depressed below adjacent paved grades unless provisions for drainage, such as catch basins and drains, are made. Adequate drainage gradients, devices, and curbing should be provided to prevent runoff from adjacent pavement or walks into planting areas.

Watering should be done in a uniform, systematic manner as equally as possible on all sides of the foundation, to keep the soil moist. Irrigation methods should promote uniformity of moisture in planters and beneath adjacent concrete flatwork. Overwatering and underwatering of landscape areas must be avoided. Areas of soil that do not have ground cover may require more moisture, as they are more susceptible to evaporation. Ponding or trapping of water in localized areas adjacent to the foundations can cause differential moisture levels in subsurface soils and, therefore, should not be allowed. Trees located within a distance of 20 feet of foundations would require more water in periods of extreme drought, and in some cases, a root injection system may be required to maintain moisture equilibrium. During extreme hot and dry periods, close observations should be carried out around foundations to ensure that adequate watering is being undertaken to prevent soil from separating or pulling back from the foundation.

5.11 Construction Observation and Testing and Plan Review

The geotechnical consultant should perform construction observation and testing during the fine, and post grading operations, future excavations and foundation or retaining wall construction at the site. Additionally, footing excavations should be observed and moisture determination tests of the slab subgrade soils should be performed by the geotechnical consultant prior to the pouring of concrete. Foundation design plans should also be reviewed by the geotechnical consultant prior to excavations.

6.0 LIMITATIONS

The recommendations contained in this report are based on available project information. Changes made during design development, should be reviewed by Leighton Consulting, Inc. to determine if recommendations are still applicable. Any questions regarding the contents of this report should be directed to the attention of Mike Jensen, CEG, (858) 300-8494 of Leighton and Associates, Inc.

The nature of many sites is such that differing geotechnical or geological conditions can occur over small areal distances and under varying climatic conditions. The conclusions and recommendations in this report are based in part upon data that were obtained from a limited number of observations, site visits, excavations, samples, and tests. Such information is by necessity incomplete and therefore preliminary. The findings, conclusions, and recommendations presented in this report are considered preliminary and can be relied upon only if Leighton has the opportunity to observe the subsurface conditions during grading and construction of the proposed improvements, in order to confirm that our preliminary findings are representative for the site.

This report was prepared for the sole use of JPI for application to the design of the proposed improvements in accordance with generally accepted geotechnical engineering practices at this time in California.

Our evaluation was limited to assessment of the preliminary geotechnical aspects of the project and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

In addition, we recommend that the GBC insert included in Appendix G be reviewed prior to the utilization of this report.

APPENDIX A

References

APPENDIX A

References

Benton Engineering, 1964, Report of Field Density Test Results in Compacted Fill Ground, South west of the Intersection of Crouch and Sbori Streets, Oceanside, California , Project No. 63-11-2 60, dated February 14, 1964.

Bryant and Hart, 2007, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning with Index to Special Study Zones Maps: Department of Conservation, Division of Mines and Geology, Special Publication 42.

California Building Standards Commission (CBSC), 2016, California Building Code (CBC).

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas; California Division of Mines and Geology, Geologic Data Map 6, Scale 1:750,000.

Kennedy, M.P., 1975, Geology of the San Diego Metropolitan Area, California Section A-Western San Diego Metropolitan Area: California Division of Mines and Geology Bulletin 200, 38p.

Leighton and Associates, Inc., 1985a, Supplemental Geotechnical Investigation, Weese Property, Parcel A and B of Parcel Map 13161, Oceanside, California, Project No. 4850512-01, dated June 18, 1985.

———, 1985b, Geotechnical Review of interim Grading Plans, Weese Property, City of Oceanside, California, Project No. 4850512-01, dated July 15, 1985.

———, 1985c, Buttress Key and Setback Location Map, I Plate, 40-Scale, Project No. 4850512-01, dated July 17, 1985.

———, 1985d, Buttress Stability, Weese Property, Oceans ide, California, Project No. 4850512-02, dated September 24, 1985.

———, 1986a, Preliminary Geotechnical Study of Feasibility for Development of Parcels C and D, Project No. 4850512-001, dated March 21, 1986.

———,1986 b, Geotechnical Report of Interim Rough Grading for Weese Property, Project No. 4850512-02, date May 15, 1986.

APPENDIX A (Continued)

————————, 2003, Geotechnical Update Investigation, Parcel B of Parcel Map No. 1316 1 and Parcels C and D of Parcel Map No. 13160, Oceanside, California, Project No. 040963-00-01, dated November 7, 2003.

————————, 2004, Response to City of Oceanside Review Comments Concerning the Ocean Creek Town Center Geotechnical Update Investigation, Parcel B of Parcel Map No. 13161 and Parcels C and D of Parcel Map No. 13160, Oceanside, California, Project No. 040963-001, dated May 12, 2004.

————————, Undated, Unpublished In-House Geotechnical Data.

G.A. Nicoll and Associates, Inc. 198, Density Test Results, Parcels *A* and B, Parcel Map 13161, Oceanside, California, Project No. 3293-71, dated October 5, 1989.

————————,1992, Preliminary Geotechnical Investigation, Proposed Development, Parcels C and D of Parcel Map 13160, Oceanside, California, Project No. 4141-20, dated November 9, 1992.

O'day Consultants, 2003, CAD File of Preliminary Ste Plan with Topography, dated November 2003.

RocScience, 2011, Slide 6.0, Slope Stability Program, 2012.

Treiman, J.A., 1984, The Rose Canyon Fault Zone: A Review and Analysis, California Division of Mines and Geology, Funded by Federal Management Agency Cooperative Agreement EMF-83-K-0148.

————, 1993, The Rose Canyon Fault Zone, Southern California: California Division of Mines and Geology, Open-File Report 93-2, 45p.

Aerial Photographs

Date	Source	Flight	Photo Number
5-2-53	USDA	AXN-14	36-38

Figure

Project: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1 " = 2,000 '	Date: September 2019
Base Map: ESRI ArcGIS Online 2019 Author: (mmurphy)	

SITE LOCATION MAP

JPI Ocean Creek
Oceanside California

Figure 1

Leighton

Map Saved as V:\Drafting\12085\002\Maps\12085-002_F01_SLM_2019-09-18.mxd on 9/18/2019 11:08:58 AM

Plates

Legend

- B-3 — Approximate Location of Large-Diameter Boring (Leighton, This Study)
- CPT-3 — Approximate Location of Cone Penetration Test (Leighton, This Study)
- LB-14 — Approximate Location of Large Diameter Boring (Leighton and Associates, 2003)
- CPT-7 — Approximate Location of Cone Penetration Test (Leighton and Associates, 2003)
- T-10 — Approximate Location of Exploratory Trench (Leighton, 1985a)
- B-2 — Approximate Location of Small-Diameter Boring (Leighton, 1985a)
- NB-3 — Approximate Location of Large-Diameter Boring (Nicoll, 1992)
- AB-6 — Approximate Location of Large-Diamter Boring (Action, 1984a)
- 30 — Proposed Buttress Key Bottom Elevation
- Approximate Geologic Contact (Dotted where Buried Queried where Uncertain)
- Approximate Limits of Landslide (Arrows indicate Inferred Direction of Movement)
- Approximate Area of Potential Hydroauger Installation
- Approximate Location of Shear Pins at 10 feet on Center
- Approximate Structure Setback with Landslide Removal and Shear Pins
- Approximate Stuctural Setback Limit due to Existing Landslide
- G — G' Geologic Cross-Section
- Recommended Buttress and/or Stability Fill Key
- Recommended Buttress Fill (60 Feet Wide with Finish Elevation of 150 Feet MSL)
- Approximate Site Bouindary
- Area Susceptible to Liquefaction with Differential Settlement on the Order of 1-Inch

Geologic Units

- Af — Artificial Fill - Placed Under Observation and Testing of Leighton and Associates
- Afo — Artificial Fill - Placed by Others
- Qal — Quaternary Alluvium/Colluvium, Undifferentiated, (circled where buried)
- Qt — Quaternary Terace Deposits (circled where buried)
- Qls — Quaternary Landslide Deposits (circled where buried)
- Tsa — Tertiary Santiago Formation (circled where buried)

N

0 80 160
Feet

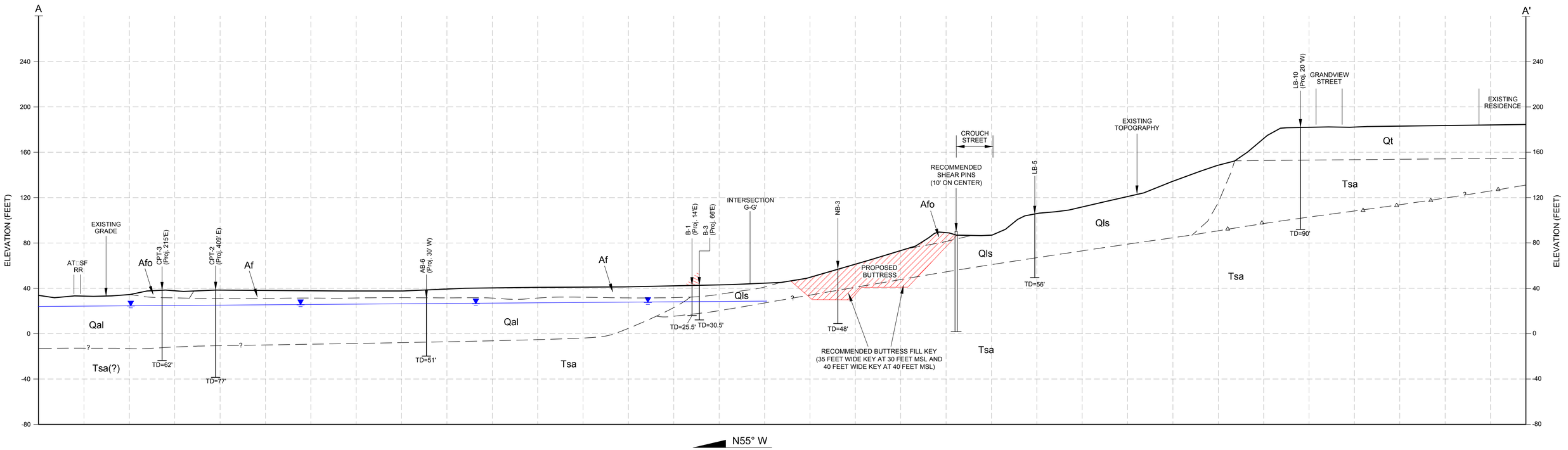
GEOTECHNICAL MAP

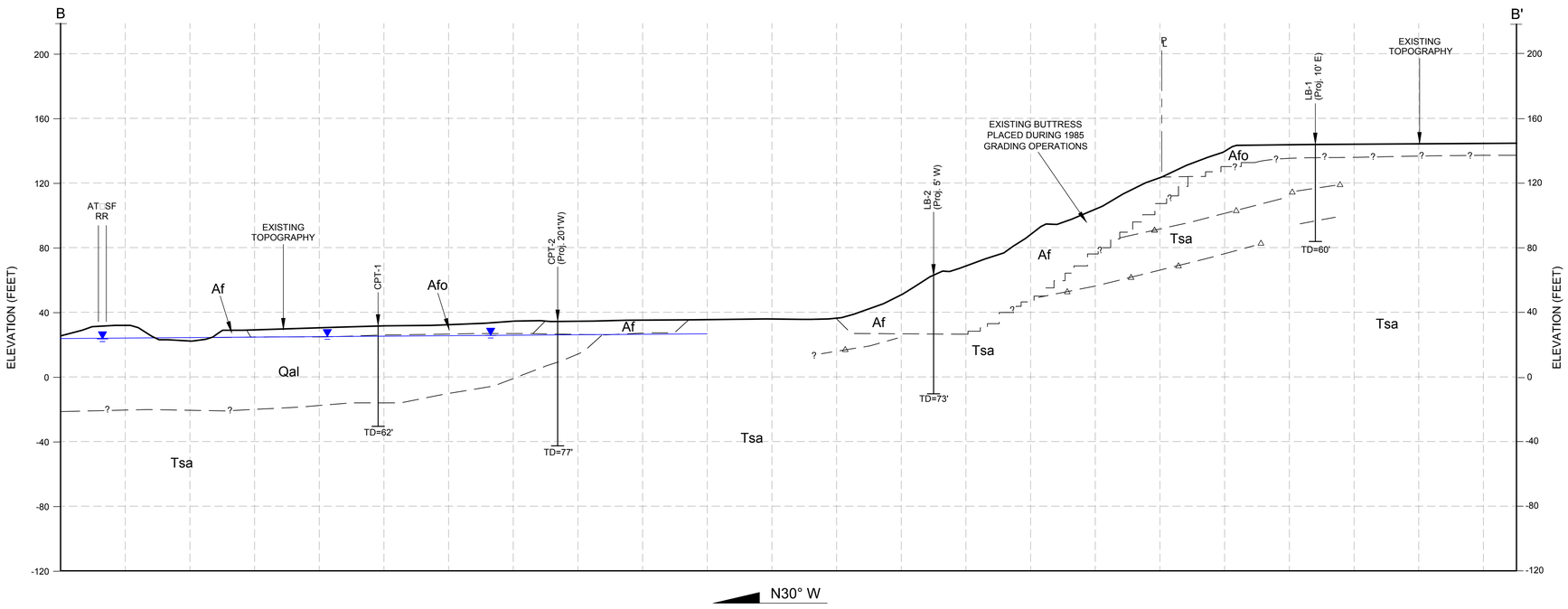
JPI Ocean Creek
Oceanside California

Plate 1

Project: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1 " = 80 feet	Date: September 2019
Reference: ????????????????????????????	
Author: (mmurphy)	Map Saved as V:\Drafting\12085\002\Maps\12085-002_P01_GM_2019-09-16.mxd on 9/20/2019 3:39:29 PM

Leighton





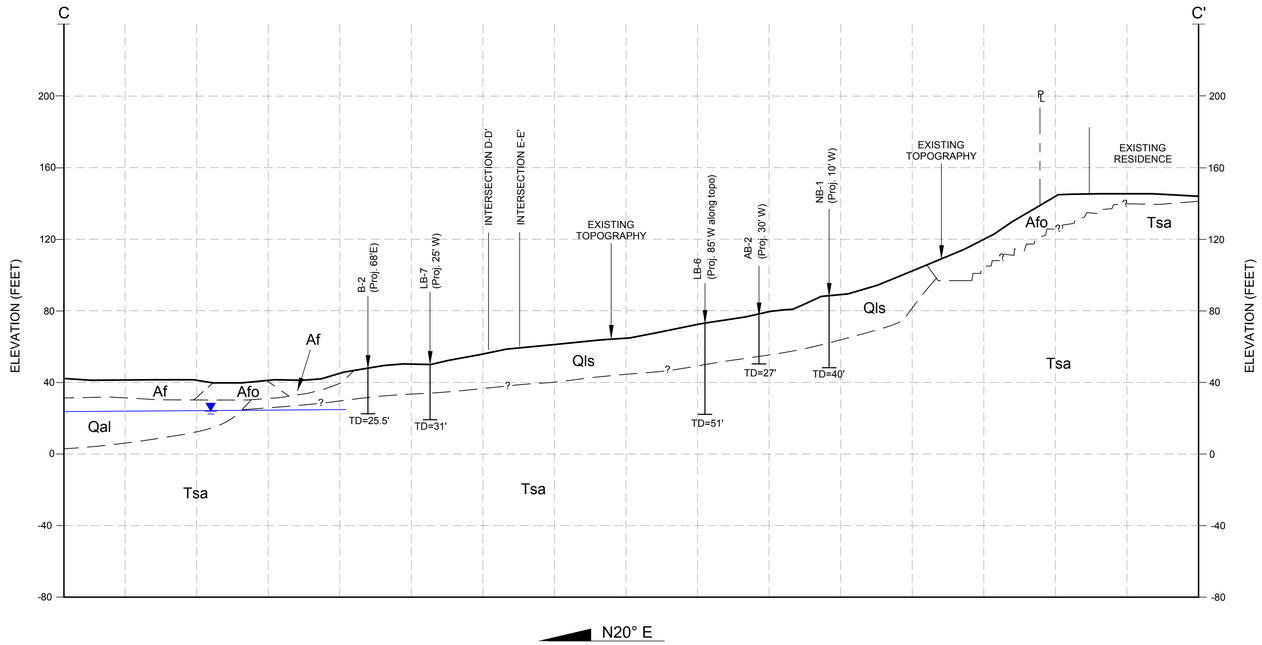
GEOLOGIC CROSS-SECTIONS A-A' & B-B'

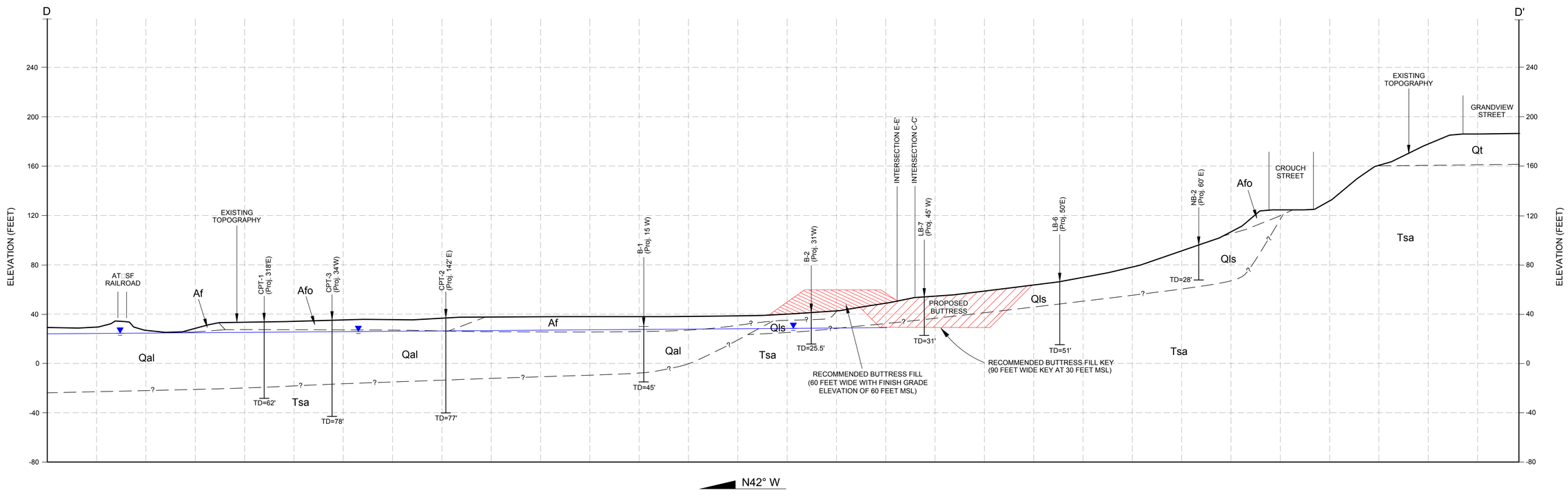
JPI Ocean Creek
Oceanside California

Plate 2

Proj: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1"=40 feet	Date: September 2019
Reference:	
Author: MAM	F:\DRAFTING\12085\002\CAD\12085-002_P00_GCS_2019-09-13.DWG 09-20-19 3:02:10PM, Plotted by: mmurphy

Leighton





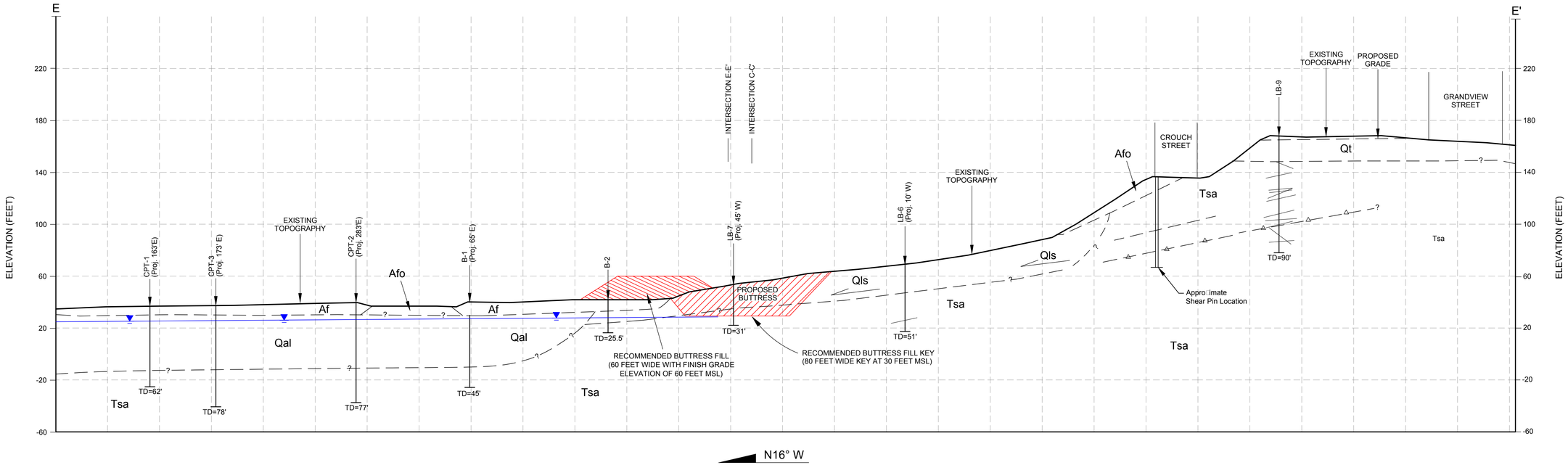
GEOLOGIC CROSS-SECTIONS C-C' & D-D'

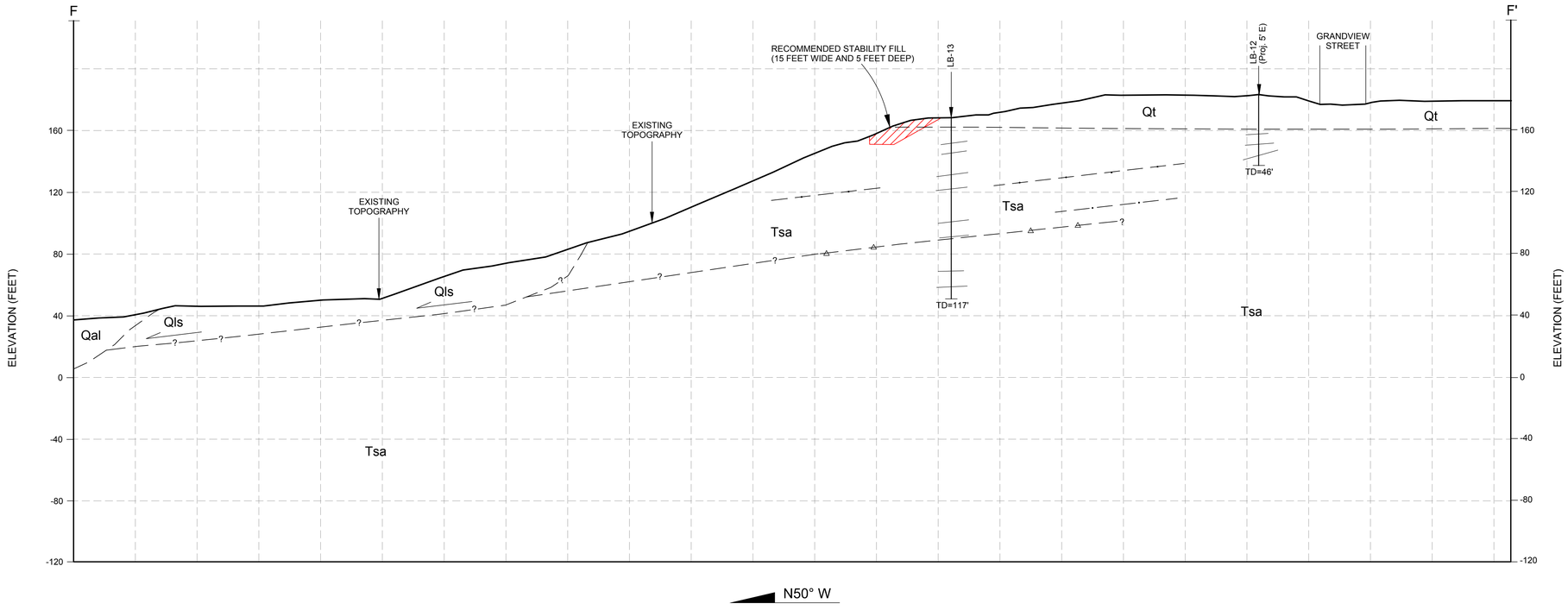
JPI Ocean Creek
Oceanside California

Plate 3

Proj: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1"=40 feet	Date: September 2019
Reference:	
Author: MAM	P:\DRAFTING\12085\002\CAD\12085-002_PGI_GCS_2019-09-13.DWG (09-20-19 2:59:53PM) Plotted by: mmurphy

