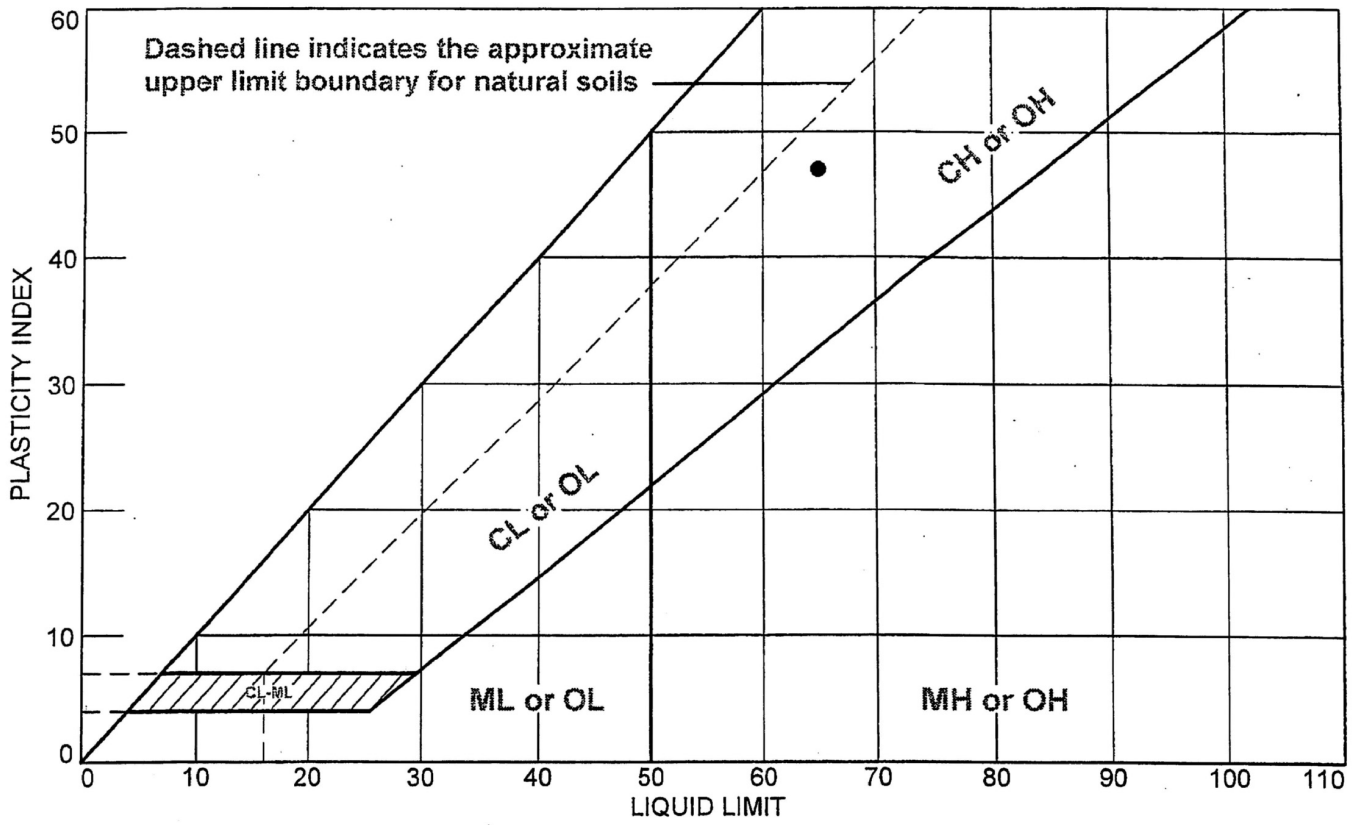
LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2359UD	UD-5	40.0-41.7	20.2	18	65	47	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure NA

