

DOCKETED	
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Description:	N/A
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DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
	Bulk	Driven						
20			28				CL	ALLUVIUM: (Continued) Reddish brown, moist, very stiff, CLAY; trace to few coarse sand; trace fine gravel.
							GC	Brown, moist, stiff, clayey GRAVEL.
25			19				CL + ML	Brown, stiff, CLAY; interbedded with few thin beds of yellowish brown SILT; few coarse sand; trace fine gravel; trace pinhole voids.
30			29				SC	Light brown, moist, medium dense, clayey fine SAND; fine wavy laminations of brown clay. Dark brown; few caliche nodules up to approximately 1/8 inch in diameter; fossils.
35			14				CL + SC	Yellowish brown, moist, stiff, fine sandy CLAY; few mottles with red oxidation; interbedded with clayey fine SAND; gradational bedding.
40								

DATE DRILLED 4/8/99 BORING NO. B-3
GROUND ELEVATION 218' ±(MSL) SHEET 2 OF 4
METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)
DRIVE WEIGHT 140 lbs. DROP 30"
SAMPLED BY GMC LOGGED BY GMC REVIEWED BY MD/CAP



BORING LOG
Oso Creek Channel
San Juan Capistrano, California

PROJECT NO. 201885-01	DATE 6/00	FIGURE A-10
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DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	GENERAL INFORMATION				
	Bulk	Driven						DATE DRILLED	BORING NO.	SHEET	OF	4
								4/8/99	B-3	218' ± (MSL)	3	4
								METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)				
								140 lbs.	30"	DRIVE WEIGHT		
								SAMPLED BY GMC LOGGED BY GMC REVIEWED BY MD/CAP				
DESCRIPTION/INTERPRETATION												
40			38				CL + SC SC	ALLUVIUM: (Continued) Yellowish brown, moist, stiff, fine sandy CLAY; local mottling with red oxidation; interbedded with clayey fine SAND; gradational bedding. Yellowish brown, moist, medium dense, clayey SAND; few spots of red oxidation.				
45			9				CL + SC	Grayish brown, moist, stiff, fine sandy CLAY; interbedded with medium dense, clayey SAND; gradational contacts; few beds of fine sandy SILT.				
50			30					@ 50.0': Groundwater encountered during drilling. Few yellowish brown beds. Minor seepage; sample slightly wet.				
55			15					Grayish brown and gray; micaceous; oxidized spots.				
60								CAPISTRANO FORMATION: Dark grayish brown, moderately indurated, silty CLAYSTONE; very finely laminated; speckled with few caliche nodules/fossils up to approximately 1/8 inch in diameter. @ 60.0': Groundwater encountered after drilling.				



BORING LOG		
Oso Creek Channel San Juan Capistrano, California		
PROJECT NO. 201885-01	DATE 6/00	FIGURE A-11

DEPTH (feet)	Bulk Driven	SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.
								4/8/99	B-3
GROUND ELEVATION 218' ±(MSL)								SHEET	4 OF 4
METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)									
DRIVE WEIGHT 140 lbs.								DROP	30"
SAMPLED BY GMC								LOGGED BY GMC	REVIEWED BY MD/CAP
DESCRIPTION/INTERPRETATION									
60			55					CAPISTRANO FORMATION: (Continued) Dark grayish brown, moderately indurated, silty CLAYSTONE; very finely laminated; speckled with few caliche nodules/fossils up to approximately 1/8 inch in diameter.	
65			52					Decrease in caliche nodules/fossils.	
70								Total Depth = 66.5 feet. Groundwater encountered at approximately 50 feet during drilling. Groundwater measured at approximately 60 feet after drilling. Backfilled on 4/8/99.	
75									
80									



BORING LOG

Oso Creek Channel
San Juan Capistrano, California

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6/00


FIGURE
A-12

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>4/8/99</u> BORING NO. <u>B-4</u>	
	Bulk	Driven						GROUND ELEVATION <u>217' ±(MSL)</u>	SHEET <u>1</u> OF <u>4</u>
								METHOD OF DRILLING <u>8" hollow stem auger (A&R Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs.</u> DROP <u>30"</u>	
								SAMPLED BY <u>GMC</u> LOGGED BY <u>GMC</u> REVIEWED BY <u>MD/CAP</u>	
								DESCRIPTION/INTERPRETATION	
0							CL	<u>FILL:</u> Brown, moist, hard, fine sandy CLAY; intermixed with nodules of dark brown CLAY and fine gravel; trace wood pieces; few thin layers of fine gravel.	
5			52						
10			18					Very stiff; trace medium SAND.	
15			23				CL	<u>ALLUVIUM:</u> Reddish brown, moist, very stiff, silty CLAY; trace coarse sand and fine gravel; trace very fine caliche veinlets; trace pinhole voids.	
20								Yellowish brown; trace caliche nodules up to approximately 1/8 inch in	




BORING LOG		
Oso Creek Channel San Juan Capistrano, California		
PROJECT NO. 201885-01	DATE 6/00	FIGURE A-13

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							4/8/99	B-4	
							GROUND ELEVATION	SHEET	OF
							217' ±(MSL)	2	4
							METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)		
							DRIVE WEIGHT	DROP	
							140 lbs.	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GMC	GMC	MD/CAP
							DESCRIPTION/INTERPRETATION		
20		19				CL + ML	diameter.		
							<p><u>ALLUVIUM</u>: (Continued) Yellowish brown, moist, very stiff, silty CLAY; trace coarse sand and fine gravel; trace very fine caliche veinlets and nodules up to approximately 1/8 inch in diameter; trace pinhole voids; interbedded with trace very thin beds of light yellowish brown, SILT.</p>		
25		28					<p>Brown; increase in caliche nodules up to approximately 1/8 inch in diameter; trace coarse gravel; few coarse sand.</p>		
30		18					<p>Stiff; sandy.</p>		
35		20					<p>Gray and grayish brown, moist, stiff, fine sandy CLAY; few very thin interbeds of red SILT; oxidized; micaceous.</p>		
40						CL + ML			

