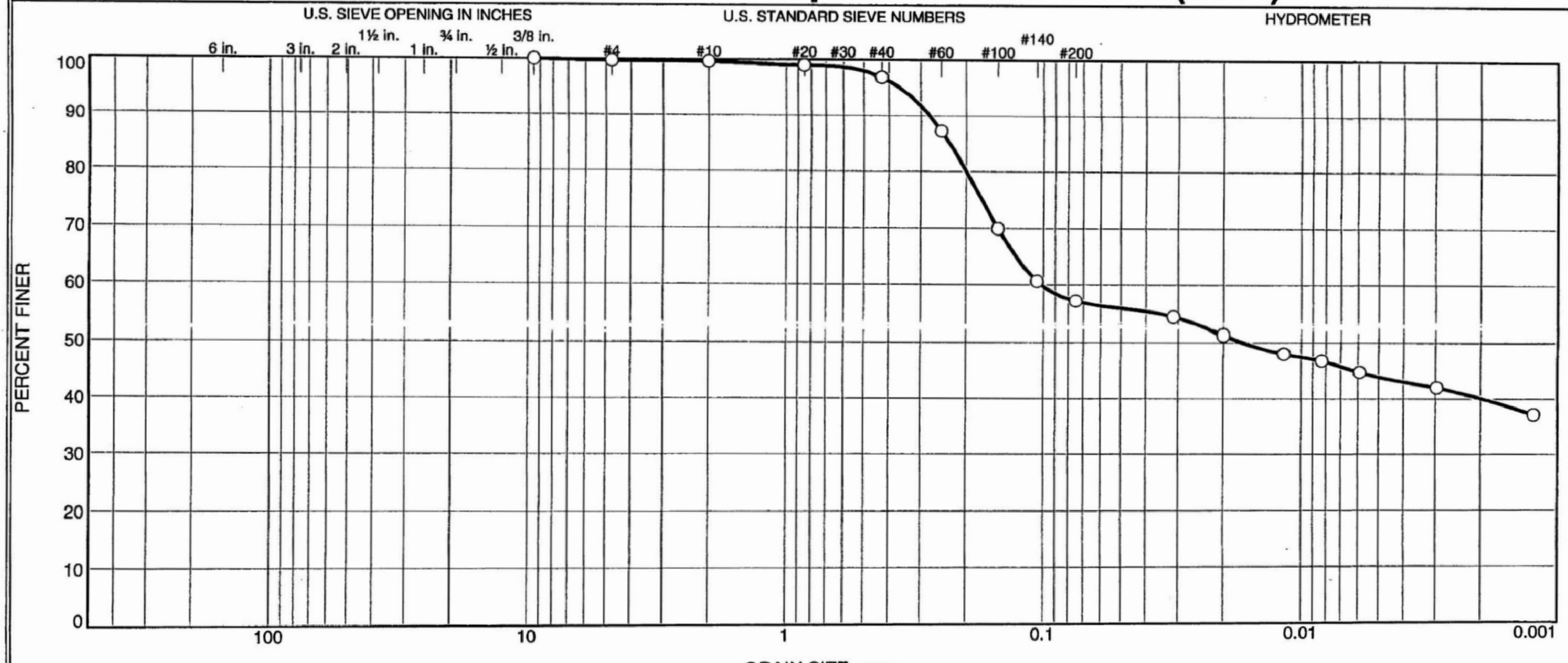
Run No.	1	2	3	4	
Wet+Tare	22.80	23.25			
Dry+Tare	21.99	22.43			
Tare	15.50	15.48			
Moisture	12.5	11.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
93.76	81.47	6.81	16.5

MACTEC, Inc.

Particle Size Distribution Report / ASTM D422-63(2002)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.3	0.1	2.7	39.8	13.2	43.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-15	58.5-60.0	12-15-07	CL	Light Gray and Brownish Yellow Sandy Lean CLAY	15.8	41	18

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity = 2.681 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 58.5-60.0 **Sample Number:** SS-15
Material Description: Light Gray and Brownish Yellow Sandy Lean CLAY
Date: 12-15-07 **Natural Moisture:** 15.8
Liquid Limit: 41 **Plastic Limit:** 18 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.681 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
257.74	0.00	0.00	.375	0.00	100.0
			#4	0.69	99.7
			#10	1.02	99.6
48.76	0.00	0.00	#20	0.31	99.0
			#40	1.33	96.9
			#60	6.02	87.3
			#100	14.51	70.0
			#140	19.06	60.7
			#200	20.81	57.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.6
Weight of hydrometer sample =48.76
Hygroscopic moisture correction:
Moist weight and tare = 45.49
Dry weight and tare = 45.08
Tare weight = 31.89
Hygroscopic moisture = 3.1%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.681
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
2.00	21.3	31.0	26.0	0.0133	32.0	11.0	0.0313	54.3
5.00	21.3	29.5	24.5	0.0133	30.5	11.3	0.0200	51.2
15.00	21.3	28.0	23.0	0.0133	29.0	11.5	0.0117	48.0
30.00	21.1	27.5	22.4	0.0133	28.5	11.6	0.0083	46.8
60.00	21.1	26.5	21.4	0.0133	27.5	11.8	0.0059	44.7
240.00	21.6	25.0	20.1	0.0133	26.0	12.0	0.0030	42.0
1440.00	20.8	23.0	17.8	0.0134	24.0	12.4	0.0012	37.2

MACTEC, Inc.

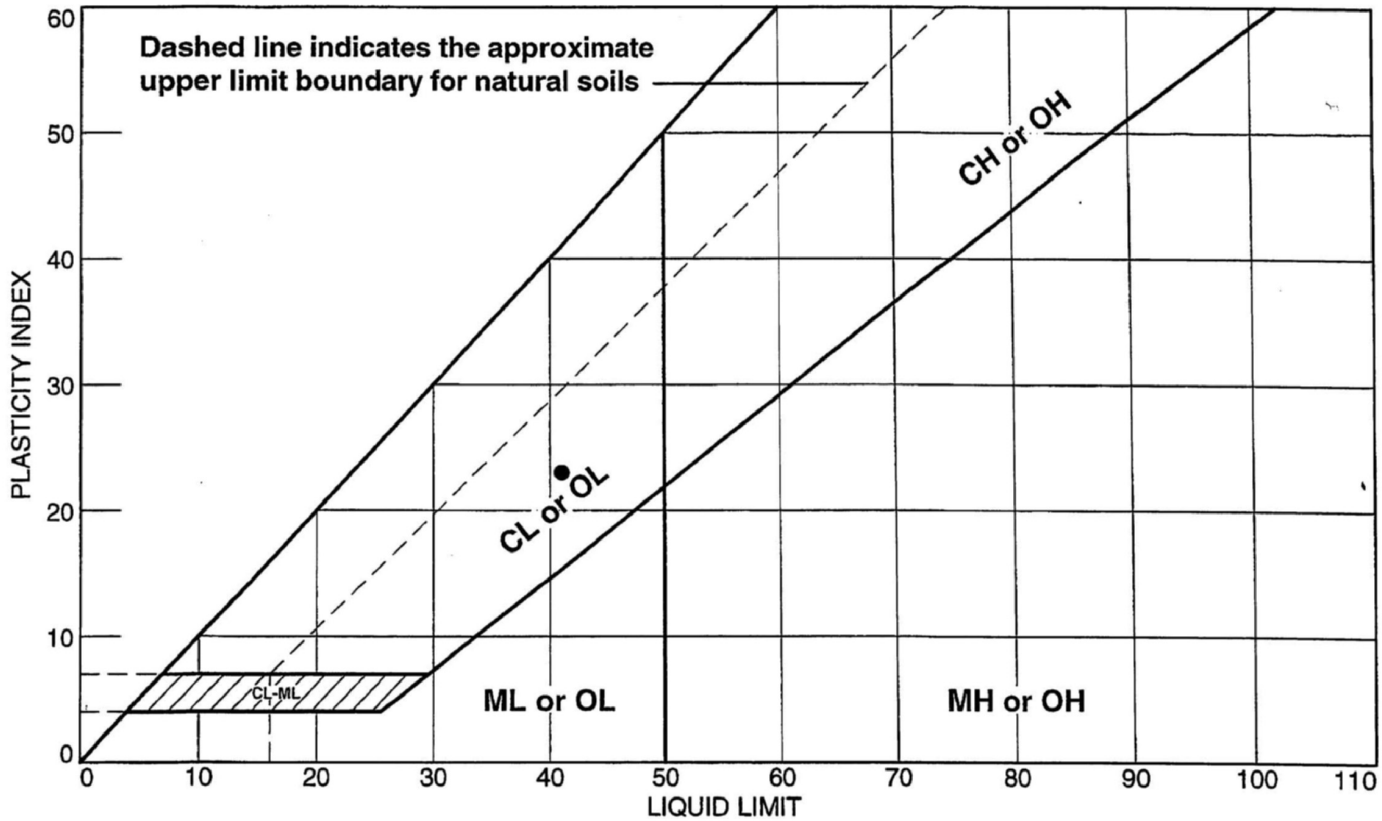
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	0.1	2.7	39.8	42.6	13.2	43.9	57.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0169	0.1019	0.1995	0.2315	0.2770	0.3610