Leighton





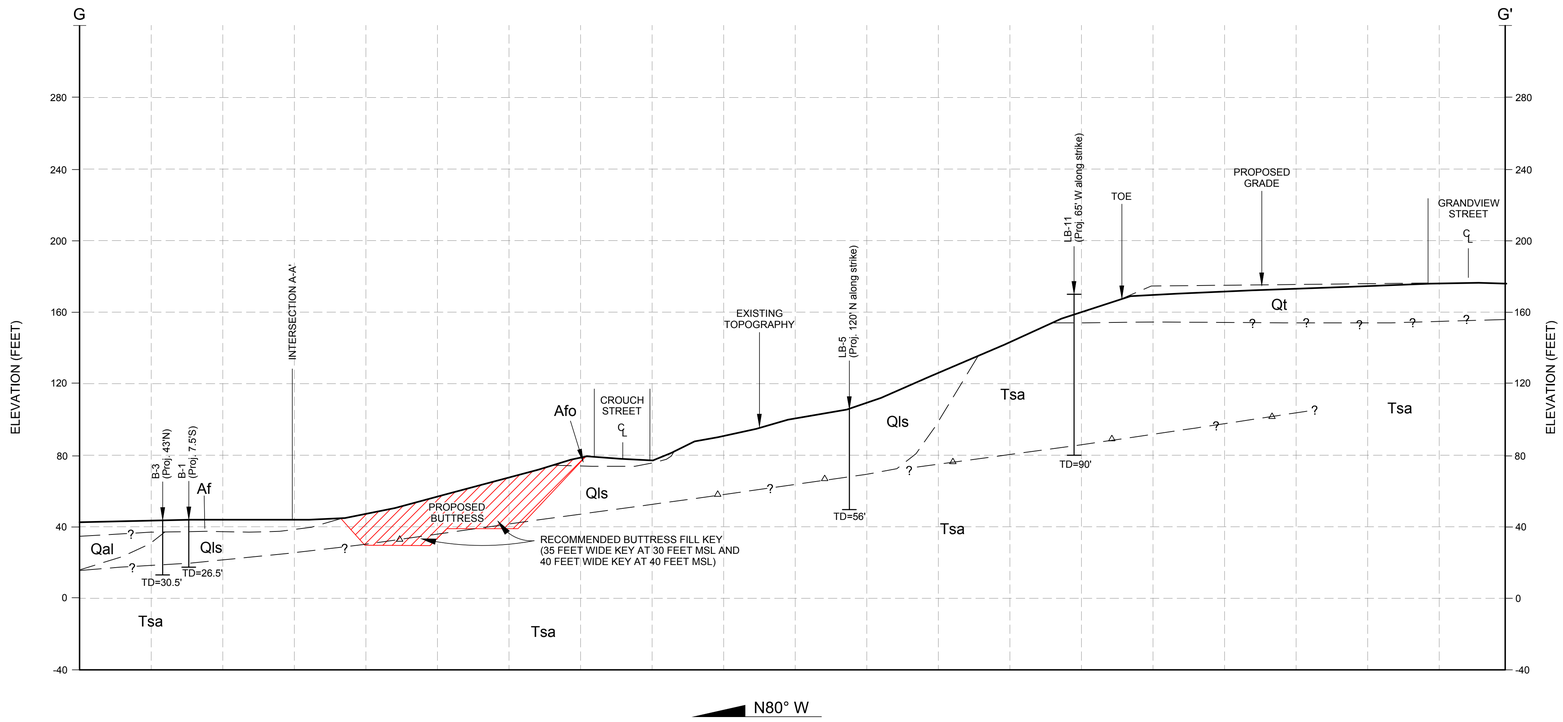
GEOLOGIC CROSS-SECTIONS E-E' & F-F'

JPI Ocean Creek
Oceanside California

Plate 4

Proj: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1"=40 feet	Date: September 2019
Reference:	
Author: MAM	P:\GRAFTING\12085\002\CAD\12085-002_P06_GCS_2019-09-13.DWG 09-20-19 2:59:29PM5 Plotted by: mmurphy

Leighton



GEOLOGIC CROSS-SECTION G-G'

JPI Ocean Creek
Oceanside California

Plate 5

Proj: 12085.002	Eng/Geol: WDO/MDJ
Scale: 1"=40 feet	Date: September 2019
Reference:	
Author: MAM	P:\DRAFTING\12085\002\CAD\12085-002_F02_GCS_2019-09-13.DWG 09-20-19 2:59:01 PM\ Plotted by: mmurphy

Leighton

Appendix B

Current Explorations

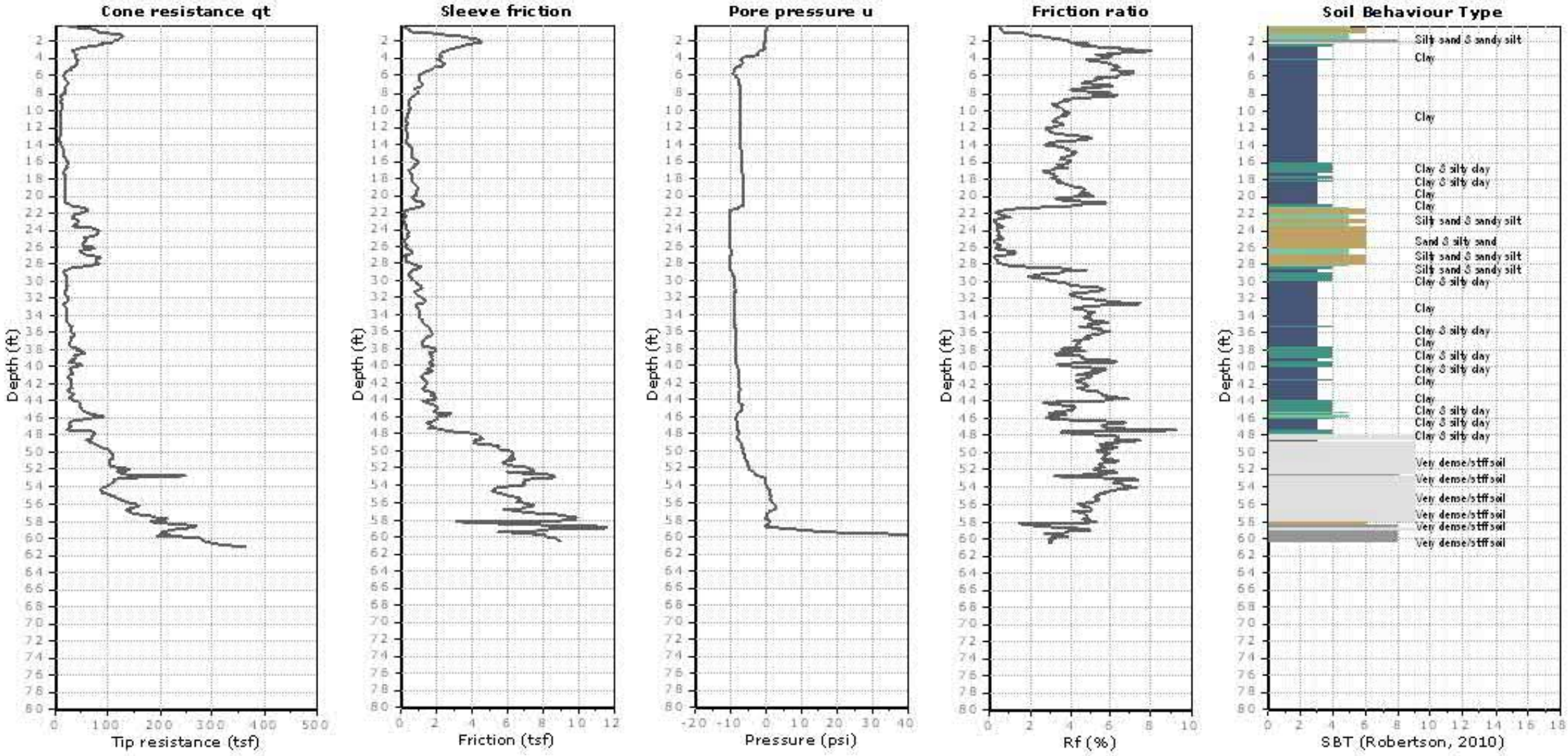
Appendix B (Continued)

CPT-1 through CPT-3

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton & Associates - JPI Ocean Creek Town Center**
Location: **Oceanside, CA**

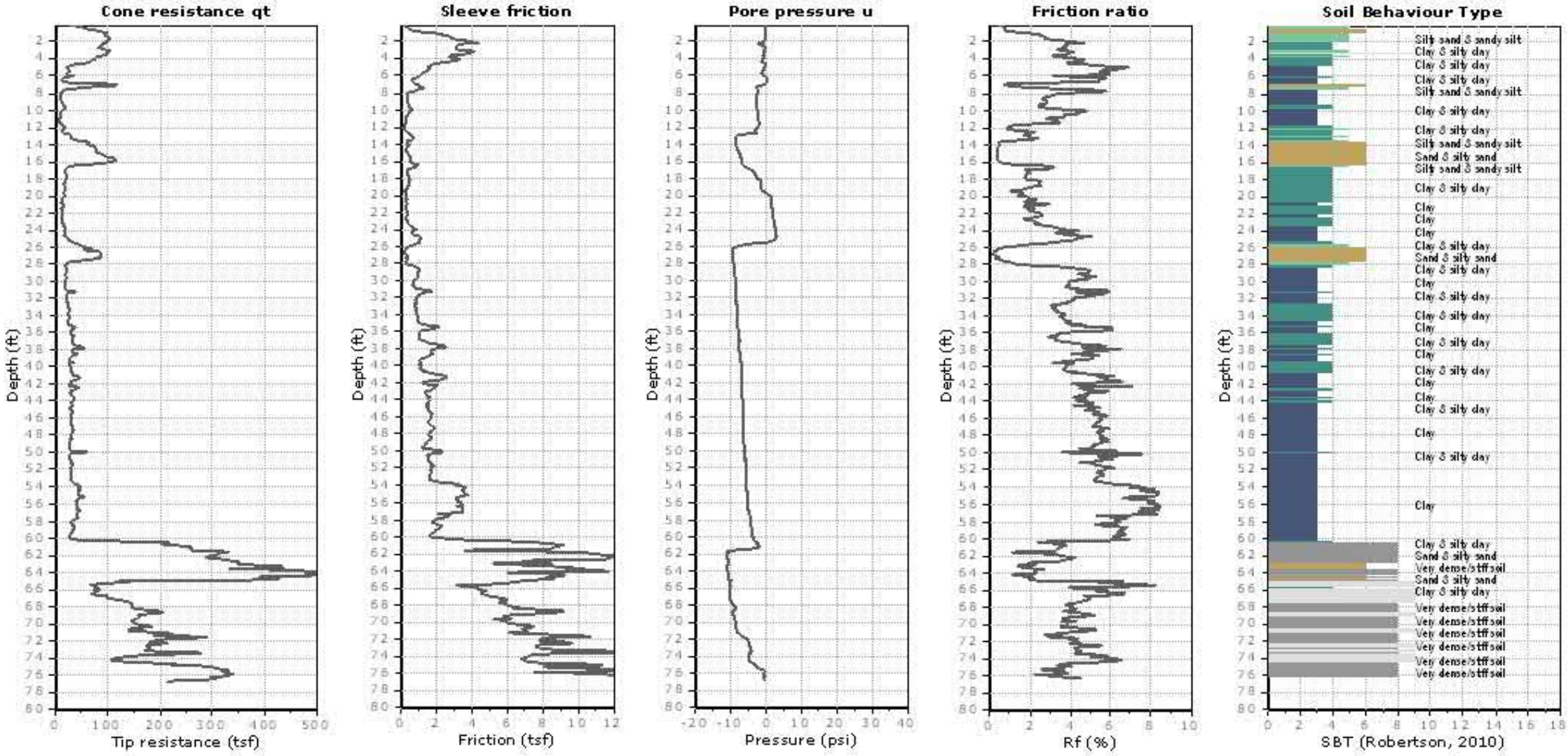
CPT-1
Total depth: 60.96 ft, Date: 8/2/2019



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton & Associates - JPI Ocean Creek Town Center**
Location: **Oceanside, CA**

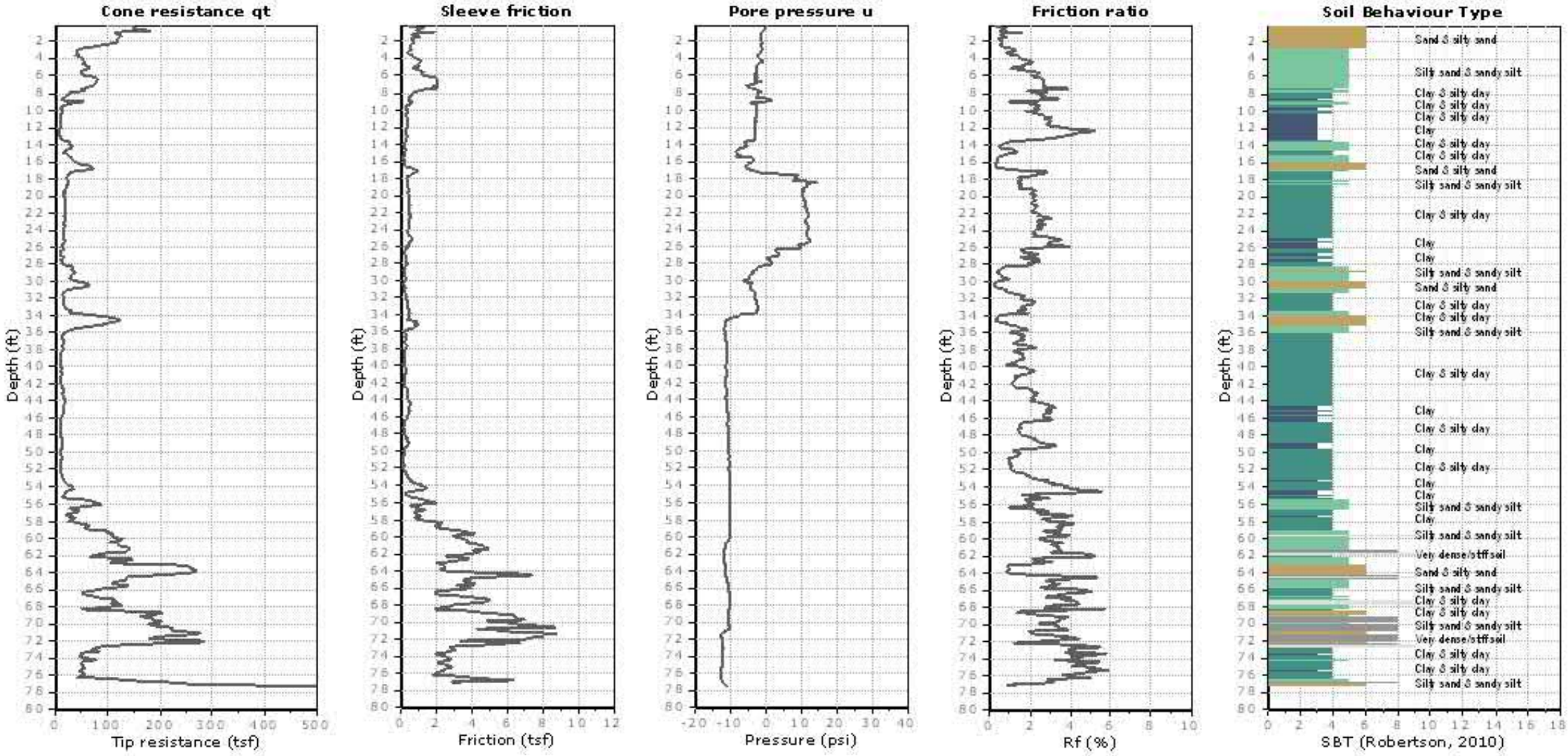
CPT-2
Total depth: 76.72 ft, Date: 8/2/2019



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton & Associates - JPI Ocean Creek Town Center**
Location: **Oceanside, CA**

CPT-3
Total depth: 77.50 ft, Date: 8/2/2019



Appendix B (Continued)

Large Diameter Borings
B-1 through B-3

GEOTECHNICAL BORING LOG KEY

Date _____ **Sheet** 1 **of** 1

Project KEY TO BORING LOG GRAPHICS **Project No.** _____

Drilling Co. _____ **Type of Rig** _____

Hole Diameter _____ **Drive Weight** _____ **Drop** "

Elevation Top of Elevation ' **Location** _____

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	0								Asphaltic concrete.	
									Portland cement concrete.	
								CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay.	
								CH	Inorganic clay; high plasticity, fat clays.	
								OL	Organic clay; medium to plasticity, organic silts.	
	5							ML	Inorganic silt; clayey silt with low plasticity.	
								MH	Inorganic silt; diatomaceous fine sandy or silty soils; elastic silt.	
								ML-CL	Clayey silt to silty clay.	
								GW	Well-graded gravel; gravel-sand mixture, little or no fines.	
								GP	Poorly graded gravel; gravel-sand mixture, little or no fines.	
	10							GM	Silty gravel; gravel-sand-silt mixtures.	
								GC	Clayey gravel; gravel-sand-clay mixtures.	
								SW	Well-graded sand; gravelly sand, little or no fines.	
								SP	Poorly graded sand; gravelly sand, little or no fines.	
								SM	Silty sand; poorly graded sand-silt mixtures.	
	15							SC	Clayey sand; sand-clay mixtures.	
									Bedrock.	
									Ground water encountered at time of drilling.	
				B-1					Bulk Sample 1.	
	20			B-1					Bulk Sample 2.	
				C-1					Core Sample.	
				G-1					Grab Sample.	
				R-1					Modified California Sampler (3" O.D., 2.5 I.D.).	
				SH-1					Shelby Tube Sampler (3" O.D.).	
	25			S-1					Standard Penetration Test SPT (Sampler (2" O.D., 1.4" I.D.).	
				PUSH					Sampler Penetrates without Hammer Blow.	
									Bulk Sample 2.	
	30									

Logged By _____

Sampled By _____

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- AT ATTERBURG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON

GEOTECHNICAL BORING LOG B-1

Project No.	12085.002	**Date Drilled**	7-29-19
Project	JPI Oceancreek	**Logged By**	XR
Drilling Co.	Tri-Valley Drilling, Inc.	**Hole Diameter**	30"
Drilling Method	Bucket Auger	**Ground Elevation**	42'
Location	See Map	**Sampled By**	XR

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
40	0							SM	ARTIFICIAL FILL (Af) @ 0'-2.9': Silty SAND, medium dense, brown, dry to damp, fine-grained, native and concrete clasts	
35	5								@ 5': Sandy SILT @ 6.7'-7.2': Silty SAND, light brown, near horizontal @ 8.2': Concretion 2 to 3" bed with clasts of SANDSTONE in silty SAND fill, light brown, medium dense, poorly-graded	
30	10			R-1	1@6" 1@6"			SM	QUATERNARY LANDSLIDE (Qls) @ 9.8': Silty SAND, dark brown, rootlets @ 10': Silty SAND, light brown, gravel-sized clasts of SANDSTONE nearly horizontal layer, discontinuous around the boring	
25	15			R-2	Push 1@6"				@ 14.5': Heavy caving, silty SAND, medium dense, heavy seepage, red-brown, fine-grained, moist, friable Unable to geologically log below 14.5' @ 15': Silty SAND, loose, orange-brown, wet, roots, friable, iron-oxide blebs	
20	20							ML	@ 20': SILTSTONE, gray-brown, intact, possible landslide	
15	25			R-3	1@6" 2@6"			SM ML	TERTIARY SANTIAGO FORMATION (Tsa) @ 25': Silty SANDSTONE, medium dense, gray-brown, wet, micaceous, fine-grained, calcium-carbonate blebs/stringers @ 26': SILTSTONE with interbedded SAND, medium dense, gray-brown **Total Depth = 26.5 Feet** **Groundwater and Seepage Encountered at 14 Feet at Time of Drilling** **Backfilled with Bentonite and Native Soil on 7/29/19**	
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

GEOTECHNICAL BORING LOG B-2

Project No.	12085.002	**Date Drilled**	7-29-19
Project	JPI Oceancreek	**Logged By**	XR
Drilling Co.	Tri-Valley Drilling, Inc.	**Hole Diameter**	30"
Drilling Method	Bucket Auger	**Ground Elevation**	44'
Location	See Map	**Sampled By**	XR

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
40	0							SM	@ 0-5": TOPSOIL ARTIFICIAL FILL (Af) @ 5": Silty SAND, concrete, brick debris, gray-brown, dry, fine-grained	
35	5			R-1					@ 5': Silty SAND, loose, light gray-brown, moist, fine-grained @ 8': Becomes red-brown	
	10			R-2				SM	QUATERNARY LANDSLIDE DEPOSITS (Qls) @ 9': Disturbed bed broken modeled SANDSTONE not intact 9'-11'	
30								SP	@ 10': Silty SAND, light orange-brown, moist @ 11': Moderate caving oxidized on sand layer @ 11.6': Friable SAND, mottled but not intact	
	15		RS:N80E, 10-11NW					CL SM ML	@ 13': Sandy SILT with a 2" thick plastic clayseam dipping N, calcium-carbonate blebs stringers @ 15': Silty SANDSTONE, light gray-brown, wet @ 15.2': Landslide rupture surface 1/2" thick CLAYSEAM, around entire boring, moderate seepage along bottom of landslide SANTIAGO FORMATION (Tsa) @ 15.8': SILTSTONE, dense, intact	
25	20								@ 20': SILTSTONE, hard, gray-brown, intact	
20	25							SM SP	@ 22': Silty SANDSTONE, very dense light brown @ 25': Poorly-graded SANDSTONE, light gray, micaceous	
15	30								**Total Depth = 25.5 Feet** **Groundwater and Seepage Encountered at 14 Feet at Time of Drilling** **Backfilled with Bentonite and Native Soil on 7/29/19**	