Tested By: CS **Checked By:** LBJ KAW 5/8/08

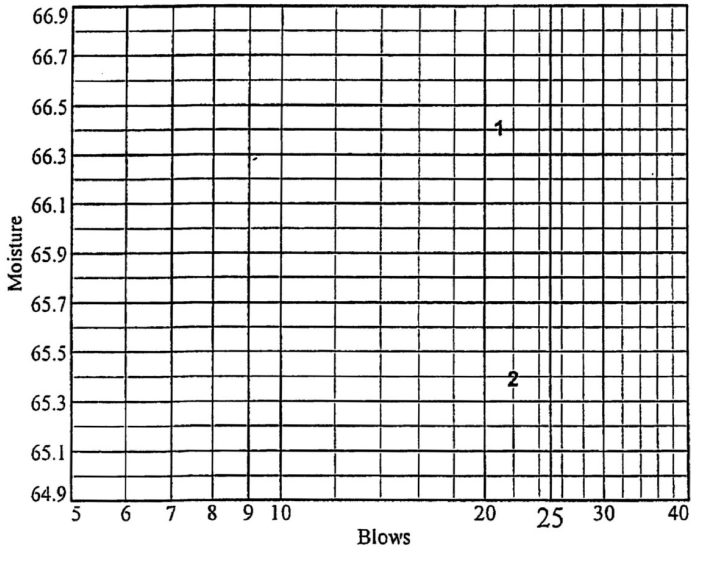
LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2359UD
Depth: 40.0-41.7 **Sample Number:** UD-5
Material Description: Pale Brown Fat CLAY
USCS: CH **AASHTO:** A-7-6(48)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.14	23.45				
Dry+Tare	20.70	20.20				
Tare	15.52	15.23				
# Blows	21	22				
Moisture	66.4	65.4				



Liquid Limit= 65
Plastic Limit= 18
Plasticity Index= 47
Natural Moisture= 20.2
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.01	22.19			
Dry+Tare	21.03	21.18			
Tare	15.64	15.53			
Moisture	18.2	17.9			

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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: 4/14/08

SAMPLE IDENTIFICATION: B-2359UD UD-5

(A) Mass of oven-dried soil, grams:	48.88
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.53
(C) Mass of pycnometer, water and soil, grams:	687.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.708
(F) ***Correction factor:***	0.99972
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.707