Fineness Modulus
0.41

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-15	58.5-60.0	15.8	18	41	23	CL

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** N A

Tested By: CS **Checked By:** LBJ DSC 2-27-08

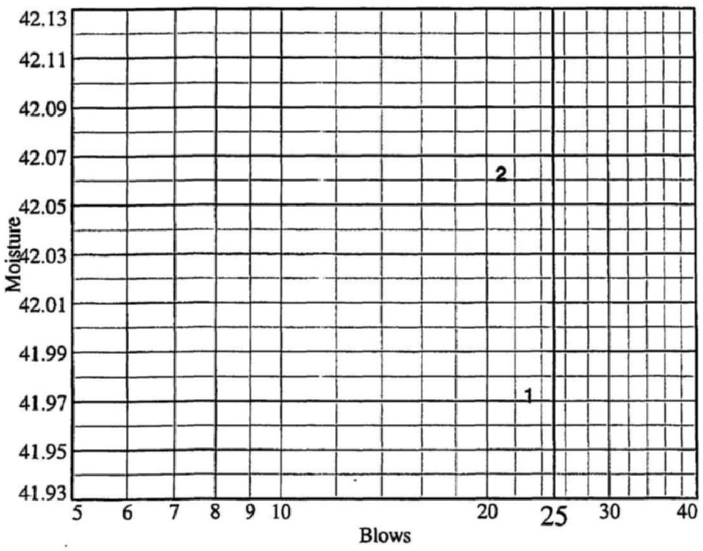
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 58.5-60.0 **Sample Number:** SS-15
Material Description: Light Gray and Brownish Yellow Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(10)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.69	30.51				
Dry+Tare	23.54	24.76				
Tare	11.27	11.09				
# Blows	23	21				
Moisture	42.0	42.1				



Liquid Limit= 41
Plastic Limit= 18
Plasticity Index= 23
Natural Moisture= 15.8
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.43	23.16			
Dry+Tare	21.36	22.00			
Tare	15.48	15.45			
Moisture	18.2	17.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
120.75	105.24	6.84	15.8

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 2/13/2008

SAMPLE IDENTIFICATION: B-2321,SS-15

(A) Mass of oven-dried soil, grams:		51.37
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.92
(C) Mass of pycnometer, water and soil, grams:		688.13
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		19.7
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.681
(F)	***Correction factor:***	1.00006
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.681

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER : P-6

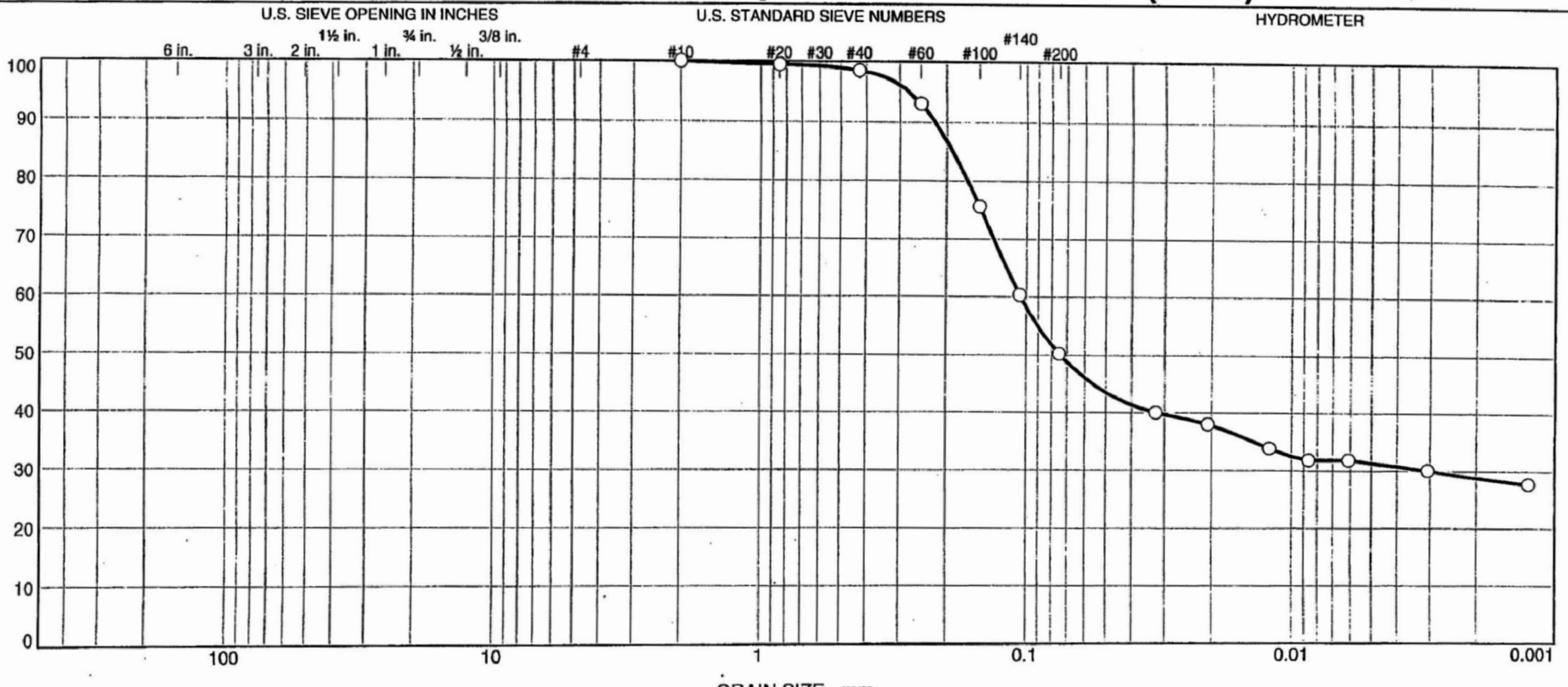
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: **Brian Johnson**

