DOCKETED	
Docket Number:	24-OPT-02
Project Title:	Compass Energy Storage Project
TN #:	264553
Document Title:	Geotechnical Evaluation Report (TN #255561-6) References Part 2_4 of 9
Description:	N/A
Filer:	Erin Phillips
Organization:	Dudek
Submitter Role:	Applicant Consultant
Submission Date:	7/2/2025 6:58:42 PM
Docketed Date:	7/2/2025

A				BORING LOG		
ogged By			Date D	illed. Drill Rig: Boring Diameter:	Boring Numb	
				at the specific boring location and at the time the boring was made. The to be representative of subsurface conditions at other locations or times.	LB-14	/
0EPTH, FT	SAMPI, ES	BLOWS/FOOT	GROUND W£TER	DESCRIPTION	MOISTURE CONTENT.	Озиев теятя
50 10 10 10 15 10 15 10 15 10 15 10 15 10 15 10 15 15			TENDE 11-1-11-11-11-11-11-11-11-11-11-11-11-1	OLDER ALLUVIUM (DBIO) (DNI) (SLIDE-AFFECTED?) SILTY CLAY VERY DARK GREY, SOFT MOIST TOWMOIST, MICACOUS LOCALLY OKIDE STAINED, LIVE ROOTS FRACTIVES WISH GHT SEEPAGE, DISCONTIN, PARTING SURFACES DARK GREY, SOFT, TO FIRM, VERY MOIST TOWET, SULFACES DARK GREY, SOFT, TO FIRM, VERY MOIST TOWET, SULFACES DARK GREY, SOFT, TO FIRM, VERY MOIST TOWET, SULFACES DARK GREY, SOFT, TO FIRM, VERY MOIST TOWET, SULFACES INTERBED, FINE SILTY SAND TO SANDYSILT, CONCRETIONS LIVE, ROOTS, YH "THICK, SLIGHT SEEPAGE, DISCONTING DISCONTINUOUS, LAMINATIONS OF SILTY SAND GREY TO DARK GREY, VERY MICACEDUS, ABUNDANT ROOTS, ALMOST SIRVITUREUESS THIN COLOR BAND, N-S, HO'E DARK COLOR. SCATTERED CONCRETIONS; CHARCOAL FLELLS, LOCALLY ABUNDANT CHARCOAL THIN COLOR BAND, DARK COLOR—NO CAY, N-S, 40°E 1-2" THICK IN FINE SAND, DEPOSITIONAL SAND LAMINATIONS, V, FINE SAND DIPANG EASTERLY PROJECT NO.		
HAM		DROP:		1651-4		

DESCRIPTION DESCRIPTION DESCRIPTION SILVY CAPEY DIAM. SOME COLOR BANDING DESCRIPTION SILVY COLOR BANDING DESCRIPTION SOME COLOR BANDING DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION SILVY CAPEY DIAM. SOME COLOR BANDING DESCRIPTION DESCRIPTION DESCRIPTION SOME COLOR BANDING DESCRIPTION DESCRIPTI					BORING LOG			
DESCRIPTION DESCR	ogged By	:		Date Di	illed. Drill Rig: Boring Diameter:		•	
TO DECORING TO DESCRIPTION (ODER) ENTRY (NOTE) STANCES SILVICIALY - GREY TO DIRECTORY MOIST, TEXCES WHITE MIN. + ONLDE STANJING, MOTTLED. GUIDE ENTRY TALL TO "DIMM, SCATTERED WOOD FRAGMENTS, PRETIALLY DECOMPOSED WOOD FRAGMENTS, PRETIALLY DECOMPOSED WOOD FRAGMENTS, PRETIALLY DECOMPOSED WOOD FRAGMENTS, PRETIALLY DECOMPOSED ROOTS, W'DIAM. COURS BANDING 1 COURS BANDING, MAYBE BEDDING, NOT CLOYEY DIRPING 33: N. CONTIST - SOFT, STICKY, CLAYEY, N. MOIST, STEEPEN DEPHNIQUES TO EAST							LB-14	<i>.</i>
GYPSUM XTAL TO 1"DIAM, SCATTERED LOWCRETIONS, 4-5" DIAM, CARBON-RICH SCATTERED LOWCRETIONS, 4-5" DIAM, CARBON-RICH SCATTERED LOWCRETIONS, PRETIALLY DECOMPOSED, SOME COLOR BANDING BANDING COLOR BANDING, MAY BE DEDDING, NOT CLAYEY DIRAMS 32' N' CONTRET SOFT, STEED Y, W MOIST, STEED BY DEFORMER (TO DEMANDES OF TO EAST	0EPTH, FT	SAMPI, ES	BLOWS/FOOT	GABUND		MOISTURE CONTENT.	DIAY.DENSITY PCI	O: HER TESTS
HAMMER WEIGHT: DROP: OCATES SICTSIONE GREY, MOD. HARD, MOIST, NSOW, 50°E PROJECT NO.: FIGURE NO.: 1651-4 4	75 85 90 190	MER	WEIGH	10000000000000000000000000000000000000	CONTACT - SOFT, STICEY CLAYEY, V. MOIST, STEEPLY DEDROCK (TO) CONTACT - SOFT, STICEY CLAYEY, V. MOIST, STEEPLY DEDROCK (TO) CLAYER STORM (MOP, HARD, MOIST, USON, SD'E PROJECT NO:		URE NO	

				BORING LOG			
ogged B	у:	12 320	Date D	lled. Drill Rig: Boring Diameter:		ng Number	
Descrip descrip	ptions on th	nis boring to	g apply only of warranted	at the specific boring location and at the time the boring was made. The to be representative of subsurface conditions at other locations or times.		B-14	<i>'</i> .
DEPTH. FT	SAMPI, ES	BLOWS/FOOT	CARRIED	DESCRIPTION	MOISTURE C:)M?FNT,	Diay DENSITY pcf	O: HER TESTS
100_			7	BEDROCK (TZ) CLAYEY SICTSTONE DARK OLIVE GREY, MOD. HARD, MOIST, MASSIVE, NO OXIDES, WHITE MIN.			
			لد	MASSIVE		ľ.	
105		die	7	NO APPARENT CHANGE OF ROCK CHARACTERISTICS			
/o5			<u> </u>				
_			_!_		į		
//o -			-1				
_					~		
_			T-		i.		
				•	*.		
'15 - -				TD = 115' DOWNHOLE LOG TO 101'			
-			ž		,		¥
_	,				ı		i.
70-	-						
-							
	1						*
25	1						
	MER	WEIGH DROP:	T:	PROJECT NO.: 1651-4	FIGU	JRE NO.	:

				BORING LOG			
ogged By:			Date D	orlled. Drill Rig: Boring Diameter:		ng Numbe	
Descript descript	ions on th	is log are n	og apply oni	y at the specific boring location and at the time the boring was made. The to be representative of subsurface conditions at other locations or times.		-B-1	5
DEPTH. FT	SAMPLES	BLOWS/FOOT	GROUND WETER	DESCRIPTION	MOISTURE CONSENT.	Diay DENSITY	O:HER TEST9
	amvs .	/SMO18	16月11日11日11日11日11日11日11日1日1日1日1日1日1日1日1日	OLDER ALLUVIUM (QOAL) (LONDSTIDE AffectED) SILTY CLAY VERY DARK GREYISH BROWN, FIRM, SLIGHTLY MOIST SLIGHTLY POROUS, SCATTERED CHARCOAL FLECKS, WITH SCATTERED SMALL ROCK FRAGS, IRREGULAR SHAPED, IN-FILLED SEAM OF LT, BROWN SILT (BURROW INFILL /LIQUEFACTION?) CLAYEY SILT, LIGHT BROWN, IRREG. SHAPE SHARP COUR CHANGE ALONG SLIGHTLY (LAYEY PLANE N-S, 30°E, LT. BROWN ABOUE, LT. OCIUE GREY BÉTOW UT FE OXIDE; WHITE MINN STAINING SCATTERED CARBON FLECIES, THIN, TIGHT CONTACT MOTTLING, DARK BROWN, THIN BANDING COLOR BANDING, DEPOSITIONAL CONTACT SANDY SILT N-S, 10°E, LESS CLAY BELOW WICHTAGET SHARP, WAYY, POSSIBLY EROSIONAL CLAYENSILT	NOI C: N	30 AbO	O:HEB1
20-		WEIGH	出一个生生大学大	BROWN TO DARK BROWN, (PALEUSOLT) FIRM, MOIST, SLIGHTLY POROUS, WERDATIONAL CONTACT SILM CLAY, OLIVE BROWN, SOFT, MOIST, W/WHITE MIN. STAINING, W/SOME FE OXIDES INDISTINCT BEDDING, SUBHORIZONTAL, PISCONTIN, ABUNDANT WHITE MIN, STAINING	e g	JRE NO	
HAM		WEIGH DROP:	<u>T:</u>	PROJECT NO:: 1651-4	FIGU	JRE NO	.:

				BORING LOG			(+				
iged By:			Date D	rilled. Drill Rig: Boring Diameter:		}	B-15				
Descripti descripti	escriptions on this boring log apply only at the specific boring location and at the time the boring was made. The scriptions on this log are not warranted to be representative of subsurface conditions at other locations or times.										
DEPTH FT	SAMPLES	BLOWS/FDOT	GROUND	DESCRIPTION		C. INTENT.	O'TY DENSITY PCI	O: HER TESTS			
5-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		11·11·11·11·11·11·11·11·11·11·11·11·11·		OLDER ALLUVIUM (QQIO) LANDSLIDE AFFECTED SILTY CLAY LIGHT OLIVE BROWN, SOFT, MOIST, SLI POROUS WITH FE AND WHITE MINERAL STAINING, ABUM DANT SMALL & ROCK FRACMENTS, MOTTLED, NO OBSERS. STRUCTURE TREGULAR, OARK GREY-BROWN CLAY POCKETS CONCRETION, SUBANGULAR, CALB. CEMENTED 6" DWM, SLI. NOISTURE ON DISCONTINUOUS FRACTURES NUMEROUS FRACTURES, SOME CLAY LINED AND STRIATED, DISCONTINUOUS, VERY MOIST TO WE FRACTURES INTERSECTING, SOME CAVING, SOFT-FR ZONE OF INTERSECTING, CLAY SEAMS, WET, LONE OF SOIL INFILLING BOUNDED BY SHAR. DISCONTINUOUS PLANES, STEERLY DIPPING, NER VERTICAL TREEGULAR, ORGANIC-RICH, LENSES, DISCONT ANGLES CLAY LINED FRACTURE 'B- YIL "THICK, SHEI SMOOTH, PLANAR, W/ STRIATIONS ORIENTED DOWN DIP, SOIL-LIKE MATERIAL ABOVE PLANE, ABRUPT COLOR CHANGE, NSW, 60°E GRADATIONAL CONTACT - OLDER ALLUVIUM TO VERY WEATHERED BEDROCK (TV) SLIPE AFFECTED CLAY SEAM, WELL DEFINED, PLANAR, DEEPLY STRIATED, VISE, 22'NW, STRIATIONS TREAM NTSE CLAY SEAM, WELL DEFINED, PLANAR, NSSE ZU STRIATIONS TRENDING NTON CLAYEY PLANE, STRIATED, LESS MOTTLED BEION PANE, PLASTIC CLAY, VISW, 55 NE FISH VERTEBERE, I'D JIAM, 15" MIGH, LATE PLIOCENE - EARLY PLESTOCENE CLAY SEAM, DISCONCHILLY MOTTLED, OR GANICS, N-5, 35°C, LIGHLUM MOTTLED, OR GANICS, CHARCOALFLEKKS, DARK LENSES "2" DAMM.	J- DS TEM DE THE DO THE	TIGUI	RE NO.:				
HAMN	MER	DROP:	<u>-</u>	1651-4			7				