	BORING LOG		
	Oso Creek Channel San Juan Capistrano, California		
	PROJECT NO. 201885-01	DATE 6/00	FIGURE A-14

DEPTH (feet)	SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							4/8/99	B-4	
							GROUND ELEVATION	SHEET	OF
							217' ±(MSL)	3	4
METHOD OF DRILLING <u>8" hollow stem auger (A&R Drilling)</u>									
							DRIVE WEIGHT	DROP	
							140 lbs.	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GMC	GMC	MD/CAP
DESCRIPTION/INTERPRETATION									
40		20				CL + ML	ALLUVIUM: (Continued) Gray and grayish brown, moist, stiff, fine sandy CLAY; few thin interbeds of red SILT; oxidized; micaceous.		
							@ 44.0': Groundwater measured after drilling.		
45		39					Finely laminated; light gray and gray; interlayered with few thin, red clayey sand and clay; convoluted/wavey; shallow dip.		
							@ 47.0': Groundwater encountered during drilling.		
50		84				SP + SC	TERRACE DEPOSITS: Light brown and brown, saturated, SAND; interbedded with fractured moderately and strongly indurated silty CLAYSTONE and clayey SAND; few fine gravel.		
55		34 50/3"				SP/GP	Reddish brown, saturated, medium dense, poorly graded medium SAND to fine GRAVEL.		
						GC	Light brown, saturated, very stiff, clayey GRAVEL; gravel is dark gray, hard claystone.		
						SC	Reddish brown, saturated, medium dense, clayey SAND.		
60									

	BORING LOG		
	Oso Creek Channel San Juan Capistrano, California		
PROJECT NO. 201885-01	DATE 6/00	FIGURE A-15	

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.
	Bulk	Driven						4/8/99	B-4
								GROUND ELEVATION	SHEET
								217' ±(MSL)	4 OF 4
								METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)	
								DRIVE WEIGHT	DROP
								140 lbs.	30"
								SAMPLED BY	LOGGED BY
								GMC	GMC
								REVIEWED BY	MD/CAP
								DESCRIPTION/INTERPRETATION	
60			15				SC	TERRACE DEPOSITS: (Continued) Reddish brown, saturated, medium dense, clayey SAND; little fine gravel.	
								CAPISTRANO FORMATION: Dark gray, saturated, weakly indurated, silty CLAYSTONE; trace coarse sand and moderately indurated claystone; few laminations; mostly massive.	
65			97/8"					Moderately indurated.	
								Total Depth = 66.5 feet. Groundwater encountered during drilling at approximately 47 feet. Groundwater measured after drilling at approximately 43 feet. Backfilled on 4/8/99.	
70									
75									
80									



BORING LOG

Oso Creek Channel
San Juan Capistrano, California

PROJECT NO. 201885-01	DATE 6/00	FIGURE A-16
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DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							4/8/99	B-5	
							GROUND ELEVATION	SHEET	OF
							194' ±(MSL)	1	3
							METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)		
							DRIVE WEIGHT	DROP	
							140 lbs.	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GMC	GMC	MD/CAP
							DESCRIPTION/INTERPRETATION		
0						CL	LANDSLIDE DEPOSITS (DISTURBED FILL): Dark brown, moist to wet, soft, fine sandy CLAY; few fine gravel. Surface is covered by mostly fine to coarse granitic gravel (ballast).		
5		4					Firm.		
6						GC	Dark brown and brown, moist, loose, clayey GRAVEL.		
10		8							
15		6				SC + CL	LANDSLIDE DEPOSITS (DISTURBED ALLUVIUM): Gray and light brown, moist, firm, fine sandy CLAY; interbedded with clayey fine SAND; gradational; few red oxidation.		
20						SC	Gray and yellowish brown, moist, medium dense, clayey fine SAND; some spots of red oxidation.		

Ninyo & Moore

BORING LOG

Oso Creek Channel
San Juan Capistrano, California

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FIGURE
A-17

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.
	Bulk	Driven						4/8/99	B-5
								GROUND ELEVATION	SHEET
								194' ±(MSL)	2 OF 3
								METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)	
								DRIVE WEIGHT	DROP
								140 lbs.	30"
								SAMPLED BY	LOGGED BY
								GMC	GMC
								REVIEWED BY	MD/CAP
								DESCRIPTION/INTERPRETATION	
20			27				SC	LANDSLIDE DEPOSITS (DISTURBED ALLUVIUM): (Continued) Gray and yellowish brown, moist, medium dense, clayey fine SAND; some spots of red oxidation. @ 21.5': Begin continuous coring.	
							SC + CL	Yellowish brown, moist, medium dense, clayey fine SAND; alternating with fine sandy CLAY and CLAY; thinly laminated to 1 inch thick beds within approximately 6-inch-thick beds of clayey sand, sand, and clay; laminations are planar. @ 27.0' - 28.0': Yellowish brown, wet, firm, fine sandy CLAY; few very thin beds with red oxidation; seepage. @ 28.0' - 29.0': Moist; firm; few very thin beds of fine SAND. @ 29.0' - 30.0': Brown, moist, stiff; fine sandy CLAY; clay content increases downward; few very thin bedding apparent; relatively flat.	
25									
30							SP	@ 30.0' - 32.5': Brown, wet, fine to coarse poorly graded SAND; trace fine gravel.	
							CH	@ 32.5': Landslide rupture surface. Gray, wet, soft, silty CLAY; approximately 1/2-inch-thick clay seam mixed with gravel.	
							ML		
							CL	TERRACE DEPOSITS: Yellowish brown, wet, fine sandy SILT. @ 33.0': Groundwater encountered during drilling. @ 33.2' - 37.5': Brown, moist, stiff and very stiff, silty CLAY in thin beds; interbedded with very thin and thin, light brown and yellowish brown, fine sandy CLAY; relatively flat bedding. @ 34.0': Groundwater measured after drilling.	
35									
							SP	@ 37.5' - 38.3': Light brown, saturated, medium dense, fine SAND, few thin laminations of red oxidized sand.	
							ML + CL	@ 38.3' - 39.0': Light brown and yellowish brown, saturated, stiff, fine sandy CLAY and fine sandy SILT in thin interbeds.	
								CAPISTRANO FORMATION: @ 39.0' - 40.0': Light brown and yellowish brown, saturated,	
40									