DSC 2-28-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	1.5	48.2	18.9	31.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-16	63.5-65.0	12-15-07	CL	Light Gray Sandy Lean CLAY	16.0	31	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/21/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Light Gray Sandy Lean CLAY
Date: 12-15-07 **Natural Moisture:** 16.0
Liquid Limit: 31 **Plastic Limit:** 14 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
248.68	0.00	0.00	#10	0.00	100.0
50.36	0.00	0.00	#20	0.25	99.5
			#40	0.74	98.5
			#60	3.45	93.1
			#100	12.29	75.6
			#140	19.96	60.4
			#200	25.05	50.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.36
Hygroscopic moisture correction:
Moist weight and tare = 29.03
Dry weight and tare = 28.75
Tare weight = 15.93
Hygroscopic moisture = 2.2%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
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
2.00	21.3	25.0	20.0	0.0132	26.0	12.0	0.0324	40.1
5.00	21.3	24.0	19.0	0.0132	25.0	12.2	0.0207	38.1
15.00	21.1	22.0	16.9	0.0133	23.0	12.5	0.0121	33.9
30.00	21.1	21.0	15.9	0.0133	22.0	12.7	0.0086	31.9
60.00	21.1	21.0	15.9	0.0133	22.0	12.7	0.0061	31.9
240.00	21.4	20.0	15.0	0.0132	21.0	12.9	0.0031	30.1
1440.00	20.9	19.0	13.8	0.0133	20.0	13.0	0.0013	27.7

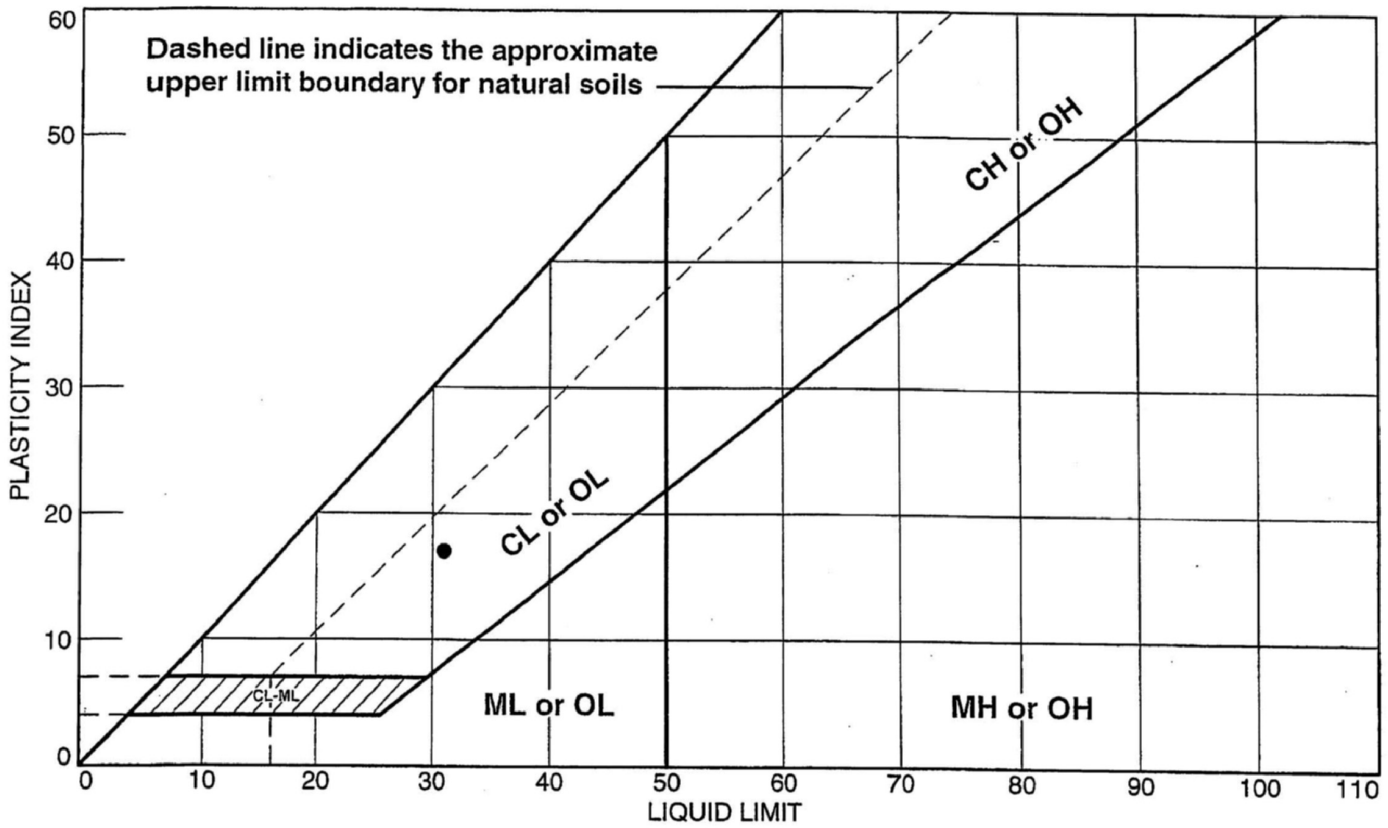
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.5	48.2	49.7	18.9	31.4	50.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0030	0.0741	0.1050	0.1663	0.1892	0.2207	0.2759

Fineness Modulus
0.29

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-16	63.5-65.0	16.0	14	31	17	CL

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS 7/18/2008 **Checked By:** BJ DSC 2-27-08 DCN# EXE808

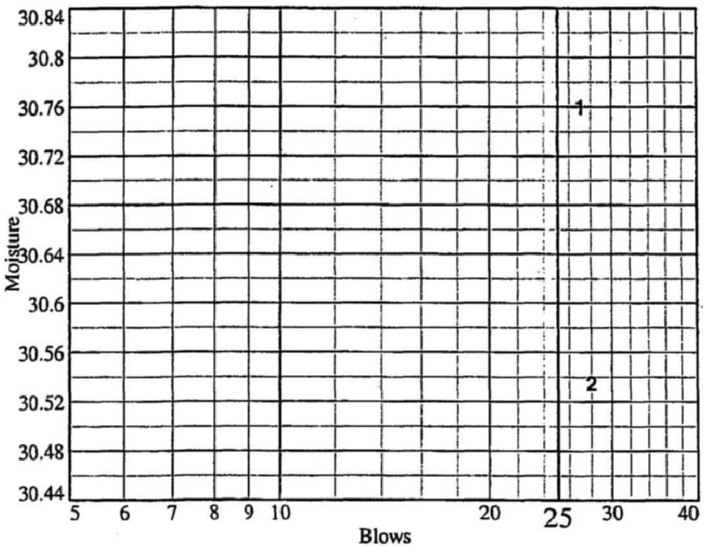
LIQUID AND PLASTIC LIMIT TEST DATA

2/21/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-6(5)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.39	26.37				
Dry+Tare	23.84	23.86				
Tare	15.55	15.64				
# Blows	27	28				
Moisture	30.8	30.5				



Liquid Limit= 31
Plastic Limit= 14
Plasticity Index= 17
Natural Moisture= 16.0
Liquidity Index= 0.1