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

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

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER :5.1.01

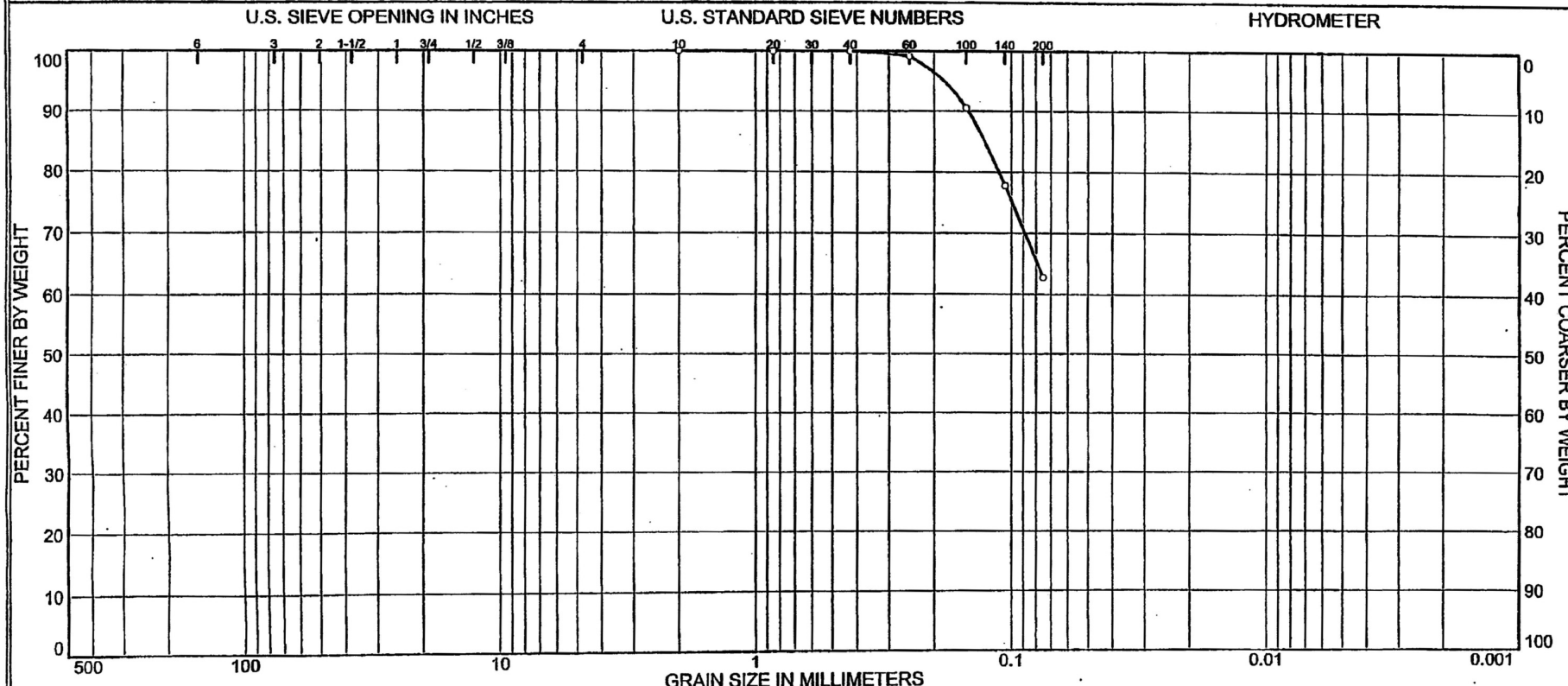
PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report ASTM D6913-04 e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.0	37.2	62.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-2359UD	UD-7	55-56.7 Ft	1/29/08	ML	Light Gray Sandy SILT (Visual)	14.3	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8559

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.65 (ASTM D 854-06)
ND = Not Determined.

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
Sample No.: UD-7
Elev. or Depth: 55-56.7 Ft **Sample Length(in./cm.):** ID#8559
Location: B-2359UD
Description: Light Gray Sandy SILT (Visual)
Date: 1/29/08 **PL:** ND **LL:** ND **PI:** ND
USCS Classification: ML **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.65 (ASTM D 854-06)
ND = Not Determined.

Mechanical Analysis Data

	Initial
Dry sample and tare=	258.65
Tare =	89.55
Dry sample weight =	169.10

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.08	100.0
# 60	1.39	99.2
# 100	16.07	90.5
# 140	37.63	77.7
# 200	62.95	62.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =**
% SAND = 37.2 **(% coarse =** **% medium** = 0.0 **% fine** = 37.2)
% FINES = 62.8

D_{85}= 0.13

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2359UD,UD-7 @ 55-56.7 Ft.

(A) Mass of oven-dried soil, grams:	37.54
(B) Mass of pycnometer filled with water at test temperature (T), grams:	338.35
(C) Mass of pycnometer, water and soil, grams:	361.75
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.655
(F) ***Correction factor:***	0.99904
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.652