			2.0000	BORING LOG			
ged By:		* HAMES - 20	Date D	rilled. Drill Rig: Boring Diameter:		ing Numbe	
Description description	ons on th	his boring lo nis log are n	og apply onl of warrante	y at the specific boring location and at the time the boring was made. The do be representative of subsurface conditions at other locations or times.	4	LB-1	Sconi
DEPTH, FT	SANDLES	BLOWS/FOOT	GROUND	DESCRIPTION	AUDISTURE C. MCF NT,	DIAY DENSITY	O: HER TESTS
50		WEIGHT	18711-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	BEDROCK (TC) (HIGHLY WEATHERED) (CONT.) (SLIDE APPECTED) SILIV CLAY(STONE) PARK GREY TO GREY MOTTLED, SOFT TO MOD. HRD, MST, SOME FE OXIDE STALNING, MICACEOUS, PREAMIC MATTER, MASSIVE CLAY SEAM, CONTINUOUS, PLANAR, STRIATIONS POTENTIAL SUP SURFACE, NIOW, 116. STRIATIONS REND NOSE, PLASTIC CLAY, 12." THICK, MOIST BEDROCK (TC) (SLIDE APPECTED) CLAYEY SILITSTONE DARK OLIVE GREY, MOD. HARD, MOIST, MOD. FRACTURED, DK. MINERAL * DR. OXIDE STAINING, THICKLY BEDDED TO MASSIVE MICACEOUS FRACTURED, STEEP, DISCONTINUOUS, SLIGHT SEEFAGE INTENSELY FRACTURED, STEEP, DISCONTINUENT, FRACTS WET (SEEPAGE) CLAYSEAMS - NSOW, 20°NE, VERY PANAR BEDROCK (TC) - CLAYEY SILTSTONE DARK OLIVE GREY, HARD, MOIST, MASSIVE, MICACEOUS, HARD SILICEOUS SILTSTONE LAYER, SCEPAGE SHELL FRACMENTS FRACTURES, PARALLEL, NYOW, SOONE PROJECT NO.		RE NO.	
намм		DROP:		1651-4	3		

gged B	v		Date D	BORING LOG rilled. Drill Rig: Boring Diameter		I Bo	ring Numbe	,
		his barran I		y at the specific boring location and at the time the boring was made. The Boring Elevation				5(cont.,
descrip	otions on th	nis log are r	ot warrante	d to be representative of subsurface conditions at other locations or times.	· · · · · · · · · · · · · · · · · · ·			1 -
DEPTH, FT	3AMPI, ES	BLOWS/FOO	GROUND WATER	DESCRIPTION		CUNTENT.	DOY DENSITY	O: HER TESTS
5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N. C.	KC78	THE 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	BEDROCK (TC) (cont.) CLAYEY SILTSTONE DARK OLIVE GREY, HARD, MOIST, MA MICACEOUS FRACTURE JOINT PLANE, FAIRLY O CLAY COATING, THIN, SMOOTH, PLAN CLAY COATINOUS POSSIBLE BEDDING, SUBHORIZONT, CLAYEY, (CONTINUOUS?) FRACTURE?, DISCONTINUOUS, SCIGHT SO THICK SOFTER ZONE FRALTURE, CONTINUOUS, VERY TIGHT, SLIGHT SEEP, SUBJEARALLEL FRACTURE BELOW, N-5,57°E	CONTINI, NAR, N-S, 60°E AL, SLIGHTLY	NON CONTRACTOR OF THE PROPERTY		O:HE
HAM	MER	WEIGHT	-		PROJECT NO: /65/-4	FIGU	IRE NO.:	

ged By:			Date C	BORING LOG Prilled. Ortil Rig: Boring Diamete	er:	Bon	ng Numbe	er.
Descriptio	ons on	this boring la	og apply on	ly at the specific boring location and at the time the boring was made. The Boring Elevation	<u> </u>			S(cont.)
Jescriptio.	SANPLES	nis log are n	GROUND WETER WETER	DESCRIPTION		MOISTURE CONTENT.	DINY OENSITY	O: HER TESTS
11 0 1 1 0 1 1 1 1 1	SAMPLES	BIOMS/FOO		DESCRIPTION BEDROCK (TC) (CONF.) CLAYEY SILTSTONE DARK OLIVE GREY, HARD, MOIST, MASS SLIGHTLY FRACTURED, VERY HARD, FEWER MICRO FOSS SLIGHTLY MOIST, FEWER SEEPS SANDY SILTSTONE WI CLAY TO SILTSTONE DARK OLIVE GREY, HARD, SLI. MOIST, ABO MICRO FOSSILS, WET FROM SEEP VERY HARD, ABUNDANT MICROFOSSILS, SO SELIGHTLY LESS HARD, G"THICK LA	JIAL	NOISTURE CONTENT.		O:HER TEST
150			1 1 - 1	END OF BORING @ 147! HOLE BACKFILLED AND TAMPED.				
HAMM	ER	WEIGHT	<u> </u>		PROJECT NO.:	FIGU	RE NO.	:

				*				VAN RANO, CA ING NO.
							DRILLING METHOD: BUCKET AUGER	B-17
							SHEE	T .
							SAMPLING METHOD:	OF 7
							SAMPLING METHOD.	DRILLING
							STA	ART FINISH
							WATER LEVEL TIME	ME TIME
							11:4	5AM
9							TIME	TE DATE
DRIVING V	VT.:		-	-	·		DATE 5-24	7-01
ATUM Z			• •		ELEVATI	ON	CASING DEPTH	
MPLER YPE INCHES DRIVEN	e o o	SAMPLE NO.	ŕ. R	NUMBER OF RINGS	포片	Ţ		
SAMPLER TYPE INCHES DRIVE	DEPTH OF CASING	S /피문	BLOWS/FT. SAMPLER	MBEF	DEPTH IN FEET	SOIL		**
SAMPLEF TYPE INCHE DRIV	80	SAMPLE	SA	N C				
- 1 -							F)LL (?)	
					0]	SILTY CLAY	
					1		DARK BROWN, SOFT, S. MOIST	
					'[MOTILED GRAY, LIGHT BROWN AREAS, FE O	KIDE SPOTS
					2	-	NUMEROUS ROOTLETS	
/		$\langle \cdot \rangle$			-	-		
					3 -	_	*	
-	-				ł -	-	*	r 1
					4 -			
	-				_ -	-		
					5			
					1 .	1 ^	CLAYEY SILT	
					6		GRAY, STIFF, S. MOIST, MOTTLEN, SCATTERED SU	B. ANG. RK
					7 -		SILTY SAND	
/_/							GRAY SOFT, S. MOIST	
					8 -	_		
-/ $-$ /					-	4		
					9	-	Olately as a	
	_		-	_	† †	-	CLAYEY SILT TO SILTY SAND	
		/			10	7	DARK GRAYISH BROWN, STIFF, S. MOIST	
					1 ., t	1	DARK YELLOWISH BROWN	
] " [~ 2' WIDE FONE OF LOOSELY CONSOLIDATED W	HITE SAND
					12		YELLOWISH BROWN	TRENCH BE
$-\!$					ļ — ļ	_	WHITE MIN. STREAK, LOCALLY	
					13	-		-
-/ $-$ /					 	-		
		/			14	-	SILTY SAND	
					 	i	GRAY TO OLIVE GRAY SUFT, SIMOIST	
					15	-	FE OXIDES, LOCAL WHITE MIN. STREAKING	<i>3</i>
17					1	1	-	
					16	1	_ ORANGE GRAY SAND	
					17]	SECONDARY MIN. SEAMS - VEINLETS W SAN	D CUT ACR
] '' [WEATHERED BEDROCK SHARP, VERY IRREGULAR	
					18		CLAYEY SILT	
1				1	1 10 "			
					_ " [_ [GRAY (DARKER THAN ABOVE), SOFT, S. MOIST	
			_		10	<u>]</u>	GRAY (DARKER THAN ABOVE), SOFT, S. MOIST	

	LOCAT	ION OF BO	ORING			*				JOB NO. 1651-4		PERO SERRA U SCHOOL	51	ATION AN JUAN HISTRAN	10, CA
										DRILLING METHOD	BUCKE	T AUGER		BORING NO	
														LB-/	7
														SHEET	-,
,										SAMPLING METHOD):				7
П														DRILL	.ING
П					1.0					-				START	FINISH
П										WATER LEVEL				TIME	TIME
Н										TIME				11:45 AM	*
										DATE		-		DATE	DATE
		ING V	VT.: _							CASING DEPTH				5-29-01	
	DATUM	z /] w.o. /		-	ELEVAT	ION	SURFAC	E CONDITIONS:					
Ш	E E	INCHES DRIVEN	DEPTH OF CASING	SAMPLE NO.	FR.	NUMBER OF RINGS	표별	7 %							·
	SAMPLER TYPE	BLOWS	EPT	JE S	BLOWS/FT. SAMPLER	MBE	DEPTH IN FEET	SOIL	-				-		
	Ŋ	/ 3	۵۰	SAMPLE DEPTH	A S	ž	_			(CONT'D)					
			2010000 1.00				40		WEAT	HERED BEDRO	OCK .				
] "[C	LAYEY SILT	(W/ 501	ME VF. SANO)			
							1			GRAY, SOFT	MOIST	•			
				/			↓ ↓			SCATTERE	ED FE &	DXIDES			
							2	-							_
								-				-			/
							3	_		GRAY, SOFT TO	STIFF,	moist			
							4	4							
							45	_		CONCRETIO	N ~ 1	TO 3" DIAM.			
•							-	4		GYRSUM	RYSTAL	<u>S</u>			
	٠						6							,	
							7	-	-						
				1			R			TOP OF C	ASING	(47.9')			
] ° [)		:	
							9		a	LAYEY SILT		·			
				<u>/_</u> ,				_		GRAY, SOFT,	MOIST				
}							50	-		WHITEMIN	J B	YPSUM; SLIGHTL	Y MOTT	LED	-
				/			1								
) BY				1		-	-	-						_	
CHK'D BY.				/			2	-		auth -	01011516	Willett access	O E OV	lace	
U				/		 - -	┧ _					, WHITE MIN. STI	KEHK . L	DUHULY	
Ï							3			GASUM	UN FOI ME				
=	- 7			1/											
2						ı.	4								
2-54-01							55			LAYEY SILT.					
		/		/				-		GRAY, STIFF	, S, MOL	ST			
DATE							6			SMALL WHII	E MIN.	SPECKS, OXIDATIO	IN LOCA	uy .	_
		/		/			7					E OXIDES, YELLOW), .	
		V.,		/		 	4					TALS OF GYASUM		<u>.</u>	
	Ĭ	/		/			8								
		1		1	1		9	\exists		HARD, ANG	OUL MR L	GF GRAY SILTSTONE	FRAG	~ 2,5" DI	AM ·
		/_				1		П			-/-				
	1	/		/	1		60	\sqcup			- 1	`			

/	LOCAT	ON OF BO	ORING				F			10в no. 1651-4	CLIENT	HERD H	SERRA OL	SA	ATION IN JUAN IPISTIR AN BORING NO	10, CA
									1	DRILLING METHOD: BUCKET AUGER LB-17						
	ļ								-						SHEET	
									t.	SAMPLING METHOD:					4 01	7
l I									+	· · · · · · · · · · · · · · · · · · ·					DRILL	ING
	į.								-						START	FINISH
									-	WATER LEVEL			<u> </u>	T	TIME	TIME
	<u> </u>								ļ	TIME	-				11: 45 AM	
	DON	VING V	VT ·							DATE			 	 	DATE	DATE
İ	DATUM	VING V	V I			•			 I	CASING DEPTH				 	5-29-01	
	*****	ر کے ا		<u>"0</u> /			ELEVA1	TION	SURFACE	CONDITIONS:				ل	<u></u>	
	SAMPLER	INCHES DRIVEN BLOWS	DEPTH OF CASING	SAMPLE NO.	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL								
	, w	/ B		SAMPLE		ž				(CONT'D)						
							40	-		IERED BEDROCK YEY SILT					<u>-</u>	
. 1							1			RAY, STIFF, S						
							2	_								
							3									
	-					-	4									
	R		-	2/65	1°=6" 46=6"		65			YEY SILT HARK GRAY , FI	Pna S	MAIST				
	1						6			LOCAL OKIL						
							7					····				
							8									
							9		CLAYI	EY SILT						
1							70			FE DXIDES ,	mais	MIN. A	EPOSITS			
							1						-100113			
CHK'D BY							2			VERY MOIST,		SEEPA	SE			
							3	-		DARKER GR	AY W	DEPTH	_			
5-29-01			<u> </u>				4			ery dark Gra	Y , ST	IFF, MI				
5-2							75			WHITE SPEC ZONES OF				PADUALLY	MORE U	NEPTH
DATE				/			6			SOME SCA	TERED	OXIDAT	ION			DALIA
							7									
J.	 !						8						_			
							9				-					
				/	1		80	П								