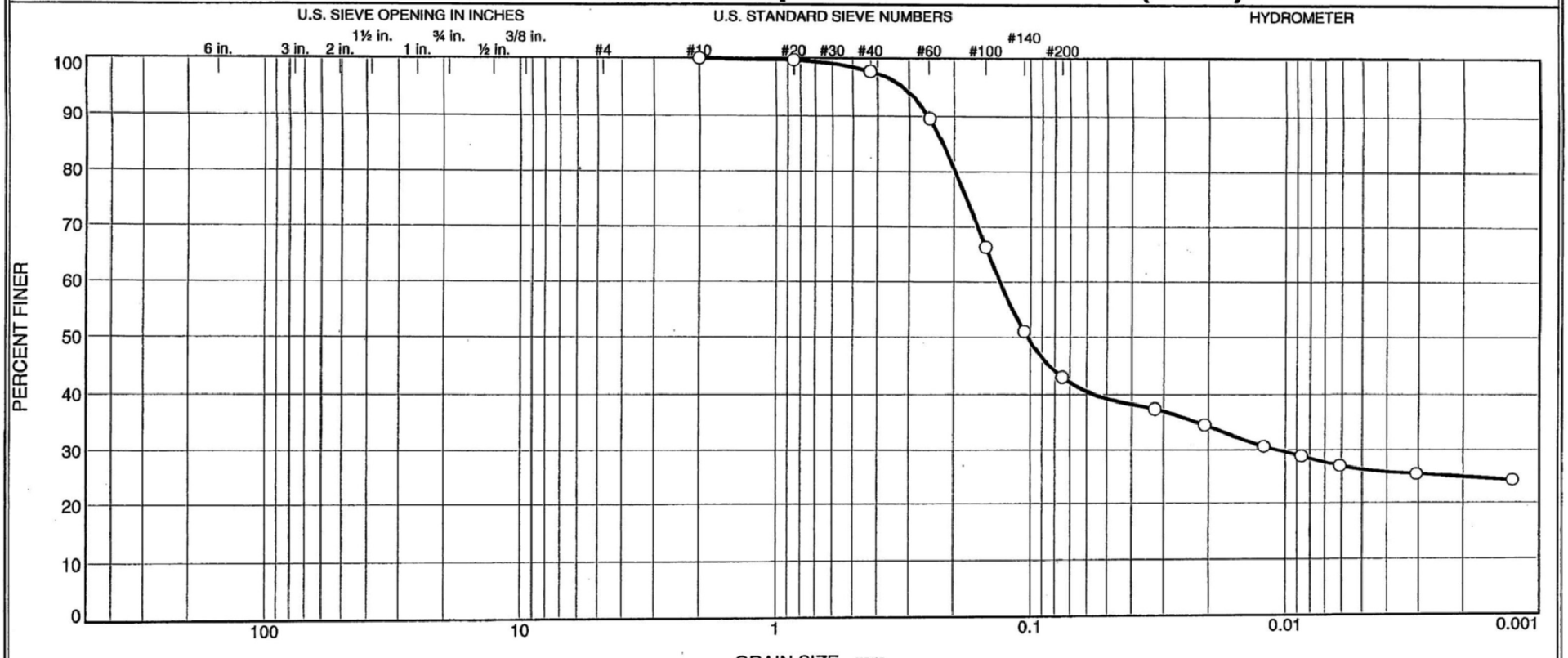
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.46	22.96			
Dry+Tare	22.46	22.04			
Tare	15.51	15.51			
Moisture	14.4	14.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
118.44	102.99	6.71	16.0

Particle Size Distribution Report / ASTM D422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.4	54.6	16.6	26.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-17	68.5-70.0	12-15-07	SC	Light Gray Clayey SAND	16.3	30	17

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 68.5-70.0 **Sample Number:** SS-17
Material Description: Light Gray Clayey SAND
Date: 12-15-07 **Natural Moisture:** 16.3
Liquid Limit: 30 **Plastic Limit:** 17 **USCS Class.:** SC
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
276.75	0.00	0.00	#10	0.00	100.0
52.98	0.00	0.00	#20	0.17	99.7
			#40	1.25	97.6
			#60	5.52	89.6
			#100	17.86	66.3
			#140	25.94	51.0
			#200	30.19	43.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =52.98
Hygroscopic moisture correction:
Moist weight and tare = 28.35
Dry weight and tare = 28.06
Tare weight = 15.46
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
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
2.00	21.7	24.5	19.6	0.0132	25.5	12.1	0.0324	37.4
5.00	21.7	23.0	18.1	0.0132	24.0	12.4	0.0207	34.6
15.00	21.6	21.0	16.1	0.0132	22.0	12.7	0.0121	30.7
30.00	21.7	20.0	15.1	0.0132	21.0	12.9	0.0086	28.8
60.00	21.9	19.0	14.2	0.0131	20.0	13.0	0.0061	27.1
240.00	22.4	18.0	13.4	0.0131	19.0	13.2	0.0031	25.5
1440.00	20.6	18.0	12.7	0.0133	19.0	13.2	0.0013	24.3

MACTEC, Inc.

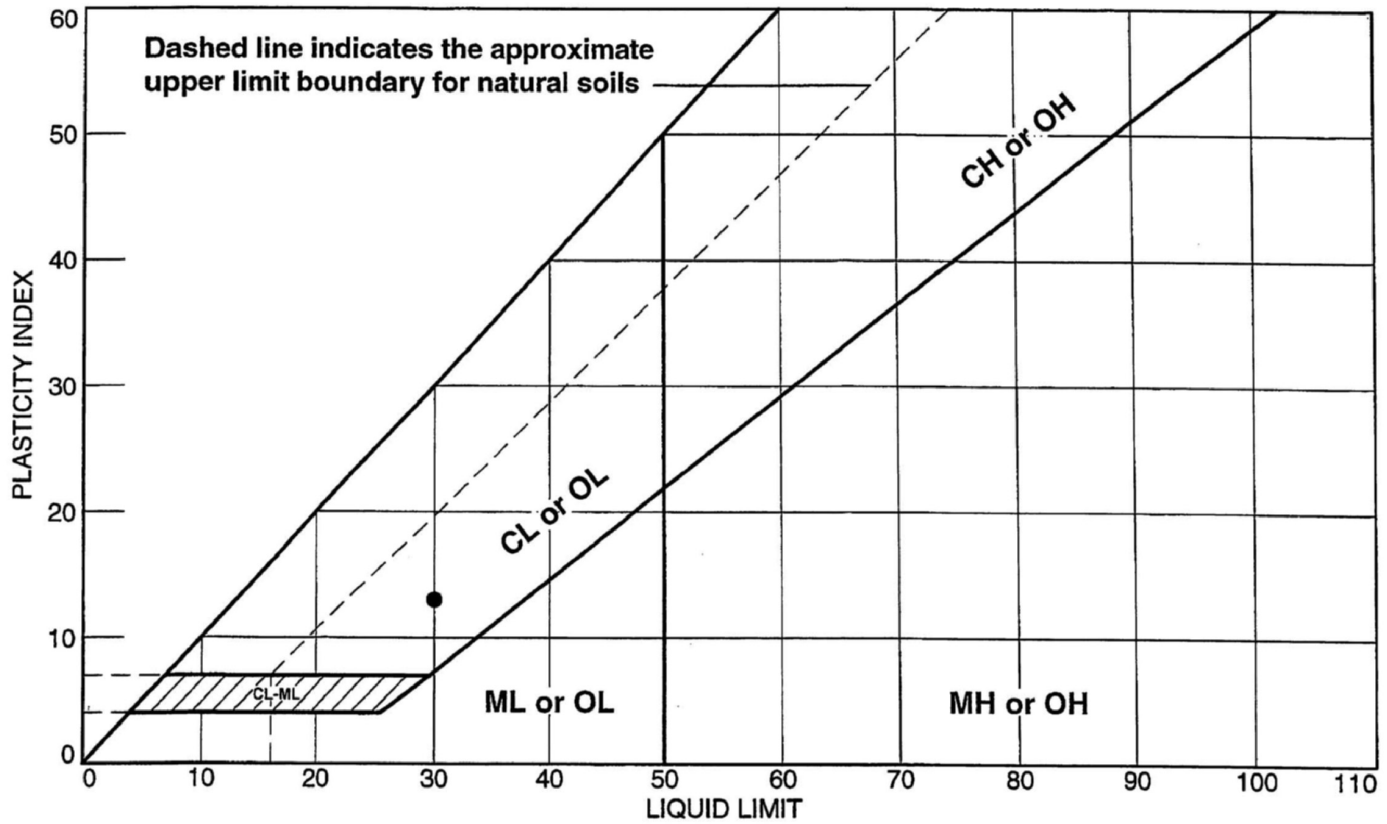
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.4	54.6	57.0	16.6	26.4	43.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0107	0.1027	0.1318	0.1973	0.2208	0.2534	0.3178