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

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

REMARKS: Estimated % Passing # 4 : 100

Sandy SILT (ML) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER :2759

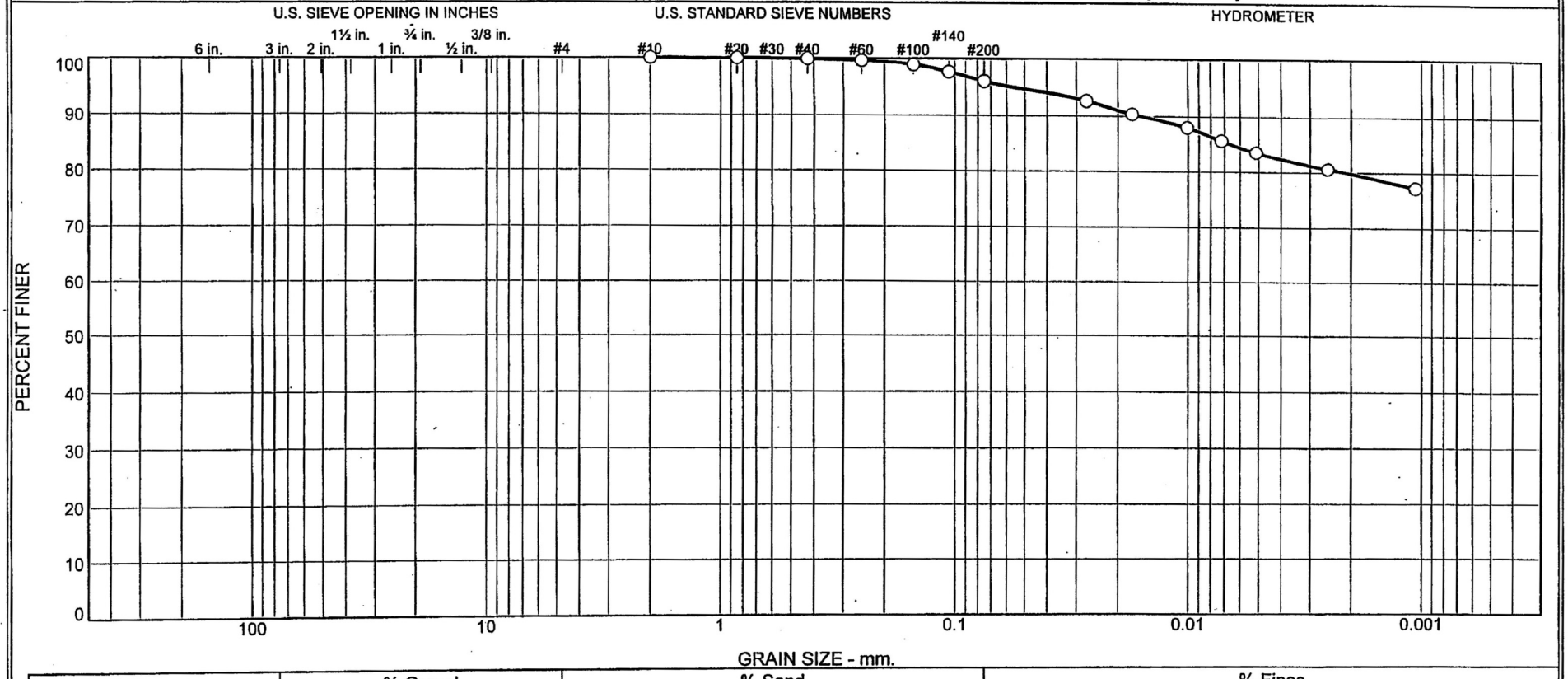
PYCNOMETER : 2054

TESTED BY: EH

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls **REVIEWED BY:** Harry Johnson HJ

KAW 4.15.08

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	0.1	3.9	12.6	83.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2359UD	UD-10	70.0-71.5	1/29/08	CH	Mottled Light Gray and Yellowish Brown Fat CLAY	16.7	95	34

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

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Raleigh, North Carolina

○ Specific Gravity = 2.720 (ASTM D 854-06)
NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS **Checked By:** LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2359UD
Depth: 70.0-71.5 **Sample Number:** UD-10
Material Description: Mottled Light Gray and Yellowish Brown Fat CLAY
Date: 1/29/08 **Natural Moisture:** 16.7
Liquid Limit: 95 **Plastic Limit:** 34 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.720 (ASTM D 854-06)
NM is average of values obtained from consolidation and triaxial test specimens
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
139.88	0.00	0.00	#10	0.00	100.0
46.29	0.00	0.00	#20	0.02	100.0
			#40	0.06	99.9
			#60	0.19	99.6
			#100	0.51	98.9
			#140	1.09	97.6
			#200	1.86	96.0