BORING LOG		
Oso Creek Channel San Juan Capistrano, California		
PROJECT NO. 201885-01	DATE 6/00	FIGURE A-18

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
	Bulk	Driven						4/8/99	B-5	
								GROUND ELEVATION	SHEET	OF
								194' ±(MSL)	3	3
								METHOD OF DRILLING 8" hollow stem auger (A&R Drilling)		
								DRIVE WEIGHT	DROP	
								140 lbs.	30"	
								SAMPLED BY GMC LOGGED BY GMC REVIEWED BY MD/CAP		
								DESCRIPTION/INTERPRETATION		
40								moderately indurated, silty CLAYSTONE over black, moderately indurated silty CLAYSTONE; massive.		
								CAPISTRANO FORMATION: (Continued)		
								Black, saturated, weakly to moderately indurated, silty CLAYSTONE; very finely laminated.		
								@ 40.0' - 42.0': Mostly undisturbed; few beds are highly fractured; relatively planar; no polished surfaces observed.		
								@ 42.0' - 44.3': Highly fractured; weakly indurated; no polished surfaces observed.		
45								@ 44.3' - 45.0': Massive; undisturbed; dark grayish brown; weakly indurated.		
								@ 45.0' - 45.5': Fractured along laminations; approximately 1 inch on bottom is highly fractured.		
								Undisturbed.		
								@ 46.0': Approximately 3 inches thick highly fractured zone; appears relatively flat, very shallow dip; no polished surfaces observed.		
								@ 46.5': Slightly fractured thin seam < 1 inch thick; no polished surfaces; undisturbed; massive.		
50								@ 48.0' - 48.3': Highly fractured; no polished surfaces.		
								@ 48.5' - 48.7': Slightly fractured; no polished surfaces.		
								@ 49.8' - 50.0': Highly fractured; no polished surfaces.		
								Total Depth = 50.0 feet.		
								Groundwater encountered during drilling at approximately 33 feet.		
								Groundwater measured after drilling at approximately 34 feet.		
								Seepage at 27.5 feet.		
								Backfilled on 4/8/99.		
55										
60										



BORING LOG		
Oso Creek Channel San Juan Capistrano, California		
PROJECT NO. 201885-01	DATE 6/00	FIGURE A-19

**Medall
Boring Logs**

BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-1
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 463'+	

SAMPLE							GEOLOGICAL/ENGINEERING	
BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	'DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	Description and Remarks
								7 1/2' of Road Cut - 60' E. of Feature on Road.
						5	ML	<p><u>SLOPEWASH/TERRACE DEPOSITS:</u> Clayey SILT with SAND - Firm to moderately (mod.) stiff, moist (mst.), medium (med.) brown (brn.), very (v.) fine SAND, slightly (sli.) mottled, porous, roots. Silty CLAY - dark (dk.) brn., irregular contacts approximately (approx.) horizontal (horiz.).</p>
						10	ML	<p><u>TERRACE DEPOSITS (Qt):</u> Clayey SILT with SAND - Light (lt.) to med. greenish brn. w/few orange clasts/mottles, w/rare gravels, few filled burrows, some roots.</p> <p>Numerous orange oxide stringers, few calcium carbonate (CaCO₃) stringers.</p> <p>Increase in CLAY, sli. stiffer.</p> <p>← Thin buried soil (?) N73E 9N (poor)</p> <p>Less CLAY, few cemented CaCO₃ nodules, rare rounded siliceous SILTSTONE clasts, few thin dk. brn. layers, NS, 3-4°W to horiz.</p> <p>← few carbonate nodules.</p> <p>thin buried soils (?), w/carbon offset buried soils - SHEAR - N6E 65-70S, 3-10" displacement, west side up, drag along shears - SHEAR - N4W 50N, gravel sized grey SILTSTONE clasts, numerous CaCO₃ nodules.</p>
						15		
						20	ML	<p><u>SILT w/CLAY & SAND -</u> Firm to stiff, mst. brnish grey, mottled w/ orange oxide, white carbonate & black (blk) mineral/carbonate fragments (frag.'s), w/thin dk. brn. laminae, no apparent bedding.; BEDDING(?): N25E 35N SHEAR - N16W 72S, north side up offset 2", some drag. features on "up" side.</p>

AER WEIGHT:
DROP:

BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-1 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						25	ML	<p>SILT w/CLAY & SAND (Continued) - w/thin brn. white & grey laminae, w/small elongate dk. brn. nodules.</p> <p>Med. brn. silty CLAY - small pod SHEAR: N19E 39E 3" offset west side up. SHEAR: N28E 82W S side down-dropped ≈ 1" N35E, 14S (+), Irregular Contact</p> <p><u>BEDROCK (Tc):</u> Clayey SILTSTONE - Soft to mod. hard, mst., lt. grey w/orange SANDSTONE interbeds, yellow to orange oxide staining, some white mineral staining, some v. fine SAND, BEDDING - N35W, 19°S on sand lense.</p> <p>Highly fractured. JOINT - N85E 15S, NS70E; fractures thin, oxidized & gypsum lined. JOINT - N12W 10N</p> <p>← Minor offset on fracture JOINT - N35E 75-80S</p> <p>Mod. hard.</p> <p>← Large siliceous SILTSTONE nodule.</p> <p>Less fractured.</p>
						30		
						35		
						40		