Fineness Modulus
0.41

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-17	68.5-70.0	16.3	17	30	13	SC

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 2-27-08

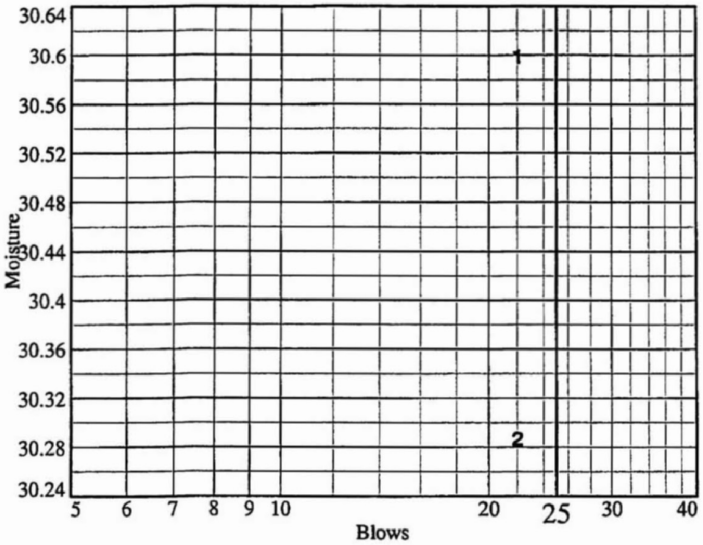
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 68.5-70.0 **Sample Number:** SS-17
Material Description: Light Gray Clayey SAND
USCS: SC **AASHTO:** A-6(2)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.57	25.42				
Dry+Tare	23.22	23.10				
Tare	15.54	15.44				
# Blows	22	22				
Moisture	30.6	30.3				



Liquid Limit= 30
Plastic Limit= 17
Plasticity Index= 13
Natural Moisture= 16.3
Liquidity Index= -0.1

Plastic Limit Data

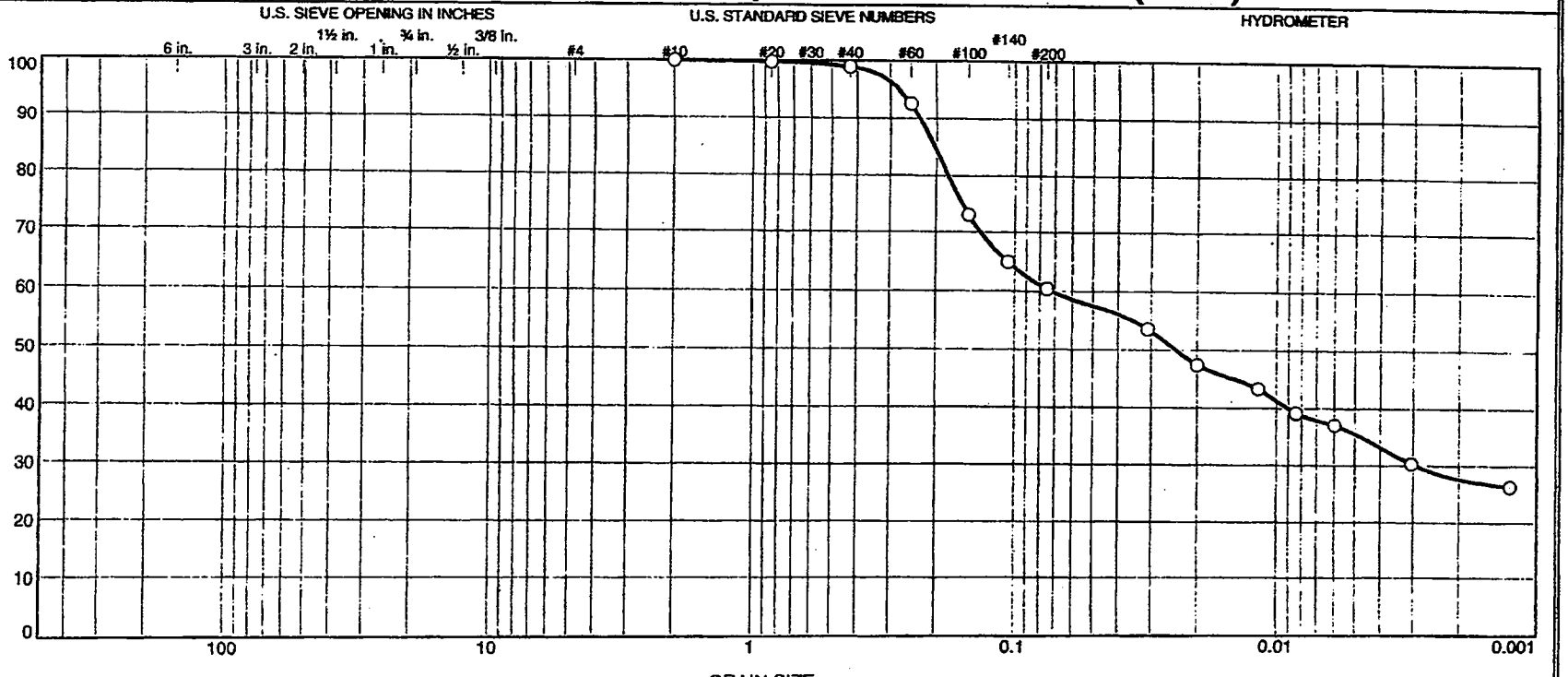
Run No.	1	2	3	4	
Wet+Tare	22.22	21.81			
Dry+Tare	21.23	20.93			
Tare	15.40	15.51			
Moisture	17.0	16.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
154.00	133.36	6.80	16.3

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	1.0	38.6	24.7	35.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-18	73.5-75.0	12-15-07	CL	Light Gray Sandy Lean CLAY	20.1	32	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/21/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Light Gray Sandy Lean CLAY
Date: 12-15-07 **Natural Moisture:** 20.1
Liquid Limit: 32 **Plastic Limit:** 14 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
219.98	0.00	0.00	#10	0.00	100.0
49.34	0.00	0.00	#20	0.11	99.8
			#40	0.50	99.0
			#60	3.65	92.6
			#100	13.30	73.0
			#140	17.28	65.0
			#200	19.53	60.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.34
Hygroscopic moisture correction:
Moist weight and tare = 28.21
Dry weight and tare = 27.89
Tare weight = 15.75
Hygroscopic moisture = 2.6%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
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
2.00	21.7	31.0	26.1	0.0132	32.0	11.0	0.0309	53.7
5.00	21.7	28.0	23.1	0.0132	29.0	11.5	0.0200	47.5
15.00	21.7	26.0	21.1	0.0132	27.0	11.9	0.0117	43.4
30.00	21.6	24.0	19.1	0.0132	25.0	12.2	0.0084	39.2
60.00	21.6	23.0	18.1	0.0132	24.0	12.4	0.0060	37.2
240.00	22.1	19.5	14.8	0.0131	20.5	12.9	0.0030	30.3
1440.00	20.9	18.0	12.8	0.0133	19.0	13.2	0.0013	26.4