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

GEOTECHNICAL BORING LOG B-3

Project No.	12085.002	**Date Drilled**	7-30-19
Project	JPI Oceancreek	**Logged By**	XR
Drilling Co.	Tri-Valley Drilling, Inc.	**Hole Diameter**	30"
Drilling Method	Bucket Auger	**Ground Elevation**	44'
Location	See Map	**Sampled By**	XR

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
40	0							SM	ARTIFICIAL FILL (Af) @ 0': Silty SANDSTONE, light gray-brown, dry, fine-grained	
								CL	@ 3.8': CLAY 4", dark brown @ 3.9': SAND, white, friable	
5	5			R-1	1 1				@ 5': Silty SAND, brown, moist, fine-grained	
								SM	@ 5.8': Disturbed zone, silty SAND, dark brown	
35								SC	@ 7.8': SAND bed, brown, micaceous, clasts of native formation @ 8': Sandy CLAY, medium stiff, dark brown, moist, Possible Topsoil	
	10			R-2	1 1			SM	QUATERNARY LANDSLIDE DEPOSITS (Qls) @ 10': Silty SANDSTONE, orange-brown, charcoal, fine-grained, micaceous @ 10.3': Silty SAND, medium dense, dark brown, moist, slightly oxidized @ 11.3': Charcoal and wood chunks	
30										
	15		N60W 65 degrees	R-3	1 2				@ 14': SANDSTONE clasts 4" high, calcium-carbonate blebs stringers, loose @ 14.7': Highly fractured SILTSTONE, calcium-carbonate blebs, dark gray-brown, moist, randomly fractured, heavy seepage along fractures, calcium-carbonate stringers. @ 15.5': Silty SAND	
25										
	20		CS:N40W 15-20 degrees RS:N45E 15-17 degrees	R-4	1 2			ML	@ 19.8'-20.2': Highly sheared CLAYSTONE, polished, striated, dark gray to red-gray, remolded CLAYSEAM	
								ML	@20.2': 1.5 to 2" thick CLAYSEAM, dark brown, moist, high plasticity, heavy moderate seepage along clayseam and fractures, caving @ 20.3': SILTSTONE, light gray, manganese	
20									TERTIARY SANTIAGO FORMATION @ 21': Denser material SANDSTONE, light gray	
	25			R-5	2 1				@ 25': SILTSTONE, very hard, light green-gray, micaceous @ 26': Standing water	
15										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

GEOTECHNICAL BORING LOG B-3

Project No.	12085.002	**Date Drilled**	7-30-19
Project	JPI Oceancreek	**Logged By**	XR
Drilling Co.	Tri-Valley Drilling, Inc.	**Hole Diameter**	30"
Drilling Method	Bucket Auger	**Ground Elevation**	44'
Location	See Map	**Sampled By**	XR

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			R-6	5 10			SM	@ 30': SILTSTONE, very dense, light brown, micaceous	
10	35								**Geologically Logged to 25.5 Feet** **Total Depth = 30.5 Feet** **Groundwater and Seepage Encountered at 15 Feet at Time of Drilling** **Backfilled with Bentonite and Native Soil on 7/30/19**	
5	40									
0	45									
-5	50									
-10	55									
-15	60									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Appendix B (Continued)

Previous Explorations

GEOTECHNICAL BORING LOG LB-8

Date 6-13-03 **Sheet** 1 **of** 1
Project Weese Family Trust - Oceanside **Project No.** 040963-001
Drilling Co. Larive **Type of Rig** Bucket Auger
Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"
Elevation Top of Hole 158' **Location**

Logged By BJO
Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	0	N S						SM	QUATERNARY TERRACE DEPOSITS (Qt) @ 0'-2': Light orange-brown silty SAND; dry to slightly moist, very dense, fine grained	
155								SC	@ 2'-3': Brown sandy CLAY, moist, stiff, horizontal profile ring holes; cemented along base	
	5								@ 4': Sample is similar to above; light orange-brown silty SAND, slightly moist, very dense; fine to medium grained	
									@ 6': Grain size and moisture increases, becomes orange-brown silty SAND; moist, dense; fine to medium grained; local stringers and pods of gray color	
150									@ 10': Sample is: Orange-brown silty SAND; moist, dense; medium grained with scattered subangular coarse sand to gravel @ 10.5'-11.0': Scattered subrounded gravel and small cobbles supported in matrix similar to above; rare claystone clasts	
	10			R-1	8(11")	126.1	4.1	SM		
			C:EW, 10N C:EW, 3-8N					SM	TERTIARY SANTIAGO FORMATION (Tsa) @ 11': Light gray silty SANDSTONE; slightly moist, dense; very fine grained; generally massive; rare gray claystone clasts @ 12': Contact, iron-oxide stained above, generally clean, light gray color below; parallels the contact above, generally dips 3-8 degrees north	
145										
	15								@ 16': Discontinuous pod of orange sand in west wall, horizontal	
									@ 18': End downhole log @ 20': Sample is: gray silty to clayey SANDSTONE, slightly moist, dense to very dense; fine grained; local, gray claystone clasts up to 1/8"	
140				R-2	9	120.7	7.7	SM		
	20								Total Depth = 20 Feet Downhole Logged to 18 Feet No ground water encountered at time of drilling Backfilled and tamped with native soil on 6/13/03	
135										
	25									
130										
	30									

SAMPLE TYPES:
S SPLIT SPOON
R RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE
G GRAB SAMPLE
SH SHELBY TUBE

TYPE OF TESTS:
DS DIRECT SHEAR
MD MAXIMUM DENSITY
CN CONSOLIDATION
CR CORROSION
SA SIEVE ANALYSIS
CU TRIAXIAL SHEAR
EI EXPANSION INDEX
RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-9

Date 6-13-03 **Sheet** 1 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 170' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
170	0							SM	QUATERNARY TERRACE DEPOSITS (Qt) @ 0': Light orange-brown silty SAND to sandy SILT, dry, very fine grained; weakly cemented	
165	5								@ 7': Generally coarsens with depth, bulk sample (7-9') is fine to medium grained, slightly moist, otherwise same as above	
160	10			R-1	4	117.9	5.8	SM	@ 10': Sample is: orange-brown SAND, slightly moist, medium dense; fine to medium grained	
155	15								@ 14.9': Gradational contact to orange-brown clayey SAND; moist, medium dense @ 16.5': 6" thick horizontal layer of scattered gravel, matrix supported @ 18.5': Base of clayey coarse SAND with gravel, moist, medium dense to loose; horizontal, slightly undulatory contact	
			C:Horizontal S:N70E, 22S					CL/ML	TERTIARY SANTIAGO FORMATION (Tsa) @ 18.5': Gray silty CLAYSTONE; slightly moist; medium dense to dense; micaceous; weathered, discontinuous oxidized fractures	
150	20			R-2	3	94.3	27.4	CL	@ 19.5': Gray CLAY-lined shear, polished, weathered, continuous @ 20': Sample is similar to above	
			C:N60-70E, 2-3N					SM	@ 23.3': Diffuse contact with light gray SANDSTONE; slightly moist, medium dense; very fine grained	
145	25								@ 25': Grain size coarsens to fine grained	
			GB:N50E, 13NW						@ 29.4': 1/4" to 1" thick gray-brown clayey SANDSTONE, locally cemented	
140	30									

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-9

Date 6-13-03 **Sheet** 2 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 170' **Location**

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By BJO; Sampled By BJO)	Type of Tests
140	30			R-3	18	114.6	6.8	SM	@ 30': Sample is: Light gray silty SANDSTONE; slightly moist, very dense; very fine grained; micaceous; diffuse iron-oxide staining	
									@ 32'-33.5': Coarsens downward, scattered red claystone rip-up clasts	
									@ 33.5': Irregular, generally north dipping, scoured contact, very fine grained sand below	
135	35								@ 37': Weakly cemented SANDSTONE cementation, increases with depth	
									@ 39': Very minor seepage from above cemented layer, 1.5" thick; continuous around hole	
130	40			R-4	20	121.2	10.4	SM	@ 40': Sample is: light gray silty SANDSTONE; moist, very dense; fine grained; micaceous	
			B:N10E, 14NW					SM/CL	@ 41'-42': Yellow-brown CLAYSTONE; moist to wet, soft to medium stiff; clay seam at base, polished, continuous with local seepage	
			B:N15E, 12NW						@ 42'-42.5': Thinly bedded gray-brown, micaceous SANDSTONE and brown to yellow-brown CLAYSTONE, polished surfaces along bedding surfaces	
			S:N36E, 27NW						@ 42.5': Gray fine SANDSTONE, moist, dense	
125	45		STR:15N, N20W						@ 43.7': Well polished shear zone 4" thick, in yellow-brown CLAYSTONE; oriented along bedding; weathered, slightly moist; striated	
									@ 44': Grades sandy and micaceous	
			B:N50E, 15NW						@ 46.5'-47.9': Polished red-brown to yellow-brown CLAYSTONE, slightly undulatory, continuous around hole	
								SM	@ 48': Contact with light gray to light blue-gray, silty SANDSTONE, slightly moist; very dense	
120	50			R-5	32	123.1	12.8	SM	@ 49.5': 4" thick concreted zone, dips northwest, local pink coloration	
									@ 50': Sample is similar to above	
									@ 52': Contact with slightly finer grained material	
115	55		C:N35W, 14NE						@ 55': Contact with brownish gray clayey SANDSTONE, slightly moist, dense; very fine grained, micaceous; 1/2" thick reddish halo at contact; unsheared	
			GB:N80W, 15N							
110	60			R-6	40(5")	101.5	11.1	SM/CL	@ 59': Gray sandy CLAYSTONE to silty SANDSTONE, slightly	

SAMPLE TYPES:

S SPLIT SPOON
R RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE
G GRAB SAMPLE
SH SHELBY TUBE

TYPE OF TESTS:

DS DIRECT SHEAR
MD MAXIMUM DENSITY
CN CONSOLIDATION
CR CORROSION
SA SIEVE ANALYSIS
CU TRIAXIAL SHEAR
EI EXPANSION INDEX
RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-9

Date 6-13-03 **Sheet** 3 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 170' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
110	60							SM/CL	moist, dense; fine grained; concreted gray sandstone/claystone in sample tip	
			GB:N30-50E, 5NW						@ 64': Discontinuous cemented zone; hard, dry	
105	65							ML	@ 65': Light brownish gray clayey SILTSTONE, slightly moist, very stiff; scattered fine SAND grains; grades to sandy SILTSTONE through 68'	
			S:N30-40E, 20NW						@ 68': Paper thin, planar shear, local discontinuous shears propogate 1" to 2" above surface	
100	70			R-7	30-10"	116.6	18.4	SM	@ 70': Sample is: (at top) light grayish brown, clayey to silty SANDSTONE; slightly moist, very dense to hard (and at bottom) light bluish gray, silty SANDSTONE, slightly moist, very dense; all very fine grained	
			C:N60W, 3-5SW						@ 71.5': Contact-iron stained, generally fine to medium grained	
			F:N57E, 40SE STR:35SE, N60W							
95	75								@ 74.5': Clay-lined fault surface, continuous around hole; dry, tight; sense of offset not evident	
			F:N57E, 40SE STR:35SE, N60W						@ 77.6': Fault surface lined with 2-3 mm of lavender clay, dry, stiff; striated, locally bifurcated, 1-2" apparent offset down to south	
90	80		F:N28E, 55S B:NS-5-10W	R-8	30-10"	115.3	11.9	SM/SC	@ 80': Sample is: light gray to gray silty to clayey SANDSTONE, slightly moist, very dense; very fine grained; slightly micaceous	
									@ 80.1': East dipping shear offsets brown 1" thick claystone seam, 0.5" down to east	
									@ 83'-84': Very minor seepage	
85	85								@ 83.9': 4" thick concretion of gray-brown clayey SAND; continuous around hole	
									@ 85': Grades to moist (darker gray) medium grained SAND, scattered light gray and orange concrete nodules	
				R-9	30-8"	114.8	14.8	SM	@ 90': Sample is: gray SANDSTONE; moist, very dense, fine to medium grained	
80	90									

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

GEOTECHNICAL BORING LOG LB-9

Date 6-13-03 **Sheet** 4 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 170' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
80	90	N S							Total Depth = 90 Feet Downhole Logged to 87 Feet Very minor seepage from north wall at 39 feet and generally continuous at around hole at 83-84 feet Standing water at 83.5 Feet depth on a.m. of 6/16/03 Backfilled and tamped with native and bentonite on 6/17/03	
75	95									
70	100									
65	105									
60	110									
55	115									
50	120									

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-10

Date 6-16-03 **Sheet** 1 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 185' **Location**

Logged By BJO/RKW

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
185	0							SM	QUATERNARY TERRACE DEPOSITS (Qt) @ 5': Orange-brown silty to clayey SAND; slightly moist, medium dense; generally fine grained, very weakly cemented	
180	5								@ 5'-6': Subvertical light brown SAND infilled vein	
175	10			R-1	6	125.3	9.6	SM	@ 10': Sample is same as above	
170	15							SM	@ 14.8-17': Grades to medium grained, scattered coarse grains; generally clayey SAND, moist, medium dense, rare subangular gravel, micaceous	
165	20			R-2	5	103.2	7.7	SM	@ 18.5': 1-3" thick silty fine SAND bed, yellow-brown to orange-brown; moist, medium dense, horizontal; friable; continuous around hole @ 20': Sample is: yellow-brown to orange-brown, silty SAND, slightly moist, medium dense; friable; black mottled pattern to sample top @ 20.8': Contact with 1' thick fine silty SAND, similar to 18.5'; undulatory, horizontal top; gradational bottom; micaceous; friable	
160	25		GB:N60E 6SE						@ 24': Subrounded cobbles and subangular gravel in 5" thick horizontal layer; matrix supported @ 24.5': Low angle cross-bedding of gold mica-rich laminations and thin beds @ 27.2': Horizontal bed of medium to coarse grained SAND; 4-6" thick	
155	30							SM	TERTIARY SANTIAGO FORMATION (Tsa) @ 28.7': Light gray to yellow-gray SANDSTONE; slightly moist,	

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-10

Date 6-16-03 | Sheet 2 of 4

Project Weese Family Trust - Oceanside | Project No. 040963-001

Drilling Co. Larive | Type of Rig Bucket Auger

Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' | Drop 12"

Elevation Top of Hole 185' | Location

Logged By BJO/RKW

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
155	30		GB:N40-60E 15-20NW	R-3	16	94.3	20.4	ML	dense; very fine grained; minor silt; undulatory but sharp upper contact; generally horizontal @ 30': Sample is: Light gray sandy SILTSTONE; slightly moist, medium dense to dense; very fine grained; orange oxidation stain to upper sample @ 30.5': Generalized bedding based on 4" thick yellow-gray sand band, local claystone rip-ups @ 32.5': Very diffuse, north dipping contact, fine to medium grained below	
150	35								@ 35.5': Generally north dipping iron-stained bands, diffuse	
145	40		C:N30-50W 50-10SW	R-4	10	104.0	22.7	ML-CL ML/CL	@ 41': Sand grades medium to coarse grained @ 41.5': Contact slightly undulatory, drops 4" to southwest across hole, unsheared; stiff material below @ 42': Sample is gray sandy SILTSTONE to silty CLAYSTONE, slightly moist, very stiff; massive @ 43'-45': Local concreted and weathered pods, otherwise very stiff to very stiff and massive	
140	45		J:N30E, 90 C:N40-60, 5NW B:N40-50E, 5-10NW					SM	@ 45': Rare subvertical, discontinuous, tight, unweathered, short joints @ 45.4'-45.7": Contact, cemented, gray, very fine SAND below, slightly moist, very dense @ 47': 3" thick light brown, concrete SILTSTONE bed; dry to slightly moist, hard; fractured; slightly undulatory; drops 4" to northwest across hole, sand above clayey below	
135	50		S:N40-50W, 15-20NE	R-5A R-5B	9	110.0 120.2	18.8 9.5	SC-CL SM	@ 50': Sample is: light gray-brown clayey SILTSTONE to silty CLAYSTONE, slightly moist, very stiff; minor very fine SAND, polished surfaces in sampler tip @ 51.5': Thin, irregular shear zone enters hole, discontinuous, not well developed; short semi-polished surfaces	
130	55		C:N60W, 11NE B:N70-80E, 10NW					SM	@ 53': Contact, thin red clay bands within blue-gray SANDSTONE, moist, dense; local concretion, grades to light brownish gray to light gray SANDSTONE, moist, medium dense to dense; fine to medium grained, minor silt @ 54.1'-54.5': Tight, stiff, sharp CLAYSTONE bed; faintly polished, sharp upper surface	
125	60									

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-10

Date 6-16-03 | Sheet 3 of 4

Project Weese Family Trust - Oceanside | Project No. 040963-001

Drilling Co. Larive | Type of Rig Bucket Auger

Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' | Drop 12"

Elevation Top of Hole 185' | Location

Logged By BJO/RKW

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
125	60	N S						ML	@ 62': Oblong CLAYSTONE rip-up clasts @ 62.5'-63': Blue-gray SAND lenses	
			C:N50E, 8NW	R-6	28	106.3	20.6	CL	@ 63': Generally gray-brown clayey SILTSTONE; slightly moist; very stiff; micaceous, thin (1/8") laminations of pink-gray yellow-brown CLAYSTONE, slightly moist, very stiff, micaceous discontinuous, very short parting surfaces along approximate bedding (contact orientation)	
120	65		C:N60-70E, 9NW					SM	@ 66': Contact; concretion lined; 1" thick planar brown, CLAYSTONE with planar parting surfaces above; slightly moist, soft to medium stiff @ 67': Light blue-gray to light gray SANDSTONE, slightly moist, dense; fine to medium grained; micaceous	
115	70		GB:N60E, 10NW						@ 70': Diffuse contact, gray medium grained below, generalized attitude on red clayey SAND ribbon, dips 0.5' to the northwest @ 72': Minor seepage, sand is very moist to wet to 78'	
110	75									
105	80		S:N48E, 7NW					CL/CH	@ 78.5': Contact with brown CLAYSTONE, moist to wet along short fractures; soft to stiff; abundant discontinuous shears, continuous around hole @ 79'-79.5': Well-developed shear zone, 0.5' thick, attitude on planar lower surface; local concreted nodules to 6" diameter; shears dry up and decrease through 80.5'; possible striae trend N05W	
			S:N51E, 8NW					SM	@ 81.3': Contact with blue-gray SANDSTONE interbed, moist, dense to very dense	
								CL	@ 81.7': Lower shear, immediately above SANDSTONE; continuous, 1" to 2" thick zone @ 82.5'-83.8': Brown CLAYSTONE bed; parallel to above; very moist, soft to stiff; sheared base and top; scattered gold mica; red clayey sand ribbon at base	
100	85							SM	@ 84': Blue-gray SANDSTONE, wet, dense to very dense, weeping seepage continues	
95	90							CL	@ 87': Brown CLAYSTONE, slightly moist, stiff; end downhole log	

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-10

Date 6-16-03 | Sheet 4 of 4

Project Weese Family Trust - Oceanside | Project No. 040963-001

Drilling Co. Larive | Type of Rig Bucket Auger

Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' Drop 12"

Elevation Top of Hole 185' | Location

Logged By BJO/RKW

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
95	90	N S		R-7	30(10")	116.1	14.3	SM	@ 92': Sample is: Gray silty SANDSTONE, slightly moist, dense to very dense; micaceous; fine grained	
									Total Depth = 92 Feet	
									Downhole logged to 87 feet	
									Minor seepage at 72 feet to total depth	
									Standing water at 91 feet	
									Backfilled and tamped with native and bentonite on 6/16/03	
90	95									
85	100									
80	105									
75	110									
70	115									
65	120									

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-11

Date 6-18-03 | Sheet 1 of 4
Project Weese Family Trust - Oceanside | Project No. 040963-001
Drilling Co. Larive | Type of Rig Bucket Auger
Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' Drop 12"
Elevation Top of Hole 170' | Location

Logged By BJO
Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
170	0	N S						SM/ML	QUATERNARY TERRACE DEPOSITS (Qt) @ 0': Reworked, topsoil-like material consisting of light brown SAND, to clayey SILT, slightly moist, loose to medium stiff; irregular lower contact	
		Casing						SM/SC	@ 2.5'-9': Orange-brown silty SAND; moist, medium dense, friable, medium grained; minor clay; fine to medium grained micaceous	
165	5								@ 5.5': Scattered very coarse SAND to subangular gravel in coarse silt, sand matrix	
									@ 9': Horizontal, slightly undulatory contact with orange-brown to silty SAND, moist, dense, very fine grained; not offset by joint at 9.5'; cemented infilling, propgates to 10'	
160	10		J:N62E, 74N	R-1	8	116.2	15.0	SM/SC	TERTIARY SANTIAGO FORMATION (Tsa) @ 10'-13': Light gray to gray silty to clayey SANDSTONE, moist, dense; very fine grained; rare subvertical fractures filled with up to 1/8" thick orange sandy silt; undulatory upper contact, scoured to the southwest	
			C:25-35E 35NW						@ 13': Gradational contact: Light yellow-gray silty SANDSTONE, slightly moist, dense; scattered black stained blebs and subvertical streaks; fine to medium grained	
155	15		C:20-40E 8-10NW					CL	@ 16': Contact with gray-brown silty CLAYSTONE, moist, medium stiff; orange stained above, weathered below for 1-2"; stiff to very stiff through 21', with scattered concreted nodules	
									@ 21': Scattered white concretions ring hole, local loose pockets due to subhorizontal shear zone; 2-3" above contact, discontinuous polished surfaces	
150	20		S:EW-12N C:N30E 10NW					SM	@ 21.2': Contact with silty to clayey SANDSTONE; moist, dense, blue-gray, with red clayey ribbons at contact, fine grained	
145	25								- coarsens from fine to medium grained through 29'	
140	30									

SAMPLE TYPES:
S SPLIT SPOON
R RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE
G GRAB SAMPLE
SH SHELBY TUBE

TYPE OF TESTS:
DS DIRECT SHEAR
MD MAXIMUM DENSITY
CN CONSOLIDATION
CR CORROSION
SA SIEVE ANALYSIS
CU TRIAXIAL SHEAR
EI EXPANSION INDEX
RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-11

Date 6-18-03 | Sheet 2 of 4

Project Weese Family Trust - Oceanside | Project No. 040963-001

Drilling Co. Larive | Type of Rig Bucket Auger

Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' Drop 12"

Elevation Top of Hole 170' | Location

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
140	30	N S		R-2	15	114.1	6.3	SM	@ 30': Sample is: Light gray SANDSTONE; slightly moist, medium dense; minor silt; generally fine grained; diffuse orange staining; friable	
									@ 32': 1" to 6" thick layer of red to brown clay and concretions, continuous around hole, pinches and swells, no clear orientation	
135	35								@ 34.1'-35': Concreted SILTSTONE continuous around hole; undulatory, with discontinuous red-orange clayey ribbons at base; local blueish SAND below	
130	40								- SANDSTONE continues, generally massive light gray, fine to medium grained, moist though 44'	
			C:EW-5N S:NS 5-10W					ML	@ 44': Gray-brown clayey SILTSTONE; slightly moist, very stiff; discontinuous but planar, poorly developed shear surfaces in upper 3" below contact	
125	45			R-3	20(11")	112.0	18.1	SC	@ 46': Sample is similar to above, with fine SAND	
120	50							SM	@ 50': Grades to very fine grained silty SANDSTONE, slightly moist, dense to very dense, scattered red-brown claystone, caliche (?) pockets, and cemented siltstone clasts through 55'	
115	55							CL	@ 55'-57': Grades fine to medium grained red-brown CLAYSTONE	
			GB:N30-40W 3-5NE						@ 57': Generalized bedding on thin, nearly continuous red sandy clay lamination	
110	60									