HAMMER	WEIGHT:	DROP:			
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BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-1 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING	
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	Description and Remarks	
						45		Clayey SILTSTONE (Continued) - Mod. hard to hard, med. to dk. grey. w/ thin white fine SAND lenses, & pods, <u>poorly bedded,</u> Mod. hard, increase in % of CLAY BEDDING: N60E 10S (poor)	
						50		SHEAR: <u>N35E, 44S; NS, 45E</u> Mod. hard to hard, mst. dk. grey, micaceous w/ thin interbeds of oxidized SILTSTONE. Irregular upper contact - trends approx. <u>N43W 15W</u> Hard, dk. greenish grey, micaceous, odoriferous ("unoxidized")	
						55		← Seep, sli. flow along Sand bed.	
						60		← BEDDING: N10E 15-20W (poor)	

HAMMER	WEIGHT:	
	DROP:	

BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-1 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE
							CLAYEY SILTSTONE (Continued) -
						65	END OF BORING @ 63'. SLIGHT SEEP @ 52'. NO CAVING. HOLE BACKFILLED AND TAMPED.
						70	

HAMMER	WEIGHT:	DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-2
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 530'±	

GEOLOGICAL/ENGINEERING						
Description and Remarks						
SAMPLE	BULK TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET
						ML
						5
						10
						15
						20

SLOPEWASH (Qsw):
 Clayey SILT (?) -
 Stiff, mst. med-dk. brn., porous, roots, burrows, some SILTSTONE clasts.

Less CLAY, calcium carbonate staining.

SLOPEWASH/TERRACE DEPOSITS (Qsw/Qt):
 SILT w/Clayey SILT -
 Firm to mod. stiff, mst., numerous carbonate filled root holes; med. grey brn.

Lt. grey-brn., increased CLAY, less CaCO₃.
 Stiff, rare oxide staining.

Less CLAY, firm to stiff, numerous soft CaCO₃ nodules, sm. grey SILTSTONE clasts less than 1/2" diam.

Med. grey brn. to brn. mottled, sli. increase in % of SAND, faintly bedded w/in-distinct pods of lt. grey to orange oxide stained material.

HAMMER WEIGHT:
DROP:

BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-2 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET
							<p>SILT w/Clayey SILT (Continued) - Discontinuous thin dk. brn. lenses.</p> <p>lt. grey & orange color (weathered rock?) - no bedding, fracturing or CaCo3 staining.</p> <p>Increase in CLAY, some sli. carbonate staining NS 24E (poor) on upper contact.</p> <p>Thin layer, lt. grey clayey SILT, approx. horiz. orientation. <i>at</i></p> <p>SILT w/SAND & Clayey SILT - Firm to mod. stiff, mst., lt. grey w/orange oxide staining mottled, numerous CaCo3 stringers.</p> <p>Few orange oxidized angular SILTSTONE clasts - no apparent bedding, chaotic mix. CLAY & SAND ← Fewer SAND lenses, chaotic appearance.</p> <p>Less chaotic, some sm. shears SHEAR: N3W 75W, east side up, few inches displacement. SHEAR: EW 7N, N64W 63N all thin features, w/minor displacement.</p> <p>BEDROCK (Tc): Clayey SILTSTONE - Mod. hard, mst., lt. grey, highly fract., w/ orange oxide, gypsum filled fract., poorly bedded. JOINT: NS, 59W SHEAR: N32W, 80E; clayey SILT against Sandy SILT. Yel. to orange oxide staining SHEAR: N30W 63N on zone of thin shears.</p>
							25
							30
							35
							40

HAMMER	WEIGHT:	DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-2 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE		GEOLOGICAL/ENGINEERING						
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	Description and Remarks
						45	Rock	Clayey SILTSTONE (Continued) - Mod. hard, mst., lt. grey w/orange oxide staining along joints & shears, mod. fract.
						50		BEDDING: N70E 2N on 2" thick, orange SAND lense. JOINT: N28W 60N, NS 76E
						55		} SANDY ZONE, similar appearance to SILT. above.
						60		Mod. hard to hard, med. - dk. brnish grey, fewer fract.'s apparent. BEDDING: N58W 9N on orange SAND lense.

HAMMER	WEIGHT:	DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-22-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-2 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET
							<p>Clayey SILTSTONE (Continued) - Increase in number of shears.</p> <p>w/irregular zones of dk. grey JOINT: N32W 59E, gypsum filled.</p> <p>Unoxidized SILTSTONE between joints.</p> <p>Hard, mst., dk. grey, mod. fract., thin shear, gypsum filled, w/zones 2-3" of oxidized SILTSTONE bounding fractures. (unoxidized) JOINT: NS 90</p> <p>JOINT: NS 42E, N20W 63E</p> <p>← Seepage along disc. SAND lense, minor flow. BEDDING: N20W 15W (poor)</p> <p>SHEAR: N20W 60E</p> <p>↙ Seepage along joint, minor flow.</p> <p>END OF BORING @ 80'. SLIGHT SEEPAGE @ 73' & 79'. HOLE BACKFILLED AND TAMPED.</p>
							65
							70
							75
							80

HAMMER	WEIGHT: DROP:
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BORING LOG

Logged By: AOM	Date Drilled: 5-23-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-3
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 500'±	

GEOLOGICAL/ENGINEERING								
Description and Remarks								
SAMPLE	BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE
							0	ML / CL TOPSOIL: Clayey SILT - Silty CLAY - Stiff, dry to sli. mst., dk. brn., roots, sli. porous.
							5	ML SLOPEWASH (Qsw): Clayey SILT - Stiff, sli. mst., med. brn-dk. brn., porous, roots, clay skins. V. stiff, blocky. Sli. mst.
							10	SLOPEWASH/TERRACE DEPOSITS (Qsw/Qt): SILT w/Clayey SILT - Firm-mod. stiff, mst., lt. to med. brn. green mottled, sli. Sandy, some CaCO ₃ stringers, v. porous. Numerous fine CaCO ₃ stringers along roots. Few orange oxide clasts, sli. sandy, v. porous.
							15	w/Sandy SILT Fewer carbonate nodules.
							20	V. highly weathered (weath.), grey SILT- STONE clasts, boundary indistinct.