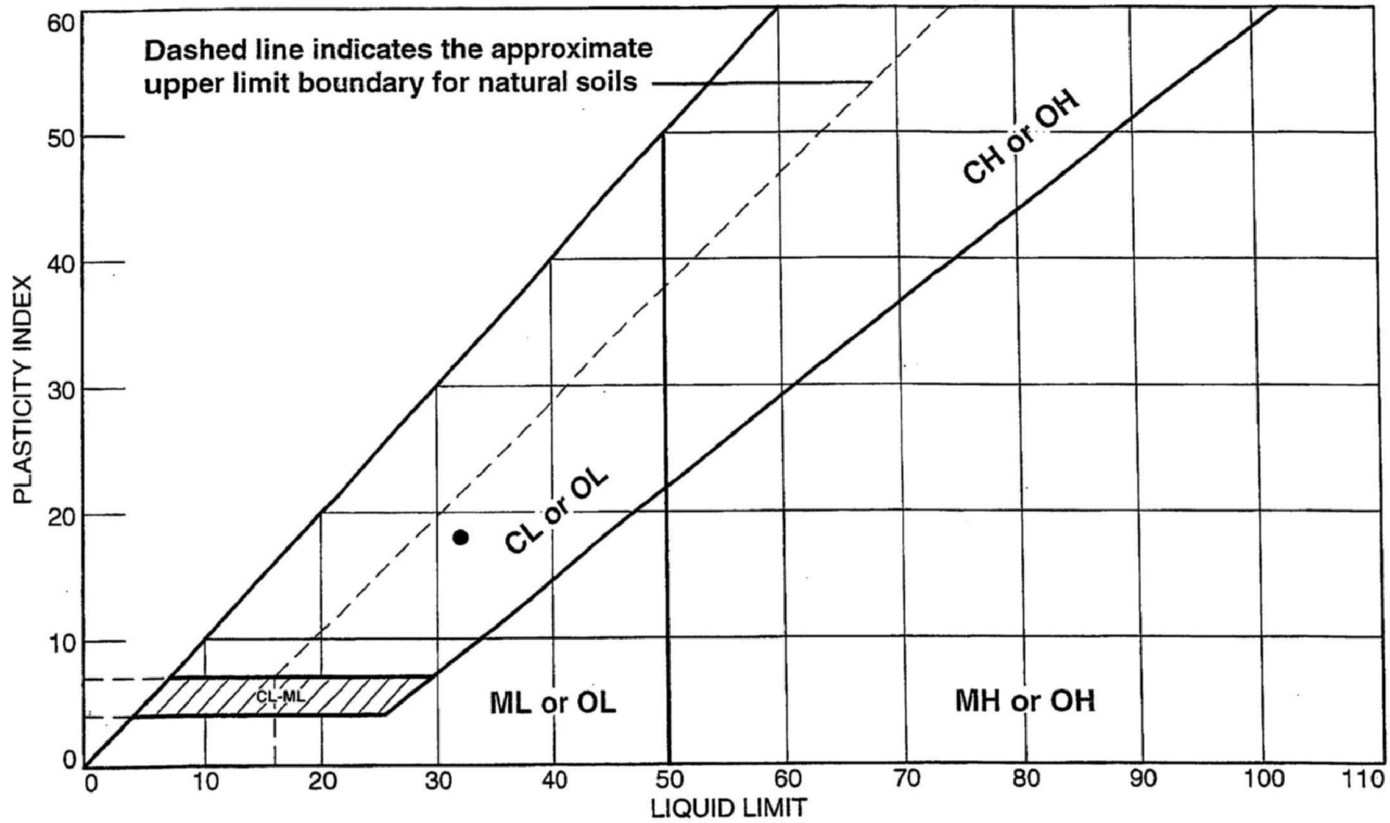
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.0	38.6	39.6	24.7	35.7	60.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0029	0.0240	0.0717	0.1799	0.2028	0.2307	0.2754

Fineness Modulus
0.31

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-18	73.5-75.0	20.1	14	32	18	CL

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS 2/18/2008 Checked By: BJ DSC 2-27-08 DCN# EXE808

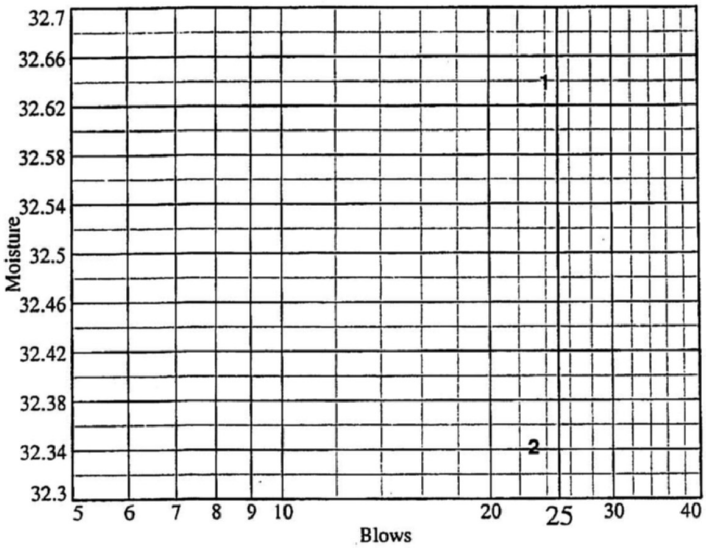
LIQUID AND PLASTIC LIMIT TEST DATA

2/21/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-6(8)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.14	26.71				
Dry+Tare	22.79	23.99				
Tare	15.59	15.58				
# Blows	24	23				
Moisture	32.6	32.3				



Liquid Limit= 32
Plastic Limit= 14
Plasticity Index= 18
Natural Moisture= 20.1
Liquidity Index= 0.3

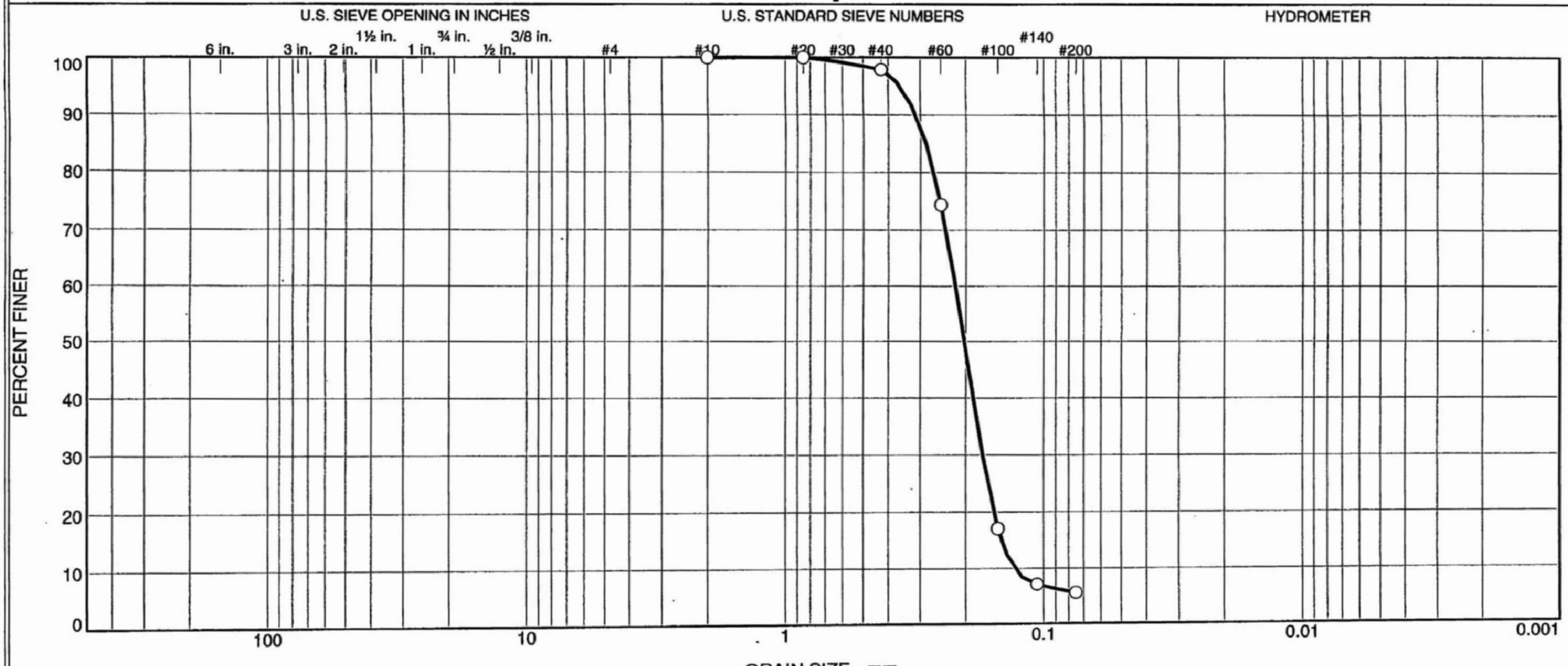
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.88	23.19			
Dry+Tare	21.93	22.26			
Tare	15.45	15.70			
Moisture	14.7	14.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
131.69	111.16	9.14	20.1