Hydrometer Test Data

Hydrometer test uses material passing#10
Percent passing #10 based upon complete sample =100.0
Weight of hydrometer sample =46.29
Hygroscopic moisture correction:
Moist weight and tare = 28.68
Dry weight and tare = 27.58
Tare weight = 15.24
Hygroscopic moisture =8.9%
Table of composite correction values:

Temp., deg. C:	11.3	29.5
Comp. corr.:	-8.0	-3.0

Meniscus correction only =1.0
Specific gravity of solids =2.720
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	22.2	45.0	40.0	0.0130	46.0	8.8	0.0272	92.7
5.00	22.2	44.0	39.0	0.0130	45.0	8.9	0.0174	90.3
15.00	22.2	43.0	38.0	0.0130	44.0	9.1	0.0101	88.0
30.00	22.2	42.0	37.0	0.0130	43.0	9.2	0.0072	85.7
60.00	22.5	41.0	36.1	0.0130	42.0	9.4	0.0051	83.6
250.00	23.4	39.5	34.8	0.0128	40.5	9.7	0.0025	80.7
1440.00	23.5	38.0	33.4	0.0128	39.0	9.9	0.0011	77.3

MACTEC, Inc.

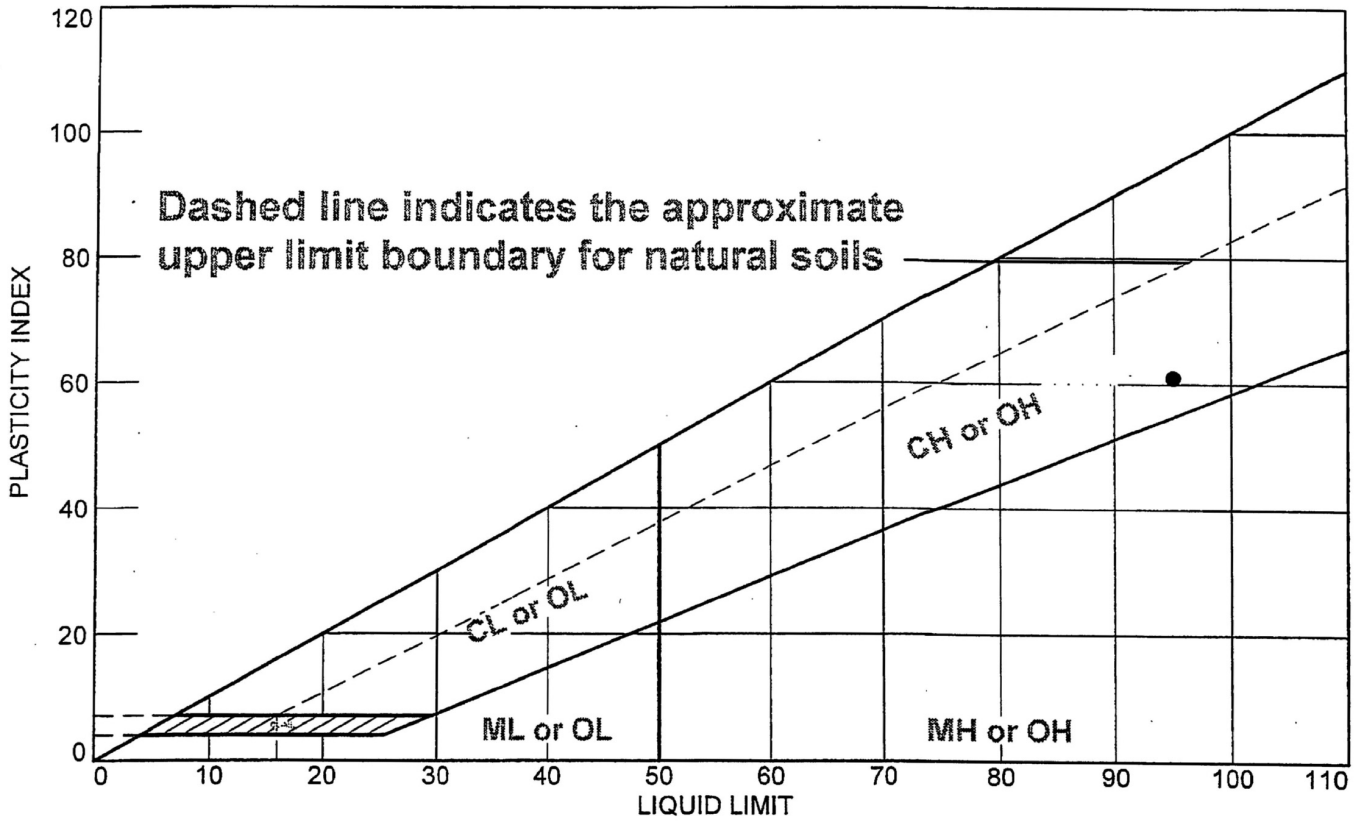
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	3.9	4.0	12.6	83.4	96.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0021	0.0065	0.0161	0.0570