/	LOCAT	ION OF BO	ORING					· 	<u></u>	JOB NO.	CLIENT	II PERO S	EPPA	LOC	NOITA	,
							*			1651-4	HIG	H SCHO	02		BORING NO	10, CA
										DRILLING METHOD:	BUCK	ET AUGI	ER		LB-1:	
1	1														SHEET	
	ı									SAMPLING METHOD.					5 .	F 7
															DRIL	LING
1 1	}														START	FINISH
7										WATER LEVEL					TIME	TIME
3										TIME			_		11:45 AM	
3	DRI	VING V	VT.: _							DATE			ļ	-	5-29-01	DATE
}	DATUM			Two: //			ELEVAT	ION	SHPEAC	CASING DEPTH E CONDITIONS:				9	3 2, 01	
1	LER	INCHES DRIVEN	O O	SAMPLE NO.	/FT.	NUMBER OF RINGS	E	, I	JUNIAC	E CONDITIONS.						
1	SAMPLER TYPE	BLOWS	DEPTH OF CASING	SAMPLE DEPTH	BLOWS/FT. SAMPLER	RING	DEPTH IN FEET	SOIL		<i>(</i> 2						
3	- U1	/ 尚		SAM	- B	ž				(CONTID)						
.							80	4	BEDR							
š									- cy	AYEY SILTSTON		46.7	20		_	
							1	1		VERY DARK GA	CHY, N	10 D. HH	CO, MO	IST		
	4						2									
			8				3			WATER SEEP						
					-		4	_	_	VERY HARD	ZONE	OF CONC	RETIONS	(LGT GI	PAY)	
					_		{ }									
						-	85									
. 8	[6	1								
ă							7	7								
				1			8									
					1		ł		-						-3	
ř	ļ 			/ _,			9									
							90			VERY DARK GR				SI TO V.I	101.57	
							1	-								
СНК'D ВУ.							2									
1			-	1			3									
5				1		-	1	-								
29-6				K-,			4									
DATE 5-29-01	<u> </u>			/_			95				VERY	MOIST T	D WET			
DATE							6	-				- · · · · · ·	-			
•				/			7									
ē		/		17			8									
÷.				1			-	-								
3 60				/			9									
		/		1/	l]	100	H	ļ <u>-</u>							

1	LOCATI	ON OF BC	PING							JOB NO.	CLIE	NT		Troc	ATION	
ĺ	LOCATI	ON OF BC	KING			4			ž	1651-4	Ju	NIPERO SCHO	SERRA OL	Sr C	AN JUA APISTRI BORING NO	N 10'C
1										DRILLING METHOD:	Buck	ET AUGE	R		BORING NO	
															SHEET	
										SAMPLING METHOR					60	F 7
- (SAMIFEING WETTON					DRILL	
															START	FINISH
										WATER LEVEL					TIME	TIME
.										TIME		1-			1 1	
	ומח	/ING V	VT •							DATE			 	 	DATE	DATE
- } }	DATUM	ina v	· · · · ~				ELEVAT	ION		CASING DEPTH			 		1]	
		Z A		# Q			ELEVAI	ION	SURFACE	CONDITIONS:		<u> </u>	<u>. L </u>	<u> </u>	L	
	SAMPLER	INCHES DRIVEN	DEPTH OF CASING	SAMPLE NO.	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	∃ <u>₹</u>								
	SAMI	BLOWS	CAS	SAMPLE	LOW	E NE	N S	SOIL								
		/ m		40	m 0,	Ž	\ 			(01/T/D)						
1							100		BEDE							
1							1	-	CL	AYEY SILTSTON						
							1			VERY DARK 6	RAY,	MOD. HARI	, V. MOI	ST		
	}						2	}		(вискеть	UERY I	WET, MUL	(Qr)			
			8				3									
							4									
,							105									
							6					· · · · · · ·				
							7									
ĺ	-						8									
5 1							9									
										VERY DARK	SRAY.	MOD. HAR	'A. V. MOI	157		
0							/10	-								
CHK'D BY					-			-								
Ş			·				2]			-					
2		//					3]								
-30-01			·			·	4	1		/0:-1:	et :					
3				//			/)5	1		(BUCKETS	31/22	WET, MI	NDDY)	•		
DATE							6									
							7	_								
	<u></u>					L	8									
							9		<	(NO CHANGE)						
				1/			120	\dashv	<u> </u>							

האודדוואפ רכואוא.

Previous Leighton Logs

DATE	Curria Co. Ca	u - Si Liforn	amaa ia T	DRILL 1800 Testi	HOLE	No	
HOLE DIA	N TOP OF	HOLE L	50±1	DRIVE REF. (000#(0-30) DROP 12 IN
O DEPTH FEET M GRAPHIC E LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	Sgit, ELASS.	GEOTECHNICAL DESCRIPTION LOGGED BY _BC SAMPLED BY STH
		-			,		Topsoil: dx. brngray, moist, soft, clayey, sandy siH; rts. E rt/h; local Feo stag.
5-11		/	Push				Blide Debris: @ 3.7' Biliceous cobble-tan silt - @ 5' mod plastic; mod firm; massive
ハくし、く		2	Push		a General		@8.5' contact w/ green brn., moist, soft-med firm, sandy \$11t w/clay; oxid.; Fe05tng blabs of topsoil; mottled; local Fe0 blabs @9' tan sandstone frag.
(6)	C: N30E	-	P-8"		e e e		@12' green brn, moist-wet Clayer &ilt no structure @12:1-13.1' band of soil; dk brn irreg. apper contact; no sign of rupture @14' green brn., moist, soft-med. firm, Clayer, \$111: mass.; no structure; mottled
20-11		4	Push				@ 18' FeO Stng., abot.; lighter bright org. @ 20' looks like remnant Structure, destroyed during Sliding; less blotchy & fewer
25-		5	Push				@20-22' more Clay rich; micaceous; jarosite sting. @22.5' less mica; mod. plastic; no structure @23' local Feb pod; soft concr.
<u>*</u>	Standing Heo 8-2-80	_					

DRILLING CO. Palfornia Testing - Bo Sac Type of Rig Bucket Hole Diameter 24" Drive Weight 2800# (0-30) Drop 12 ELEVATION TOP OF HOLE— REF. OR DATUM BY STORY BY	DAT Pro	E	Z9 E 8 Curri	2-6	0 Omu	DRILL	HOLE	No	<u>B-/</u> SHEET <u>Z of Z</u> PROJECT No. <u>180165-02</u>
HOLE DIAMETER 24 BRIVE WEIGHT ELEVATION TOP OF HOLE— REF. OR DATUM GEOTECHNICAL DESCRIPTION LOGGED BY BC SAMPLED BY STH ANOtes: 1) Cal Testing broke down @ 34.7-29-80; Hour after brokedown & 24.5 each of the active of t	Dri	LLING	Co Car	itori	riai	Testi	20-	Bo	Jac Type OF Rig Bucket
Stording Histories Stording Histories Stording St							WEIGH	ن کــ ۱۲	2800 # (0-30) DROP 12 IN
Standing His 1-278 Total Depth: 34' Notes: 1) Cal Testing broke down @ 34' 1-29-80; HeO standing @ 33.5, I hour after breakdou c) to Jac drilled to 34' 8-2-drilling vary slow due to severe caving; decided @ 3 it was not feasible to continue to detail and the direct of 22 5 822.	ELE	VATIO	TOP OF	HOLE-		REF.	OR DAT	TUM	
Total Depth: 34' Notes: 1) Cal Testing broke down @ 34' 7-29-80; H2O standing @ 33.5, I hour after breakdou 2) To-Jac drilled to 34' 8-2- drilling very slow due to severe caving; decided @ 3 it was not feasible to continue		GRAPH1C LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	\$014. ELASS.	GEOTECHNICAL DESCRIPTION LOGGED BY BC SAMPLED BY STH
Notes: 1) Cal Testing broke down @ 34' 7-29-80; HzO standing @ 33.5; I hour after breakdow C) Bo-Jac drilled to 34' 8-2-drilling vary slow due to severe caving; decided @ 3 it was not feasible to continue	_		Standing Heb 7-24-8		Push				
	35								Notes: 1) Cal Testing broke down @ 34' 7-29-80; HzO standing @ 33.5, I hour after breakdown Z) Bo-Jac drilled to 34' 8-2-80 drilling very slow due to severe caving; decided @ 34' it was not feasible to

Pro	JECT_	Curr Co METER Z	ie -	Ja	mua	1902	No	B-Z SHEET_1_OF_4 PROJECT NO. 180165-02 TYPE OF RIG Bucket 500# (0-25); 1500#(25-45) DROP_12IN
Dертн Feet		ATTITUDES	TUBE SAMPLE NO,	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	Sg.1, ELASS.	GEOTECHNICAL DESCRIPTION LOGGED BY SAMPLED BY STH
5-			1 1 1 1	e1			** :	Collutium: dx. gray brn., moist- dry, soft-mad. firm, sandy, Clayay silt; large rts; highly explansive; white sand lanses, some green silt lenses @1' root @2' rt.
-			ंडिंग	Push	105.0	20.2	CL	Blide Debris: Some oxid. silt@5' @6' med-dk.brn, moist, local _
10-		*	2	Push	103-5	22.7	CL	@8' dk. brn. @11' grn. gray brn. moist, med firm clayer silt hi mottled; no structure; rt/n becoming more firm
15-			3	P-6°	95.5	27.4	CL	@13' grades to Capistrano looking debris: med. brn- grn. brn. gray, wet, soft clayer silt, hi weathered; some organics; microslicks on broken surfaces; feosting. @15' gray brn, moist, firm Clayer silt; plastic; mottled w/ Feosting no structure @16 dk. rino structure @16 dk. rino structure @17' slightly more structured same a.a.; and Feosting
20-			4	Push	88.i	30.2	CL	@19'. a.a.
25-		v						@21' Same a.a., but more moist; minor Fe O Strag. @23' moist-wet-gat.; minor seepage
25-			5	Push	99.2	26.2	CL	@25' oxid. Sardy Silt layer @27' Small conc.: free HzO clay - Sandy-Silt
30_				ı				

GEOTECHNICAL BORING LOG DATE 8-2-80 DRILL HOLE No. B-2 SHEET 2 OF 4 Samualson Currie -PROJECT No. 180165-02 Bo-Jac TYPE OF RIG Bucket DRILLING CO. HOLE DIAMETER 24" DRIVE WEIGHT 1500#(25-45'); 750#(45-65') DROP 12 ELEVATION TOP OF HOLE 225 REF. OR DATUM DENS ITY PCF Moisture Content, % PER FOOT GEOTECHNICAL DESCRIPTION TUBE SAMPLE DRY LOGGED BY _ SAMPLED BY STH 30 6 3 104.5 24.4 @32' gypsun @33' becoming darker gray; odor thin laxering, possible Sodi merd 35. 7 2 97.1 30.2 CL @37' abolt organics, wood bark small nodules of croam silt @39' fresh fibrous bark, ax gray clayer silt matrix, organic odor AO. 3 91.4 31.5 CL @44' Small rootlets 45. 9 3 85.8 37.4 @46' gray silt modules @47' metamorphic clast (chlorite schist) 50 10 10 99.4 27.1 CL @53' abolt., fresh organics branches & roots, still mica. 95.8 27.7 CL @58' matl. same a.a.

Pro- Dri Hol	JECT_ LLING E DIAM	2-80 Currie Co. Bo	2-50 2-50 24"	Jam 1C	DRILL LOS DRIVE	Hole Weigh	No	B-2 SHEET_3_OF 4 PROJECT NO. 180165-02 TYPE OF RIG Bucket 0#(45-65); 1500#(65-90') DROP_12IN
Дертн Реет		ATTITUDES 00-	SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY 3	Moisture 2	\$016, \$18.5°. €	GEOTECHNICAL DESCRIPTION LOGGED BY SAMPLED BY STH
65-			13 14	13	98.1	26.1	CL	@61' thin bedded clayer sitt, med-ok. gray; odorous; organics mottled blebs of mica. sitt @63' Concr. 6-8" dk. groy § 1t. gray silt>12" @67' same dk. flood plain deposits @68' still abdt. organics @70' It. gray Sand lenses; abdt. organics
- 15-			15	14	90.1	32.8	CL	@ 73' Some Small local slicks beginning of gradational change to unox. @ 75' brn, wet sand lens coarse grnd; small pebbles
80-			16	12	89.4	32.4	CL	Bedrack(?) @77' contact(?) dk. gray, moist, firm - stiff, Sandy Clayey Silt; massive; petro. odor @19' gyp. filled jt., local slicks @82' questionable bedrack, locks a bit messy; some silt lenses tant lt. green @83' high Clay content, Clayey Silt; V/ Stiff
45- - - -			17	14	82.3	37.7	CL	@85' good bedrock @86' becomes siltier, local slicks; good bedding signs; fossils

Pro Dri Hol	JECT_ LLING .E DIAM	Curr Co. Ba METER—	ie-, 2-Jo 24"	Sam ic	uedo	WEIGH		B-Z SHEET 4_OF 4 PROJECT NO. 180165-02 TYPE OF RIG BUCKET 1500# (65-90) DROP 12 1
Вертн Реет	GRAPHIC Log	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	_	Sor, CLASS.	GEOTECHNICAL DESCRIPTION LOGGED BY
90			18	26	93.6	27.1	CL	
								Notes: 1) Not downhole logged due to caring soring to 33' 3) Seepage @23 t, 27'ing to 33'