Particle Size Distribution Report / ASTM D6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.1	92.3	5.6	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-19	78.5-80.0	12-15-07	SP-SC	Pale Yellow Poorly Graded SAND with clay (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.651 (ASTM D854-06)
SIEVE ANALYSIS ONLY
ND = Not Determined

Tested By: CS **Checked By:** LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 78.5-80.0 **Sample Number:** SS-19
Material Description: Pale Yellow Poorly Graded SAND with clay (Visual)
Date: 12-15-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP-SC
Testing Remarks: Specific Gravity = 2.651 (ASTM D854-06)
SIEVE ANALYSIS ONLY
ND = Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
218.96	0.00	0.00	#10	0.00	100.0
100.46	0.00	0.00	#20	0.01	100.0
			#40	2.14	97.9
			#60	25.74	74.4
			#100	83.20	17.2
			#140	93.27	7.2
			#200	94.87	5.6

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	92.3	94.4			5.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1295	0.1452	0.1555	0.1720	0.2027	0.2196	0.2665	0.2857	0.3131	0.3617

Fineness Modulus	C_u	C_c
0.96	1.70	1.04

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 2/11/2008

SAMPLE IDENTIFICATION: B-2321,SS-19

(A) Mass of oven-dried soil, grams:	49.94
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.68
(C) Mass of pycnometer, water and soil, grams:	686.79
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.652
(F) ***Correction factor:***	0.99959
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.651

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded SAND with clay (SP-SC) - Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER : P-6

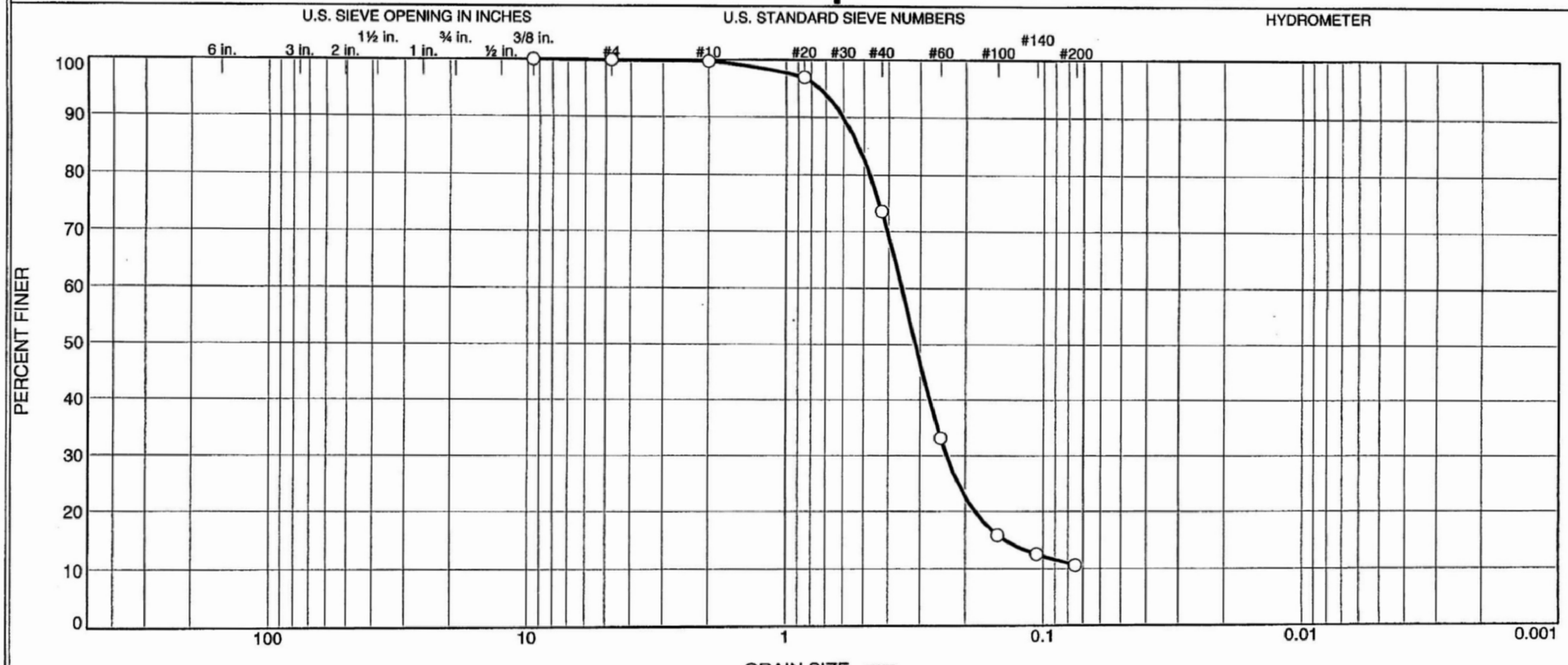
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: **Brian Johnson**

DSC 2-27-08

Particle Size Distribution Report / ASTM D6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	0.2	26.0	63.1	10.6	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-20	83.5-85.0	12-16-08	SP-SC	Pale Yellow Poorly Graded SAND with clay (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND= Not Determined

Tested By: CS **Checked By:** LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 83.5-85.0 **Sample Number:** SS-20
Material Description: Pale Yellow Poorly Graded SAND with clay (Visual)
Date: 12-16-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP-SC
Testing Remarks: SIEVE ANALYSIS ONLY
ND= Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
239.26	0.00	0.00	3/8"	0.00	100.0
			#4	0.29	99.9
			#10	0.67	99.7
101.79	0.00	0.00	#20	2.91	96.9
			#40	26.60	73.7
			#60	67.92	33.2
			#100	85.62	15.8
			#140	88.97	12.6
			#200	90.94	10.6