SAMPLE TYPES:
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TYPE OF TESTS:
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- MD MAXIMUM DENSITY
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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-11

Date 6-18-03 **Sheet** 3 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 170' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
110	60			R-4	30(10")	103.2	11.5	SM	@ 60': Minor seepage through 63' @ 60': Sample is: Light brownish gray SANDSTONE; moist, very dense	
			B:N-45E, 16NW						@ 63': 1' thick concreted gray-brown SILTSTONE bed, intact unsheared; wet above; clear upper contact, iron stained	
105	65							CL	@ 68': 4 to 6" thick, semi-continuous light brown concreted SILTSTONE/CLAYSTONE, local pink coloration @ 69': Gray-brown CLAYSTONE bed, similar to above	
100	70		B:N4E, SW 5W	R-5	30(10")	120.0	13.2	SM	@ 70': Sample is: Light blue-gray SANDSTONE; slightly moist, very dense; fine grained with minor silt	
95	75								@ 78': Northwest dipping contact, dips 6" across hole, unsheared, minor seepage from blue-gray sandstone above	
			C:N20-40E					CL	@ 78.5': Brownish gray silty CLAYSTONE, slightly moist, very stiff to hard; generally homogeneous and massive, with scattered gravel-sized concreted nodules	
90	80			R-6	30(11")	112.3	19.0	CL	@ 80': Sample is similar to above	
								SC	@ 84': Blue-gray SANDSTONE bed; very stiff to hard material, interbedded blue-gray clayey SANDSTONES, dry to slightly moist, very dense to hard; locally cemented; and brown clayey SILTSTONES, dry to slightly moist, very stiff	
85	85									
				R-7	25(10")	114.8	16.1	SC	@ 90': Sample is: Gray clayey SANDSTONE, slightly moist, very stiff; finely micaceous; sand is very fine grained	
80	90									

SAMPLE TYPES:

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TYPE OF TESTS:

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GEOTECHNICAL BORING LOG LB-11

Date 6-18-03 | Sheet 4 of 4

Project Weese Family Trust - Oceanside | Project No. 040963-001

Drilling Co. Larive | Type of Rig Bucket Auger

Hole Diameter 30" | Drive Weight 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' | Drop 12"

Elevation Top of Hole 170' | Location

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
80	90	N S							Logged By BJO Sampled By BJO Total Depth = 90 Feet Downhole Logged to 88 Feet Minor seepage at 60 to 63 feet and at 78 feet Backfilled and tamped with native and bentonite on 6/18/03	
75	95									
70	100									
65	105									
60	110									
55	115									
50	120									

SAMPLE TYPES:
- S SPLIT SPOON
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- SH SHELBY TUBE

TYPE OF TESTS:
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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-12

Date 6-19-03 **Sheet** 1 of 2

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 187' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	0							SM	QUATERNARY TERRACE DEPOSITS (Qt) @ 0': Orange-brown sandy SILT and silty SAND, dry to slightly moist, medium dense; fine to locally medium grained	
185										
	5								@ 5': 1/2" diameter, solitary, root @ 5-14': Subvertical sand filled veins, narrow and pinch out with depth; infilling is light brown, friable, fine- to medium-grained SAND; locally roots along plane	
180										
	10			R-1	9	117.7	9.4	SM	@ 10': Sample is: Orange-brown silty SAND; slightly moist, dense; fine to medium grained	
175									- grades to medium grained through 14'	
	15		C:Horizontal						@ 15': Contact with fine-grained material	
170										
	20		J:N5E, 90	R-2	11	111.3	8.5	SM	@ 19-20': Scattered coarse to very coarse grains, rare fine gravel; root-lined joint, no offset @ 20': Sample similar to above @ 20'-23': Thin, generally horizontal beds of fine grained silty and coarse grained material; rare subangular gravel	
165										
								SM	TERTIARY SANTIAGO FORMATION (Tsa) @ 23.2': Horizontal contact with light orange-gray silty SANDSTONE, slightly moist, dense; fine grained, friable; abundant threads of black mottling though 24	
	25		C:N50-70W, 5-15NE					ML SM	@ 24.5': Gray-brown clayey SILTSTONE; slightly moist; soft to medium stiff; weathered; abundant dark brown mottling irregular, northwest dipping contact @ 25.5': Contact with light gray to white SANDSTONE, dry, dense; fine to very fine grained; minor stiff @ 27'-28': Bands of colored stains ring hole, generally horizontal brown, yellow, red-gray silty to clayey SANDSTONE	
160										
	30									

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
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- SH SHELBY TUBE

TYPE OF TESTS:

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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-12

Date 6-19-03 **Sheet** 2 **of** 2

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 187' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	30	N S								
155			C:5-15W, 7SW	R-3	12	111.1	5.2	SM	@ 31': Sample is: Light yellow-gray SANDSTONE; dry to slightly moist, dense; fine grained with minor silt; friable; coarsens downward through 32' @ 32'-38': Gray-brown silty CLAYSTONE to fine sandy SILTSTONE; slightly moist, very stiff; very finely micaceous and siltier with depth	
	35							CL	@ 35': Irregular cemented yellow-brown CLAYSTONE; continuous around hole @ 35'-37': Scattered cemented nodules	
150										
	40		S:N62E, 24NW B:N69E, 18NW					SM	@ 39': Yellow-brown CLAYSTONE bed; discontinuous but planar polished surfaces, very minor discontinuous shears along; upper contact @ 40.5': Light blue-gray silty SANDSTONE; slightly moist, very dense; very fine grained	
145				R-4	20(11")	122.3	10.5	SM		
	45								@ 43,5': Semi-continuous, reddish clayey sandy SILTSTONE layer, 1" thick @ 44': Concreted SANDSTONE, 3-4" thick, discontinuous @ 46': Sample is: Gray to light gray silty SANDSTONE; slightly moist; very dense; very fine grained; friable to weakly cemented	
				R-5	(20(11")	120.7	11.5	SM	Total Depth = 46 Feet Downhole logged to 44 feet No ground water encountered at time of drilling Backfilled and tamped with native and bentonite on 6/19/03	
140										
	50									
135										
	55									
130										
	60									

SAMPLE TYPES:

- S SPLIT SPOON
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TYPE OF TESTS:

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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-13

Date 6-23-03 **Sheet** 1 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 172' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
170	0								QUATERNARY TERRACE DEPOSITS (Qt) @ 0-2': Light brown sandy SILT; dry, loose; very friable; scattered roots through 3' @ 2'-6.5': Orange-brown silty SAND; dry to slightly moist, dense, generally fine grained; weakly cemented	
	5							SM	- scattered subrounded gravel along basal contact TERTIARY SANTIAGO FORMATION (Tsa)	
165			C:Horizontal GB:N5-8E, 10-15NW J:N70E, 90						@ 6.5': Very light gray to light orange-gray silty SANDSTONE, dry, medium dense; friable to locally cemented; generally coarsens downward, fine to medium grained through 11' @ 8': Generalized bedding along medium grained SAND layer 1/2-1" thick	
	10			R-1	7	111.6	9.6	SM CL/ML	@ 10': Sample is: Light orange-gray to yellow-gray silty SANDSTONE; slightly moist; medium dense to dense; fine grained; weakly cemented; tight red-orange stained joint surfaces @ 11': Scoured, irregular, but generally northwest dipping contact with gray-brown SILTSTONE to CLAYSTONE; slightly moist, stiff; weathered; abundant dark brown and black streaks/staining; stiffens/less fractured through 14 feet	
160										
	15		JN83E, 77S							
155			C:N20-50E, 7-8NW						@ 17'-17.5': Generally northwest dipping concreted CLAYSTONE, 4"-6" thick, generalized contact	
			S:N10E, 20-35W						@ 18.5': Discontinuous shear, steepens and dies out to the north	
	20		J:N41W, 72NE	R-2	8(10")	121.9	9.2	SM	@ 19.5': Short, tight, brown/root-lined joint @ 20': Grades to blue-gray silty SANDSTONE, slightly moist, dense to very dense; very fine grained; local northwest dipping, disc. red-orange band below contact	
150										
			GB:N20-30E, 5-7NW						@ 23': Generalized bedding on red and orange stained, fine to medium grained SANDSTONE, attitude on upper contact	
	25									
145										
	30									

SAMPLE TYPES:

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- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-13

Date 6-23-03 **Sheet** 2 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 172' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	30			R-3	20(7")	119.2	4.4	SM	@ 30': Sample is: Generally similar to above; cemented in sampler tip, with local white powder (caliche?) @ 30.5'-31.5': Irregular, concretion, generally 1" thick, orange stained medium grained SANDSTONE above, clayey SILTSTONE below @ 30.5-36.5': Weakly to moderately cemented light gray, sandy SILTSTONE to silty SANDSTONE, dry, very dense/stiff to hard	
140										
	35									
135								ML	@ 37': Gradational contact with gray-brown to gray sandy to clayey SILTSTONE, slightly moist, very stiff; micaceous @ 38.1'-40': Micaceous sandy laminations, clearly traceable around hole, dips to the northwest	
			GB:N35E, 8NW							
	40			R-4	20	126.2	6.8	SM	@ 40': Light gray SANDSTONE; slightly moist, dense to very dense; fine grained, grades to medium with scattered coarse and very coarse grains through 41'; moist material at 41-43', scattered claystone rip-ups	
130								CL	@ 41.2'-43.3': Very irregular, extremely scoured contact with brown; very stiff to hard; clayey SILTSTONE to silty CLAYSTONE at top, slightly moist, blue-gray SANDSTONE to SILTSTONE, slightly moist, dense; very fine grained; local red-brown staining	
	45									
			C:N20-40E, 10NW	R-5	21	112.7	16.3	ML SM	@ 46': Sample is similar to above @ 47': Contact with light gray silty SANDSTONE, slightly moist, dense; very fine grained; generally friable; very minor, very discontinuous yellow-brown CLAYSTONE laminations along upper contact	
125										
	50								@ 49': Lenticular concreted SILTSTONE; fractured, with local pink coloration	
120										
	55									
115									@ 57'-58': Concretion nodule; sand is fine to medium grained below @ 59.5': Dark red to orange, moist, medium grained SAND along contact	
	60									

SAMPLE TYPES:

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GEOTECHNICAL BORING LOG LB-13

Date 6-23-03 **Sheet** 3 **of** 4

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 172' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	60	N S							@ 60': Cemented contact, undulatory, gently west dipping	
110				R-6	30(11")	120.5	14.0	SM	@ 61': Sample is: Light gray silty SANDSTONE; slightly moist, very dense; very fine grained to fine grained; micaceous; diffuse blue-gray interbeds @ 62.5': Thin red-orange-lined contact, micaceous laminations in gray sandy SILTSTONE to silty SANDSTONE through 63'	
	65								@ 65': Grades to SANDSTONE, gray to light blue-gray, moist, very dense; very weak weeping seepage at 68' to 77'	
105			B:N15E, 7-8NW						@ 68.3': Thin brown clayey SILT lamination, planar; unpolished; continuous; local concretions, weak weeping seepage continues	
	70			R-7	27	121.4	13.1	SM	@ 70': Sample is: Light gray SANDSTONE; moist, very dense; fine grained with minor silt and medium grained material; friable	
100										
	75								@ 76'-78': Scattered CLAYSTONE rip-ups	
95								CL/ML	@ 77.7'-78': Slightly undulatory, cemented, unsheared contact, local red staining; below is brownish-gray SILTSTONE, slightly moist, very stiff	
	80		S:N54E, 6NW S:N18W, 5SW S:N36E, 4NW	R-8	28	109.8	20.2	CL	@ 78.2'-78.6': Upper, planar contact with 3-4" thick shear zone, local; yellow-brown concreted CLAYSTONE rolled into silt and clay; moist, soft to locally stiff @ 78.9': Zone exists hole, planar lower contact @ 80': Sample is: Brownish gray to brown silty CLAYSTONE; slightly moist, very stiff @ 81'-82': Scattered cemented nodules	
90										
	85									
85								ML	@ 87': Grades to gray sandy SILTSTONE, slightly moist, very stiff; scattered very fine SAND and mica	
	90									

SAMPLE TYPES:

S SPLIT SPOON
R RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE
G GRAB SAMPLE
SH SHELBY TUBE

TYPE OF TESTS:

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MD MAXIMUM DENSITY
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GEOTECHNICAL BORING LOG LB-13

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Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 172' **Location**

Logged By BJO

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	90			R-9	25(10")	120.3	12.5	ML/SM	@ 89.5'-90': White and red-orange and blue-gray bands ring hole, very shallow northwest dip @ 90': Sample is: Gray sandy SILTSTONE to silty SANDSTONE, slightly moist, very stiff/very dense; very fine grained; weak to moderate cementation; finely micaceous	
80										
	95								- very minor seepage at 94-97'	
75								CL	@ 97.6': Contact: yellow-brown CLAYSTONE laminations along surface, continuous around hole @ 100': Sample is: Light brownish gray silty CLAYSTONE to clayey SILTSTONE, dry to slightly moist, very stiff; scattered very fine SAND, including mica	
	100		C:N80E, 3-4N	R-10B R-10A	24	107.2 113.2	20.7 19.0	CL-ML SM	@ 101': Light gray SANDSTONE, dry to slightly moist, very dense; generally fine grained, friable with local concreted pockets; massive	
70										
	105									
65										
	110			R-11	25(10")	119.2	5.4	SM	@ 110': Sample is similar to above	
60			GB:N70-80E, 3-5N						@ 112': Generalized attitude on medium grained diffuse, sand lamination	
									@ 114': End downhole log	
55	115								- similar to total depth	
	120								Total Depth = 117 Feet Downhole logged to 114 feet Light weeping seepage at 55 to 77 feet and 94 to 97 feet Backfilled and tamped with native and bentonite on 6/24/03	

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
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- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

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LEIGHTON AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG LB-14

Date 6-25-03 **Sheet** 1 **of** 1

Project Weese Family Trust - Oceanside **Project No.** 040963-001

Drilling Co. Larive **Type of Rig** Bucket Auger

Hole Diameter 30" **Drive Weight** 3500#@0-28'; 2500#@28-55'; 1300#@55-85'; 1800#@85-100' **Drop** 12"

Elevation Top of Hole 65' **Location**

Logged By BJO/RKW

Sampled By BJO

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
65	0							CL	QUATERNARY LANDSLIDE DEPOSITS (Qls) @ 0-6': Topsoil consisting of brown silty generally subvertical CLAY; moist, medium stiff; scattered sand and very fine gravel; caliche threads; roots in upper 12"	
60	5			R-1	2	107.3	19.6	CL	@ 5': Sample is: similar to above @ 6.5'-8': Gradational moderately northwest dipping contact with lighter color, sandier material @ 7'-16.5': Generally disturbed beds, pockets, and packages of light brown sandy to silty CLAY, moist, soft, and light gray to light gray-brown, clayey to silty SAND, moist, loose to medium dense; rare dark brown pods of soil-like silty clay (krotovina?)	
55	10		S:N73E, 33N	R-2	1	105.9	17.9	CL/SC	@ 10': Sample is: Light brown sandy silty CLAY; moist, soft to medium stiff; darker brown laminations, possible remnant bedding, dips 40-50 degrees; local caliche threads and pockets; mottled coloration @ 13.7': Undulatory, subhorizontal with contact with 2-8" thick layer of dark brown silty CLAY, moist, soft; local shearing within light brown, clay above, very soft material above and below	
50	15		C:N70-80E, 30-35S					SM	@ 16.5'-18': Contact, irregular and gradational with light gray-brown silty SAND, moist, loose; fine grained; massive; loose material continues to total depth @ 20': Sample is: Light gray-brown to light gray SAND, moist, loose to locally medium dense; friable	
45	20			R-3	2	114.0	12.1	SM	Total Depth = 20 Feet Downhole logged to 18 feet No ground water encountered at time of drilling Backfilled and tamped with native soil on 6/25/03	
40	25									
35	30									

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

Appendix B (continued)

CPT-1 through CPT-7

Cone Penetration Test Soundings

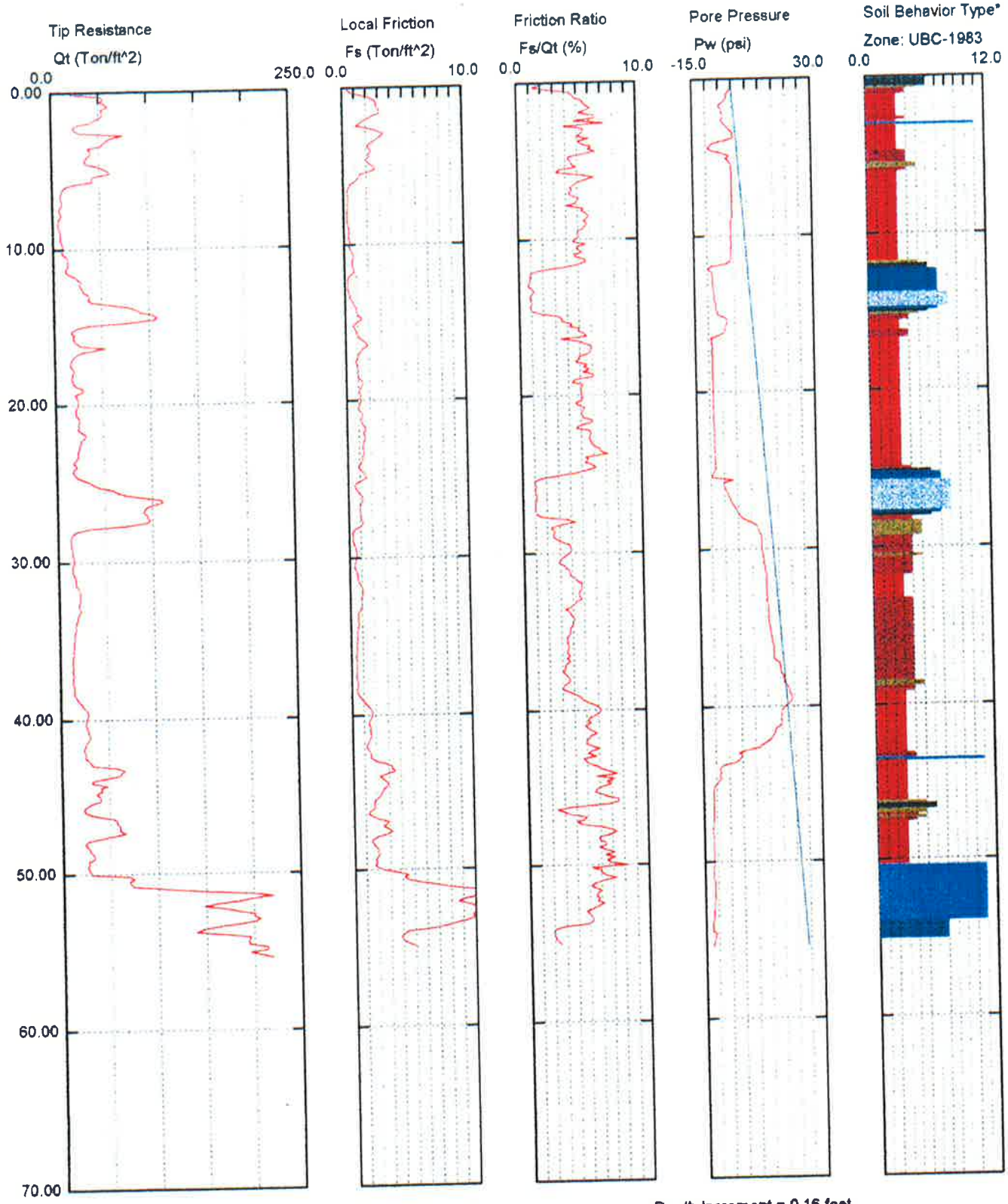
From:

Current Investigation

WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT199
Cone Used: 510

CPT Date/Time: 08-04-03 08:01
Location: CPT-01
Job Number: WEESE

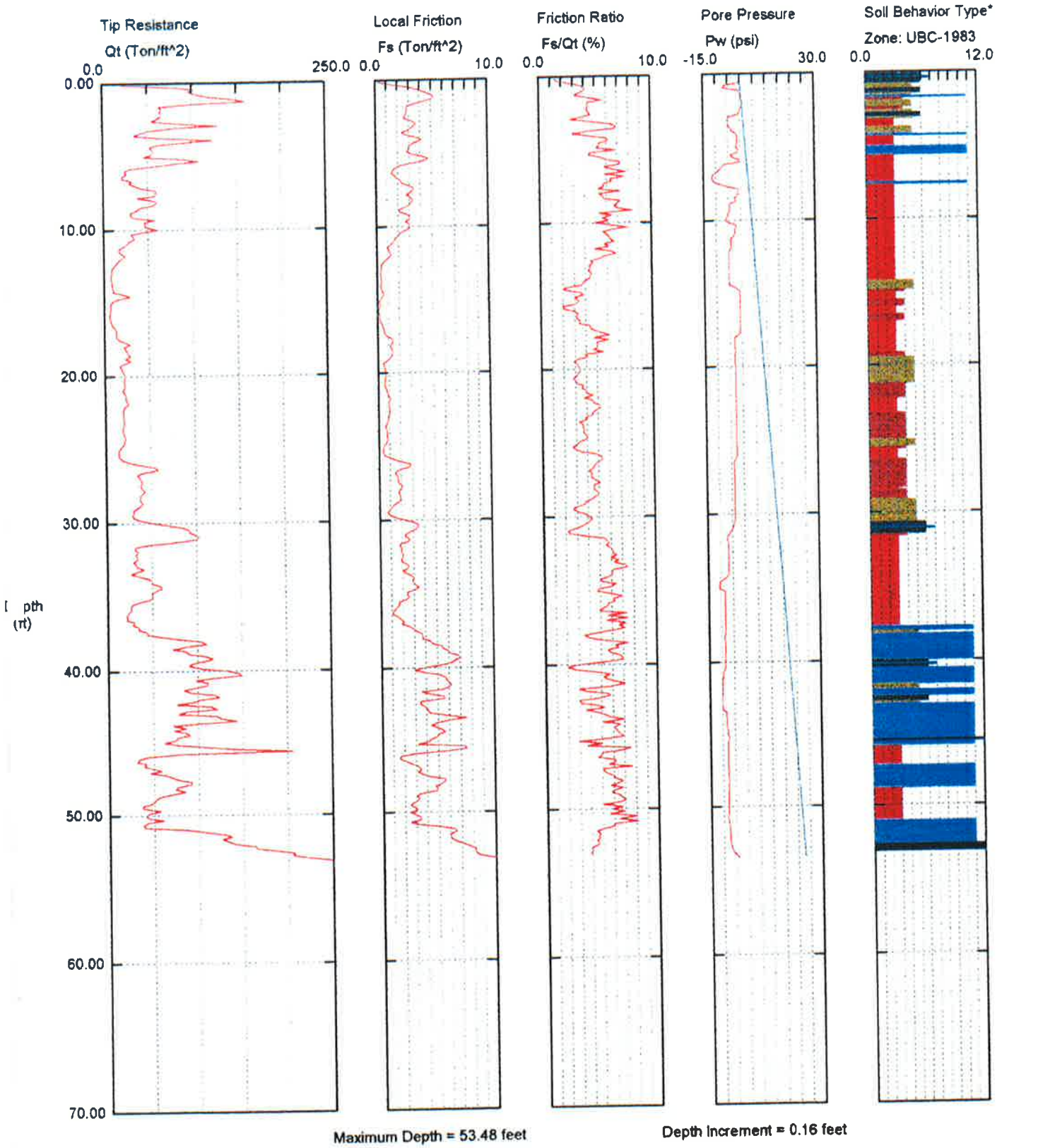


Behavior type and SPT based on data from UBC-1983

WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT200
Cone Used: 510

CPT Date/Time: 08-04-03 09:03
Location: CPT-02
Job Number: WEESE



Maximum Depth = 53.48 feet

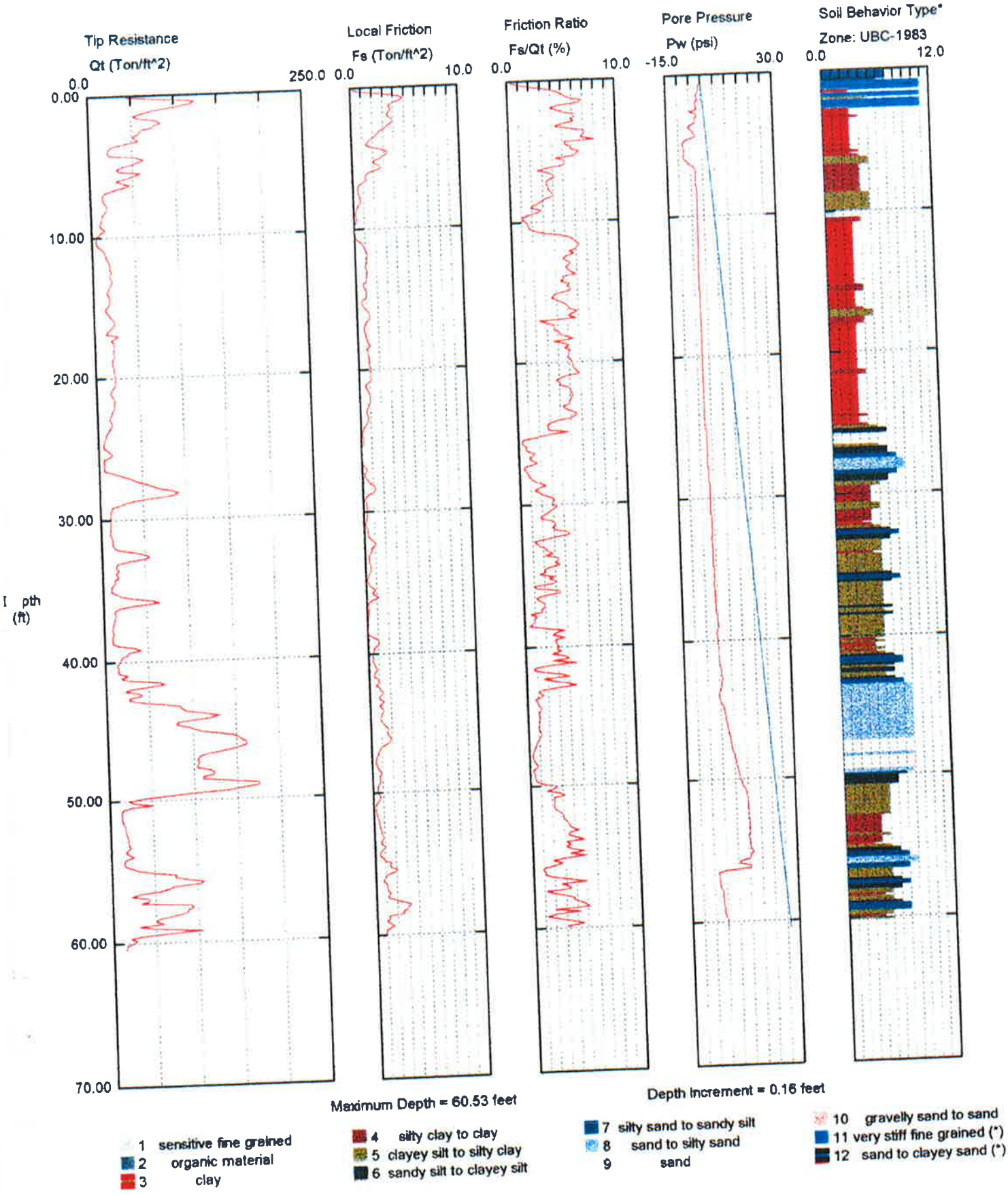
Depth Increment = 0.16 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT201
Cone Used: 510

CPT Date/Time: 08-04-03 10:02
Location: CPT-03
Job Number: WEESE

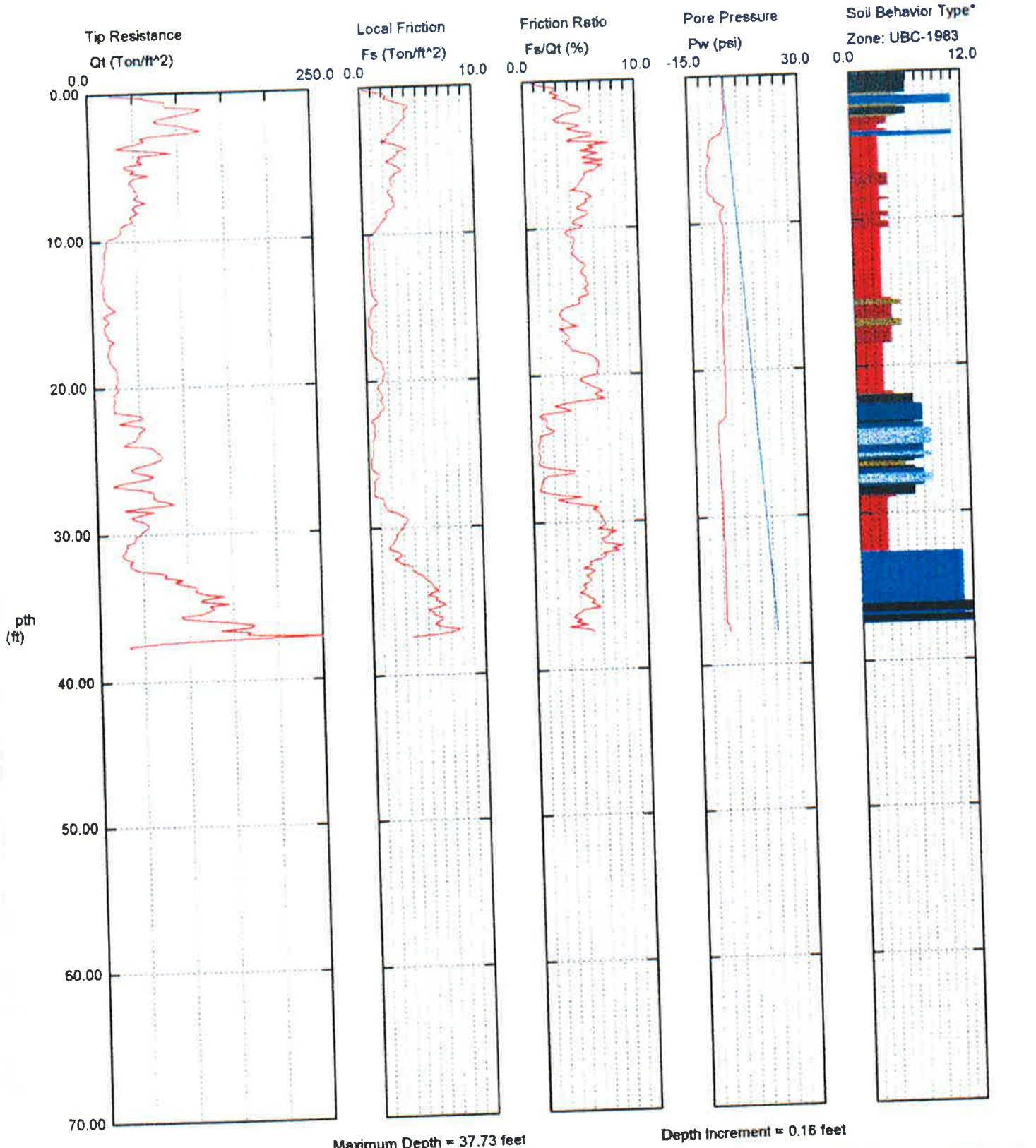


Behavior type and SPT based on data from UBC-1983

WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT202
Cone Used: 510

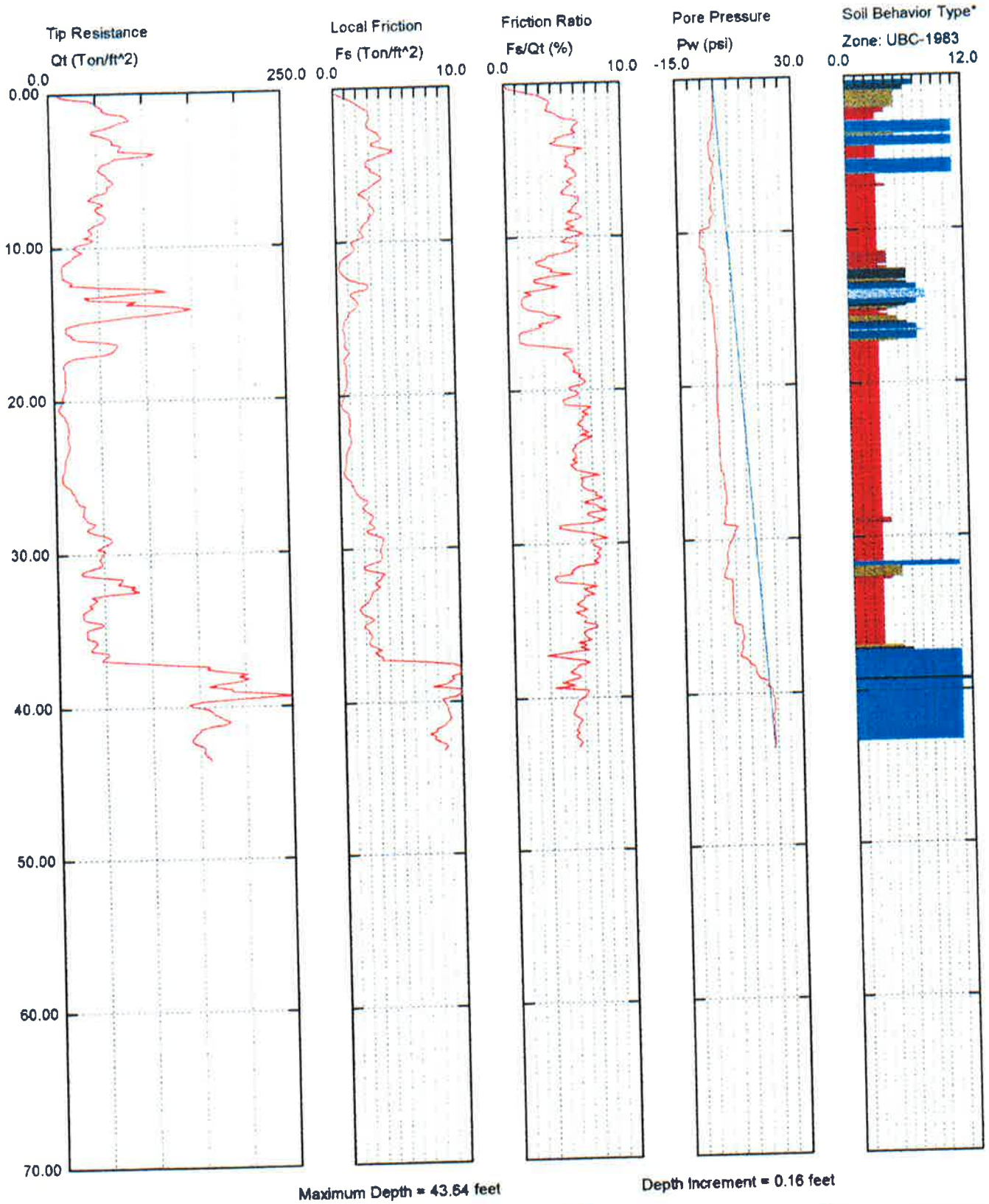
CPT Date/Time: 08-04-03 11:28
Location: CPT-04
Job Number: WEESE



WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT203
Cone Used: 510

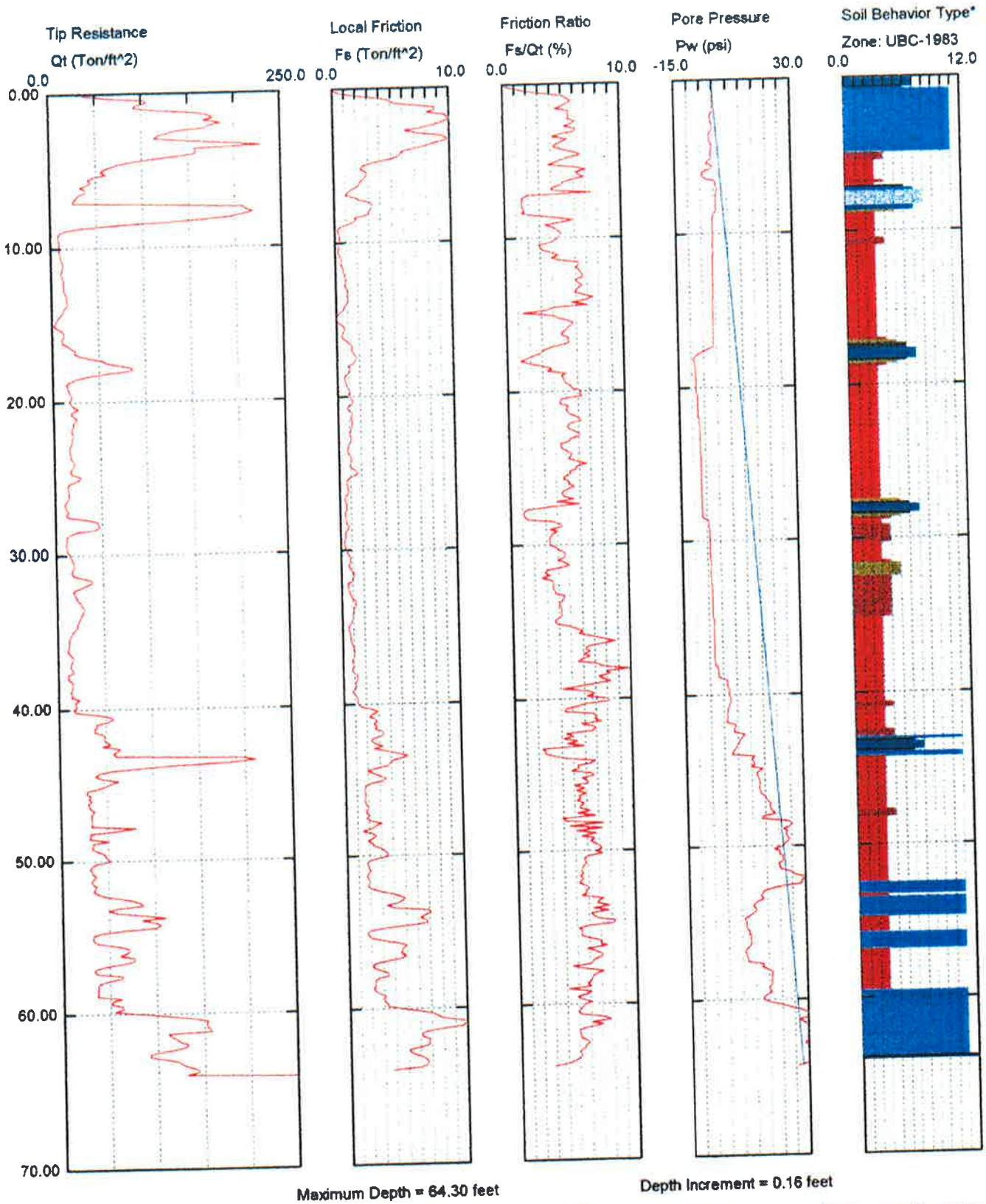
CPT Date/Time: 08-04-03 11:55
Location: CPT-05
Job Number: WEESE



WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT204
Cone Used: 510

CPT Date/Time: 08-04-03 12:53
Location: CPT-06
Job Number: WEESE



Maximum Depth = 64.30 feet

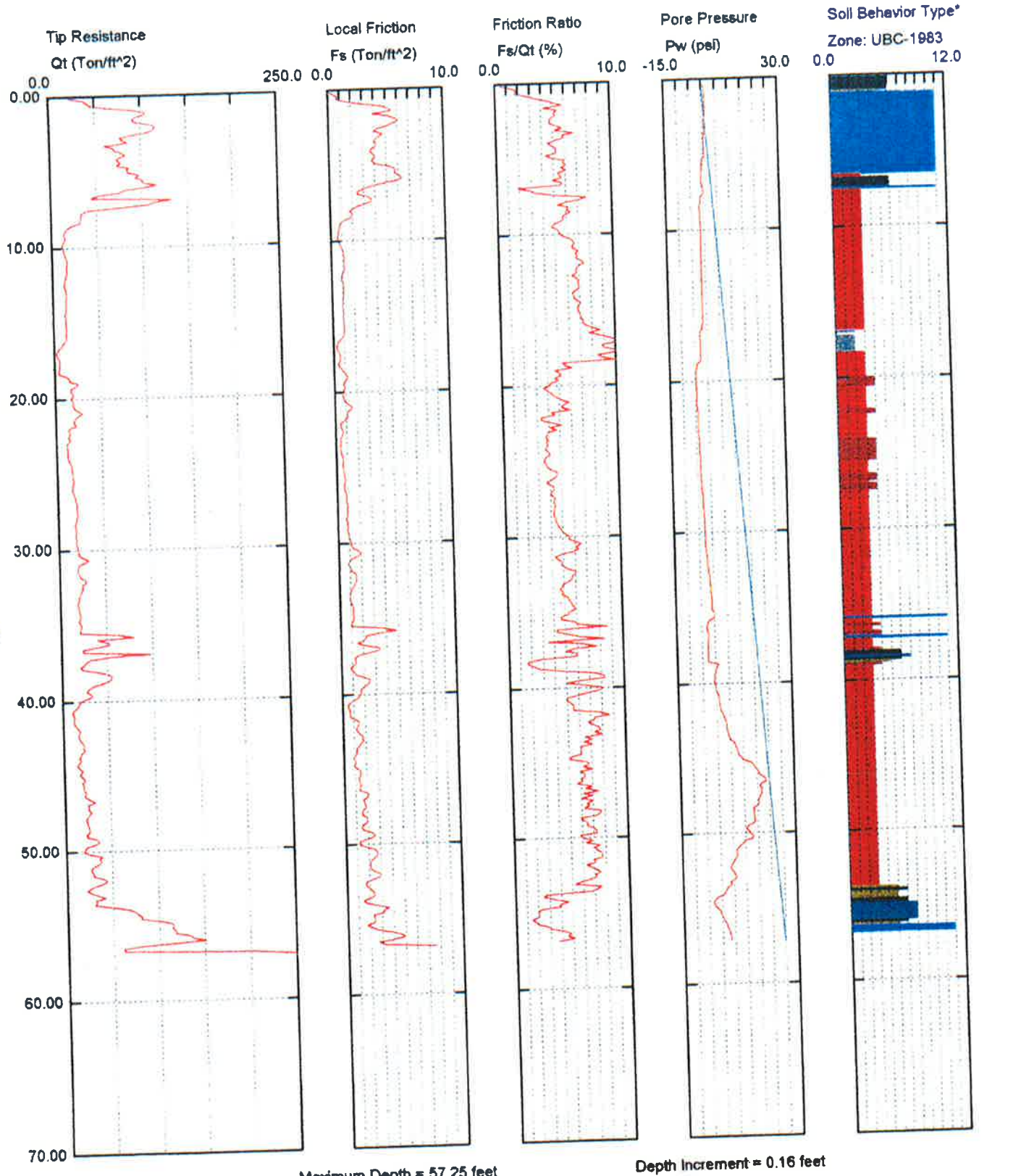
Depth Increment = 0.16 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

WEST HAZMAT DRILLING CORP.

Operator: B. BUCKNAM
Sounding: CPT205
Cone Used: 510

CPT Date/Time: 08-04-03 14:08
Location: CPT-07
Job Number: WEESE



Appendix C

LB-1 through LB-7

Large-Diameter Borings

From:

Leighton and Associates, 1985a

GEOTECHNICAL BORING LOG

DATE 4/18/85 DRILL HOLE No. LB-1 SHEET 1 OF 2

PROJECT Weese Property PROJECT No. 4850512-01

DRILLING Co. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700lbs to 27', 2600lbs to 55', 1400lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±143 REF. OR DATUM Mean Sea Level

LOGGED BY MRS/SJ

SAMPLED BY MRS

DEPTH FEET	GRAPHIC LOG W E	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							CL	Topsoil: Dark brown, damp, soft, silty clay; very fractured, abundant rootlets.
		C: gradational					CL	Santiago Formation: Dark greenish brown, damp, stiff, claystone; very fractured, calcium carbonate filled fractures upto 2" thick.
		calcium carbonate filled fractures						
5		B: EW 12-14 N						@6', 2" layer of greenish brown, damp, hard, sandy claystone.
		claystone					SM	White to light gray, damp, dense, silty sandstone; minor calcium carbonate filled fractures, moderately weathered, minor roots.
		open fracture	(1)					@7½', 1" discontinuous layer of pinkish brown sandy clay with minor roots.
		C: horizontal						@8', ¼ to ⅜" open fracture, near vertical, discontinuous.
10		striation: EW 65N					CL	Brown, very stiff, claystone; zone of red oxidation staining, 2" above sharp contact, approximately 1½" thick.
								@11', Striated claystone, some minor red oxidization staining.
		B: EW 5N						@14', cemented 1½" to 2" thick bed.
15			(2)	6/10"	113.4	16.9	CL	@14½', medium brown, damp, hard, claystone;
		striation: EW 50N	(3)				SM/SC	Medium brown, damp, dense, clayey to silty sandstone; straited fracture surface, some claystone chunks.
		claystone						
		Fault F: N45E 50NW						@19' to 22½', Fault, slickensided surface @ 20', minor apparent offset.
20							SM	@21', Gray, damp, dense, silty coarse sandstone
								@23', Light to medium gray, damp, dense, silty fine sandstone
		C: gradational						
			(4)					@25', Coarse grained small concretion.
25								@26', slightly lighter gray, some red oxidation staining.
							CL	@27', brown to light greenish brown, damp, hard, siltstone to claystone; 2' thick
		CS: N55E 5-8NW	(5)				CH	@27½' Remolded clayseam, continuous, dark chocolate brown, moist, soft, clay; sheared.
							SC	@28', medium brown, damp, dense, clayey sandstone.
30								@29½', concretionary layer, 2" thick

GEOTECHNICAL BORING LOG

DATE 4/18/85 DRILL HOLE NO. LB-1 SHEET 2 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±143 REF. OR DATUM Mean Sea Level

LOGGED BY MRS/SJ

SAMPLED BY MRS

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			2	20/9"	121.8	11.7	SM	Santiago Formation: White to light gray, damp, very dense, sandstone; with minor cemented layers.
		C: gradational						@32', silty to slightly clayey sandstone.
								@34', light gray, damp, very dense, silty sandstone; massive, minor red oxidation staining.
35								
								@39', minor discontinuous claystone layers.
40			⑥					
		C: horizontal and sharp					SC	Brown, damp, dense, slightly clayey sandstone; some red oxidation staining above contact, very cemented along contact.
		B: N10E 1SN					SM	Grayish brown, silty fine sandstone; sharp contact.
45			3a&b	20	117.4	7.0		@45', coarser, very dense, sandstone.
								@47', finer, very dense, sandstone.
								@48', red oxidation stain, 3" to 4" wide.
50								@51', 2" thick cemented layer.
			⑦					@52', brown, damp, very dense, silty fine sandstone; slightly clayey.
								@53', light gray, damp, very dense, silty sandstone.
55								@55', medium gray.
60			4	40/10"	122.2	9.3		Total Depth = 60' Geologically logged to 57' Dry at time of drilling Backfilled 4/18/85

GEOTECHNICAL BORING LOG

DATE 4/18/85 DRILL HOLE NO. LB-2 SHEET 1 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±84' REF. OR DATUM Mean Sea Level

LOGGED BY SJ/RH

SAMPLED BY RI/RH

Depth Feet	Graphic Log (W E)	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
0							SM	Santiago Formation: Off-white, damp, dense, silty fine sandstone; root zone to 4½', lower part has red oxidation staining.
		B: N40W 8N						
		C: gradational					CL	Dark gray, damp, hard, claystone; very fractured, blocky, blebs of calcium carbonate upto 1" thick.
5								@6', red clay clasts upto 3" long, hard, ductile.
							ML	@7½', white, damp, hard, very clayey fine sandy siltstone.
		C: gradational					CL	@8', dark olive brown, claystone; ~2' thick
10		C: N55E 0-10N					SM/SC	White, damp, very dense, silty fine to medium sandstone; upper ½" red oxidized staining.
			①					@14', blebs of reddish material, becomes clayey.
15		CS: N60E B: 4-10N		1 8	123.9	12.9		@16' discontinuous clay seam.
								@18', cemented layer, 1" thick.
20		B: N60E 10N						@21', coarser sandstone, with rip-up clasts of dark olive claystone.
								@23', red oxidized stained zone, ½" thick.
							CL	@24', dark olive brown, hard, claystone; blebs of calcium carbonate upto 2" thick.
25		B: undulating 5-20N C: undulating C: N40E 10-15					SM/SC	@26', white, damp, very dense, silty sandstone; becomes clayey at contact.
			②					@29', discontinuous clay seam; ½" to 1½" interbeds.
30								

GEOTECHNICAL BORING LOG

DATE 4/18/85 DRILL HOLE NO. LB-2 SHEET 2 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±84' REF. OR DATUM Mean Sea Level

LOGGED BY SJ/RH

SAMPLED BY RI/RH

Depth Feet	Graphic Log W E	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
30			2	14	110.9	16.8	SM	Santiago Formation: White to gray, damp, very dense, silty fine to medium sandstone, massive.
								@30', semi-cemented zone.
							SM/CL	@30½', brown to gray interbedded sandstone, siltstone, and claystone; 2½' thick
								@34', oxidation staining.
35								
								@37', becomes coarser sandstone.
								@39', slightly cemented zone.
40		C: abrupt to gradational N45E 6NW B: N40E 8NW						
								@42½', oxidation staining, continuous around boring.
			③					
45			3	11	114.8	17.5		@45', increasing silt and clay content, sand slightly coarser.
								@46', becomes finer grained.
								@48', 6" thick cemented zone.
50		C: N45E 8-10 NW						
		CS: NS 65W					CL	Brown, moist, hard, sandy claystone.
		C: gradational						@53' Discontinuous, bentonitic appearing, high angle clay seam.
55							SC	Off-white, moist, very dense, clayey sandstone
		C: gradational					SM	@57½', gray to off-white, dense, silty sandstone; massive no apparent bedding surfaces.
60		C: undulating generally dips to NW						

GEOTECHNICAL BORING LOG

DATE 4/18/85 DRILL HOLE NO. LB-2 SHEET 3 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±84' REF. OR DATUM Mean Sea Level

LOGGED BY SJ/RH

SAMPLED BY RI/RH

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
60			4	35			CL	Santiago Formation: Dark olive gray, damp, very stiff to hard, claystone; massive, concoidal fractures, occasional manganese oxide staining developed on fractures.
							SM	Off-white to light gray, moist to wet, very dense, silty sandstone.
		F: vertical						@64', large open fractures, wet
65						?		@66', rapid groundwater seepage from open fractures upto 6" wide.
		C: N60E 14NW						@67½', continuous brecciated zone
70							CL	Dark olive gray, damp, hard claystone.
			5	38				Total Depth = 73' Geologically logged to 71' Seepage at 66' Backfilled 4/19/85
75								
80								
85								
90								

GEOTECHNICAL BORING LOG

DATE 4/19/85 DRILL HOLE NO. LB-3 SHEET 1 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larvie TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±94' REF. OR DATUM Mean Sea Level

LOGGED BY RH/SJ

SAMPLED BY RH

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	Santiago Formation: Gray to white, damp, dense, silty fine sandstone; weathered
			①					
		c: N70E 14NW to undulating	②				CL/SM	Dark gray, damp, hard, claystone; red oxidized interbedded cemented silty sand
5								
		c: gradational					ML/CL	Gray, damp, very dense, slightly sandy siltstone to claystone; with irregular, discontinuous red oxidized stained seams upto 1/2" thick, some steeply dipping to the west, upto 16" long.
		F: N30E 75NW					SM	@8', cemented zone of pink fine sandstone, discontinuous; calcium carbonate filled fracture.
10							CL	@10', dark olive gray, very stiff claystone; 1' thick.
		c: gradational					ML	@11', siltstone becomes friable.
		c: gradational					SM	@12½', white fine sandstone.
								@15', pink stained zone.
15		c: N35E 15NW to undulating	1	8	127.3	7.8	CL	Dark gray to brown, damp, hard, silty claystone.
		c: undulating					CL/ML	@19', Zone of red claystone and siltstone; 1/2" thick.
		B: EW 8-12N					SM/CL	@19', Interbedded sandstone and claystone.
20		B: N5E 5NW						
		c: undulating					CL	@22', brown claystone layer; 1" thick.
		c: generally horizontal					SM	@23', white silty sandstone; massive.
25		c: abrupt to gradational					CL	@25½', dark brown claystone; 2" thick.
							ML	@26', dark gray, siltstone; micaceous, 6" thick.
							CL	@28', cemented sandy clay; 1' thick.
							SM	@29', white sandstone; well cemented.
30								

GEOTECHNICAL BORING LOG

DATE 4/19/85 DRILL HOLE NO. LB-3 SHEET 2 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±94 REF. OR DATUM Mean Sea Level

LOGGED BY RH/SJ

SAMPLED BY RH

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30		C: Horizontal	2	13	112.3	19.5	CL	Santiago Formation: Dark olive brown, damp, hard, slightly silty claystone.
								@33', several blebs upto 4" of calcium carbonate.
35		C: undulating					SC	White, damp, very dense to hard, clayey sandstone; at contact zone of pink staining.
		B: N10E 8-25NW						
		B: N10W 15SW generalized						@40', clay content increases.
40		B: N20E 5NW					CL	@42' dark brown, claystone; 2" thick.
							SC	@42 1/4', sandstone becomes dark brown.
							CL	@44', thin clay seam, fracture parallel to seam filled with calcium carbonate.
45			3	20/8"	127.9	8.4	SM/ML	@45 1/2', white to gray, moist, very dense silty sandstone to sandy siltstone; slightly clayey.
								@46' becomes coarser sandstone.
		CS: N10W 45NE					SC/CL	@47', interbedded sandstone and claystone; locally claystone is crushed, 6" thick.
		B: N20E 15NW					CL	@48' gray claystone; cemented.
		C: N20E 15NW						@49' fracture, 1/16" thick, gypsum filled.
50		C: N30E 15-20NW						@50' moisture content increases to wet.
								@51 1/2', brown clay seam; 1/4" thick, along bedding.
		B: N45E 15N						
		C: N10E 5-15N					CL/SC	Interbedded dark gray to brown, silty claystone with sandstone
55							SC	White, wet, dense, silty sandstone.
		CS: N-S 40E					CL	@57', clay seam; hard, with gypsum infilling, pink staining, 6" thick.
60								

GEOTECHNICAL BORING LOG

DATE 4/19/85 DRILL HOLE NO. LB-3 SHEET 3 OF 3

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±94 REF. OR DATUM Mean Sea Level

LOGGED BY RH/SJ

SAMPLED BY RH

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60			4	40	124.2	12.2	SM	Santiago Formation: White, damp, very dense, silty fine sandstone; micaceous, cross bedding.
								@63', slight belling of the hole, becomes massive, slightly clayey.
		C: sharp horizontal						@64½', cemented zone, 2½' thick.
65						9		@66' Seepage through vertical fracture; slow.
								@66 to 67', numerous high angle, polished, clay surfaces, generally dipping north.
		C: gradational to N30E 20NW					ML/CL	Dark brown, damp, hard, siltstone and claystone.
70								@69½', disturbed zone, 6" thick.
			5	38	117.8	15.2		Sandstone.
								Total Depth = 72' Geologically logged to 71' Seepage at 66' Backfilled 14/19/85
75								

GEOTECHNICAL BORING LOG

DATE 4/21/85 DRILL HOLE NO. LB-4 SHEET 1 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±34' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	**Alluvium:** Medium gray brown, very moist medium dense, silty fine sand; scattered clasts of dense silty sand upto 3" in diameter, roots and rootlets.
		c: undulating and abrupt					CL/CH	**Colluvium:** Very dark brown, very moist, firm, slightly sandy clay.
		c: undulating and gradational	①					@4', high concentration of calcium carbonate blebs.
5		c: gradational					SM	**Ancient Landslide:** Light brown, very moist to wet, medium dense to dense, very silty fine sand; animal burrows.
		F: N55E 85SE					SM	Light gray to off-white, very moist to wet, dense, silty fine sand; highly fractured with hairline to 1/8" wide openings, fractures are steeply dipping, calcium carbonate developed along majority of fracture surfaces.
						▽		@8', very rapid groundwater seepage; several gallons per minute.
10			② 1	4	123.3	13.9		
		C: N68E 40NW					CL	Medium brown to olive green, very moist, stiff to very stiff, slightly silty clay; very disturbed, contains blebs of calcium carbonate upto 4" thick, numerous shears.
		CS: N25E 35NW	③				CL	Medium brown to olive green, wet, firm, slightly silty clay; crushed and very disturbed.
15		RS: N40E 18NW					CH	@16', Rupture Surface; continuous, very polished, 1/8" to 1/2" thick, olive green, very moist to wet, plastic clay seam.
							SM	**Santiago Formation:** Very light brown gray, moist to very moist, dense to very dense, silty fine sandstone.
20			2	6	117.2	15.8		
25							SM	Light gray brown, very moist to wet, dense to very dense, silty fine sandstone.
30								

GEOTECHNICAL BORING LOG

DATE 4/21/85 DRILL HOLE NO. LB-4 SHEET 2 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±34' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			④ 3	19	122.3	13.1	SM	Santiago Formation: Light gray brown, very moist to wet, dense to very dense, silty fine sandstone
							CL	Medium olive gray, moist, very stiff, silty claystone.
35							SM	Mottled olive, red, and medium brown, very moist to wet, dense to very dense, silty fine sandstone
							SM	Light gray brown, very moist to wet, dense to very dense, silty fine to medium sandstone.
40			4	29/9"	125.2	10.3		
45								
50								
55								Total Depth = 53' Geologically logged to 25' Seepage at 8' Caving below 8' Backfilled 4/21/85

GEOTECHNICAL BORING LOG

DATE 4/22/85 DRILL HOLE NO. LB-5 SHEET 1 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±108 REF. OR DATUM Mean Sea Level

LOGGED BY RLW/SJ

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SC	Topsoil: Medium brown, damp, dense, very clayey fine sand; roots and rootlets, very scattered gravel sized clasts upto 1" in diameter.
5		c: gradational					SM	Ancient Landslide: Medium orange brown, damp, dense, silty fine sand; rare cobble sized clasts upto 6" in diameter, occasional rip-up clasts of brown clayey sand upto 3" in diameter; massive, no apparent bedding surfaces.
		cs: N78E 6NW					ML	@9', dark gray, moist, firm to stiff, very silty clay seam; continuous, ± 1" thick, abundant calcium carbonate veins throughout, slightly remolded appearance, moderately laminated.
10		c: gradational	1	5	107.1	20.6		Light to medium gray, moist, firm, very fine sandy silt; slightly micaceous, moderate increase in sand content with depth.
							SM	Light to medium gray, moist, dense, very silty fine sand, @13' and 14', two discontinuous concretionary nodules.
15		cs: N80E 20NW					CL	@15.5', medium brown, moist, firm to stiff, clay seam; remolded, laminated with numerous shears and polished surfaces, underlain by 1" thick olive green silty sand, overlain by numerous discontinuous concretionary nodules.
							SM	Light gray, moist, medium dense, silty fine to medium sand; micaceous, very friable, contains high angle fractures with hairline to 1/8" wide openings.
20		F: N68E 71NW					CL	@19.5', discontinuous 1" thick lense of brown clay pods, continuous around the boring.
								@22', becomes wet.
		cs: N88W 11NE				▽	CL	@23', abrupt change to ± 1" thick continuous medium brown, firm, clay seam; laminated, at base of the clay seam is a slightly polished, moderately sheared clay seam, water seepage above clay seam.
25		cs: undulating to N14W 55NE	2	5	105.4	▽ 28.4	CL	Medium brown gray, moist to wet, stiff, silty clay; moderately laminated.
		cs: N68E 2NW					SM	@25', continuous olive green clay seam; highly polished and sheared, striations are in dip direction, scattered concretionary nodules developed above clay seam, water seepage above clay seam.
		cs: undulating to N12E 19NW						@27', 1/4" to 1/2" thick medium brown, continuous laminated clay seam.
30								

GEOTECHNICAL BORING LOG

DATE 4/22/85 DRILL HOLE No. LB-5 SHEET 2 OF 2

PROJECT Weese Property PROJECT No. 4850512-01

DRILLING Co. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±108 REF. OR DATUM Mean Sea Level

LOGGED BY RLW/SJ

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30		C: undulating					SM	**Ancient Landslide:** Medium brown gray, moist to wet, stiff, silty clay; moderately laminated.
								Medium gray, wet to saturated, dense, silty fine sand.
								@28.5', 3" to 4" thick continuous, olive gray, laminated, clay seam; not remolded, one preferred surface.
35							ML	Medium gray, wet, stiff, clayey silt, slightly fine sandy; discontinuous concretionary nodules above and below contact, scattered concretionary nodules throughout.
		CS/RS: undulating to E-W, 4N					CL	@39', ½" to 1½" thick, continuous, brown laminated, stiff, plastic clayseam/rupture surface; one preferred surface.
40			3	18	124.1	12.3	SM	**Santiago Formation:** Light to medium gray, wet, dense to very dense, silty fine sandstone; slightly micaceous.
		C: gradational					SM	@42', light to medium gray, wet, very dense, silty fine to medium sandstone; slightly micaceous, approximately ½' thick.
		C: N60E 15NW					SM	Medium gray, wet, dense, silty fine sandstone.
45		C: gradational					ML	@46', medium brown, wet, very stiff, siltstone; 1' thick.
		C: gradational					SM	Medium gray brown, wet, dense to very dense, silty fine sandstone.
50								
55			4	16	129.9	11.8		
								Total Depth = 56' Geologically logged to 53' Seepage at 23' and 25' No caving Backfilled 4/22/85
60								

GEOTECHNICAL BORING LOG

DATE 5/21/85 DRILL HOLE NO. LB-6 SHEET 1 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±72' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SC	Ancient Landslide: Medium to dark brown, damp, very loose to loose, very clayey fine to medium sand; scattered subrounded gravel sized clasts upto 1½" in diameter, roots and rootlets.
		c: undulating					CL	Dark brown, moist, firm to stiff, very sandy clay; minor root development, small gravel size clasts upto ½" in diameter.
5		c: gradational					SM	Medium orange brown and mottled off-white, moist to wet loose, silty fine to medium sand; pods of off-white silty fine sand upto 2" in diameter, slightly micaceous.
		c: undulating	①				ML	Light olive green, mottled medium olive and dark brown, very moist to wet, soft, sandy silt; rip-up clasts of dark brown sandy clay and off-white silty sand; blocky texture, calcium carbonate veinlets, locally stained with iron oxide, slightly micaceous.
10			1	push				@13' to 15', numerous calcium carbonate in-filled voids upto 2" in diameter.
		c: undulating to N55E 33SE					SM	Medium gray, mottled off-white and orange brown, wet to very wet, loose, silty fine to medium sand.
15		c: very undulating				♀	ML	Medium olive green, very moist to wet, soft to firm, slightly sandy silt; very blocky, locally stained with iron oxide. @17', numerous calcium carbonate pods upto 3" in diameter, moderate groundwater seepage.
		c: undulating	②			♀	SM	Light gray, saturated, medium dense, silty fine to medium sand.
20			2	push/9" +1				@20', very rapid groundwater seepage, some caving in this zone.
		CS/RS: undulating to N18E, 6NW to N36E 15NW to E-W, 8N to N40E, 7NW						@21.5', medium olive gray, 1/16" to 1/8" thick, continuous clay seam / rupture surface; straited, laminated, plastic.
25						▽	SM	Santiago Formation: Medium gray, moist, dense, silty fine to medium sandstone; micaceous, very massive, no apparent bedding surfaces, locally cemented.
		c: undulating to N78E, 10NW					SM	@25', very rapid groundwater in flowing.
		c: N52E 8NW					SM	Medium green, wet, dense to very dense, silty fine sandstone; micaceous.
		c: N10W 2NE					SM	Very light gray, wet to saturated, dense, silty fine to medium sandstone; micaceous.
30								

GEOTECHNICAL BORING LOG

DATE 5/21/85 DRILL HOLE NO. LB-6 SHEET 2 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±72' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			③ 3	14			SM	Santiago Formation: Very light gray, wet to saturated, dense, silty fine to medium sandstone; micaceous. Medium olive, very moist, dense to medium dense, silty fine to medium sandstone; micaceous, contact with overlying unit is slightly cemented.
35		c: gradational					SM-ML	Medium to dark olive, very moist to wet, dense to hard, fine sandy siltstone to silty fine sandstone; contact with overlying unit is moderately cemented.
40		cemented zone: N32W 17NE	④ 4	17				@40', continuous, ±3" thick cemented layer.
45		c: N15E 12W					CL	Dark olive green, very moist, hard, silty claystone.
50			5	12				Total Depth = 51' Geologically logged to 49' Seepage at 17' and 20' Water table at 25' Caving at 20' Backfilled 5/21/85
55								
60								

GEOTECHNICAL BORING LOG

DATE 5/21/85 DRILL HOLE NO. LB-7 SHEET 1 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±54' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							CL	**Topsoil:** Medium brown, moist, stiff, very sandy clay; roots and rootlets, scattered gravel and cobble sized clasts.
		c: gradational					SM	**Ancient Landslide:** Medium brown orange, moist, medium dense, silty fine to medium sand.
5		c: gradational					SM	Light orange brown to light gray, moist to wet, medium dense, silty fine to medium sand. @ 8', moisture content becomes wet to saturated. @ 9', caving of saturated sand.
10			① 1	push 6" +1				
		c: gradational					SM	Light gray, very wet to saturated, medium dense, silty fine to medium sand; micaceous, heavy caving. @ 13', rapid groundwater seepage. @ 15', very heavy caving, unsafe to log below this depth, very rapid groundwater seepage.
15							CL	@ 16', Medium brown, polished, striated, continuous, clay seam.
		cs/RS(?)					SM	**Santiago Formation:** Light gray, moist, very dense, silty fine to medium sandstone; micaceous.
20			② 2	7				
25							ML	Medium olive gray, moist, very stiff, fine sandy siltstone; micaceous
30								

GEOTECHNICAL BORING LOG

DATE 5/21/85 DRILL HOLE NO. LB-7 SHEET 2 OF 2

PROJECT Weese Property PROJECT NO. 4850512-01

DRILLING CO. Larive TYPE OF RIG Bucket

HOLE DIAMETER 30" DRIVE WEIGHT 3700 lbs to 27', 2600 lbs to 55', 1400 lbs to 80' DROP 12 IN

ELEVATION TOP OF HOLE ±54' REF. OR DATUM Mean Sea Level

LOGGED BY RLW

SAMPLED BY RLW

DEPTH FEET	GRAPHIC LOG W E	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			③ 3	9			ML	Santiago Formation: Medium olive gray, moist, very stiff, fine sandy siltstone; micaceous.
								Total Depth = 31' Geologically logged to 15' Seepage at 13' Water table at 15' Caving at 9' and 12' to 15' Backfilled 5/21/85
35								
40								

Appendix C (continued)

B-1 and B-2

Small-Diameter Borings

From:

Leighton and Associates, 1985a

GEOTECHNICAL BORING LOG

Date 4/17/85 Drill Hole No. B-1 Sheet 1 of 2

Project Weese Property Job No. 4850512-01

Drilling Co. Morrison Type of Rig B-53/Rotary Wash

Hole Diameter 4" Drive Weight 140 lbs Drop 30 in.

Elevation Top of Hole ±30' Ref. or Datum Mean Sea Level

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by RH Sampled by RH
0			①				CL	Alluvium: Light brown, damp, soft clay.
5			1	11	92.3	31.9	CL/CH	Dark gray to black, moist, stiff, clay; numerous roots and organics.
10			2	14	109.9	18.9	CL/SC	Very dark gray, moist, stiff, sandy clay to clayey sand. @12', becomes harder drilling.
15			3	17	92.4	32.4	CL	Dark olive gray, moist to wet, stiff, sandy clay.
20			4	8 12 14			CL/CH	Dark brown to black, moist, very stiff, sandy clay; numerous rootlets. @22', becomes harder drilling.
25			5	30	101.1	24.7	ML	Mottled light to medium brown, moist, very stiff, clayey silt; slightly sandy, micaceous.
30			6	29	94.2	30.4	CL	Mottled mix of olivebrown to gray, moist, very stiff, silty clay; numerous blebs of calcium carbonate, micaceou

GEOTECHNICAL BORING LOG

Date 4/17/85 Drill Hole No. B-1 Sheet 2 of 2

Project Weese Property Job No. 4850512-01

Drilling Co. Morrison Type of Rig B-53/Rotary Wash

Hole Diameter 4" Drive Weight 140 lbs Drop 30 in.

Elevation Top of Hole ± 30' Ref. or Datum Mean Sea Level

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by RH Sampled by RH
30							CL	Alluvium: Mottled mix of olive brown to gray, moist, very stiff, silty clay; numerous blebs of calcium carbonate, micaceous.
35			7	13 15 17			CL	Mottled intermixed olive brown, dark gray, and medium gray, moist, very stiff, silty clay; some clay and sandy clay material, minor amounts of calcium carbonate.
40			8	77			CL/SC	Santiago Formation: Medium gray to white, damp, hard, sandy claystone; slightly silty. @43', becomes harder drilling.
45			9	75/4"				Total Depth = 45' Piezometer installed to 45' Groundwater at 2.29', measured on 5/14/85

GEOTECHNICAL BORING LOG

Date 4/17/85 Drill Hole No. B-2 Sheet 1 of 2

Project Weese Property Job No. 4850512-01

Drilling Co. Morrison Type of Rig B-53/ Rotary Wash

Hole Diameter 4" Drive Weight 140 lbs Drop 30 in.

Elevation Top of Hole ±35' Ref. or Datum Mean Sea Level

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by RH Sampled by RH
0			①				CL/CL-SC	**Artifical Fill:** Dark olive brown, moist, stiff, clay; contains chunks and bits of hard claystone and grayish white sandy clay.
5			1	15	101.8	25.2		
							ML	**Alluvium:** Black, moist, stiff, very clayey silt, trace of roothairs and organics.
10			2	13	97.4	25.7		
15								
20			3	30			CL	Dark brown to black, wet, very stiff, clay.
25			4	15			CL	Gray, wet, stiff, clay; minor amounts of sand, micaceous.
30			5	10 10 12			CL/SC	Light gray to white, wet, very stiff, sandy clay; micaceous, blocky.

GEOTECHNICAL BORING LOG

Date 4/17/85 Drill Hole No. B-2 Sheet 2 of 2

Project Weese/Oceanside Job No. 4850512-01

Drilling Co. Morrison Type of Rig B-53/Rotary Wash

Hole Diameter 4" Drive Weight 140 lbs Drop 30 in.

Elevation Top of Hole ± 35' Ref. or Datum Mean Sea Level

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								Logged by RH Sampled by RH
30							CL/SC	Alluvium: Light gray to white, wet, very stiff, sandy clay; micaceous, blocky. @ 32', becomes very hard drilling.
35			6 7	24 7 9 12				Medium red brown, moist, very stiff, clayey silt with abundant fine sand; micaceous, with numerous zones of blocky, dark gray claystone and gray slightly sandy clay.
40								Total Depth = 36.5' Piezometer installed to 12' Groundwater at 7.10', measured on 5/14/85

Appendix C (continued)

T-1 through T-10

Exploratory Trenches

From:

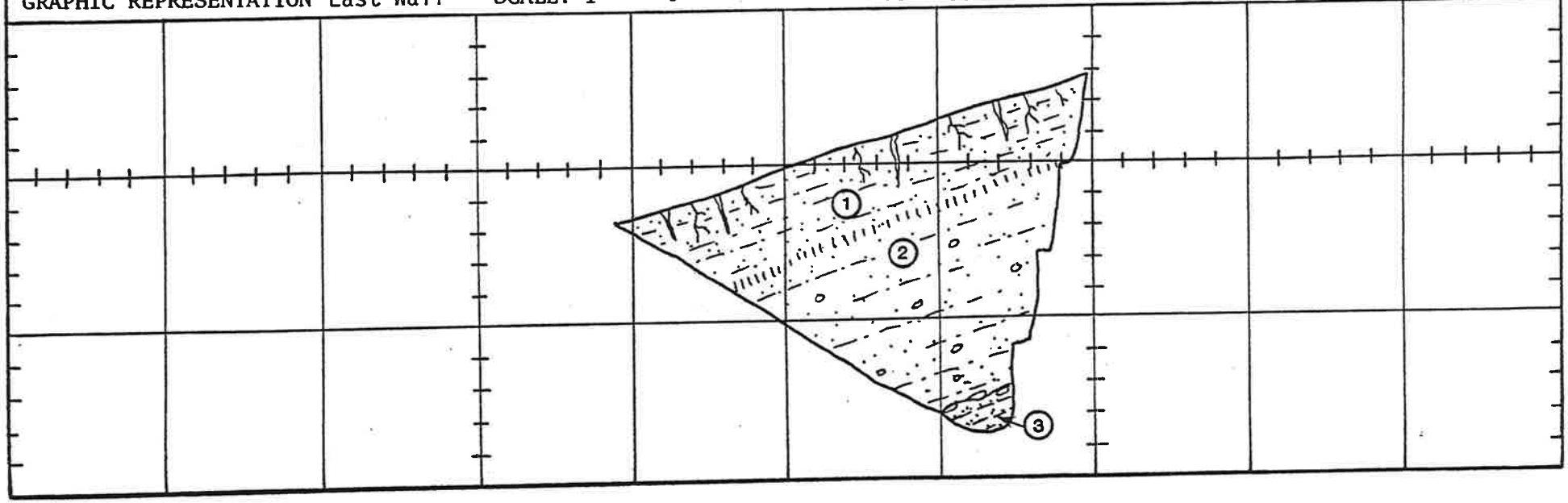
Leighton and Associates, 1985a

501-A - (3/77)

Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 510-C/Trackhoe
Logged By: RLW
Elevation: ±115'
Location: See Geotechnical Map
TRENCH NO. T-1

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium brown, damp, medium dense to dense, silty to clayey fine sand; roots and rootlets, minor amount of desiccation cracks.	Topsoil	SM/SC			
c:gradational	LANDSLIDE DEBRIS					
	② Medium slightly red-brown, moist, dense, silty fine sand; jumbled, rip-up clasts of light brown silty sand, very scattered gravel-sized clasts to 1" in diameter.	Qls	SM			
c:undulating	③ Medium red-brown, moist to very moist, firm, very fine sandy clay; high concentration of calcium carbonate near contact, very jumbled in appearance.	Qls	CL			
	Total depth = 12' No ground water encountered	No caving Backfilled 4/23/85				

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 18° TREND: N68W



LOG OF TRENCH NO. T-1

Leighton & Associates

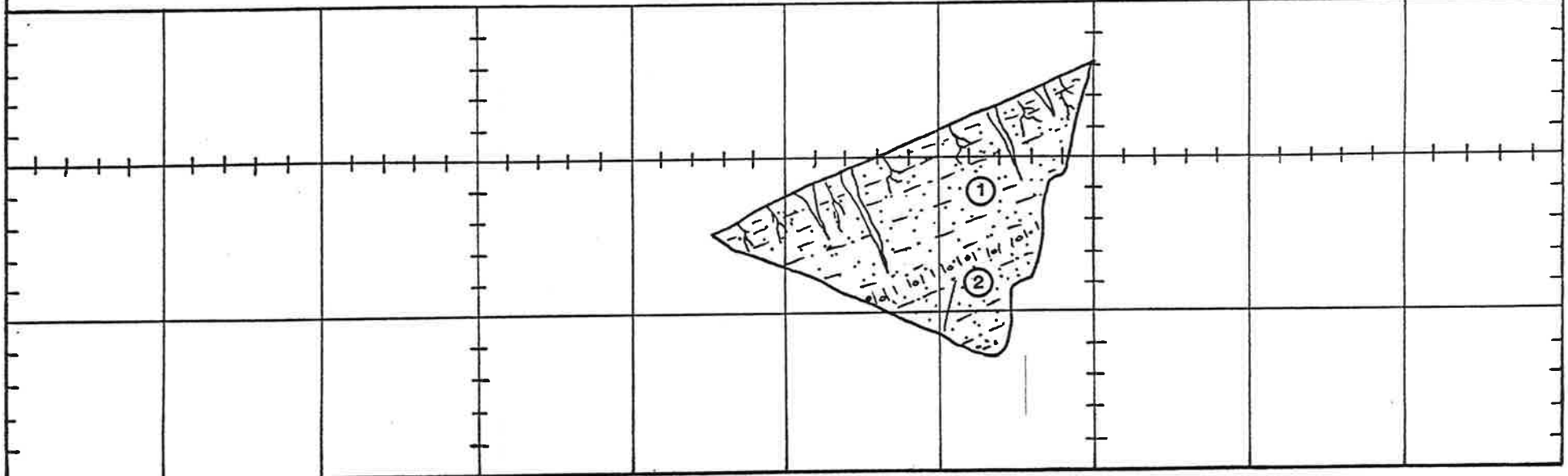
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD510-C/Trackhoe
Logged By: RLW
Elevation: ±125'
Location: See Geotechnical Map
TRENCH NO. T-2

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium brown, damp, medium dense to dense, very silty to clayey fine sand; roots and rootlets, abundant amount of desiccation cracks with openings 1/8" to 1/4" wide.	Topsoil	SM/SC			
c:gradational (over 1')						
	LANDSLIDE DEBRIS					
j:N41°W;85°NE	② Light to medium red-brown, damp to moist, dense, silty fine to medium sand; massive, no apparent bedding surfaces, jointed, manganese oxide staining developed on majority of joint surfaces.	Qls	SM			
	Total depth = 10' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 25° TREND: N70°W



LOG OF TRENCH NO: T-2

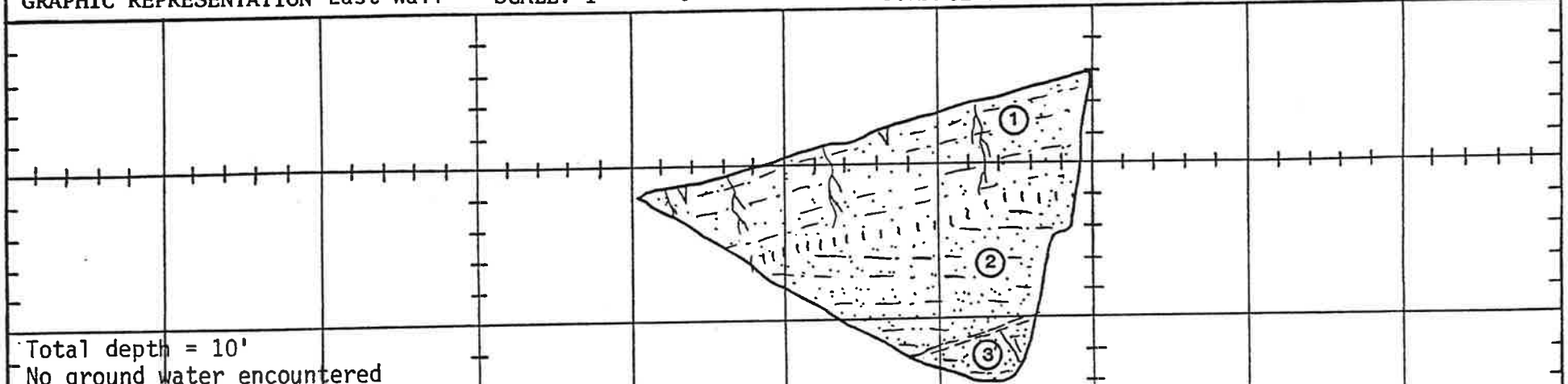
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 45C-C/Trackhoe
Logged By: RLW
Elevation: ±138'
Location: See Geotechnical Map
TRENCH NO. T-3

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium brown, damp, medium dense, very silty to clayey fine sand; roots and rootlets, minor amount of desiccation cracks.	Topsoil	SM/SC			
c:gradational (over ±6')						
	SANTIAGO FORMATION					
	② Light to medium slightly red-brown, damp to moist, dense, silty fine to medium sand; very minor amount of calcium carbonate stringers, weathered.	Ts	SM			
c:cs:N64°W; 11°NE						
	③ Light gray to off white, moist, dense to very dense, silty fine to medium sand; high angle joints, calcium carbonate and iron oxide developed on these joints, at contact with overlaying unit is a 1/8" to 1/2" thick, continuous clay seam.	Ts	SM			
j:N62°E;85°SE (approximate)						

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 16° TREND: N



Total depth = 10'
No ground water encountered
No caving
Backfilled 4/23/85

LOG OF TRENCH NO: T-3

501-A - (3/77)

Leighton & Associates

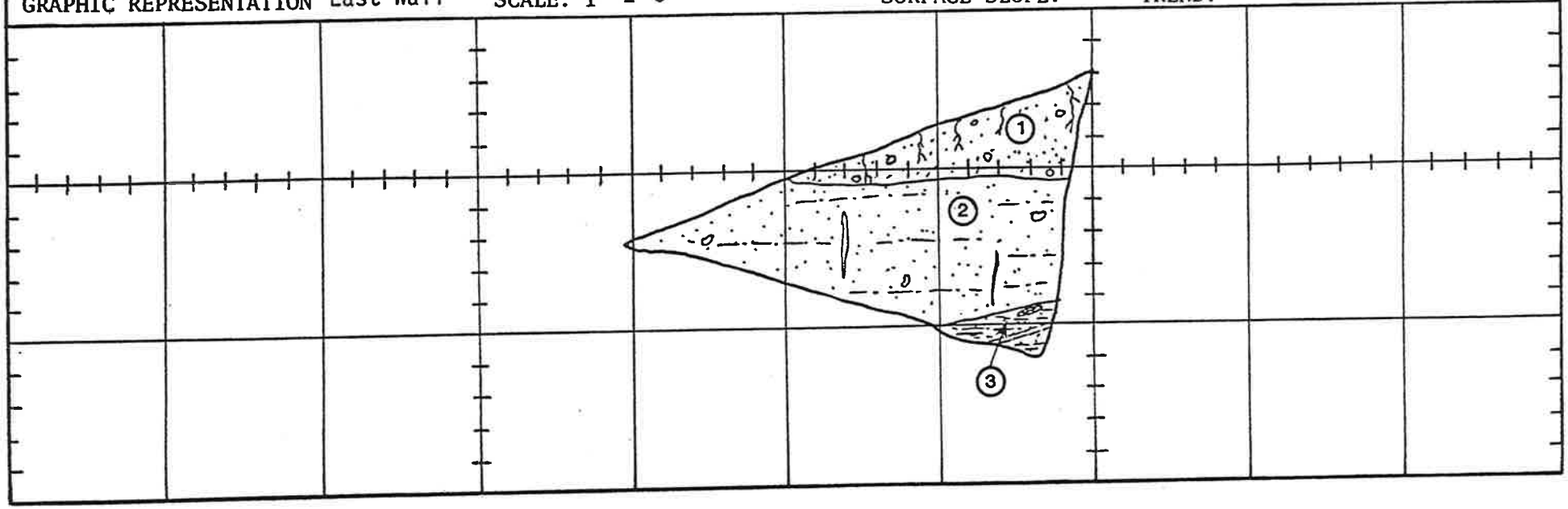
Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 450-C/Trackhoe

Logged By: RLW
Elevation: ±115'
Location: See Geotechnical Map

TRENCH NO. T-4

GEOLOGIC ATTITUDES	DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	DATE: 4/23/85					
	TOPSOIL					
	① Medium brown, moist, medium dense, clayey fine to medium sand; roots and rootlets, very scattered gravel and cobble-sized clasts.	Topsoil	SC			
c:undulating						
	LANDSLIDE DEBRIS					
	② Light slightly red-brown, moist, dense, silty fine to medium sand; minor calcium carbonate stringers, rare cobble-sized clasts.	Qls	SM			
c:undulating						
	③ Medium gray-brown, moist, stiff, very silty clay; abundant amount of calcium carbonate blebs to 3" in diameter near contact, 1" thick, continuous sheared clay seam @ 9.5', very jumbled and disturbed.	Qls	CL			
cs:N10°E;30°NW (approximate)						
	Total depth = 10' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 21° TREND: N-S



LOG OF TRENCH NO: T-4

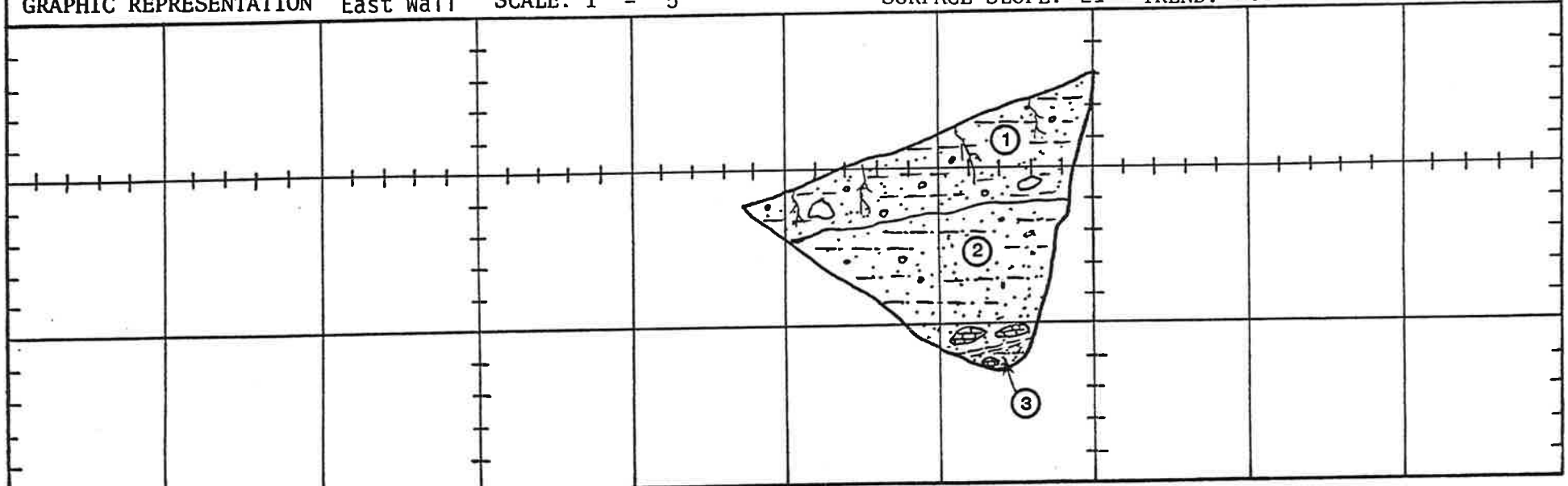
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside	Logged By: RLW		
Project Number: 4850512-01	Elevation: ±125'	TRENCH NO. T-5	
Equipment: JD 450-C/Trackhoe	Location: See Geotechnical Map		

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium brown, moist, medium dense, clayey fine sand; gravel and cobble-sized clasts to 6" in diameter; roots and rootlets.	Topsoil	SC			
c:undulating	LANDSLIDE DEBRIS					
	② Light to medium brown, moist, dense, silty fine sand; scattered gravel-sized clasts, minor rip-up clasts of brown silty clay, contact with underlaying unit has abundant calcium carbonate blebs to 4" in diameter, above 1/8" to 1/2" wide, discontinuous silty clay seam.	Qls	SM			
c:undulating	③ Light brownish white, mottled yellow-brown, moist, medium dense, silty fine sand; rip-up clasts of brown silty sand to 3" in diameter, calcium carbonate blebs.	Qls	SM			
	Total depth = 9.5' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 21° TREND: N88°W



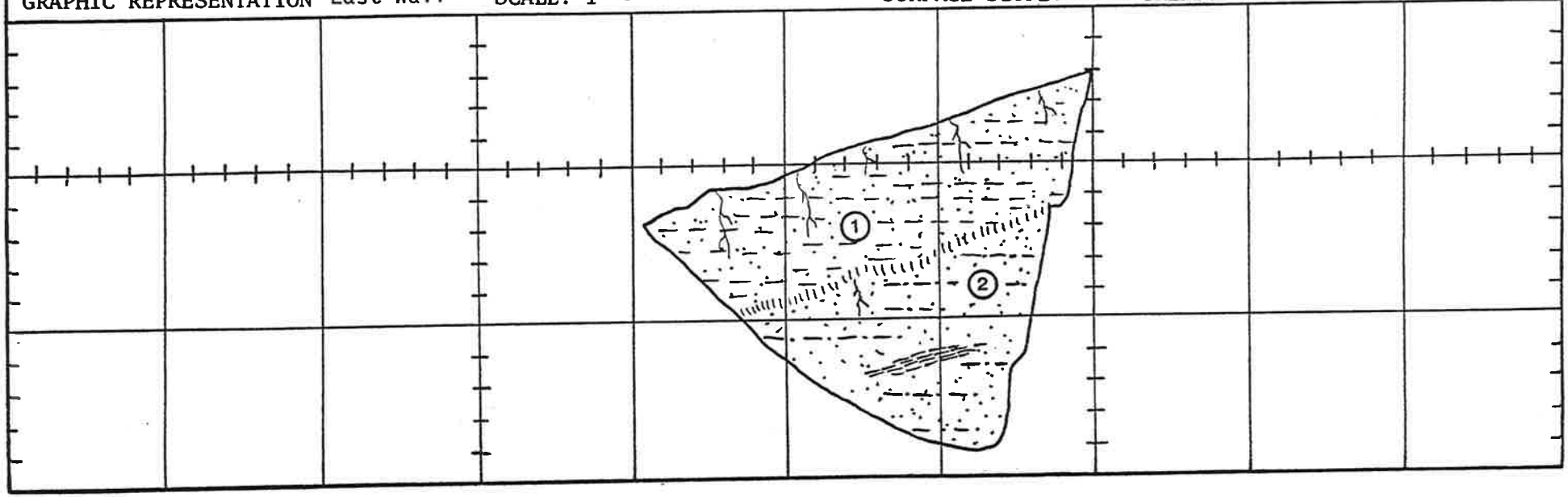
LOG OF TRENCH NO: T-5

501-A - (3/77)

Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 450-C/Trackhoe
Logged By: RLW
Elevation: ±128'
Location: See Geotechnical Map
TRENCH NO. T-6

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
c: gradational	TOPSOIL ① Medium brown, damp, medium dense, very clayey fine sand; roots and rootlets.	Topsoil	SC			
	LANDSLIDE DEBRIS ② Medium slightly orange-brown, damp, dense, silty fine sand; minor root development, @ 9' discontinuous 1" thick, dark brown clay lens, slight lightening of color with depth.	Qls	SM			
	Total depth = 12' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 18° TREND: N



LOG OF TRENCH NO: T-6

Leighton & Associates

501-A - (3/77)

Leighton & Associates

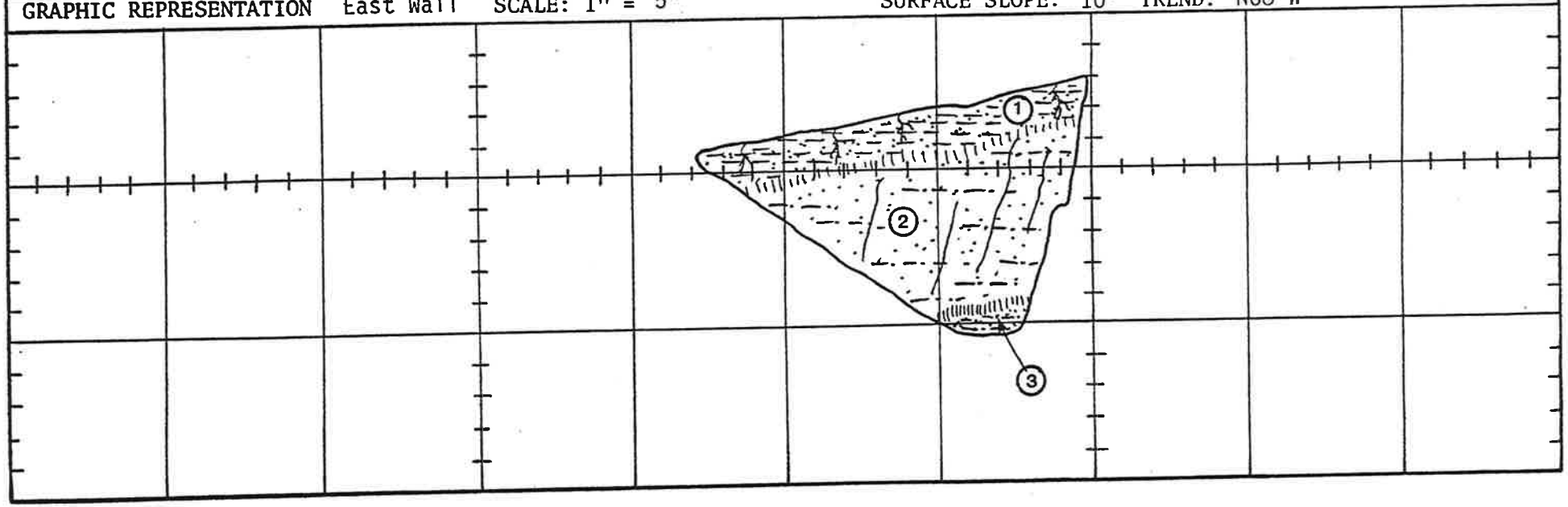
Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 450-C/Trackhoe

Logged By: RLW
Elevation: ±58'
Location: See Geotechnical Map

TRENCH NO. T-7

GEOLOGIC ATTITUDES	DESCRIPTION (DATE: 4/23/85)	GEOLOGIC UNIT	ENGINEERING PROPERTIES: U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium gray-brown, damp, stiff, very fine sandy clay; roots and rootlets.	Topsoil	CL			
c:gradational	LANDSLIDE DEBRIS					
	② Medium orange-brown, damp to moist, dense, silty fine to medium sand; high angle fractures with openings hairline to 1/8" wide, calcium carbonate developed on fracture surfaces.	Qls	SM			
c:gradational	③ Medium gray-brown, moist, firm, very fine sandy silt; very jumbled.	Qls	ML			
	Total depth = 8.5' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 10° TREND: N68°W



LOG OF TRENCH NO: T-7

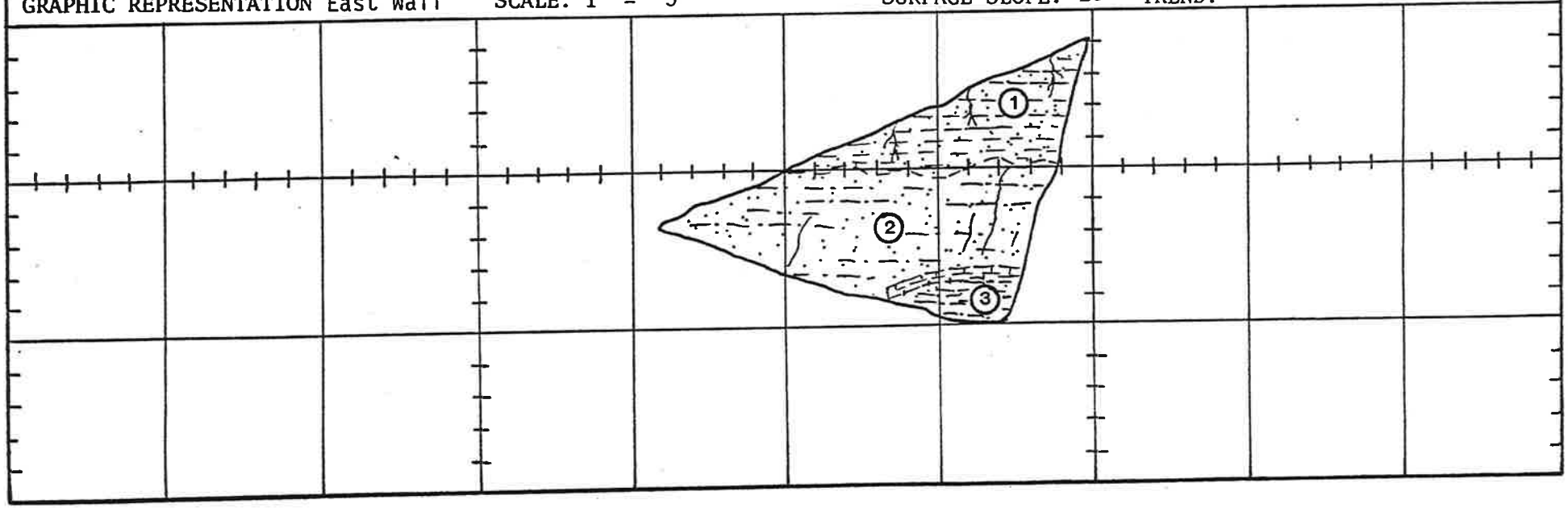
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside	Logged By: RLW		
Project Number: 4850512-01	Elevation: ±68'	TRENCH NO. T-8	
Equipment: JD 450-C/Trackhoe	Location: See Geotechnical Map		

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium to dark brown, damp, stiff, fine sandy clay; roots and rootlets.	Topsoil	CL			
c:gradational						
	LANDSLIDE DEBRIS					
	② Off white, damp, dense, very silty, very fine sand; calcium carbonate filled fractures with openings hairline to 1/8", at base ±4" thick zone of calcium carbonate enrichment.	Qls	SM			
c:gradational						
	③ Medium gray, moist, stiff, clayey silt; very broken and jumbled.	Qls	ML			
	Total depth = 9' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 23° TREND: N68°W



LOG OF TRENCH NO: T-8

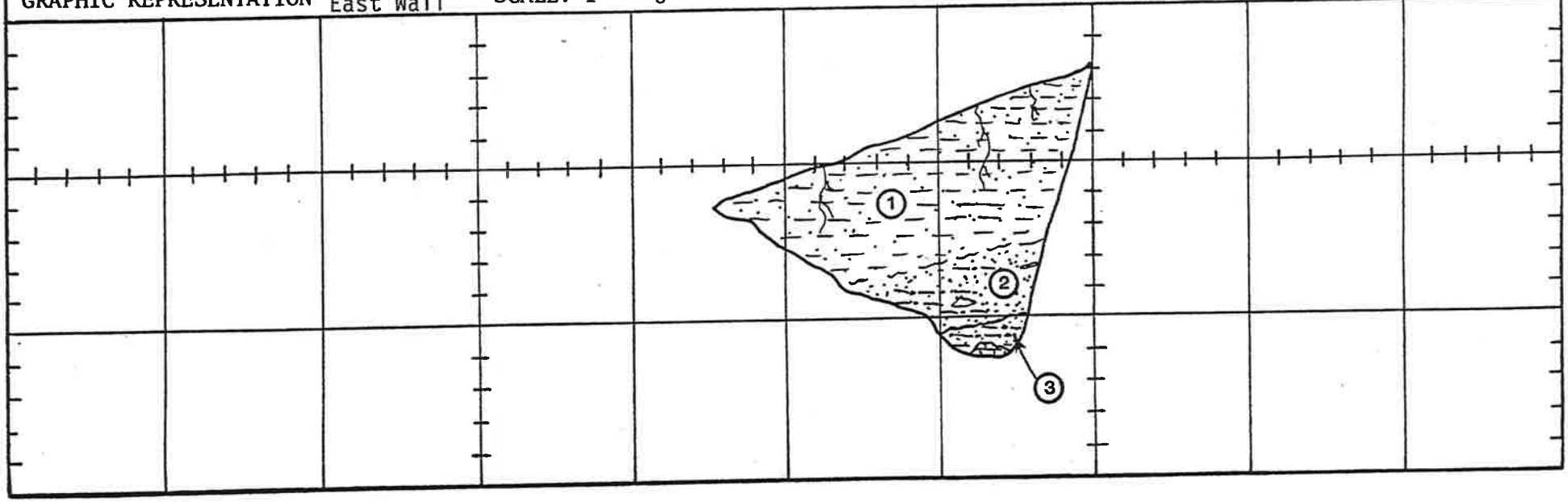
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside
Project Number: 4850512-01
Equipment: JD 450-C/Trackhoe
Logged By: RLW
Elevation: ±110'
Location: See Geotechnical Map
TRENCH NO. T-9

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	TOPSOIL					
	① Medium brown, damp, stiff, very fine sandy clay; roots and rootlets.	Topsoil	CL			
c:gradational	LANDSLIDE DEBRIS					
	② Medium orange-brown to light brown, moist, dense, silty fine sand; rip-up clasts of dark brown silty clay to 2" in diameter, minor root development.	Qls	SM			
c:undulating	③ Medium gray-brown, moist, firm, fine sandy silt; very jumbled in appearance, voids to 3" in diameter in-filled with soft calcium carbonate.	Qls	ML			
	Total depth = 9' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 18° TREND: N32°W



LOG OF TRENCH NO: T-9

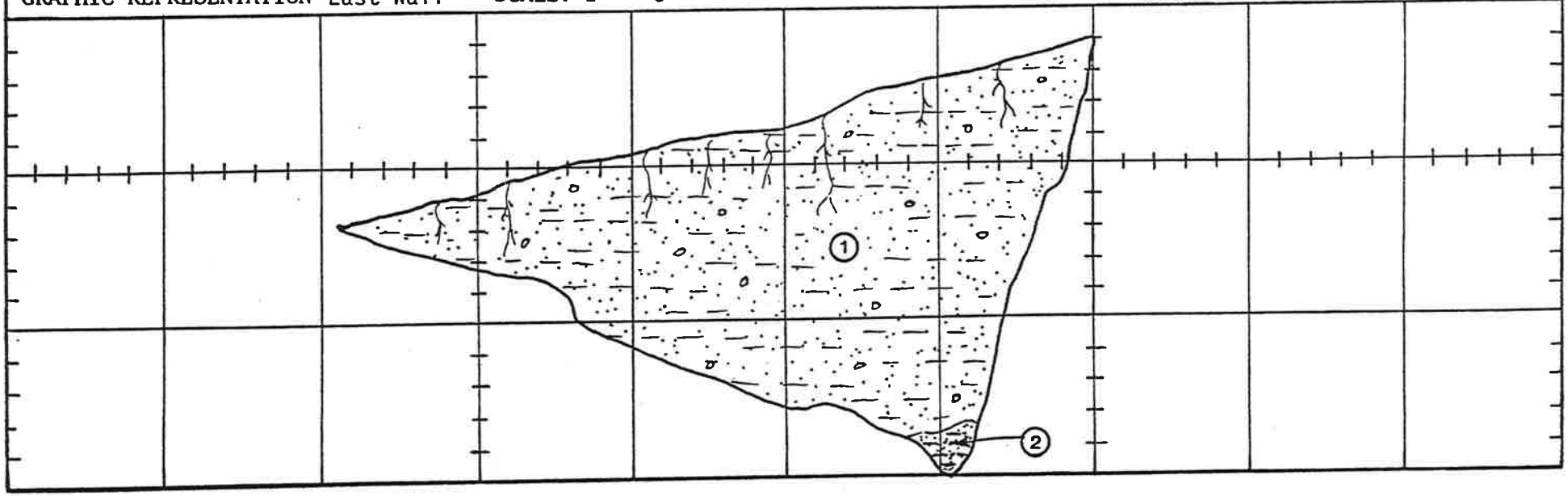
501-A - (3/77)

Leighton & Associates

Project Name: Weese/Oceanside	Logged By: RLW		
Project Number: 4850512-01	Elevation: ±105'	TRENCH NO. T-10	
Equipment: JD 450-C/Trackhoe	Location: See Geotechnical Map		

GEOLOGIC ATTITUDES	DATE: 4/23/85 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
c:undulating	TOPSOIL/LANDSLIDE DEBRIS ① Dark brown, moist, dense, clayey fine sand; abundant roots and rootlets, very scattered gravel-sized clasts.	Topsoil/ Qls	SC			
	LANDSLIDE DEBRIS (?) ② Off white, moist, dense, silty fine to medium sand.	Qls (?)	SM			
	Total depth = 14' No ground water encountered No caving Backfilled 4/23/85					

GRAPHIC REPRESENTATION East Wall SCALE: 1" = 5' SURFACE SLOPE: 11° TREND: N25°E



LOG OF TRENCH NO: T-10

Appendix C (continued)

AT-1 to AT-12

Exploratory Trenches

From:

Action Geotechnical Consultants, 1984a

Mr. Thomas O. Weese W.O. 413701

LOG OF EXPLORATORY PITS

Pit No.	Depth	Description	Attitudes
1	0-1'	GREY/WHITE SAND with SILT and SANDSTONE fragments (old cut surface)	B N30E/5NW
	1-4' (bedrock)	GREY/WHITE SANDSTONE, massive, dense, very hard bed @ 1'	J E-W/82S J N55W/88SW
2	0-0.5'	GREY/WHITE SAND with SANDSTONE fragments (old cut surface)	
	0.5-7' (bedrock)	GREY/WHITE SANDSTONE, dense, massive	J N85W/85SW J N70W/85SW J N15W/88NE B N30E/5NW
3	0-5' (bedrock)	WHITE SANDSTONE, soft	
	5-6.5'	GREY/WHITE, clayey SANDSTONE, firm	
	6.5-7.5'	BROWN, sandy, clayey mudstone	
4	0-1.5- (bedrock)	WHITE SANDSTONE, firm	
	1.5-3.5'	GREY, clayey SANDSTONE	
	3.5-5'	GREY SANDSTONE, firm, very dense, WHITE SANDSTONE @ 5'	
5	0-6' (colluvium)	DARK GREY, silty CLAY with SAND, porous and scattered caliche and rock fragments, moist	
		Grades to DARK BROWN color and denser state @ 8'	
	8-10' (bedrock)	LIGHT BROWN, silty, fine SANDSTONE, moist and soft	
6	0-4' (slide debris/ colluvium)	DARK GREY to BLACK, silty CLAY with SAND and speckled with caliche	
	4-7.5'	DARK BROWN, silty CLAY with SAND and occasional round pebbles	
	7.5-13' (weathered bedrock)	BROWN, silty, fine SAND	
	13-14' (bedrock)	WHITE, fine SANDSTONE	

W.O. 413701

Pit No.	Depth	Description	Attitudes
7	0-3' (colluvium/ slide debris)	DARK GREY to BLACK, silty CLAY with SAND, porous	
	3-5'	DARK BROWN, silty, sandy CLAY, speckled with caliche	
	5-6.5'	Mottled BROWN and RUST BROWN clayey SAND	
	6.5-10'	LIGHT BROWN SAND, soft with pockets of DARK GREY CLAY and scattered SANDSTONE cobbles	
	10-12' (bedrock)	GREY/WHITE SANDSTONE, firm	
8	0-2' (slide debris)	GREY/BROWN, silty, fine grained SAND, very porous and dry	
	2-8'	DARK GREY, clayey SAND, slightly porous, speckled with caliche from 5'-6'	
	8-12'	BROWN, slightly clayey, fine to medium grained SAND with WHITE SANDSTONE fragments and pockets of DARK GREY, silty CLAY	
	12-14'	BROWN and WHITE, mottled SAND with traces of iron staining and organic material	
	14-19.5'	BROWN, fine to medium grained SAND with WHITE SANDSTONE fragments	
		Groundwater Seepage @ 16' and 19.5'	
9	0-5' (slide debris)	DARK GREY to BLACK, sandy CLAY with caliche @ 4'-5'	
	5-7'	BROWN and BLACK clayey SAND	
	7-16'	LIGHT BROWN, slightly clayey SAND, soft, locally contains intergrained caliche and rust staining	

W.O. 413701

Pit No.	Depth	Classification	Attitudes
10	0-5' (fill)	LIGHT BROWN/WHITE, fine grained SAND	
	0.5-1.5'	BLUE/GREY CLAY with dry grass (organic smell)	
	1.5-3'	GREY/WHITE SAND	
	3-5' (alluvial)	Very fat, BLUE/GREY CLAY	
		Groundwater @ 5'	
11	0-7' (Fill)	LIGHT BROWN/WHITE, fine, clayey SAND with SANDSTONE fragments and trace of DARK GREY CLAY	
	7-8.5 (alluvial)	Very fat, BLUE/GREY CLAY	
	8.5-10'	GREY, fine SAND, damp	
		Groundwater @ 10'	
12	0-3' (alluvial)	LIGHT BROWN and GREY/WHITE, fine grained SAND (caves)	
	3-8'	BLACK, fat CLAY with trace of SAND	
	8-11'	GREY, sandy CLAY, damp	
		Groundwater @ 9'	

Appendix C (continued)

AB-1 through AB-8

Large-Diameter Borings

From:

Action Geotechnical Consultants, 1984a

SUMMARY SHEET

PROJECT Mr. Thomas O. Weese

GEOLOGICAL DESCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Bedrock					2				GREY/BROWN, sandy CLAY
					4				WHITE, fine grained sandstone
					6				GREY/BROWN, clayey sandstone, moderately cemented
					8				WHITE, medium to coarse sandstone, with cemented layers
	133		6		10		x		WHITE, fine to medium sandstone
					12				Very difficult drilling @ 16'
					14				Refusal @ 17.5'
					16				End @ 17.5'
					18				No Water or Caving

BORING No. 1

SURFACE ELEV. see map

EQUIP. Bucket Auger HOLE DIA. 24"

LOGGED BY GW

JOB NO.	DATE	SHEET
413701	6/11/84	1 OF 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

PROJECT: Mr. Thomas Weese

GEOLOGICAL DESCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Slide Debris					2				GREY, silty SAND, dry, loose
					4				DARK GREY, clayey SAND/ sandy CLAY
					6				
					8				
	112		13		10		x		RED, clayey, fine to medium SAND, mottled with DARK GREY, sandy clay stringers, weathered sandstone boulders @ 10'
					12				
					14				BROWN and BLACKSAND with trace of CLAY, weathered chunks of sandstone @ 16'
					16				
					18				GREY/WHITE, medium SAND with trace of BLACK CLAY. WHITE clay seam @ 18'
					20				GREY, clayey SAND, seepage @ 20'
Bedrock					22				
					24				WHITE, fine to medium sandstone, 1/8" clay seam & seepage @ 21'
	119		13		26		x		
									Dense SANDSTONE @ 27'
									End @ 27'
									Seepage @ 20' & 21'
									Caving @ 16' to 21"

BORING No. 2

SURFACE ELEV. see map

EQUIP. Bucket Auger HOLE DIA. 24"

LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/11/84	2 9

1686-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

OJECT Mr. Thomas O. Weese

OLOGICAL SCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
lide ebris					2				DARK GREY to BLACK, sandy CLAY, speckled with caliche @ 3'
					4				
					6				GREY/BROWN, fine to medium SAND with pockets of DARK GREY sandy CLAY and WHITE SAND
					8				
					10				LIGHT BROWN SAND with WHITE SAND, very moist @ 11'
					12				
					14				
edrock					16				Heavy Seepage @ 16'
					18				LIGHT BROWN, fine to medium SANDSTONE, firm
					20				WHITE, fine SANDSTONE, firm
	116		15		22		x		End @ 22'
									Groundwater @ 16'
									Severe Caving 11' to 17'

BORING No. 3

SURFACE ELEV. see map

EQUIP. Bucket Auger HOLE DIA. 24"

LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/11/84	3 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

OJECT Mr. Thomas O. Weese

OLOGICAL SCRIPTION	ENGINEERING CLASSIFICATION/DESCRIPTION
Bedrock	LIGHT BROWN CLAY, fine SANDSTONE
	LIGHT GREY, fine SANDSTONE with clayey SANDSTONE lenses @ 4'
	WHITE, fine SANDSTONE Pinkish tone @ 6' Clayey SANDSTONE lenses @ 11'
	GREY/BROWN, sandy, clayey MUDSTONE
	GREY, clayey SANDSTONE
	BROWN SANDSTONE with trace of CLAY, very dense
	WHITE, fine SANDSTONE, very dense, refusal
	Refusal @ 18' End @ 18' No Groundwater or Caving

DEPTH IN FEET: 2, 4, 6, 8, 10, 12, 14, 16, 18

DRY DENSITY lbs./cu. ft. | RELATIVE COMPACTION | MOISTURE % | PENETRATION N | DEPTH IN FEET | LOG AND LOCATION OF SAMPLE (CORE) | UNIFIED SOIL CLASSIFICATION

BORING No. 4

SURFACE ELEV. see map

EQUIP. Bucket Auger HOLE DIA. 24"

LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/11/84	4 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

OJECT Mr. Thomas O. Weese

OLOGICAL SCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N (STP)	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Slide Debris			26	4 3 5	5	x			DARK GREY, sandy CLAY Mottled LIGHT BROWN, silty CLAY with caliche
			16	8 8 11	10	x			Firms @ 7' GREY/WHITE SAND
			19	11 20 24	15	x			BROWN, clayey SAND, bentonite seam @ 15' groundwater @ 18'
Bedrock			15	38 50 (4")	20	x			WHITE, fine to medium SANDSTONE WHITE to LIGHT BROWN SANDSTONE, difficult drilling below 25'
			17	25 36 50 (5")	25	x			WHITE, fine to medium SANDSTONE
			11	50 (5")	30	x			End @ 30'

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BORING No. 5

SURFACE ELEV. see map

EQUIP. Hollow Stem Auger HOLE DIA. 8"

LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/13/84	5 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

OJECT Mr. Thomas O. Weese

OLOGICAL SCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N (STP)	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Fill	99	87	21	5 17			x		LIGHT GREY/WHITE, clayey SAND
	98	86	22	9 16	5		x		
lluvium	103		27	10 15	10		x		DARK GREY, fat CLAY Groundwater @ 13'
	109		16	12 17	15		x		GREY, sandy CLAY, wet
	102		24	8 15	20		x		GREY, clayey SAND with coarse SAND lenses
			13	9 11	25		x		GREY, coarse SAND
			21	4 7 6	30		x		GREY/BROWN, clayey SAND Dense below 34'
			16	6 9 16	35		x		BROWN to REDDISH BROWN, fine to medium SAND with trace of coarse SAND
			16	9 10 12	40		x		BROWN to REDDISH BROWN, medium to coarse SAND with pebbles

BORING No. 6
SURFACE ELEV. see map
EQUIP. Hollow Stem Auger HOLE DIA. 8"
LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/13/84	6 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710

SUMMARY SHEET

PROJECT Mr. Thomas O. Weese

GEOLOGICAL DESCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N (STP)	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Bedrock			12	14 31 42	45		x		LIGHT BROWN/TAN, medium to coarse SANDSTONE
			13	17 22 42	50		x		WHITE, fine to medium SANDSTONE
									End @ 51'

BORING No. 6 (continued)
SURFACE ELEV. see map
EQUIP. Hollow Stem Auger HOLE DIA. 8"
LOGGED BY GW

JOB NO.	DATE	SHEET
413701	6/13/84	7 OF 9

SUMMARY SHEET

PROJECT Mr. Thomas O. Weese

GEOLOGICAL DESCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N (STP)	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Alluvium			22	1 2 1	5		x		DARK GREY, clayey, medium to course SAND
				4 7 9	10		x		DARK GREY, clayey, fine SAND, wet
			17	4 4 6	15		x		DARK OLIVE GREY, fine sandy CLAY
Bedrock			14	31 50 (2")	20		x		WHITE, medium to course SANDSTONE

BORING No. 7

SURFACE ELEV. see map

EQUIP. Hollow Stem Auger HOLE DIA. 8"

LOGGED BY PA

JOB NO.	DATE	SHEET OF
413701	6/13/84	8 OF 9

SUMMARY SHEET

PROJECT Mr. Thomas O. Weese

GEOLOGICAL DESCRIPTION	DRY DENSITY lbs./cu. ft.	RELATIVE COMPACTION	MOISTURE %	PENETRATION N (STP)	DEPTH IN FEET	LOG AND LOCATION OF SAMPLE	CORE	UNIFIED SOIL CLASSIFICATION	ENGINEERING CLASSIFICATION/DESCRIPTION
Alluvium				4					DARK GREY to BLACK CLAY, fat, trace of SILT
				5	5		x		GREY/BROWN, clayey SAND
				7					@ 7', water @ 10'
				5					
			17	8	10		x		WHITE and LIGHT BROWN SAND
				11					
Bedrock									Firmer below 12'
				12					
			11	15	15		x		WHITE and REDDISH, fine grained sandstone
				15					
									End @ 16'
									Water @ 10'

BORING No. 8

SURFACE ELEV. see map

EQUIP. Hollow Stem Auger HOLE DIA. 8"

LOGGED BY GW

JOB NO.	DATE	SHEET OF
413701	6/13/84	9 9

1630-G South Sunkist Street Anaheim, California 92806 (714) 634-2092 (213) 852-4710