	-20-80			DRILL	HOLE	No	8-3 SHEET 1 OF 4
	Carria			1500			PROJECT No. 180165-02
URILLING	CO	1- nox		<u>-</u> _		740	Type of Rig Bucket
FIEVATE	N TOP OF	Hay = 7	70+	DRIVE	WEIGH	7 4	00#(0-25); 1550# (25-45) DROP 12 IN
CLEVATIO	T TOP OF	MOLE ==		NEF. (OR DAT	אט	
DEPTH FEET & GRAPHIC	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	\$915. CLASS.	GEOTECHNICAL DESCRIPTION LOGGED BY BC. TB recorded Sampled by TB
0 10 10 10 10 10 10 10 10 10 10 10 10 10		3-5	4	104.1	12.3		Colluvium: 0-7' Col: med-dk bry, dry-moist yl stiff-hard, clayey gandy 51'l; vl Porous, abdt. roots; scattered Cobbles to 3"; Caliche Stringers; mass; fresh root, hairs; abdt. gypsum blebs, locally stringers
10 10 15 10 15 20 15 15 15 15 15 15 15 15 15 15 15 15 15		3 7-14	3		13.6		Siltstone: @ 7' Sit: It gray brn - brn, Camp - moist, stiff - Yl stiff, Bandy Sit: Some jarosite & Fr.O String; mod. Porous; abot. baliche Stringers; local loase areas @ 8' Concretion: 6" Mick; mass; North wall; Camentad Silt @ 9' Animal burrow @ 9.5' loose Soil w/ openings @ 10' Sit: mottled green gray, org. brn; brn, darb, mod. Stiff. Sit; w/ abot. Fr.Os jarosite Stri, appears 1/ broken § jumbled; some coliche blets stringers @ 12' concretion @ 13' Bit. becomes tan-It. brn, mot. jocally Ox. @ 15' concretion @ 20.5' St. changes to dk. brn w/ It. brn mot.; most-y/ moist, med. Stiff, Clayey Sit; porous; aldt. coliche @ 22' Sit. changes to med-It gray brn; Contains weathered two string contains weathered two string contains weathered two string contains weathered two string appears 11 broken; abdt. coliche Stringers; 1/ moist @ 24.8' Concretion
30 ~ ~	1						@29' ox patch on N wall;

	11	7. 0						BORING LOG
		20-8			DRILL	HOLE	No	B-3 SHEET Z OF A
		Curria			150n	(1-1/2)		PROJECT No. 180165-02
UR I	LLING C. D.A.	Co_AL	771104		D	~		Type of Rig Bucket
not.	E DIAM	TOP OF	Un 2	70+	DRIVE	WEIGH	T _Z=	550*(25-45'); 850#(45-70') DROP 12 IN
LLE	VALLON	100 05	HOLE	70-	REF. (OR DAT	UM	
Вертн Реет	≥ GRAPHIC U LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	\$0.5.5.8ss.	GEOTECHNICAL DESCRIPTION LOGGED BYBC, TB recorded SAMPLED BYTB
30	3.4		6	3	88.9	35.2		
_	4.2	,	544		'			· · · · · · · · · · · · · · · · · · ·
] ~	4.00	*	<u> </u>		100		141	@32' concretion; small
_	J. 7		32-35 32-35			*		@33' SIt. V/ moist
	4. >					ļ		@34' Concration on South wall
7-	! (X							
35-	7.7		7	3	88.6	305		Drn. I moist wet, I broken
-	1 B		14					w/ Feo strg, fracts; about jarosite; exattered forams;
) -	4.4		_					y clayer
1	~· f-							@36 small concretion
	4.7						4	@38' ox. more abolt.
1. 7	بر .	350					п	- H
40-	4		8	3	89.9	211		@40' gray brn. FeD stnd. Clayey - Silt; hi. Plastic
-	1. 4.	Я			0 -11	21:1		alli, ni. piale
	7.7	9.	l					
	+·~					*		
	-· +							-
1 .1	4.~	·						Q45' numerous weathered Fad
45-	SE		O #		0.0	·		5tnd. Clasts, Scat. Organic _
1 4	4.0		4 8	4	86.8	35.4		orax w/ Ox brn bords
1]	4		-]					att concretion
-	7.~				*			
	~·.~						r	@48.5' local zone of FeO strig.
1 4	4.4		-					continuous; I' thk.
50-	~:~	٠, ,						
	4.~	80	10	18	85.6	37.2		@50' about organic mat!; appears less broken; less
	OX.		1 1]			Feb strg; dkgray black banding; matt still mot.
] 7	UNOX.	@53.5			·	l	\	banding; matt. Still mot.;
1 4	~ 7	6: NSE 0 27W	 -		2	a ²	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	@11. gray - dk gray; Plastic @50.3' seepage from around
1 4	~~~	3210	4					@51 more mass gray glt;
55-	~: ~		52-55				2 1 L	1066 OV GONDY MOVEY CITY
	~.~	,	刀器	13	96.3	26.7	/	moist: no FeO sting, soft-firm - @52' abot. Organics, and of ox.
1 7	ر. ما		P ^A)	zone
1 4	~]		3					Unoxidized Biltstone: gray, soft, unox sandy, clayey of no structure; occas of organic matt
1 4	0		55-60					occas. dk. bands of organic mat.
	~.~		Churts		[255' 1/ Strong organic odor (stinks) roots still intact: appear fairly fresh, tan ox. yeins & Jeans; mica
100	~:~				1			fresh, tan ox. yeins & geams, mica
60-					·			<u> </u>

DATE 1/- Z	20-80				BORING LOG
PROJECT_C			URILL HO	LE No	<u>B-3</u> SHEET <u>3</u> OF <u>4</u> PROJECT NO./80165-02
DRILLING CO	A1- B				TYPE OF RIG Bucket
HOLE DIAMET	ER_ 22"		DRIVE WE	1GHT 8	50#(45-70'); Z100#(70-100') DROP 1Z IN.
ELEVATION T	OP OF HOL	E 270±	REF. OR	DATUM _	
DEРТН FEET GRAPHIC LOG	ATTITUDES TUBE,	SAMPLE NO. BLOWS PER FOOT		Soll CLASS.	GEOTECHNICAL DESCRIPTION LOGGED BY BC, TB recorded
N 5				0,0	SAMPLED BY
65	1.5	3 22	98.0 2		@58' Small concretion @60' gray - dx. gray, 1/ moist, med. Stiff, 51/ Sandy, clayey' Siti, abot. organics; rts; plastic; gtrong organic odor; mottled; scat. grave; Contains rnd. It. gray sandy clasts(?); scat. torans, mica; dark handing of org. moti. @61' Concretion; tan sit. @63.5' large organic sticks; less banding @67' 51/ Sandier mico, Sandy, clayey 51t.; mass.
75-~~		5 7	946 21	8 2	@74'small concretion, layer of gray Silt @77' large organic frags.
80 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		6	94.5 2 100.2 to		@ 79' yellow concretion; 61/ @ 80' 51/ petrol. odor as well as organic odor; 51t. mot. a.a. Scat. organics @ 81' series of conc.; tan cemtd. 61t. @ 83' yellow concretion @ 83' yellow concretion @ 85.5' conc. w/ seepage at bottom; matl. has mot. appearance brn-gray; scat. org. E. Strong org. odor; med. 5tiff; firmer than above
90					@89' conc.; abdt rts. below @89' local Forams; org. Chunks

GEOTECHNICAL BORING LOG

DRILL HOLE No. 1RW SHEET 1 OF 5
PROJECT No. 180165-02

DRILLING CO. A.W.

HOLE DIAMETER 5" DRIVE WEIGHT 530 155.

DROP 12 1

		TOP OF			DRIVE REF. (WEIGH OR DAT	T		530 lbs. Drop 12 IN
О Вертн Feet	6вдРНІС Log	Arrirubes	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	89.5.648ss.	Logg Samp	GEOTECHNICAL DESCRIPTION ED BY
5	15.75 1 1 1 1			W					SOIL: DK. brn. adobe clay. 04' Med. grey-brn silty clay w/abdt. Fe 0 staining.
15-			(E)						
25 -					4				

DATE 10/20-21/80

PROJECT Currie

GEOTECHNICAL BORING LOG DATE 10/20-21/80 DRILL HOLE No. _____ IRW SHEET_2_OF_ PROJECT Currie PROJECT No. 180165-02 DRILLING CO. A.W TYPE OF RIG Rotary Wash HOLE DIAMETER ___ 530 lbs. DROP 12 IN DRIVE WEIGHT ELEVATION TOP OF HOLE-REF. OR DATUM DRY DENSITY PCF Moisture Content, % TUBE SAMPLE NO. ATTITUDES GEOTECHNICAL DESCRIPTION S015. LC+TB LOGGED BY -SAMPLED BY -@ 32 DK. grey; med stiff; clayey silt; unoxidized; massive; petrol. odor; traces of organic material; scattered Forams. 35. (3) 40 45 50 55. 3 31

DATI Pro.	JECT	-Currie	180		DRILL	HOLE	No	-	1 RW		SHEET_1	3 of 5 No. 180165-02
DRI	LING	CoA	₽W							TYPE OF	RIG Rotary Wash	
Hou	DIAM	ETER			DRIVE	WEIGH	T	-	530	lbs.		DROP IN
ELE	VALION	TOP OF	HOLE-		Ref. o			T -				
_	ن ن	DES	No.	IS 10T	DENS ITY PCF	Moisture Content, %	8014 (LASS.)		·	EOTECHNICAL	. DESCRIPTI	ION
DEPTH FEET	барніс , сос	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DEN	ISTU	نك					
	6R	Атл	SAM	PE	DRY	£.8	% E.S.	Loggi	ED BY _		C . TB	
60						<u> </u>		SAMPI	LED BY _		; —	
_	~~						*	*				
			. <u> </u>		,		l s					
	~~	2			8			*1		Tr.		
-	<u>`</u>		-	363	1 .	C						·
65 —	~~	* *	<u> </u>	1		Î		į		ě		4
	*~		-									
-	~~	e.		·	•	s.				e y	Ä	_
-	~									90. 4		· U
-	~~		-						2	E .		H
7.0 -	~	ž u	(F)	35	,				N N			Ļ
_	~~		(a)	28 .			ž		}	. 8	5	
	-		6	47				2				, ,
_	~`~		0	קב	,	100				e e	s e	
-	~		(I)	43			·				151 (6)	
75-	~~		👸	80				1	a. 3 .	0 88 9		*
	~		(1)	90		*		ļ.				H
-	~~			63				•	:00	. " 8		-
_	~	w.	(B)	62			-			ç **		
	3		<u></u>	95		a						
80-	~~		10	70				r		8		<u> -</u>
	~		(3)	70	_		*			120		7
	~~	r _{ee} f	(1)	80				5			×	H
,	E SE	,,	0	70		per.		~				. -
95	~~	9	100	60							80	H
85—	~		0	75		ľ						H
			<u>@</u>	65							e S	
			@	40						٠		H
	\sim		23	50			k.		192	q		· [1
90	\sim		83	55								

DATI Pro.	E 10	/20 - 21 Currie	/90		DRILL	HOLE	No	RW SHEET 4 OF 5 PROJECT No. 180 165-0	2
DRI	LING	Co. A	+W					Type of Ric Rotary Wa	لمدا
Holi	E DIAM	ETER	5"	<u>.</u>	DRIVE	WEIGH	т —	530 lbs. DROP 12	_ IN
ELE	NOI TAV	TOP OF	HOLE-		REF. (OR DAT	UM		
Лертн Реет	GRAPHIC Log	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	80.15.61.85°	GEOTECHNICAL DESCRIPTION Logged by	
90 	~~	-	23	35				·	
~			3	55				@ 92' Sandy layer 3/4" thick.	٠H
	~ .		(B)	75	ļ I			W The Sundy Tayer 74 Thick.	
	\sim \sim			70	= 4				
	~		(B)	80		8			
95-	~~		(a)	90	ŀ	٠,			H
-			<u>®</u>	75			ß		Н
	~~		3	65	260				H
	~		33	75					H
100-	~~		33	90					H
100	~	687.	34)	100				<u>.</u>	П
	~		33	70	8				П
	حــــــــــــــــــــــــــــــــــــ		36	65					
	~		3	75					. 🗂
105	~~		39	65				F	
_	~		39	75			æ j		П
	~~		40	50					П
	~		40 _	60			*		П
	~~		(B)	60.		*	F		
110_	~		(13)	65	i				
4	~~ن	,	(<u>@</u> [70	 				
-	~	er.	(19)	100					
	~~	*		85			*		
	~			100					
115-	~~	81	49	75					
	~		@ _	סר		₩			
-	~~		(S)	55					
	~	, i	<u> </u>	65				•	
-	~~		<u> </u>	60					. 7
130_			(53)	<i>5</i> 5					

DR1	LLING E DIAM	Co. Ag	5"		DRILL	HoLE	No	BORING LOG RW SHEET 5 OF 5 PROJECT NO. 180165-02 Type of Rig Rotary Wash 530 lbs Drop 12 In
) Беет	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	\$0.15.6.45\$.	GEOTECHNICAL DESCRIPTION LOGGED BYLC+TB SAMPLED BYTB
120	~~		<u>54</u>)	65				
125—								Total Depth 121'

GEOTECHNICAL BORING LOG DATE 10/22/80 DRILL HOLE NO. 2RW SHEET 1 OF 3 PROJECT Carrie PROJECT No. 180165-02 DRILLING CO. A+W TYPE OF RIG Rotary Wash HOLE DIAMETER 5" DRIVE WEIGHT 530 16s. DROP 12 IN ELEVATION TOP OF HOLE REF. OR DATUM GEOTECHNICAL DESCRIPTION GEOTECHNICAL DESCRIPTION

SOLL: OK. ben adobe clay. Sold of the state of the sta		DIAME ATION	TER	<u>5"</u> Hole—		DRIVE REF. (530 lbs. DROP
SOIL: DK. bon adobe clay. 8 4' Med. gray-bon silty clay w/ abdt. Fe 0 Staining. 8 15' Sample not retained. 8 16' Med. gray-bon; med. stiff; silty clay; abdt. Fe 0 Staining; gyp. filled tracts up to 18' is dissen. gyp. crystals. 20 25' Sample not retained. 9 25' Sample not retained.	Вертн Feet	.,				DENS 1TY PCF	(LASS.	LOGGED BY LC & TB
30 0 1 25 B 30' Only cuttings retained.	10	いくいとこここここことではいい		@ @ ()	(§°) 15 43 45 24			@ 15' Sample not retained. @ 16' Med. grey-brn; med. stiff; silty clay; about. FeO staining; gyp. filled fracts up to 18's dissem. gyp. crystals. @ 25' Sample not retained. @ 26's' Med. yel-brn; v/ stiff; siltstone; mod. fractured w/ gyp filling, up to 18 thick. @ 7' Only cuttings retained. @ 28' Dk. grey; med. stiff; clayey silt; unosidized; massive; petrol. odor; traces of organic material.

Pro. Drii	JECT LLING	Curric Co. A.	W					Project	2_0F_3 T No. 180165-02 F Rig Rotary Wash
ELE	VATION	TOP OF	HOLE-		REF.	WEIGH OR DAT	IT 'UM	230 103.	DROP 12 IN
, <u>Дертн</u> Fеет	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	Moisture Content, %	Sg.1k. &LAS\$.	GEOTECHNICAL DESCRIPT LOGGED BY	rion
35 -		· ·	(a) (b) (c) (c) (d) (d) (d) (d)	30 30 30 19 32 30 17				@ 30' Very clayey seams in @ 31' Sample not retained	s; Hstone
40	<pre></pre>		8888	23 29 30 30 30 (3°)				@ 42'3" Very hard layer, 1' sample. @ 44' Siltstone becomes stil	H
45— - - -	> < < < < < < < < < < < < < < < < < <			45 45 30 40 30			æ.	G T = 113.00 Decomes 5111	
50	{		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	40 50 45 34			5 , 8 9 °		
55-	~	E E	0 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	38 40 45 41 50 40				@ 56' Sample not retained.	

GEOTECHNICAL BORING LOG DATE 10/22/80 DRILL HOLE No. ___ 2 RW SHEET 3 OF 3 PROJECT Currie PROJECT No. 180165-02 Drilling Co. A + W TYPE OF RIG Rotary Wash

DROP 12 IN. 530 lbs HOLE DIAMETER-DRIVE WEIGHT . ELEVATION TOP OF HOLE-REF. OR DATUM . DRY DENSITY PCF ATTITUDES BLOWS PER FOOT GEOTECHNICAL DESCRIPTION **Дертн Fee**т LOGGED BY _____ SAMPLED BY ____ 60 3 45 33 34 34 50 40 45 65 44 45 50 40 50 50 70 Total Depth 70%

Cotton Shires Boring Log Summary



RECEIVED

JUN 28 2001

BUILDING DIVISION

June 22, 2001 EC0021

TO:

Dan McFarland Building Official

CITY OF SAN JUAN CAPISTRANO

32400 Paseo Adelanto

San Juan Capistrano, California 92675

SUBJECT:

Summary of Surface and Subsurface Exploration

RE:

Rancho Capistrano

DISCUSSION

Based upon the results of the meeting held on May 31, 2001, between representatives of the City of San Juan Capistrano, Lowney Associates, Stoney Miller Consultants, Inc., Cotton, Shires and Associates, Inc. (CSA), TRC, Inc., Junipero Serra High School and the Rancho Capistrano Ministries, it was agreed that Lowney Associates would prepare a geologic report, prior to a full geotechnical report. Due to the geologic complexity of the site and the fact that many of the large-diameter boreholes encountered deep landslide debris, an accurate characterization of the site geologic conditions and landslide geometries is necessary prior to initiating geotechnical analyses of the site slopes. The purpose of the geologic report is to summarize the findings of the surface and subsurface investigation, generate a geologic model that incorporates the geologic elements observed during the investigation, and provide recommendations for further investigation, as needed.

Approximately two weeks has elapsed since the completion of logging of LB-17 (June 4, 2001). In this letter-report we have provided a brief summary of the surface and subsurface conditions that we observed at the site, and our interpretation of the geologic elements that we consider critical to generating an accurate geologic model of the site. This letter is intended to be circulated to Lowney Associates so that they are aware of our observations, interpretations, and associated concerns prior to finalizing a geologic report. It may be prudent to meet to discuss some of the issues identified in this letter.

SURFACE GEOLOGIC CONDITIONS

The surface conditions that influence the site are characterized by three primary geomorphic features: 1) the actively incising Oso Creek channel along the eastern portion of the property; 2) the mostly level Oso Creek alluvial terrace; and 3) the steep western hillside area. These three features contain distinct geologic and geotechnical characteristics that must be identified in order to define the potential risk that geologic hazards in these areas impose upon the proposed development. Once the geologic and geotechnical elements have been characterized, and the level of risk quantified, then appropriate mitigation may be designed.

Oso Creek Channel – The Oso Creek channel contains a U-shaped concrete lining along the northern portion of the property. Through this area, the creek embankment is only about 10

e-mail: carlshad@cottonshires.com

feet in height. The lined channel ends approximately 2,300 feet south of the northern property boundary where Oso Creek transitions to a more natural channel and meanders to the southern property boundary. This southerly reach is characterized by 15- to 20-foot high embankments near the end of the lined channel to 30- to 50-foot high embankments near the southern property boundary. Active landslides are common along much of the southern reach, downstream of the lined portion of the channel. These landslides appear to increase in lateral extent and depth in the downstream direction as the depth of creek incision increases southward. These landslides attain depths of approximately 10 to 40 feet, and have lateral dimensions of up to 400 feet in length and 200 feet in width. Most of the landslides occur within the alluvial terrace deposits which appear to be sliding atop the Capistrano Formation bedrock. However, Oso Creek appears to be incising through Capistrano Formation materials in the central portion of the southern reach.

<u>Alluvial Terrace</u> – The central portion of the site is characterized by mostly level, alluvial floodplain deposits of Oso Creek. These deposits typically consist of unconsolidated sand, silt and clay. Where exposed in the Oso Creek embankments, these materials are generally flatlying, and are typically interbedded with individual beds ranging from 6 inches to 2 feet in thickness. Perched groundwater was observed along the embankment where small seeps occurred up to 15 feet above creek level.

Western Hillside – The steep (20- to 40-degree inclinations) east-facing hillside located along, and upslope of, the western property boundary extends along the entire western boundary, and is interrupted in three locations by prominent east-flowing drainages that have incised steep-walled canyons into the hillside. The western hillside contains prominent topographic benches high on the slope with steep to precipitous (30- to 45-degree inclination) slopes above the topographic benches. Capistrano Formation bedrock materials are exposed along some of the steep-walled drainage canyons and indicate that in-place bedrock materials are nearly flatlying in the central portion of the slope area. Three possible geologic interpretations of the topographic benches high on the western slope include; 1) The benches represent downdropped landslide deposits created by deep-seated landslides; 2) The benches represent ancient alluvial terraces that were carved into the hillside, followed by regional tectonic uplift of the San Juan Mountains, resulting in the elevated topographic position of the terrace relative to the active Oso Creek floodplain; and 3) Terrace deposits are located atop the topographic bench but have been displaced by deep-seated landslides.

SUBSURFACE GEOLOGIC CONDITIONS

Large-Diameter Boreholes

A total of seventeen large-diameter boreholes were excavated to depths ranging from approximately 65 feet to 140 feet. Most of the boreholes encountered some groundwater, and most of the boreholes were downhole logged; however, several boreholes were not downhole logged due to groundwater and associated caving conditions. Only one large-diameter borehole was excavated high on the western hillside due to the fact that most of this area is outside of the Rancho Capistrano property. The remainder of the large-diameter boreholes were located near or along the western property boundary. No large-diameter boreholes were excavated in the vicinity of Oso Creek, or within the active landslides near the creek channel. The following is a summary of the subsurface conditions within each borehole, as observed by CSA:

- LB-1 Collapsed, no downhole logging by CSA.
- (LB-2) Landslide debris 0-54', unfractured bedrock 54'-80'.
- LB-3 Collapsed, no downhole logging by CSA.
- <u>LB-4</u> Collapsed below 28', CSA logged 0-28', inconclusive.
- LB-5 Landslide debris 0-53.4', unfract. bedrock 53.4'-BOH.
- <u>LB-6</u> Collapsed, no downhole logging by CSA.
- <u>LB-7</u> Landslide (ls) debris 0-10', possible ls debris 10'-43', possible deep ls 43'-67.5'.
- LB-8 Landslide debris 0-62.5′, unfract. bedrock 62.5′-116′.
- $(\underline{LB-9})$ Landslide debris 0-34', unfract. bedrock 34'-72'.
- <u>LB-10</u> Landslide debris 0-67.7′, unfract. bedrock 67.7′-BOH.
- <u>LB-11</u> Collapsed below 36′, CSA logged 0-36′, inconclusive.
- <u>LB-12</u> Colluvium/fract. bedrock 0-60', unfract. bedrock 60'-80'; possible deep ls below 80'.
- LB-13 Landslide debris 0-54', fract. bedrock 54'-62', unfract. bedrock 62'-98'.
- LB-14 Landslide debris 0-99', fract. bedrock 99'-100', possible deeper ls below 100'.
- LB-15 Landslide debris 0-65', fract. bedrock 65'-80', unfract. bedrock 80'-140'.
- <u>LB-16</u> Landslide debris 0-105', fract. bedrock 105'-108', unfract. bedrock 108-130'.
- <u>LB-17</u> Sheared, tilted sediments 0-108′, no logging below 108′, likely ls debris.

Groundwater Conditions

Groundwater was encountered in most of the large-diameter boreholes and was typically characterized by small seeps along fracture zones and shears. The depth to the seepage zone was generally between 25 and 40 feet below the ground surface along the western property boundary. LB-17, which was excavated atop the topographic bench in the northern portion of the property, encountered groundwater at a depth of approximately 54 feet below the ground surface. Groundwater seepage was also noted during our reconnaissance along the Oso Creek channel where isolated seepage zones were observed along the creek embankment, up to 15 feet above creek level. The occurrence of groundwater throughout most of the site indicates that it is more pervasive than a groundwater table

CONCLUSIONS

Oso Creek Channel – Based upon our site geologic mapping and aerial photograph analysis, it appears that the southern reach of Oso Creek is characterized by a rapidly incising creek channel, resulting in highly unstable embankments, particularly where the creek has eroded down through the alluvial terrace material to the level of the Capistrano Formation bedrock. We observed active landslides along the majority of the eastern and western embankments that have failed within the past 10 years. Many of these landslides are large, deep-seated (greater than 10 feet deep) features that have extended up to 150 feet from the creek into the relatively level floodplain. Additionally, through aerial photograph analysis, we have observed large changes in the historic creek and embankment positions over time. Consequently, it is our opinion that the weak terrace materials comprising the majority of the creek embankments are highly susceptible to landsliding and rapid retreat as Oso Creek actively incises its creek bed. The flatlying, interbedded nature of the alluvial deposits results in locally perched groundwater that helps destabilize the creek embankments.

<u>Alluvial Terrace</u> – The alluvial terrace materials typically consist of interbedded sands, silts, and clays derived from Oso Creek. These deposits are generally unconsolidated, weak, and contain locally perched groundwater. In the absence of a free face where landsliding could occur, these materials appear generally stable. However, the clay layers and soil horizons may be potentially expansive, and liquefaction and settlement appear possible during seismic events. In the western portion of the site, where the western hillside abuts the terrace, deep landslide deposits have been identified within large-diameter boreholes. At present, it is unclear how far these landslide deposits extend into the terraced portion of the site.