Fractional Components

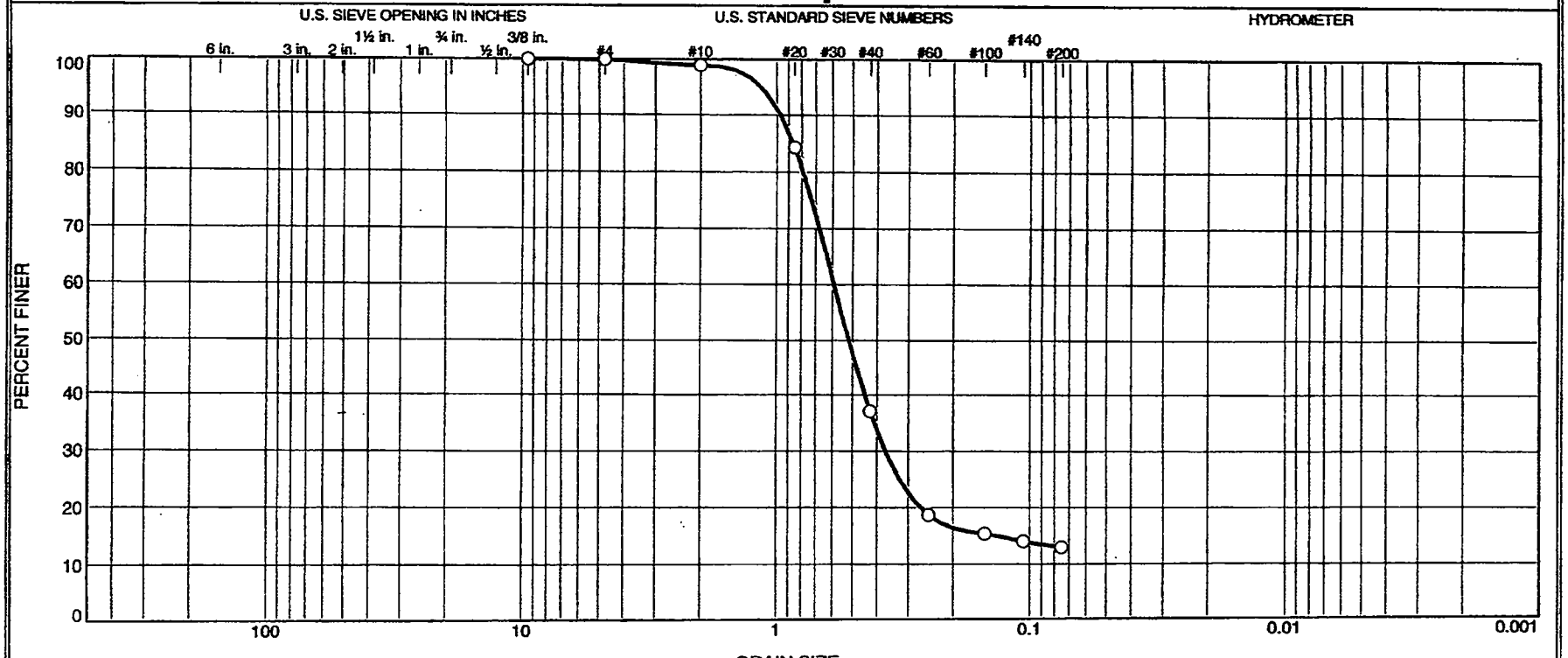
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.2	26.0	63.1	89.3			10.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1409	0.1842	0.2367	0.3138	0.3544	0.4724	0.5240	0.6008	0.7447

Fineness Modulus
1.50

MACTEC, Inc.

Particle Size Distribution Report / ASTM D6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	1.0	61.8	24.1	13.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-21	88.5-90.0	12-15-07	SC	Pale Yellow Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND = Not Determined

Tested By: CS **Checked By:** LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 88.5-90.0 **Sample Number:** SS-21
Material Description: Pale Yellow Clayey SAND (Visual)
Date: 12-15-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SC
Testing Remarks: SIEVE ANALYSIS ONLY
ND = Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
273.47	0.00	0.00	3/8	0.00	100.0
			#4	0.15	99.9
			#10	2.97	98.9
101.49	0.00	0.00	#20	15.02	84.3
			#40	63.42	37.1
			#60	82.32	18.7
			#100	85.67	15.4
			#140	87.03	14.1
			#200	88.13	13.0

Fractional Components

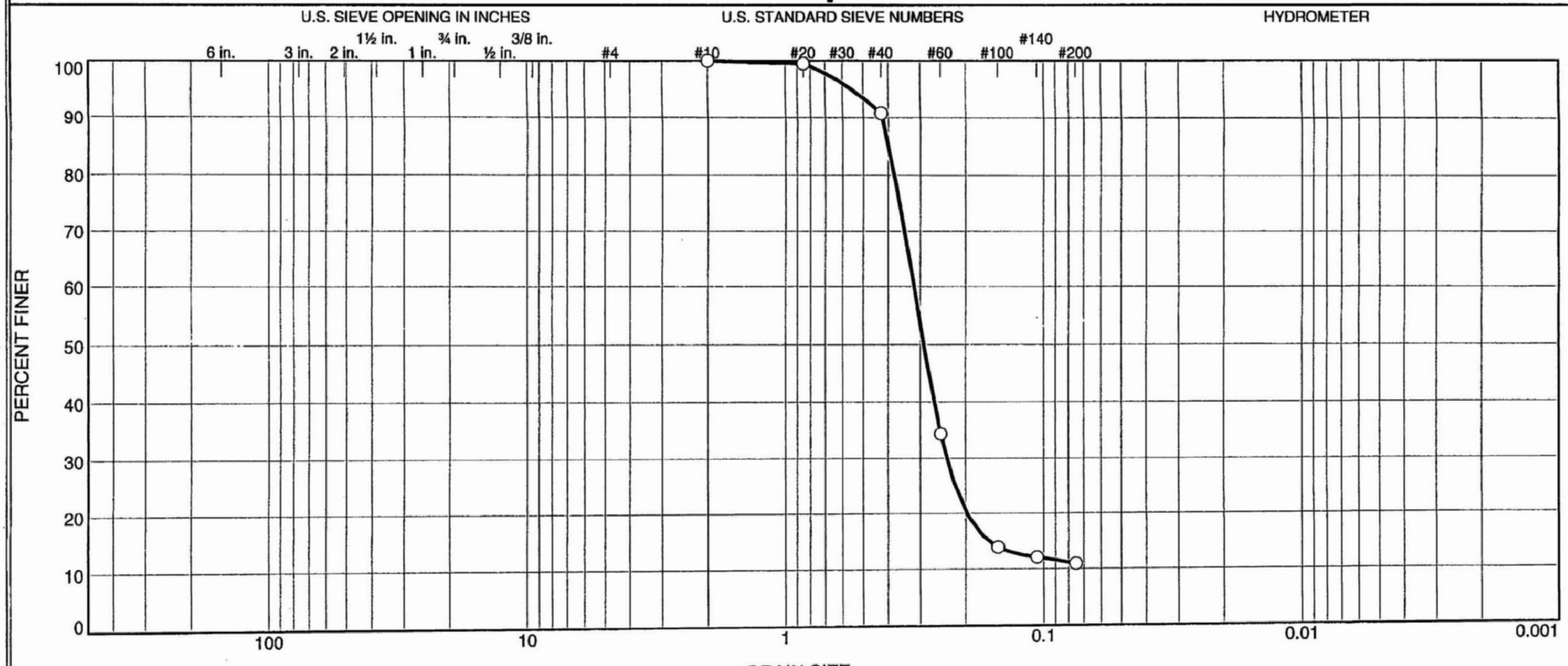
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	1.0	61.8	24.1	86.9			13.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1332	0.2694	0.3700	0.5163	0.5910	0.7876	0.8622	0.9678	1.1524

Fineness Modulus
2.06

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	9.3	79.8	10.9	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-22	93.5-95.0	12-15-07	SP-SC	Pale Yellow and Brownish Yellow Poorly Graded SAND with clay (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND = Not Determined

Tested By: CS **Checked By:** LBJ DSC 4-1-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/1/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 93.5-95.0 **Sample Number:** SS-22
Material Description: Pale Yellow and Brownish Yellow Poorly Graded SAND with clay (Visual)
Date: 12-15-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP-SC
Testing Remarks: SIEVE ANALYSIS ONLY
ND = Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
255.85	0.00	0.00	#10	0.00	100.0
101.59	0.00	0.00	#20	0.52	99.5
			#40	9.42	90.7
			#60	66.69	34.4
			#100	87.48	13.9
			#140	89.31	12.1
			#200	90.49	10.9

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	9.3	79.8	89.1			10.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1635	0.1978	0.2369	0.2911	0.3171	0.3779	0.3974	0.4210	0.5556

Fineness Modulus
1.37

MACTEC, Inc.