Fineness Modulus
0.01

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-2359UD	UD-10	70.0-71.5	16.7	34	95	61	CH

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

Tested By: CS **Checked By:** LBJ KAW 5/8/08

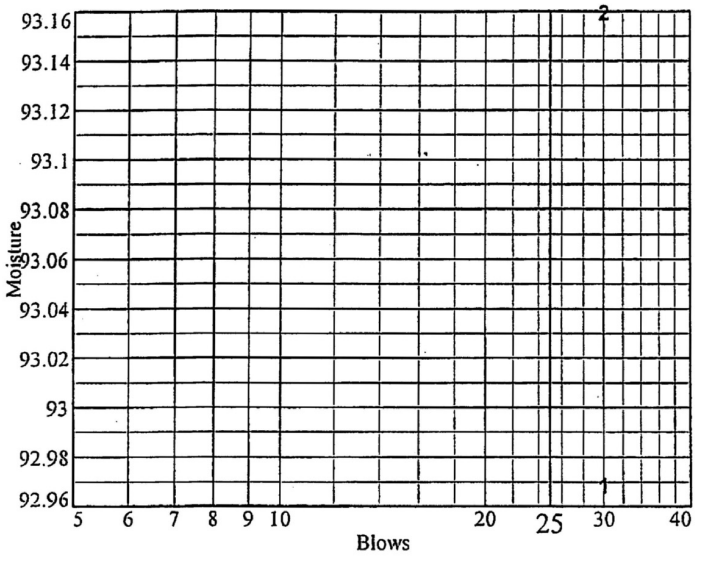
LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2359UD
Depth: 70.0-71.5 **Sample Number:** UD-10
Material Description: Mottled Light Gray and Yellowish Brown Fat CLAY
USCS: CH **AASHTO:** A-7-5(70)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.02	21.42				
Dry+Tare	19.45	18.56				
Tare	15.61	15.49				
# Blows	30	30				
Moisture	93.0	93.2				



Liquid Limit= 95
Plastic Limit= 34
Plasticity Index= 61
Natural Moisture= 16.7
Liquidity Index= -0.3

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.78	22.77			
Dry+Tare	20.97	20.92			
Tare	15.51	15.48			
Moisture	33.2	34.0			

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: 4/19/08

SAMPLE IDENTIFICATION: B-2359UD UD-10

(A) Mass of oven-dried soil, grams:	49.67
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.89
(C) Mass of pycnometer, water and soil, grams:	687.30
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.0
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.720
(F) ***Correction factor:***	1.00000
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.720