Western Hillside - Based upon our site geologic mapping, and downhole logging of 14 largediameter boreholes, it is our opinion that the western property boundary is underlain by The landslide deposits are typically characterized by highly deep-seated landslides. disrupted, fractured and sheared bedrock, alluvium, and slopewash atop prominent basal shear surfaces. The basal shear surfaces are typically characterized by planar, polished, and striated discontinuities, and typically consist of paper thin to 1/8-inch thick clay gouge. Since most of the upslope areas are outside of the Rancho Capistrano property boundary, little subsurface information was obtained in these areas. Therefore, projecting landslide basal rupture surfaces from where they were observed in the large-djameter boreholes to the upslope areas is difficult. However, without the benefit of subsurface exploration, the best available method for interpreting the geologic conditions of the site is by surface geologic mapping and aerial photograph analysis. Both of these methods suggest that the large topographic benches high on the slope, when combined with the observed deep-seated landslide deposits at the base of the slope, are associated with the downdropped headscarp region of large landslides. One large-diameter borehole (LB-17) was excavated high on the slope in the center of the topographic bench in the northern portion of the site, and encountered geologic evidence suggestive of landsliding. Although the lower portion of this borehole collapsed prior to complete geologic logging, the 20-degree westward inclination of stratigraphy, abundant high-angle shears with prominent nearvertical striae, and the lack of competent bedrock and terrace deposits points toward a landslide origin for the bench rather than a terrace origin. Without further exploration high on the western slopes, we are of the opinion that the upslope extent of landsliding should extend, at a minimum, to the base of the upper escarpment, and include the topographic bench.

However, we are of the opinion that, based upon the surface and subsurface geologic information gathered at the site to date, insufficient geologic data exists to generate a geologic model suitable for development of comprehensive mitigation design.

RECOMMENDED ACTION

Oso Creek Channel – It is our opinion that the rapidly incising creek channel and highly unstable embankments will need to be investigated to determine long-term rates of embankment retreat and gross stability of the embankments so that appropriate setbacks can be established. To date, no subsurface exploration has been performed to address creek embankment instability. At a minimum, detailed surface geologic mapping and profiling, aerial photograph analysis, small/large-diameter exploration, and laboratory testing should be performed at appropriate locations along the embankment to characterize the site conditions.

Alluvial Terrace – The alluvial terrace materials contain potentially expansive clay layers and soil horizons, and contain sand layers and perched groundwater that may be susceptible to liquefaction and settlement. It is our understanding that subsurface exploration in the form of small-diameter boreholes was performed by Lowney Associates to address these issues. It is our opinion that additional subsurface exploration is necessary to determine the downslope extent of landslides extending eastward from the western hillside.

Western Hillside - It is our opinion that the western hillside, in the vicinity of the western property boundary, is underlain by deep-seated landslide deposits. Since most of the upslope areas are outside of the Rancho Capistrano property boundary, and little subsurface information is available in these areas, additional subsurface exploration upslope of the western property boundary would be beneficial for further refinement of the geologic model. Without additional subsurface exploration upslope of the western property boundary, the surface geologic and geomorphic evidence points toward a deep-seated landslide model extending upslope of the topographic bench high on the western slopes.

We have identified an area in the southern portion of the property where the western hillside appears to extend to Oso Creek, without a prominent terrace buffer zone as in the northern portion of the property. A prominent westerly bend in Oso Creek occurs in this area and bedrock materials of the Capistrano Formation crop out in the creek embankment, as opposed to alluvial materials which are exposed in most embankments throughout the property. It is our opinion that further investigation of this area in needed to determine whether the bedrock materials in this location are in-place or landslide debris, and whether further incision of Oso Creek could destabilize the slope to the west.



The debris flow potential originating from the steep drainage in the central hillside area should be evaluated.

LIMITATIONS

This review has been performed to provide technical advice to assist the City in its discretionary permit decisions. Our services have been limited to review of documents provided to us, a visual review of the property, and a visual review of the large-diameter boreholes listed above. Our opinions and conclusions are made in accordance with

generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,

COTTON, SHIRES AND ASSOCIATES, INC. TOWN GEOTECHNICAL CONSULTANT

John M. Wallace

Senior Engineering Geologist

CEG 1923

Stan R. Helenschmidt

Managing Geotechnical Engineer

GE 2064 and 6-50.00

William R. Cotton

Principal Engineering geologist

CEG 882

WRC:JMW:SRH:st

NMG Boring Logs

								NMG Geotechnical, Inc.		age 1	_of_9
		RTED:			TE EN	DED:	8/3/01	Boring No.	B-	1	
		COMPAN'						GROUND SURFACE ELEVATION: 290			
HOL	E DIA	METER (in	.) 30"					DATUM: MSL			
		OP (in.) IGHT (lbs.	12"					LOCATION: COORD/STATION:			
			7_00011010		T			DESCRIPTION	95		
Elevation (ft.)	(ft.)	Sraphic Log	es es	letho nber	Blow Count/ Penetration	SS.	Loggod By: K	V/WG	y (p	Moisture Content (%)	\$
ration	Depth	phic	Attitudes	N E	≥ Sc	Soil Class. (U.S.C.S.)	Logged by. K	v/wg	ensit	oistu	Remarks
Ele	۵	Gra	₹	Sample Method and Number	Bo	S E	Sampled By: K	V	Dry Density (pcf)	∑õ	ا مخ
		5 N	-				Colluvium (Qcol)		<u> </u>		
		· y . v					Surface: Brown clayer abundant roots.	ey silty fine to medium SAND, dry, loose to 3",			
		•. •).					abandan rooto.				
_	-	一. <u>一</u>			1			yey fine to medium SAND, moist, porous,			
-		٦٠. –		-	-		\roots. Landslide Materials	(QIs)	'		
							caliche nodules and	prown, and gray brown fine sandy SILT, moist, stringers, FeO stain.			
	5				ı		@ 3.4'-3.8' Krotovina				
_	<u> </u>	~····		<u> </u>	1		@ 5' Clayey SILT, m	oist, firm, caliche pods and stringers, roots.			
-	-	1-1		-	_	-					
	_	***									
							@ 7' Scattered gypsi	um.	27		
-	-						@ 8' Concretion on w	vest wall, MnO-stained fractures.			
280	10	—·]		-		@ 9' Color changes t	to light gray, very moist, increase in clay.			
200	<u>.ت. </u>	. —		D-1	Push		clayey SILT, very mo	wn, yellow brown, and gray brown slightly pist, trace charcoal, caliche stringers, massive,	98.5	27.6	
	-	- CARE					scattered FeO stain,	slightly plastic.			
-	-			-	-		@ 11.5' Concretion @ 12' Light brown gr	ray clayey SILT, caliche stringers.			
-	_										
		倒					@ 13.5' Concretion				
-	۔ ۔۔ ا	. —							1		
	1 <u>5</u>	0 0		-	1		@ 15' Trace jarosite	staining, scattered subangular to subrounded			
_		- 0			-	•	concretionary 1" peb	bles.			
		(Tieves		SB-2 ⊠	\$		@ 16.5' Dark brown	colluvial lens			
-	-				1		@ 17.1' Mottled light	gray and white fine sand with carbon colluvial lens, fades by 18 ft.			
-					1		magments at base or	conuviariens, rades by To it.			
		,		_					1		
270	20			-							
		-:	ļ	D-2	Push		@ 20' SAMPLE: Gra	y silty CLAY/clayey SILT, very moist, O and jarosite staining along joints/fractures.	92.3	31.5	
-	-		RS: N80E					ce. Yellow sand stringers and FeO-stained ft. terminate at surface. Material above not	ď		
		/** [8SE	_	1		joints from below 21 coherent.	ft. terminate at surface. Material above not			
	l	** **	1			3	Capistrano Formati	ion (Tc)			
]	-			1		@ 23' Patches of und	oxidized material.			
-				-	-		@ 24' Transitions into	o dark gray to black unoxidized clayey stiff, massive, micaceous, weathered			
	25	<u>-*</u>			<u> </u>	<u></u>	SILTSTONE, moist,				
G	GEOTECHNICAL							01012-02		^^	
L	LOG OF BORING						CU	SD/Rancho Capistrano		N/	MG

	NMG Geotechnical, Inc. Page 2											
		RTED:			TE EN	IDED <u>:</u>	8/3/01	Boring No.			_	
		COMPAN' NT USED:			N	- ;	*	GROUND SURFACE ELEVATION: 290				
HOL	E DIA	METER (in						DATUM: MSL	_			
DRI\	/E WE	OP (in.) IGHT (lbs.		es				LOCATION: COORD/STATION:				
			-			-		DESCRIPTION		(
E)	(ff.)	c Lo	des	Meth	count	lass. 3.S.)	Logged By: K	V/WG) Ag	ture nt (%	arks	
Elevation (ft.)	Depth (ft.)	Graphic Log	Attitudes	Sample Method and Number	Blow Count/ Penetration	Soil Class. (U.S.C.S.)			Dry Density (pcf)	Moisture Content (%)	Remarks	
ŭ		SON		San	20.00	000	Sampled By: K	v	5	-3	_	
-		***** 	J: N15W 85 NE				foraminifera. @ 25' Near vertical fi surface	racture filled with gypsum, light gray clay on				
26 <u>0</u>	3 <u>0</u>		J: N85W	D-3	8		@ 29' Oval-shaped 5 @ 30' SAMPLE: Gre massive, micaceous	en black unoxidized clayey SILTSTONE, some partings, weathered foraminifera.	95.2	26.5		
1,	-	1	82 SW	 - -	-		@ 32' Shear surface SILTSTONE.	. Below is massive, stiff, slightly clayey				
-	3 <u>5</u>			-	-		,					
- 25 <u>0</u>	4 <u>0</u>			D-4	11		@ 40' SAMPLE: San	ne as at 30 ft.	95.1	27.7		
	-											
-	4 <u>5</u>			_	-							
240	50				-		@ 48.5' Occasional s	sand stringers.	,			
G	E	DTE	CHN	IIC/	1			01012-02		~	~ ~	
L	00	OF	ВО	RIN	IG		CU	SD/Rancho Capistrano		N/	MG	

NMG Geotechnical, Inc. Page 3 of 9 **Boring No.** DATE STARTED: 7/31/01 **DATE ENDED:** 8/3/01 DRILLING COMPANY: Tri Vallley **GROUND SURFACE ELEVATION: 290 ft EQUIPMENT USED:** Bucket Auger HOLE DIAMETER (in.) 30" DATUM: DRIVE DROP (in.) LOCATION: DRIVE WEIGHT (Ibs.) See Notes COORD/STATION: DESCRIPTION Dry Density (pcf) Sample Method and Number Moisture Content (%) Blow Count/ Penetration Graphic Log Depth (ft.) Soil Class. (U.S.C.S.) Attitudes Remarks Logged By: KV/WG Sampled By: KV @ 50' SAMPLE: Dark green black unoxidized SILTSTONE 26.4 massive, micaceous, weathered foraminifera, strongly odoriferous. @ 54.5' Concretion. 55 230 60 @ 60' SAMPLE: Same as at 50 ft. @ 60.4' Concretion. 97.5 26.3 D-6 65 @ 66.5' Slightly sandy. @ 68.5' Phosphatic nodule. 220 @ 70' SAMPLE: Same as at 60 ft. 95.4 27.5 D-7 22 @ 73.7' Pocket of sandy siltstone. **GEOTECHNICAL** 01012-02 LOG OF BORING CUSD/Rancho Capistrano

NMG Geotechnical, Inc. Page 4_of											_of_9	
DRIL	LLING	RTED:	Y: Tri Va	llley	TE EN	IDED <u>:</u>	8/3/01	Boring No.	B-	1	,	
EQU	IPME	NT USED: METER (in	Bucket /	Auger				GROUND SURFACE ELEVATION: 290 DATUM: MSL	t			
DRI	VE DR	OP (in.) IGHT (lbs.	12"					LOCATION:				
	AE AAF) See Note					COORD/STATION: DESCRIPTION	ह		 -	
Elevation (ft.)	Depth (ft.)	Graphic Log	Attitudes	Sample Method and Number	Blow Count/ Penetration	Soil Class. (U.S.C.S.)	Logged By: <u>K</u>	V/WG	Dry Density (pcf)	Moisture Content (%)	arks	
Elevatí	Dept	Graph	Attitu	and N	Blow (Soil C (U.S.	Sampled By: K	v	Den	Mois Conte	Remarks	
ш	<u> </u>	5 N		w "					<u> </u>	-		
-		· - ·								6		
	 -									181		
		. — .										
		15o.			l .		@ 78.5' Subrounded	cobbles, 3" to 5".				
210	80	_ · ~										
		. – .		D-8	44	,	@ 80' SAMPLE: Dar hard, micaceous, ma	k green black unoxidized SILTSTONE, moist, ssive, strongly odoriferous, weathered	97.4	26.4		
-	-	—; —					foraminifera.					
-	-	• •					@ 82' Increase in cla	y content.				
-	-	 ·		-								
-	-			-			-		'			
_	8 <u>5</u>	·		; -				*				
-	-	,		-		!						
-	-									1		
-	-	. —										
-	_						© 00' Slightly condy					
20 <u>0</u>	9 <u>0</u>						@ 89' Slightly sandy.			65.5		
	_	•		D-9	68/9"		@ 90' SAMPLE: San	ne as at 80 ft.	94.2	28.0		
		· .										
		A	CS: N15W 38NE				@ 92' Planar surface below, not visible on	with paper-thin clay, no disturbance above or down-dip side of boring.		,		
		· 'A									ı	
_	95	- .		-	t 		,					
_	95											
-	-			-			@ 96' Slightly sandy.		e .			
-	-	·					:					
-	-	,					@ 98' Slightly sandy.					
_						8						
190												
G	EC	DTE	CHN		1L			01012-02		~	<u>~</u>	
L	00	OF	BO	RIN	IĢ		CU	SD/Rancho Capistrano		WIIII	MG	

	_						· · · · · · · · · · · · · · · · · · ·	NMG Geotechnical, Inc.			of 9
		ARTED:			TE EN	DED:	8/3/01	Boring No.	B-	1	
EQU	JIPME	NT USED:	Bucket	Auger			*	GROUND SURFACE ELEVATION: 29			
DRI	VE DR	METER (in OP (in.)	12"				ş.	DATUM: MSL LOCATION:	_		
DRI	VE WE	IGHT (lbs.) See Note				_	COORD/STATION: DESCRIPTION			
on (ft.)	(£	Graphic Log Graphic Log Attitudes Sample Method and Number Blow Count/ Penetration				ass.	Logged By: <u>K</u>		Dry Density (pcf)	Moisture Content (%)	ırks
Elevation (ft.)	Depth (ft.)	Sraphi	Attitudes	mple I	Slow C	Soil Class. (U.S.C.S.)	Sampled By: K		Dens	Moist	Remarks
ш.		SN		100.00				me as at 90 ft., trace of oxidized fish scales.	90.5	32.0	
_		. —.		D-10	69/10"						
-	-										
-	105			-							
-							@ 105' Black unoxid micaceous, massive,	ized SILTSTONE, damp to moist, hard, , weathered foraminifera.		ľ	
-		. — .		-	-	(
-			-	-							
18 <u>0</u>	11 <u>0</u>	110		_							
-				-				•			
-			·								
	115				-						
-	, " <u>"</u>			D-11 SB-1	36/9"		contact in rings.	ame as at 105 ft. Upper rings contain gray dry, caliche-lined joints/fractures, high-angle	97.0	26.8	
		- - -			-		@ 115.3' Phosphatic	nodule.			
-	-										
17 <u>0</u>	12 <u>0</u>										
					-		@ 120.1' Phosphatic	nodule and sand stringers.		l	
-				-							
		. — .									
	125	-:_									
		OTE						01012-02		^^	
L	00	OF	BO	RIN	1G		CU	SD/Rancho Capistrano			MG

	NMG Geotechnical, Inc. Page 6 of 9												
		ARTED:			TE EN	IDED:	Boring No.						
		COMPAN'		llley			GROUND SURFACE ELEVATION: 290		* •				
HOL	E DIA	METER (in	.) 30"	Auge			DATUM: MSL						
		OP (in.) EIGHT (lbs.	12" See Note	es		3	LOCATION: COORD/STATION:						
]	,,	T:			DESCRIPTION	(c)					
uo (fi	Depth (ft.)	ic Lo	ges	Meth	Count	lass.	Logged By: KV/WG	sity (t	tr (%	arks			
Elevation (ft.)	Dept	Graphic Log	Attitudes	Sample Method and Number	Blow Count/ Penetration	Soil Class. (U.S.C.S.)	Sampled By: KV	Dry Density (pcf)	Moisture Content (%)	Remarks			
ӹ		5 N		Sai	B.T.	0,0	Sampled by. IXV	چ ک					
		······································											
		<u> </u>			1	ŝ	v						
-	-			-	1		, 5						
-	-	. — .		-	-								
-	_			-			·						
16 <u>0</u>	13 <u>0</u>												
		_ ·	i	. D-12	31/9"		@ 130' SAMPLE: Same as at 115 ft.	94.5	29.0				
					1								
-	-	. — .			1								
-	-			-	1								
-	_		i	-	-								
_	13 <u>5</u>	, ,			1								
_	_			l L	5×1								
-	-				1								
-	-	-			1		<u>.</u>						
-	-		•	-	-		@ 139' Slightly polished surface around concretion, slight seep.						
15 <u>0</u>	140	. — .	,	_									
			_		1								
-	-	. — ·	5		-		@ 142.8' Concretion, 4" to 6", slight seep.						
-			į.	-									
-	14 <u>5</u>	.,		D 43	40/01		@ 145' SAMPI E: Black upoxidized SII TSTONE, damp to moist	99.7	25.3				
_	_	· - ·		D-13	40/8"		@ 145' SAMPLE: Black unoxidized SILTSTONE, damp to moist, hard, micaceous, massive, weathered foraminifera.	33.7	20.0				
		. —											
]	· ·			1								
-	,	— · —		-	1		Logged to 148 on 8-2-01, resumed drilling. Resumed downhole						
-	-			-			logging on 8-3-01.						
140													
∣ G	E	DTE	CHN		٦L		01012-02		~	~			
L	00	OF	BO	RIN	IG		CUSD/Rancho Capistrano		N/	MG			

								NMG Geotechnical, Inc.	Pi	age 7	of 9
		ARTED:			(15 E)	NDED <u>:</u>	8/3/01	Boring No.			_01_0_
DRIL	LLING	COMPAN	Y : Tri Va	alley	-						
		NT USED: AMETER (in		<u>Auger</u>				GROUND SURFACE ELEVATION: 290 DATUM: MSL	<u>) ft</u>		
DRIV	VE DR	ROP (in.)	12"		ž			LOCATION:			
		EIGHT (Íbs.	.) See Note					COORD/STATION:			
£		D D	NAMES .	po Ja	ءَ جَ			DESCRIPTION	(bct)	(§	
on (f	쁘	ic Lc	Attitudes	Meth) oun ratio	lass C.S.	Logged By: K	V/WG	sity (ant (°	Remarks
Elevation (ft.)	Depth (ft.)	Graphic Log	Attit	Sample Method and Number	Blow Count/ Penetration	Soil Class. (U.S.C.S.)	Campled By K	V	Dry Density (pcf)	Moisture Content (%)	Rem
ŭ	_	ร ัง	. 1	San	野の	0	Sampled by. 1	<u>v</u>	ρο	-0	-
									٠		
1	-								ANS		
-					1						
اِ			1	-	4		1				1
	 		'								
, ,	455	- vivis					@ 154' Discontinuou	is light gray sand lenses.			1
_	15 <u>5</u>	· — "	1		-						1
_	,	<u></u>	, i	-	_						1
			í				@ 156.5' Coprolite; 3				1
7	-	1-1-	J: N30W 85SW		1		@ 157' Driller began				1
]	-				-						t
		- 0 -			_		Table 4001 Convolid			!	1
130	160	_ 6	1 '				@ 159'-160' Coprolite				1
100		┤ :_		D-14	35/8"	.	@ 160' SAMPLE: Da	ark green black unoxidized clayey	93.5	29.7	ĺ
ا ا				F	-		weathered foraminife	ark green black unoxidized clayey to moist, hard, massive, micaceous, era, trace MnO stain.			ĺ
				[ĺ
]						ĺ
-	-			-	-						ĺ
				-	_						l
	16 <u>5</u>		,	[ĺ
		1—			1					1 1	l
-	ᢤ.	. —			4					[]	ı
		<u></u>			_						l
											l
-				-	†						
	_			-	_						ļ
120	17 <u>0</u>										ļ
			-		1						l
-	-	 ·		 -	-						
Ι.			_	1 1							
		(20)	•								
-	1 "	·		<u> </u>	1		@ 172.5' Small oval-	-shaped concretion, slight seepage.			
,	_	-		-	_						
	175	,									
C	F	OTF/	CHN		ΔΙ			01012-02			
-	GEOTECHNICAL							01012 02		· ·	~~~

LOG OF BORING



NMG Geotechnical, Inc. Page 8 of 9												
		ARTED:	7/31/01 Y : Tri Va		TE EN	IDED <u>:</u>	8/3/01	Boring No.	B-	1	v	
EQU	JIPME	NT USED:	Bucket					GROUND SURFACE ELEVATION: 290				
DRI\	VE DR	METER (in	12"					DATUM: MSL LOCATION:				
	/E WE	EIGHT (lbs.	.) See Note	T		T	T	COORD/STATION: DESCRIPTION				
n (ft.)	(£)	Log	es	Sample Method and Number	unt/ stion	iss.	Logged By: K		Dry Density (pcf)	(%) (%)	ķ	
Elevation (ft.)	Depth (ft.)	Graphic Log	Attitudes	ple N	Blow Count/ Penetration	Soil Class. (U.S.C.S.)			Densi	Moisture Content (%)	Remarks	
삅		W E	`	Sam	ᄦᇫ	ぶこ	Sampled By: K		Dry [− ŏ∣		
				D-15	36/9"		@ 175' SAMPLE: Sa	ame as at 160 ft.	94.4	28.6		
1	-	———										
-	-	Ţ!		-	-		€ 177 2' Polished ic	oint, very planar, continuous, 1" zone above is			İ .	
	-	#-	J: N25W 42NE	-	-		joint is slightly fractu	red.				
اِ	_	- #										
110 180 .								g - 4				
								•				
		\— . —	J: N15E				(2) 494 6' Polished in	tich was planer continuous 2 subparallal			ĺ	
1		1/-	70SE		1		joints joints below, 2' generally slightly sar	oint, very planar, continuous, 2 subparallel 'thick zone, slight seepage, siltstone below is noty.			ĺ	
		NA			-		gorierany ongriny ca.	lay.			ĺ	
	-	1/1		 -	-		Ì			6		
	18 <u>5</u>		5	-	_						1	
	<u>.</u>					ł						
								1				
]	*		-				
1	-	,			1					'		
	-	-:-		-	1						I	
10 <u>0</u>	19 <u>0</u>			D-16	31		@ 190' SAMPLE: Da	ark green gray to green black SILTSTONE, e, micaceous, weathered foraminifera.	97.4	27.5	,	
-	-	│ _ : _		D- 10	31		moist, hard, massive	e, micaceous, weathered foraminifera.				
	╡.											
] _	_:										
	195		5 ,		1							
-	190				1			,				
-	-			<u> </u>	+							
ŀ	-	. —		 	-							
							}					
90 200												
		OTE	CHN	IIC/	ΔL			01012-02	<u> </u>		$\overline{\mathbb{Z}}$	
		GOF					CU	ISD/Rancho Capistrano		W/	MG	
		<i>-</i>					-	CUSD/Rancho Capistrano				

						· · ·	.	NMG Geotechnical, Inc.		- Q	of <u>9</u>
DAT	= ST/	ARTED:	7/31/01	DA	TE EN	NED:	8/3/01	Parina No.	Q_		<u>یاں ۔</u>
DRIL	LING	COMPAN	Y: Tri Va	illey	· · · · · · · · · · · · · · · · · · ·		0/3/01	Boring No.		<u> </u>	
HOL	E DIA	NT USED: METER (in	1.) 30"	Auger			-	GROUND SURFACE ELEVATION: 290 DATUM: MSL) ft		
DRI\	/E DR	OP (in.) IGHT (lbs.	12"	-				LOCATION: COORD/STATION:			
	/ L 77 =		·) See Non]		DESCRIPTION	ह	T	 -
Elevation (ft.)	(ft.)	Graphic Log	ges des	Sample Method and Number	Blow Count/ Penetration	ass.	Logged By: K	<u>(V/WG</u>	Dry Density (pcf)	Moisture Content (%)	ırks
vatio	Depth (ft.)	raphi	Attitudes	d See	ow C enetr	Soil Class. (U.S.C.S.)			Dens	Moist	Remarks
ä		W E		San	<u> </u>	SE	Sampled By: K	<u> </u>	D	-0	"
-	-				1						
-	-				-						
	-			-	+						
_				_							
	205										
					1		NOTES Total Depth 202	ft.			
_				-	1		Downhole Logge Groundwater No	d to 201 ft.			
_	-			-	-		Seepage Encour	ntered at 138', 143', 172,5', and 184'			
-	_		İ	_		ĺ	Drive Weights: 0- 84-110/1407, 110	uttings and Tamped from 110'- surface -28'/5952, 28-55'/3921, 55-84'/2531, 0-168'/1600, 168-195'/2200, 195-215'/2500			
								·			
8 <u>0</u>	210]						
0 <u>0</u> _	21 <u>0</u>	1			1						
-	-	-	1	-	1						
-				-	-						
_		1							•		
		ļ									i I
	245]	}		1						
-	21 <u>5</u>	1	\		1						
	-				1						
] -	}	 			-						
							,		ŀ		
	İ		ľ]						
-	·	1	1	<u> </u>	1						
7 <u>0</u>	22 <u>0</u>	1		-	-						
_		-			1						
•]]						
-		1									
-		-		•							
<u> </u>	225										
G	E	DTE	CHN	IIC/	1			01012-02		~	$\overline{\sim}$
						1				396.50	27.

LOG OF BORING



NMG Geotechnical, Inc. Page 1 Boring No. B-2 DATE ENDED: 8/8/01 DATE STARTED: DRILLING COMPANY: Tri Vallley EQUIPMENT USED: Bucket Auger **GROUND SURFACE ELEVATION: 287 ft** HOLE DIAMETER (in.) 30" DATUM: DRIVE DROP (in.) 12" LOCATION: DRIVE WEIGHT (ibs.) 0-28/5952, 28-55/3921, 55-84/2531 COORD/STATION: DESCRIPTION Dry Density (pcf) Sample Method and Number Blow Count/ Penetration Elevation (ft. Soil Class. (U.S.C.S.) E Remarks Attifudes Logged By: KV/WG Graphic I Depth (Sampled By: KV/WG Colluvium (Qcol) Surface: Brown silty fine to medium SAND, dry, loose to 3", scattered small cobbles. @ 1' Light brown to brown silty fine to medium SAND, moist, medium dense, abundant caliche. @ 3' Krotovina Landslide Materials (QIs) @ 4.5' Transitions into weathered bedrock. 101.4 15.8 @ 5' SAMPLE: Yellow brown to dark yellow brown clayey silty fine Push D-1 1/6" to medium SAND, moist, slightly micaceous, abundant caliche stringers, porous, roots to 1/8", abundant FeO mottling. 28<u>0</u> @ 7' Large Krotovina intersected by boring. **B-1** 10 @ 10' SAMPLE: Gray to gray brown slightly clayey SILT, moist, 95.6 25.3 **D-2** Push medium stiff to stiff, micaceous, FeO-lined joints/fractures, massive, root hairs, jarosite staining. J: N24E Downhole: Sandstone bedding fragment cut off by near vertical **68NW RS: N80E** @ 12.6' Planar rupture surface, highlighted by gypsum; fractures 6SE below terminate at rupture surface. Capistrano Formation (Tc) 1<u>5</u> @ 15' SAMPLE: Gray to gray brown slightly clayey SILTSTONE, gypsum, near vertical FeO-stained joint/fracture. 99.7 26.1 D-3 Push @ 16' Color banding above jarosite-stained polished joint surfaces. 270 J: N3W **22SW** @ 18' Abundant FeO stain; scattered gypsum; increase in clay, color change to dark. @ 18.5' Gypsum-lined joint. 20 @ 20' SAMPLE: Dark green black unoxidized clayey SILTSTONE, 97.7 25.9 **D-4** 3 damp to moist, very stiff, micaceous, massive. J: N9E 40-50SE @ 22' Odoriferous. J: N7E @ 23.7' Very tight, planar joint. 35SE GEOTECHNICAL 01012-02

GEOTECHNICAL LOG OF BORING

PFUJHU.

Report BULKEI AUGER,



NMG Geotechnical, Inc.											ige <u>2</u>	_of_3
		ARTED:			TE EN	IDED <u>:</u>	8/8/01	Boring	No.	B-	2	
		COMPAN' NT USED:					GR(OUND SURFACE ELEVA				-, -
HOL	E DIA	METER (ir	n. <u>)</u> 30"		*		DAT	TUM: MSL				2
		lOP (in.) EIGHT (lbs.	12" .) 0-28'/595	28-55'/3	3921, 5	5-841/25		OCATION:OORD/STATION:				
			. <u>/ U =U.U.</u>			1		ESCRIPTION	<u> </u>			4.7
Elevation (ft.)	(ff.)	Graphic Log	les	fethc mber	Blow Count/ Penetration	ass.	Logged By: KV/WC	2 .		ā)	Moisture Content (%)	şk S
vatio	Depth (ft.)	aphic	Attitudes	ple N	w C.	Soil Class. (U.S.C.S.)				ensi	loisti	Remarks
E.	Ā	E B	,	Sample Method and Number	음 음 음	જ ર	Sampled By: KV			Dry Density (pcf)	≥ි දි	œ
	-			D-5	3	8	@ 25' SAMPLE: Same as	at 20 ft., weathered foraminit	era.	97.1	26.3	
	ļ	_ @	ľ	D-5	3							
260		0										
			f		1	0		•				
-				-	1							
		. ~		<u> </u>								
v	30		{									
	\ <u></u>			D-6	7		@ 30' SAMPLE: Same as	at 25 ft.	,	98.0	26.2	
	× •				,							
]									1
		- -										
-		· -		-	1							
-				<u> </u>]							
اِ	3 <u>5</u>	-	[[
		- 00 m					@ 35.3' Thin wispy sand le	enses; bedding is subhorizon	tal.			
-		,,,,,,,		-			, , ,					
25 <u>0</u>			ĺ	-								
	-				1							
-	-			-	ł							٠.
	40											
		·		D-7	8		@ 40' SAMPLE: Dark gree moist, hard, massive, mica	en black clayey unoxidized Slaceous, weathered foraminife	LTSTONE, ra, strongly	99.5	24.7	
_	-						odoriferous.	9	A 100			
_	-		1	-								
]				<u> </u>								
		-										
-	4 <u>5</u>			-								
		· -				1						
240		'					@ 46.3' Cemented materia	al begins on north wall, no ce	mented			
24 <u>0</u>	-			-	1		material on south wall. Con	al begins on north wall, no ce ncentric joints on outside of c	oncretion.			
-		XX	!								Ĭ	
		$\uparrow \times$	1. 100141				0.40.71.1.1.1.1.1.1				- 1	
-	-	××	J: N20W 80SW		1		@ 48.7' Joint on west wall					
GEOTECHNICAL 01012-02										-		
G	E)TE(CHN	IICA	۱L			01012-02			~	~~

GEOTECHNICAL LOG OF BORING



NMG Geotechnical, Inc. Page 3 of 3 **Boring No.** DATE STARTED: DATE ENDED: 8/6/01 **DRILLING COMPANY: Tri Vallley GROUND SURFACE ELEVATION: 287 ft** EQUIPMENT USED: Bucket Auger DATUM: HOLE DIAMETER (in.) 30" LOCATION: DRIVE DROP (in.) COORD/STATION: DRIVE WEIGHT (Ibs.) 0-281/5952, 28-551/3921, 55-841/2531 DESCRIPTION Sample Method and Number Dry Density (pcf) Moisture Content (%) Blow Countl Penetration Elevation (ft. Soil Class. (U.S.C.S.) Depth (ft.) Logged By: KV/WG Sampled By: KV/WG @ 50' SAMPLE: Same as at 40 ft. Downhole: Joint on east wall. Water entering boning from around J: N80W 28.4 D-8 70NE @ 51.2' Groundwater. End of logging. @ 53' Coring to 58.5'. 55 230 60 6<u>5</u> **NOTES** Total Depth 58.5 ft. Boring Terminated Due to Concretion Groundwater at 51.2' after 24 hours Downhole Logged to 51 ft. Backfilled and Tamped 22<u>0</u> 7<u>0</u> **GEOTECHNICAL** 01012-02 LOG OF BORING CUSD/Rancho Capistrano

NMG Geotechnical, Inc. Page 1 **Boring No** DATE STARTED: DATE ENDED: 8/9/01 **DRILLING COMPANY:** Tri Vallley **EQUIPMENT USED:** Bucket Auger **GROUND SURFACE ELEVATION: 292 ft** HOLE DIAMETER (in.) 30" DATUM: DRIVE DROP (in.) LOCATION: DRIVE WEIGHT (Ibs.) See Notes COORD/STATION: DESCRIPTION Sample Method and Number Dry Density (pcf) Blow Count/ Penetration Elevation (ft.) Soil Class. (U.S.C.S.) Depth (ft.) Remarks Attitudes Graphic L Logged By: KV/WG Sampled By: KV Colluvium (Qcol) Surface: Brown silty fine to medium SAND, dry, loose to 2", scattered cobbles. @ 1' Carbonate silt-lined pores; cobble. 290 @ 5' SAMPLE: Dark gray brown silty fine to medium SAND, dry to 98.4 9.9 D-1 damp, pinhole porous, caliche stringers, abundant root hairs. @ 8' Increase in moisture; color change to light gray brown to brown. @ 10' SAMPLE: Yellow brown silty fine SAND, damp, porous, rootlets, minor caliche, 1" subangular siltstone fragments, 98.4 10.3 **D-2** 1 abundant FeO stain. @ 11' Yellow brown silty fine SAND, moist, mottled with gray silty fine SAND and brown soil-like material, pinhole porous, FeO stain, 280 caliche stringers. @ 14' Subrounded cobbles. Landslide/Terrace (?) Deposits (Qls/Qt?) 99.6 @ 14.8' Subhorizontal contact between Colluvium and Terrace Deposits. 9.6 **D-3** 2 @ 15' SAMPLE: Gray brown silty firie SAND, damp to moist, pinhole porous, caliche stringers, sparse FeO stain, trace charcoal flecks. @ 15.5' Krotovina zone to 16'. @ 17' Increase in silt. **SB-1** @ 19' Increase in sand. 20 @ 20' SAMPLE: Gray brown to yellow brown silty fine SAND and 100.4 9.3 **B: N28E D-4** fine sandy SILT, damp to moist, pinhole porous, trace caliche 10SE stringers, charcoal flecks. Downhole: Fine angular fragments of siltstone and organics lined 270 with carbonate silt, mottled. Attitude on 1/2" white sandy layer. @ 24' Increase in clay, roots, and pores lined with carbonate silt. **GEOTECHNICAL** 01012-02 OG OF BORING

CUSD/Rancho Capistrano

יושטיים שיוטואוטיים ואוקוואו ואים ואים ו

Project: P:KUUTWIU1Z-VZNUWINI VYN IU 1Z-VZ.SF.J.

Report: BUCKET

NMG Geotechnical, Inc. Page 2 of 6 Boring No. DATE ENDED: 8/9/01 DATE STARTED: 8/8/01 DRILLING COMPANY: Tri Vallley **GROUND SURFACE ELEVATION: 292 ft EQUIPMENT USED:** Bucket Auger HOLE DIAMETER (in.) 30" DATUM: **DRIVE DROP (in.)** 12" LOCATION: COORD/STATION: DRIVE WEIGHT (Ibs.) See Notes DESCRIPTION Dry Density (pcf) Sample Method and Number Moisture Content (%) Blow Count/ Penetration Elevation (ft.) il Class. .S.C.S.) Depth (ft.) Remarks Attitudes Logged By: KV/WG Graphic Soil C.S Sampled By: KV @ 25' SAMPLE: Mottled dark gray brown, brown, and yellow brown, silty fine SAND, moist, very porous, roots, slightly clayey, D-5 3 Report: BUCKET AUGER; Project: r:xxu01/010 .zvz.v3/N1Vi v. v. v.z-vz.lst sparse FeO stain and caliche. @ 26.7' Contact between dark gray brown slightly clayey SILT above and medium gray brown below. Transitions to light gray brown and clayeyer below. C/B: N65W **RS: N38E** @ 28.9' Rupture surface. 53SE 30 @ 30' SAMPLE: Mottled as above, silty to clayey fine SAND, 107.9 18.0 D-6 moist, porous, sparse FeO stain and caliche. **B: N50E** 45SE Terrace Deposits (Qt) 260 **B: N20E** @ 34.6' Contact with light brown clayey SILT and dark silty CLAY. 15NW @ 36.7' Soil horizon: dark brown silty CLAY, moist, plastic, caliche stringers, trace charcoal. @ 37.8' Base of soil horizon reverse offset 3.5"-4"; shear surface SH: N10E along offset; lose shear surface at 38.4'. 40SE 40 102.1 23.2 @ 40' SAMPLE: Olive gray silty CLAY, very moist, plastic, Push abundant charcoal, slightly mottled. @ 40.6' Thin organic layer, discontinuous; dip direction N20W @ 41.5' Abundant carbonate silt to 41.8', fine roots, porous. 250 @ 44' Mottled brown gray, FeO stain, brown organic material lining pores. 45 @ 48.6' Organic horizon; dip is approximately 15NW **GEOTECHNICAL** 01012-02

LOG OF BORING