HAMMER	WEIGHT: DROP:
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BORING LOG

Logged By: AOM	Date Drilled: 5-23-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-3 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET
							ML
							25
							30
							35
							40

Clayey SILT w/Sandy SILT (Continued) - Firm, mst., med. brn., v. porous, sli. mottled color, few carbonate stains.

Upper contact - N24E 9S
 Med. brn. to lt. grey brn. mottled.
 Lt. grey brn.

Med. brn. lenses dipping to N, less than 1" thick.

Med. brn. layer, irregular upper & lower contacts.
 BEDDING: N15E, 12S

Med. brn. SILT w/trace organics & carbonate nodules
 BEDDING: NS 7E

Med. brn. SILT layer dipping E at low angle.
 Med. brn. SILT layer

Firm to mod. stiff, increase in CLAY.
 Med. brn. SILT layer w/irregular upper & lower contacts - (possibly channel fill)
 BEDDING: N65E 31S

HAMMER	WEIGHT:	DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-23-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-3 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET
							ML
							45
							ML SM
							50
							ML
							55
							60

Sandy SILT w/Clayey SILT (Continued) -
Sm. soft carbonate nodules increase in % SAND
w/thin fine white SAND laminae w/scattered lt. grey SILTSTONE clasts.
Increase in visible white mineral staining.

Sandy SILT - Silty SAND -
Soft to firm lt. brnish grey, numerous white mineral stringers, numerous short discontinuous v. fine, SAND laminae, possibly bioturbated.
Increase in fines
BEDDING: N20E 3-4S (poor)

Clayey SILT -
Mod. stiff, mst., lt. grey brn., w/fine SAND interbeds & rounded white siliceous SILTSTONE and irregular lt. grey SILTSTONE clasts.
Large gravel size blocks of SILTSTONE in matrix., almost silty CLAY.

Clayey SILT - Silty CLAY - Stiff, mst., med. brn.
Irregular contact

Rock BEDROCK (Tc):
SILTSTONE - N79W 21S
Mod. hard to soft, mst. to v. mst., lt. grey w/orange oxide staining, highly fract., w/oxidized fractures.
SHEAR: N5W 22E minor offset fractures oxidized w/gypsum.
JOINT: N15W 30N w/low angle joints dipping 20-30' to NE

HAMMER WEIGHT:
DROP:

BORING LOG

Logged By: AOM	Date Drilled: 5-23-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-3 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET
							<p>SILTSTONE (Continued) - Mod. hard, mst., lt-med. grey, w/some v. fine SAND, mod. fract., poorly bedded, orange oxide staining & gypsum along fract.</p> <p style="margin-left: 20px;">] Orange, friable, v. wet SAND, Seepage in SAND on SE side of hole, Irregular upper & lower contacts.</p> <p style="margin-left: 20px;">BEDDING: N41W 11S (poor) w/mod. hard to hard, some SAND, poorly bedded, mod. fract., less oxidation.</p> <p style="margin-left: 20px;">] Orange fine SAND, loose to med. dense, sli. seep, minor caving.</p> <p style="margin-left: 20px;">w/traces of dk. grey, unoxidized SILTSTONE, Irregular contact. JOINT: N10E 48N</p> <p style="margin-left: 20px;">Mod. hard to hard, mst., dk. greenish-grey, sli. fract., some oxidation on joints, sli. sandy, micaceous, poorly bedded to massive ("unoxidized").</p>
							65
							70
							75
							80

HAMMER	WEIGHT:	DROP:							
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BORING LOG

Logged By: AOM	Date Drilled: 5-23-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number:
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	B-3 (Cont.)

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK TYPE
						85	Dk. Grey SILTSTONE (Continued) - ↙ Seepage in SILT along SAND lense. <u>Hard, dk. grey, w/1-2" thick discontinuous grey SAND lenses; fine to med. grained</u> <u>Thin discontinuous SAND lenses w/minor seepage.</u>
						90	
						95	
						100	
							END OF BORING @ 100'. SEEPAGE @ 63.5', 68' & 83'. MINOR CAVING IN SANDS @ 63.5' & 68'. HOLE BACKFILLED & TAMPED.

HAMMER	WEIGHT:	DROP:			
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BORING LOG

Logged By: AOM	Date Drilled: 5-24-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-4
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 482'+	

SAMPLE		PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE							
							CL	<u>TOPSOIL:</u> Silty CLAY - Stiff, dry-sli. mst., dk. brn [Munsell Color 5Y 2.5/1(W)], roots, sli. porous, desiccation cracks.
						5	CL/ML	<u>SLOPEWASH (Qsw):</u> Silty CLAY-Clayey SILT - Stiff, sli. mst., dk. red-brn [Munsell Color 10 YR 3/2 (W)], roots, porous, blocky structure, clay skins on partings Numerous carbonate stringers.
4	X						ML	<u>SLOPEWASH/TERRACE DEPOSITS:</u> Clayey SILT to SILT w/CLAY - Firm, sli. mst., [Munsell Color 10YR-2.5Y 3/2 (W)], porous, root casts, some v. fine SAND, upper 1-2' transit, trace carbonates, rare oxide staining. W/scattered siliceous SILTSTONE clasts.
						10		SILT w/ CLAY & SAND - Firm, sli. mst., med. to lt. green-brn., v. porous.
6	X							Sandy SILT w/Clayey SILT - Firm, sli. mst., med. to lt. green-brn., v. porous. w/few near vertical "fractures filled with" brn. SILT continuous to bedrock below <u>SHEAR:</u> N20E, 65N thin, few inches offset on med. brn. SILT layer.
						15		
						20		

HAMMER WEIGHT: 0'-25'=2500 lbs.; 25'-43'=1500 lbs.; 43'-65'=750 lbs.
 DROP: NOTE: Munsell color described in Introduction to Appendix A.

BORING LOG

Logged By: AOM	Date Drilled: 5-24-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-4 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE							GEOLOGICAL/ENGINEERING	
BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	Description and Remarks
						25	ML	<p>Sandy SILT w/Clayey SILT (Continued) - SHEAR: N20W, 62E, E side down. Med. brn. SILT layer, irregular upper & lower contacts.</p>
	9					30	ML	<p>Sandy SILT - Soft to firm, sli. mst-mst., lt. brnish grey [Munsell 2.5Y-5Y 4/2], laminated, v. fine sandy SILT & SILT w/a few thin, med. brn. SILT lenses & thin "filled fractures 1/4" - 3/4" wide subplanar</p> <p>SHEAR: N25W 73N Numerous, small thin shears, offset up to 12" w/some slicks. BEDDING: N25W 12S SHEAR: N20W 29N</p> <p>Med. brn., mod. stiff, silty CLAY discontinuous.</p>
	17					35	Rock	<p>BEDROCK (Tc): SILTSTONE (Sandy) - Contact w/med. brn. SILT filling N5W 46W SILTSTONE (Clayey) - (See Sketch) CONTACT: N10E 11S Mod. hard, mst., lt. grey [Munsell Color 2YR 4/2 (W)], sandy, sli. clayey, highly fract., w/gypsum filled fract. Some yellow orange oxide & white mineral staining. SHEAR @ 31' N10E 60E offsets clayey/sandy SILTSTONE Contact 12". Very low angle fractures. JOINT: N8W 4-6S w/dk. brn. SILT filled irregular "fractures" (see sketch). ← Discontinuous orange-white SAND lenses.</p>
						40		

HAMMER WEIGHT: 0'-25'=2500 lbs.; 25'-43'=1500 lbs.; 43'-65'=750 lbs.
DROP: NOTE: Munsell color described in Introduction to Appendix A.

BORING LOG

Logged By: AOM	Date Drilled: 5-24-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-4 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						45		Clayey SILTSTONE (Continued) - % of CLAY varies Vertical brn. SILT stringer pinches out, planar feature EW 60S
	X					50		Mod. hard to hard, increase in CLAY, med. brn-grey. Steeply-dipping SAND lense 64° south, no apparent fault. w/discontinuous, irregular SAND lenses. JOINT: N30W, 80W possibly offset beds along fracture.
						55		← Irregular brn. SILT filled fractures, almost vertical. V. mst.
						60		} Grey-brn., highly oxidized.

HAMMER	WEIGHT:	0'-25'=2500 lbs.; 25'-43'=1500 lbs.; 43'-65'=750 lbs.
	DROP:	NOTE: Munsell color described in Introduction to Appendix A.

BORING LOG

Logged By: AOM	Date Drilled: 5-24-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-4 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE		PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK TYPE	GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE							
						65	P	Clayey SILTSTONE (Continued) - ← Discontinuous sand lense w/seepage. ← SAND lense, 4-6" thick BEDDING: N50W 60S ← Orange fine SAND bed, variable thickness - up to 3' on SW side of hole. w/blk. manganese(?) staining, moderate seepage along SAND from SW side of hole. (No downhole logging below 63' due to caving.)
						70	P	
						75	P	Mod. hard-hard, mst., dk. green-grey [Munsell Color 10YR 3/1 (W)], (unoxidized), sli. fract., poorly bedded, w/rare thin white to grey SAND interbeds & laminae.
						80	P	

HAMMER | **WEIGHT:** 0'-25'=2500 lbs.; 25'-43'=1500 lbs.; 43'-65'=750 lbs.; 66'+= 1500 lbs.
DROP: NOTE: Munsell color described in Introduction to Appendix A (including stem)

BORING LOG

Logged By: AOM	Date Drilled: 5-24-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-4 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK TYPE
						85	Clayey SILTSTONE (Continued) - Hard, mst., dk. green-grey, micaceous, sli. sandy, sli. fract., poorly bedded, gypsum along fractures. Dk. grey. Variable amounts of CLAY.
						90	----- Hard, sli. fract., dk. grey SILTSTONE.
						95	
						100	END OF BORING @ 97'. SEEPAGE @ 61' & 63' AT UNKNOWN DEPTHS IN DK. GREY, SILTSTONE. CAVING IN SANDS @ 63'. HOLE BACKFILLED AND TAMPED.

HAMMER	WEIGHT:	0'-25'=2500 lbs.; 25'-43'=1500 lbs.; 43'-65'=750 lbs.
	DROP:	NOTE: Munsell color described in Introduction to Appendix A.

BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-5
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 466'±	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						0	CL	<u>TOPSOIL:</u> Clayey SILT - Stiff, dry-sli. mst., dk. brn., sli. porous, roots. Mottled, SILT w/SAND to Clayey SILT, sli. blocky.
						5	ML	<u>SLOPEWASH/TERRACE DEPOSITS (Qsw/Qt):</u> SILT w/SAND & CLAY - Firm, sli. mst., lt. to med. green brn. mot- tled, v. porous, v. fine SAND, roots w/car- bonate stringers. W/thin, med. brn. SILT interbeds.] Clayey SILT irregular contact, blocky, approx. horizontal. Weakly-bedded, white & brn. SILT laminae] Clayey SILT interbed, mod. stiff, med. grey-brn. ← Med. brn. SILT w/CLAY.
						10	Rock	Irregular contact, med. brn. SILT N10E 8E - Horizontal <u>BEDROCK (Tc):</u> Sandy SILTSTONE - Soft to mod. hard, mst., lt. grey w/orange oxide staining, siliceous SILT. clasts, mod. fract.
						15		Low angle fractures JOINT: N60W 7E Clayey SILTSTONE - Mod. hard, mst., med. brn.-grey, w/thin SAND interbeds, mod. fract.
						20		Sandy SILTSTONE w/CLAY - Mod. hard, mst., lt. grey w/orange oxide staining, w/rare orange SANDSTONE interbeds. ← Med. brn. SILT "fracture filling" N75E 70N

HAMMER	WEIGHT:	DROP:			
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-5 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE							GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN/RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	
						Rock	<p>Sandy SILTSTONE w/CLAY (Continued) -</p> <p>Highly fract. w/zones of med. brn., hard SILTSTONE, no bedding. JOINT: N85E 9S, N75W 10N oxidized w/gypsum</p> <p>← Few open voids - (may be due to drilling)</p> <p>Steeper dipping joints, thin orange oxide stained.</p> <p>Discontinuous SAND lense N20W 21S JOINT: N78W 54N</p> <p>Clayey SILTSTONE w/SANDSTONE - Mod. hard, mst., med. grey w/orange oxidation staining., v. fine to fine SAND, micaceous, fractured, w/gypsum fillings w/SAND lenses white to orange, discontinuous.</p> <p>Increase in CLAY - Sandy to clayey CONTACT N30W 36S (approx).</p> <p>Mod. hard to hard, med. to dk. grey.</p> <p>← Orange SANDSTONE interbed.</p>

HAMMER	WEIGHT: DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-5 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						45		<p>Clayey SILTSTONE w/SAND (Continued) - ← Irregular orange, fine SAND beds show minor offsets on order of 2-3" BEDDING: N38W, 28S</p>
						50		<p>Med. grey brn., mod. hard to hard, mst., mod. fract., oxidized & gypsum along joints, micaceous.</p> <p>← 2"-6" thick fine orange SAND bed.</p>
						55	q	<p>← Minor seep on NE side of hole also seep on SE side of hole.</p>
						60		<p>First trace of blk. unoxidized SILTSTONE, discontinuous contact. Hard, mst., dk. grey, micaceous, sli. sandy, poorly bedded, sli. fract., few thin v. fine SAND laminae. (unoxidized)</p>

HAMMER	WEIGHT: DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-5 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK TYPE
						65	Clayey SILTSTONE (Continued) - Hard, dk. grey, mst., poorly bedded, mica- ceous, sli. fract.
						70	END OF BORING @ 65'. SLIGHT SEEPAGE @ 53.5'. NO CAVING. HOLE BACKFILLED AND TAMPED.
						75	
						80	

HAMMER	WEIGHT: DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-6
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation: 475'+	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIP/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						0	CL	<p><u>TOPSOIL:</u> Silty CLAY - Stiff, dry to sli. mst., dk. brn., w/roots.</p>
						5	ML	<p><u>SLOPEWASH (Qsw):</u> Clayey SILT - Stiff, sli. mst., dk. red-brn., porous. w/trace carbonates along roots.</p> <p style="text-align: center;">Firm to stiff, mst., dk. red-brn., porous.</p>
						10	ML	<p><u>TERRACE DEPOSITS :</u> SILT & Clayey SILT - Soft to firm, lt.-med. brn., v. porous, "mottled", w/rootlets. w/scattered to rare gravel, rounded, less than 1" diam.</p> <p style="text-align: center;">w/Sandy SILT w/scattered pebbles & clasts of SILTSTONE.</p> <p style="text-align: center;">Slight offset 3" to 4" at contact Irregular Contact.</p> <p>SILT w/Silty CLAY lenses - Soft to firm, lt. brn. to brn. to mottled, sli. porous.</p>
						15		
						20		

HAMMER	WEIGHT:	DROP:				
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-6 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE K/PSI@SO. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						25	ML	<p>SILT w/Silty CLAY lenses (Continued) - w/scattered pebbles.</p> <p>w/small soft nodules of dk. brn. SILT & white minerals. ← SILT-filled fract; NS, 76W</p> <p style="margin-left: 40px;">} BEDDING Weak at N40E, 9-15W</p>
						30		<p>Alt. Sandy SILT & SILT - Firm to v. firm, lt. grey to grey-brn., v. thin bedded to laminated, BEDS: N45E 14N</p> <p>Bedding less distinct.</p> <p>Local "cut-fill" features</p>
						35		<p>Irregular CONTACT N45W 9N (±)</p> <p><u>BEDROCK:</u> Clayey SILTSTONE w/SANDSTONE clasts - Soft to mod. hard, lt. grey w/orange oxides; scattered SANDSTONE beds & lenses, intensely to v. fract.</p>
						40		

HAMMER	WEIGHT:	DROP:	
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-6 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING							
Description and Remarks							
SAMPLE	BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET
							<p>Clayey SILTSTONE w/SAND (Continued) -</p> <p>← SAND lenses, N16W, 39S (+) Less fractured.</p> <p>← Irregular JOINT: N40E, Vert.</p> <p style="text-align: center;">Mod. hard.</p> <p>← SAND lense 1"-2" thick, N45W, 32S</p> <hr/> <p>Clayey SILTSTONE -</p> <p style="text-align: center;">Nodules of cemented SILTSTONE, heavy oxide staining.</p> <hr/> <p>Sandy SILTSTONE & Clayey SILTSTONE -</p> <p style="text-align: center;">First occurrence of dk. grey unoxidized SILTSTONE.</p> <p>Hard, mst., med. red-brn. to dk. grey, mica-ceous w/gypsum filled joints, oxidized zone.</p>

HAMMER	WEIGHT:	DROP:			
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BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-6 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

SAMPLE								GEOLOGICAL/ENGINEERING Description and Remarks
BULK	TUBE	PEN. RESIST. BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE	
						65		<p>Sandy SILTSTONE & Clayey SILTSTONE (Continued) - Hard, med. red-brn. to dk. grey to grey-brn., micaceous, sli. sandy w/gypsum filled fract. Clayey SANDSTONE/SANDSTONE CONTACT w/SHEARS: N60E 45-68N</p> <p>← Slight seepage along joint.</p>
						70		<p>Mod. hard to hard, greenish-grey, micaceous, sli. sandy. w/thin fine SAND laminae</p> <p>Thin dk. grey fracture 1/4" thick JOINT: N30E 34S no slicks.</p> <p>FRACTURE: N70E, 45W</p>
						75		<p>← Thin dk. grey fracture 1/8" thick NS 29E</p> <p>Hard.</p> <p>← SAND lense 1-2" thick w/seepage around hole BEDDING: N20W 40S</p>
						80		

HAMMER	WEIGHT:	
	DROP:	

BORING LOG

Logged By: AOM	Date Drilled: 5-25-84	Drill Rig: Bucket Auger	Boring Diameter: 24"	Boring Number: B-6 (Cont.)
This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.			Boring Elevation:	

GEOLOGICAL/ENGINEERING								
Description and Remarks								
SAMPLE	BULK	TUBE	PEN RESIST. BLOKS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK TYPE
							85	Clayey SILTSTONE (Continued) - Hard, dk. greenish grey, mst., no obvious bedding, sli. fract. ← Slight seep. ← Thin dk. SILT joint 1/8" thick N56E 37E
							90	
							95	END OF BORING @ 90'. SLIGHT SEEPAGE @ 77' & 84'. NO CAVING. HOLE BACKFILLED AND TAMPED.
							100	

HAMMER	WEIGHT:	DROP:	
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EJN
Boring Logs

Major Divisions			Group Symbols	Soil Description	
COARSE GRAINED SOIL (More Than 50% Material Larger Than The #200 Sieve)	GRAVEL (More Than 50% Material Larger Than #4 Sieve)	Clean GRAVEL (Less Than 5% Fines)	GW	Well Graded Gravel, Sandy GRAVEL. Must have an equal distribution of Fine and Coarse Gravel.	
		GRAVEL With Fines (More Than 12% Fines)	GP	Poorly Graded Gravel, Sandy GRAVEL. Gap Graded, little or no Fines.	
		SAND (More Than 50% Material Smaller Than #4 Sieve)	Clean SAND (Less Than 5% Fines)	SW	Well Graded Sand, Gravelly SAND. Must have an equal distribution of fine, medium, and coarse Sand.
			SAND With Fines (More Than 12% Fines)	SP	Poorly Graded Sand, Gravelly SAND. Gap Graded, little or no fines.
	FINE GRAINED SOIL (More Than 50% Material Smaller Than The #200 Sieve)	SILT & CLAY (Liquid Limit Less Than 50)		SM	Silty SAND. Silty, Gravelly SAND.
				SC	Clayey SAND. Clayey, Gravelly SAND.
				ML	Inorganic Silt, Sandy or Clayey SILT. Low to No plasticity.
				CL	Inorganic Clay, Sandy or Silty CLAY. Low to Medium plasticity.
SILT & CLAY (Liquid Limit More Than 50)		OL	Organic SILT or Organic Silty CLAY. Low to Medium plasticity.		
		MH	Inorganic SILT, Micaceous or Diatomaceous Sandy SILT. Elastic SILT. Medium to High plasticity.		
		CH	Inorganic CLAY with High plasticity.		
	OH	Organic CLAY & SILT with High plasticity.			
HIGHLY ORGANIC SOIL			PT	PEAT & other Highly Organic soils.	

Note: Borderline classifications may be designated by the use of dual Symbols, i.e. SP/SM, CL/ML etc.

Unified Soil Classification System

(Sieve Openings in millimeters)	.075	.425	2.00	4.75	19.0	75.0	300.0
SILT & CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		
(U.S. Standard Sieve Sizes)	#200	#40	#10	#4	#10	3"	12"
Particle Size Limits							

E.J.N. & ASSOCIATES INC.

SURFACE ELEVATION ± 295'

RELATIVE COMPACTION %	MAX. DENSITY (pcf)	DRY DENSITY (pcf)	MOISTURE (%)	PENETRATION (N)	DEPTH (ft.)	MATERIAL SYMBOL	UNIFIED SOIL CLASSIFICATION	DESCRIPTION
					1	ML	ML	<u>TOPSOIL:</u> SANDY SILT - SOFT, BROWN, MOIST POROUS, SOME PIECES OF CONCRETIONS, V.F. GR. SAND.
					2			
					3			<u>SLOPEWASH (Qsw):</u> SANDY SILT - SOFT TO VERY FIRM, BROWN, MOIST POROUS, CONCRETION CLASTS, V.F. GR. SAND.
					4			
					5			
					6	ML	ML	
					7			
					8			
					9			
					10			
					11			
					12	Qls.	Qls.	<u>LANDSLIDE MATERIAL (Qls):</u> CLAYEY SILTSTONE - HARD, BROWN, SLIGHTLY MOIST MASSIVE, VERY FRACTURED, MOD. WEATH., CaSO ₄ FILLING. JOINT: N 70 E, 70 N
					13			
					14	ML	ML	
					15			
					16			
					17	Tc.	Tc.	<u>BEDROCK (Tc):</u> CLAYEY SILTSTONE - HARD, GREY TO BROWN, MOIST MASSIVE, MOD. FRAC & WEATH.: VERY SHEARED c CONTACT.
					18			
					19	ML	ML	
								← CONTACT: N50E, 18S
								←
								Logged by: R. MERKER
								Exploratory Boring/Pit Number: EB-1
								Job No: 82-100 Date: 4/1/82