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

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

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER :5.1.01

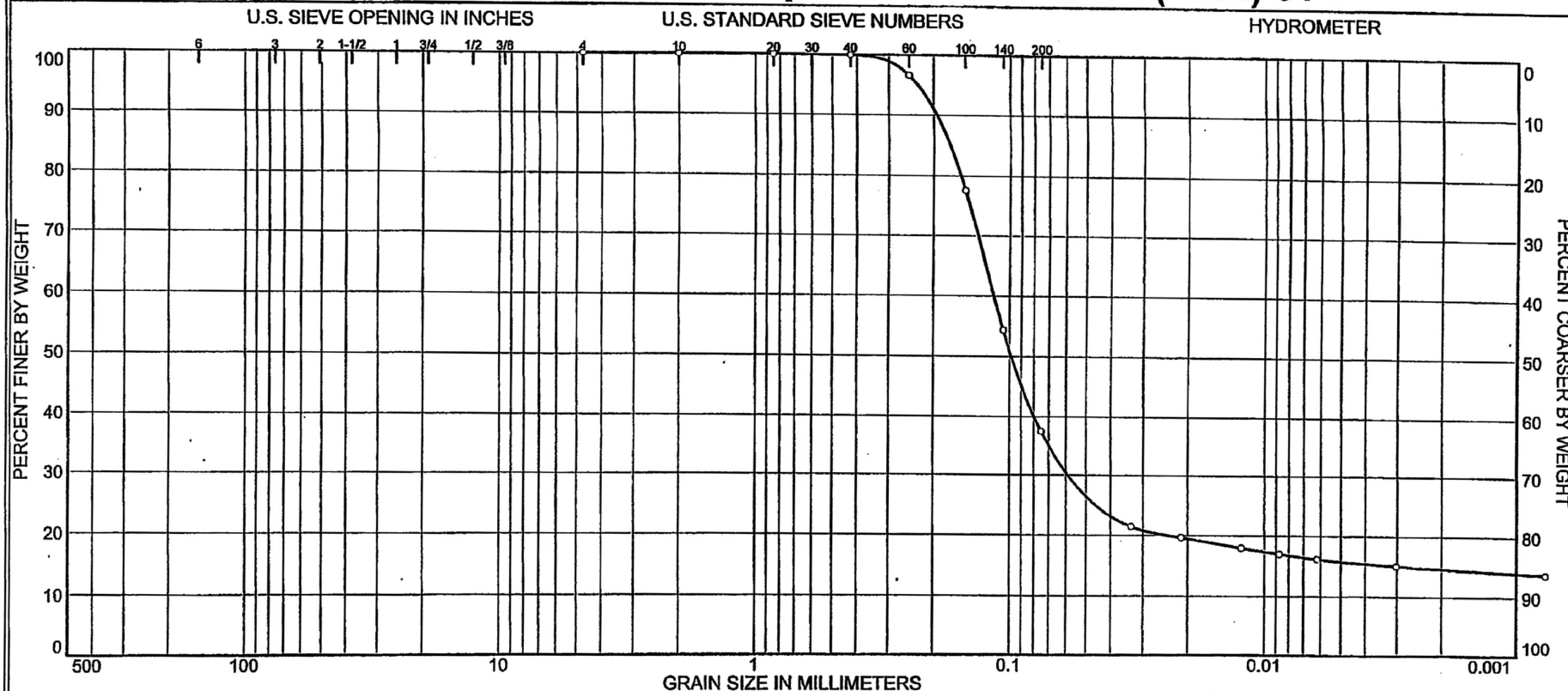
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.1	62.4	21.7	15.8

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-2359UD	UD-11	77-78.7 Ft	1/29/08	SC-SM	Light Gray Silty, Clayey SAND	19.4	23	19

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8366

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)

KAW 4.15.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
Sample No.: UD-11
Elev. or Depth: 77-78.7 Ft **Sample Length(in./cm.):** ID#8366
Location: B-2359UD
Description: Light Gray Silty, Clayey SAND
Date: 1/29/08 **PL:** 19 **LL:** 23 **PI:** 4
USCS Classification: SC-SM **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)

Mechanical Analysis Data

	Initial
Dry sample and tare=	72.90
Tare =	16.23
Dry sample weight =	56.67

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.08	99.9
# 60	1.95	96.6
# 100	12.67	77.6
# 140	25.91	54.3
# 200	35.44	37.5

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 37.5
Weight of hydrometer sample: 21.33
Calculated biased weight= 56.88
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.724
Specific gravity correction factor= 0.984
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm