

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
13.1	1356	2563	95.1	2352	4825
14.8	1224	2294	96.8	2458	4934
16.4	1282	2412	98.4	2583	6020
18.0	1562	3348	100.1	2485	5087
19.7	1379	3528	101.7	2476	4687
21.3	1426	2929	103.3	2524	4755
23.0	1533	3418	105.0	2439	5126
24.6	1512	3382	106.6	2352	4755
26.2	1773	3686	108.3	2533	4464
27.9	1736	3815	109.9	2667	4934
29.5	1823	3906	111.5	2757	5047
31.2	2278	4755	113.2	2166	4687
32.8	2232	4621	114.8	1310	3707
34.4	2286	4721	116.5	1255	3081
36.1	2090	4127	118.1	1869	3605
37.7	2144	4654	119.4	2130	5126
39.4	2395	5423			
41.0	1930	4026			
42.7	1982	3906			
44.3	2217	4621			
45.9	2137	4233			
47.6	2013	5378			
49.2	1959	4621			
50.9	2514	5087			
52.5	2360	4971			
54.1	2144	4897			
55.8	2158	4861			
57.4	2263	5047			
59.1	2360	5249			
60.7	2594	5514			
62.3	2166	4289			
64.0	2070	4687			
65.6	2187	4404			
67.3	1970	4261			
68.9	1759	4654			
70.5	1896	4971			
72.2	2025	5009			
73.8	1813	4790			
75.5	1548	4233			
77.1	1793	4345			
78.7	2044	4654			
80.4	2070	4897			
82.0	2404	5468			
83.7	2369	5608			
85.3	2448	6020			
86.9	2689	6309			
88.6	2769	5706			
90.2	2757	5561			
91.9	1843	4101			
93.5	1750	3686			

Table 4. Boring LD-B-102, Suspension R1-R2 depths and P- and S_H-wave velocities

LENIHAN DAM BORING LD-B-103

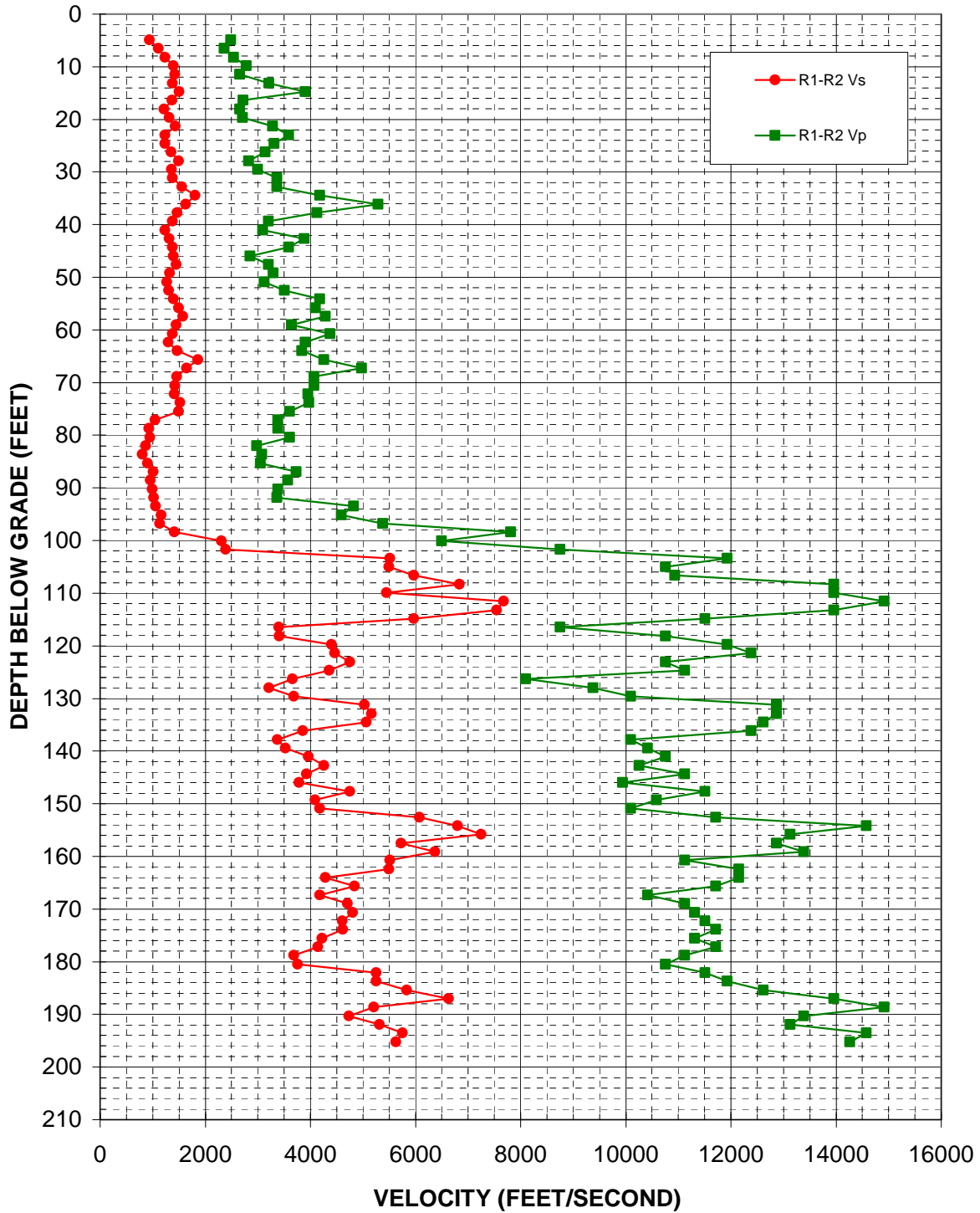


Figure 6: Boring LD-B-103, Suspension R1-R2 P- and S_H -wave velocities

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
4.9	940	2485	86.9	1013	3728	169.0	4704	11121
6.6	1112	2360	88.6	954	3566	170.6	4807	11313
8.2	1233	2543	90.2	994	3382	172.2	4605	11512
9.8	1396	2780	91.9	1022	3365	173.9	4621	11717
11.5	1423	2657	93.5	1055	4825	175.5	4220	11313
13.1	1376	3217	95.1	1163	4589	177.2	4140	11717
14.8	1505	3906	96.8	1133	5378	178.8	3686	11121
16.4	1373	2723	98.4	1411	7812	180.4	3760	10757
18.0	1217	2657	100.1	2310	6497	182.1	5249	11512
19.7	1312	2711	101.7	2386	8749	183.7	5249	11930
21.3	1436	3281	103.3	5514	11930	185.4	5833	12619
23.0	1238	3586	105.0	5491	10757	187.0	6628	13961
24.6	1238	3314	106.6	5965	10936	188.6	5208	14913
26.2	1353	3140	108.3	6835	13961	190.3	4738	13391
27.9	1495	2828	109.9	5445	13961	191.9	5313	13123
29.5	1364	2996	111.5	7674	14913	193.6	5756	14582
31.2	1379	3365	113.2	7542	13961	195.2	5632	14265
32.8	1559	3365	114.8	5965	11512			
34.4	1808	4179	116.5	3400	8749			
36.1	1632	5292	118.1	3409	10757			
37.7	1468	4127	119.8	4404	11930			
39.4	1379	3201	121.4	4464	12381			
41.0	1233	3095	123.0	4755	10757			
42.7	1318	3883	124.7	4360	11121			
44.3	1376	3586	126.3	3656	8101			
45.9	1396	2853	128.0	3209	9374			
47.6	1448	3201	129.6	3686	10095			
49.2	1323	3297	131.2	5028	12866			
50.9	1269	3125	132.9	5167	12866			
52.5	1310	3509	134.5	5067	12619			
54.1	1393	4179	136.2	3860	12381			
55.8	1498	4101	137.8	3374	10095			
57.4	1574	4289	139.4	3528	10415			
59.1	1448	3645	141.1	3965	10757			
60.7	1379	4374	142.7	4261	10253			
62.3	1297	3906	144.4	3929	11121			
64.0	1468	3837	146.0	3782	9942			
65.6	1864	4261	147.6	4755	11512			
67.3	1649	4971	149.3	4088	10583			
68.9	1461	4076	150.9	4179	10095			
70.5	1423	4076	152.6	6076	11717			
72.2	1417	3953	154.2	6800	14581			
73.8	1519	3977	155.8	7250	13123			
75.5	1491	3605	157.5	5731	12866			
77.1	1048	3382	159.1	6371	13391			
78.7	935	3382	160.8	5514	11121			
80.4	948	3605	162.4	5491	12151			
82.0	868	2983	164.0	4289	12151			
83.7	802	3081	165.7	4843	11717			
85.3	904	3052	167.3	4179	10415			

Table 5. Boring LD-B-103, Suspension R1-R2 depths and P- and S_H-wave velocities

APPENDIX A

**SUSPENSION VELOCITY MEASUREMENT
QUALITY ASSURANCE SUSPENSION SOURCE
TO RECEIVER ANALYSIS RESULTS**

LENIHAN DAM BORING LD-B-101

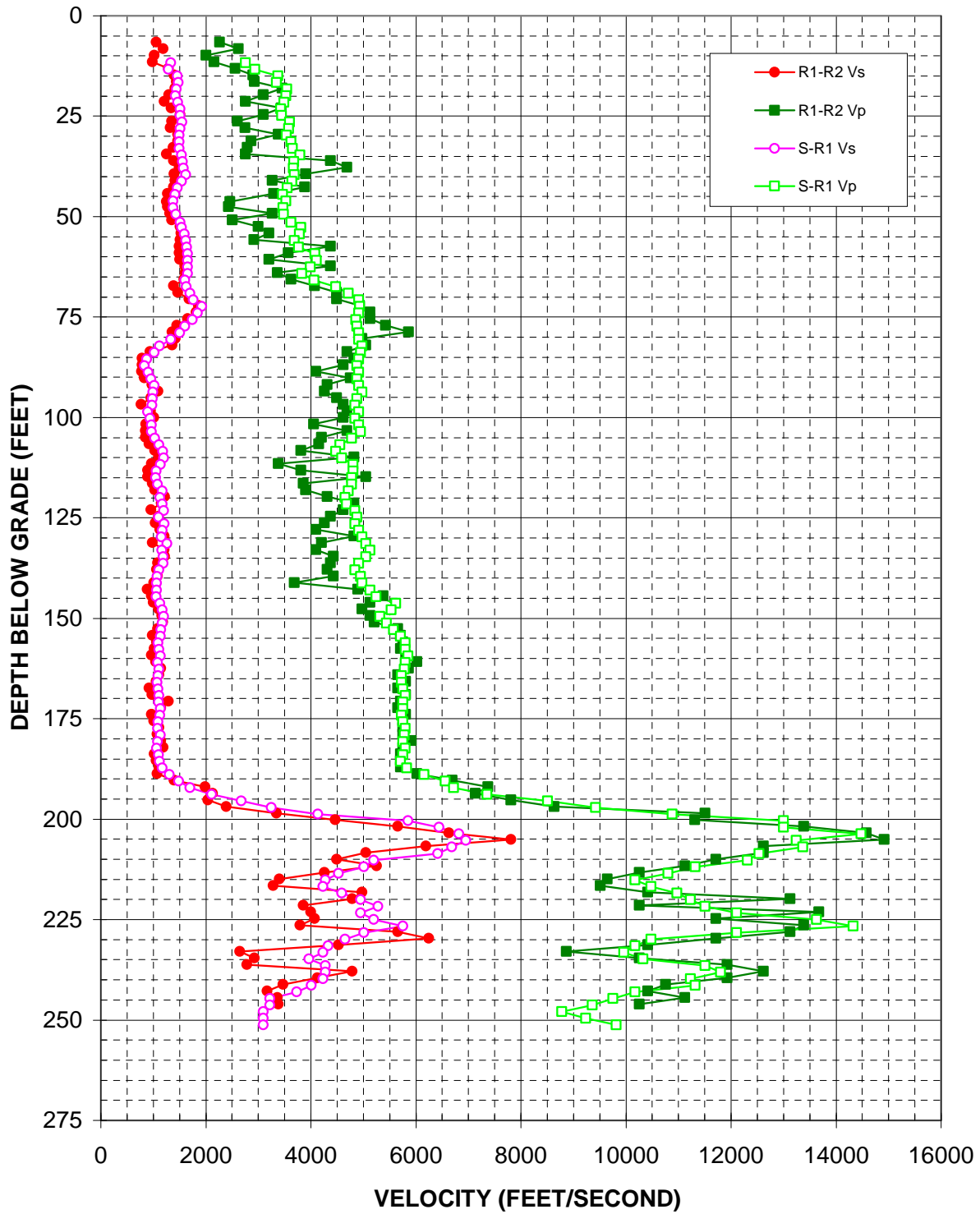


Figure A-1. Boring LD-B-101, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
11.7	1332	2753	93.7	990	4979	175.8	1095	5755
13.4	1288	2938	95.4	987	4876	177.4	1082	5802
15.0	1460	3375	97.0	976	4842	179.0	1134	5779
16.6	1478	3343	98.7	894	4910	180.7	1085	5755
18.3	1442	3546	100.3	937	4842	182.3	1065	5802
19.9	1427	3528	101.9	966	4910	184.0	1099	5755
21.6	1466	3493	103.6	966	4944	185.6	1120	5708
23.2	1510	3425	105.2	1028	4776	187.2	1176	5827
24.8	1510	3442	106.9	1109	4559	188.9	1303	6159
26.5	1550	3601	108.5	1180	4472	190.5	1484	6562
28.1	1513	3582	110.1	1200	4589	192.2	1704	6719
29.8	1494	3537	111.8	1134	4809	193.8	2108	7352
31.4	1494	3628	113.4	1059	4809	195.4	2680	8510
33.0	1494	3647	115.1	1046	4776	197.1	3250	9424
34.7	1540	3795	116.7	1082	4776	198.7	4130	10885
36.3	1560	3676	118.3	1172	4712	200.4	5851	13002
38.0	1578	3666	120.0	1127	4650	202.0	6441	13002
39.6	1618	3686	121.6	1176	4681	203.6	6817	14476
41.2	1540	3638	123.3	1196	4842	205.3	6951	13247
42.9	1460	3555	124.9	1099	4876	206.9	6687	13373
44.5	1413	3459	126.5	1204	4842	208.6	6412	12537
46.2	1374	3528	128.2	1168	4910	210.2	5201	12318
47.8	1374	3476	129.8	1153	4979	211.8	5015	11324
49.4	1436	3484	131.5	1261	5051	213.5	4530	10802
51.4	1512	3628	133.1	1160	5125	215.1	4281	10175
52.7	1540	3816	134.7	1194	5051	216.8	4230	10479
54.4	1588	3785	136.4	1192	4910	218.4	4589	10970
56.0	1618	3686	138.0	1106	4842	220.0	4944	11234
57.6	1639	3765	139.7	1075	4944	221.7	5279	11510
59.3	1660	4082	141.3	1069	4979	223.3	4944	12105
60.9	1660	4106	142.9	1069	5125	225.0	5201	13633
62.6	1660	3989	144.6	1059	5240	226.6	5755	14329
64.2	1660	3826	146.2	1131	5617	228.2	5015	12105
65.8	1599	4058	147.9	1168	5528	229.9	4650	10479
67.5	1629	4472	149.5	1200	5319	231.5	4334	10175
69.1	1704	4712	151.1	1168	5443	233.2	4230	9959
70.8	1764	4910	152.8	1142	5572	234.8	3967	10325
72.4	1924	4927	154.4	1134	5708	236.5	4281	11510
74.0	1843	4910	156.1	1095	5802	238.1	4281	11800
75.7	1742	4859	157.7	1113	5802	239.7	4230	11234
77.3	1599	4876	159.4	1134	5851	241.4	4012	11324
79.0	1503	4910	161.0	1085	5802	243.0	3735	10175
80.6	1337	4910	162.6	1109	5779	244.7	3221	9751
82.3	1118	4979	164.3	1089	5731	246.3	3221	9361
83.9	1019	4944	165.9	1075	5731	247.9	3093	8776
85.5	881	4910	167.6	1089	5755	249.6	3093	9238
87.2	835	4876	169.2	1113	5802	251.2	3093	9820
88.8	901	4910	170.8	1099	5755			
90.5	958	4876	172.5	1132	5755			
92.1	1016	4910	174.1	1127	5731			

Table A-1. Boring LD-B-101, S - R1 quality assurance analysis P- and S_H-wave data

LENIHAN DAM BORING LD-B-102

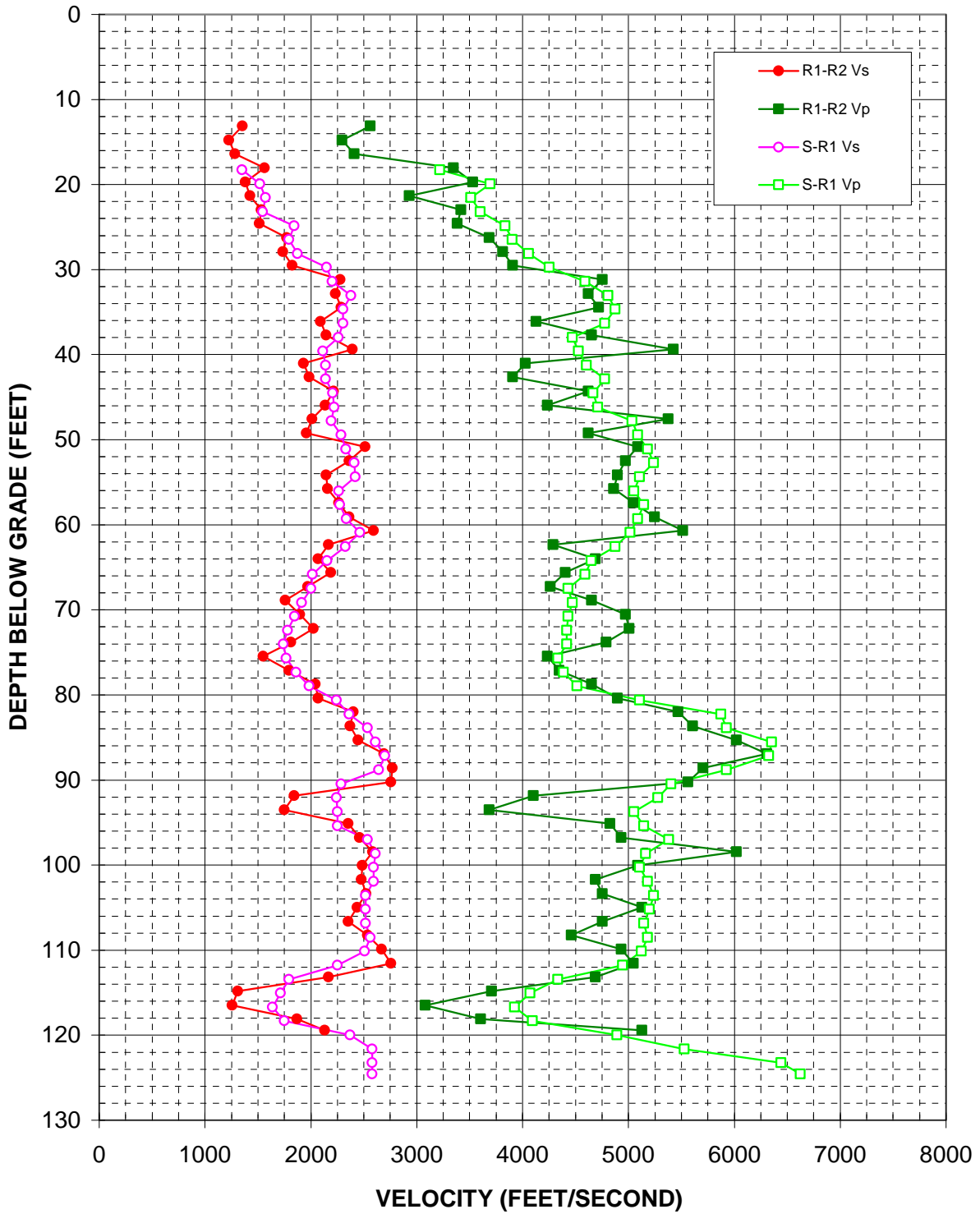


Figure A-2. Boring LD-B-102, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
18.3	1348	3221
19.9	1516	3695
21.6	1571	3510
23.2	1543	3601
24.8	1843	3837
26.5	1796	3901
28.1	1872	4058
29.8	2147	4255
31.4	2201	4589
33.0	2380	4809
34.7	2302	4876
36.3	2302	4776
38.0	2258	4472
39.6	2115	4530
41.2	2141	4604
42.9	2141	4776
44.5	2208	4665
46.2	2222	4712
47.8	2194	5033
49.4	2287	5088
51.1	2333	5182
52.7	2413	5240
54.4	2421	5106
56.0	2265	5051
57.6	2272	5144
59.3	2336	5088
60.9	2464	5015
62.6	2325	4876
64.2	2154	4650
65.8	2018	4589
67.5	2000	4430
69.1	1913	4472
70.8	1848	4430
72.4	1782	4416
74.0	1742	4416
75.7	1769	4334
77.3	1862	4388
79.0	1983	4515
80.6	2243	5106
82.3	2364	5875
83.9	2535	5925
85.5	2610	6354
87.2	2700	6325
88.8	2639	5925
90.5	2287	5401
92.1	2243	5279
93.7	2250	5051
95.4	2250	5144
97.0	2535	5380
98.7	2610	5162

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
100.3	2591	5106
101.9	2591	5182
103.6	2516	5240
105.2	2516	5201
106.9	2516	5144
108.5	2562	5182
110.1	2507	5125
111.8	2250	4944
113.4	1796	4334
115.1	1712	4070
116.7	1637	3922
118.3	1751	4094
120.0	2372	4893
121.6	2581	5528
123.3	2581	6441
124.6	2581	6624

Table A-2. Boring LD-B-102, S - R1 quality assurance analysis P- and S_H-wave data

LENIHAN DAM BORING LD-B-103

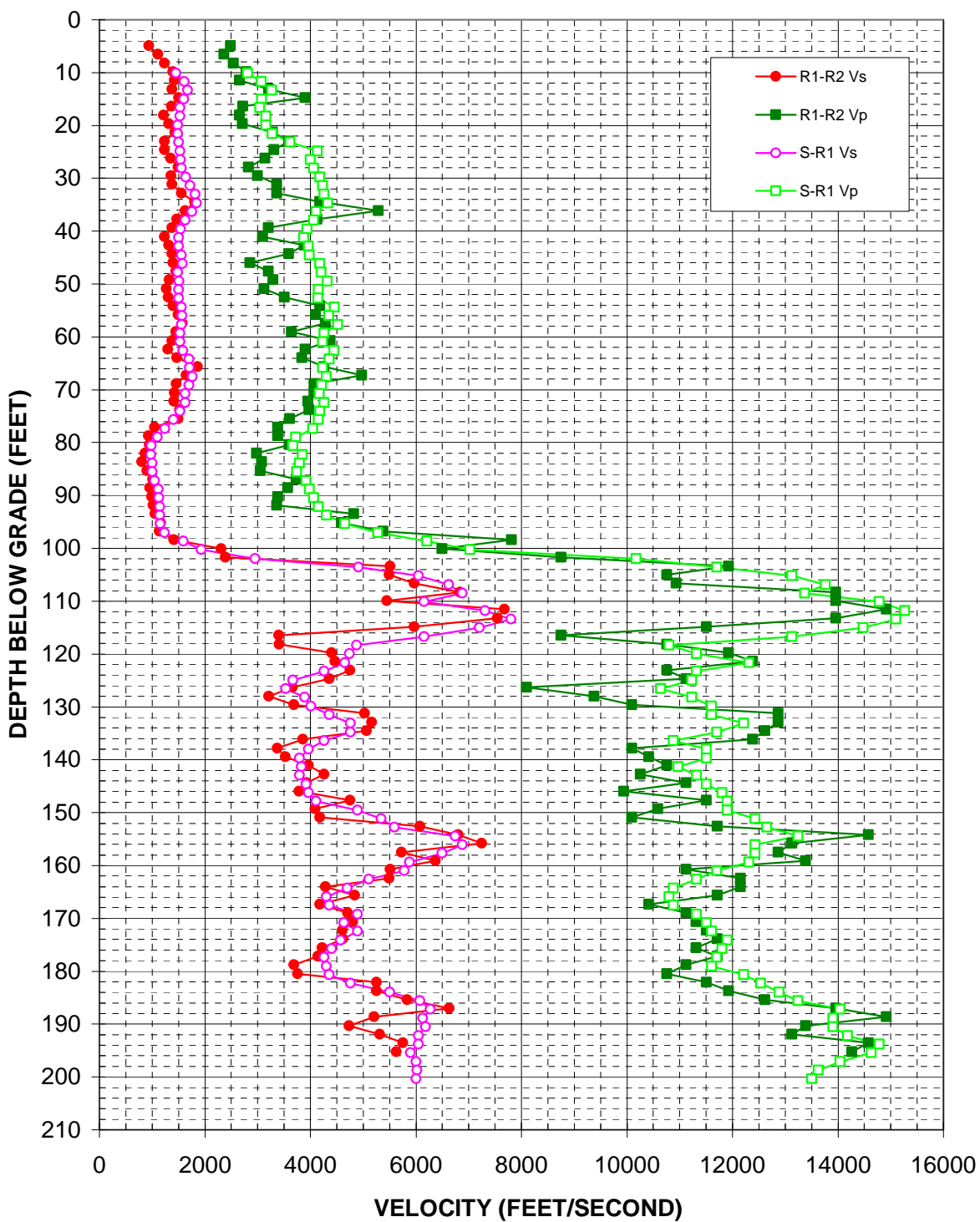


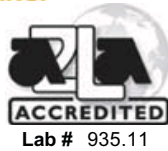
Figure A-3. Boring LD-B-103, R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H -wave data

Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)	Depth (feet)	V _s (feet/sec)	V _p (feet/sec)
10.1	1448	2808	92.1	1142	4154	174.1	4574	11900
11.7	1607	3066	93.7	1145	4307	175.8	4402	11800
13.4	1672	3266	95.4	1157	4650	177.4	4255	11702
15.0	1599	3079	97.0	1238	5279	179.0	4307	11605
16.6	1533	3046	98.7	1592	6213	180.7	4361	12210
18.3	1533	3156	100.3	1934	7021	182.3	4760	12537
19.9	1487	3163	101.9	2950	10175	184.0	5507	12883
21.6	1484	3273	103.6	4910	11702	185.6	6079	13247
23.2	1500	3619	105.2	6053	13123	187.2	6269	14042
24.8	1526	4130	106.9	6624	13767	188.9	6132	13903
26.5	1540	4001	108.5	6883	13373	190.5	6186	13903
28.1	1553	4058	110.1	6159	14781	192.2	6053	14184
29.8	1640	4179	111.8	7314	15263	193.8	6053	14781
31.4	1721	4230	113.4	7801	15099	195.4	5900	14627
33.0	1814	4255	115.1	7201	14476	197.1	6001	14042
34.7	1843	4334	116.7	6159	13123	198.7	6027	13633
36.3	1755	4106	118.3	4876	10802	200.4	6001	13502
38.0	1625	4058	120.0	4744	11324			
39.6	1540	3933	121.6	4650	12318			
41.2	1500	3879	123.3	4255	11324			
42.9	1500	3967	124.9	3666	11234			
44.5	1553	3978	126.5	3537	10638			
46.2	1574	4179	128.2	3890	11234			
47.8	1487	4204	129.8	4012	11605			
49.4	1513	4321	131.5	4361	11605			
51.1	1500	4154	133.1	4760	12210			
52.7	1502	4142	134.7	4760	11702			
54.4	1553	4458	136.4	4255	10885			
56.0	1567	4347	138.0	3967	11510			
57.6	1553	4515	139.7	3795	11510			
59.3	1533	4255	141.3	3826	10970			
60.9	1533	4230	142.9	3795	11324			
62.6	1581	4444	144.6	3922	11510			
64.2	1704	4361	146.2	3967	11800			
65.8	1712	4230	147.9	4106	11900			
67.5	1764	4307	149.5	4893	11900			
69.1	1704	4217	151.1	5339	12427			
70.8	1633	4167	152.8	5594	12650			
72.4	1625	4255	154.4	6751	13247			
74.0	1526	4179	156.1	6883	12427			
75.7	1407	4154	157.7	6501	12427			
77.3	1245	4047	159.4	5875	12318			
79.0	1100	3725	161.0	5779	11702			
80.6	987	3666	162.6	5106	11324			
82.3	976	3847	164.3	4696	10885			
83.9	999	3795	165.9	4307	10802			
85.5	1004	3745	167.6	4361	10885			
87.2	1046	3922	169.2	4893	11324			
88.8	1122	3978	170.8	4634	11510			
90.5	1123	4058	172.5	4893	11605			

Table A-3. Boring LD-B-103, S - R1 quality assurance analysis P- and S_H-wave data

APPENDIX B

**BORING GEOPHYSICAL LOGGING
SYSTEMS - NIST TRACEABLE
CALIBRATION RECORDS**



MICRO PRECISION CALIBRATION, INC.
 12686 HOOVER STREET
 GARDEN GROVE, CA, 92841
 (714) 901-5659

Certificate of Calibration

Date: 10/6/2010

Certificate #: 1114924

Customer:

GEOVISION
 1124 OLYMPIC DRIVE
 CORONA, CA, 92881

Purchase Order: OH-101004-01
 Work Order: N/A

MPC Control #: BG9698
 Asset ID: 15014
 Gage Type: LOGGER
 Manufacturer: OYO
 Model Number: 03331-0000
 Size: N/A
 Temp./RH: 70 °F / 35 %

Serial Number: 15014
 Department: N/A
 Performed By: STEVE BORING
 Received Condition: IN TOLERANCE
 Returned Condition: IN TOLERANCE
 Cal Date: October 4, 2010
 Cal. Interval: 12 MONTHS
 Cal. Due Date: October 4, 2011

Found conditions meet or exceed manufacturer specifications.

***Calibration Notes:**

The UUT (unit under test) was calibrated using the customers procedures in our Garden Grove lab. The UUT was operated by the customers personnel and data collection was observed by MPC personnel. The UUT was found to be in tolerance to customer supplied specifications. The reference standards used are in compliance with ISO/IEC 17025:2005, ISO9001:2000, ANSI/NCSL Z540-1-1994 and laboratory accreditation for lab code 935.11. Frequency is accredited. Measurement uncertainty is 0.2 x E12 Hz. Please see attached data sheet.

Standards Used To Calibrate Equipment

I.D.	Description	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
AM4000	WAVEFORM GENERATOR	33250A	MY40000703	AGILENT	8/17/2011	1063979
T1100	COUNTER	53131A	3546A09912	HEWLETT PACKARD	1/20/2011	646688

Calibrating Technician:

STEVE BORING

QC Approval:

Tammy Webster

Unless Otherwise Noted, Uncertainty Estimated at ≥ 4 to 1. Uncertainties have been estimated at a 95 percent confidence level (k=2). Services rendered comply with ISO 17025:2005, ISO 9001:2008, ANSI/NCSL Z540-1, MPC Quality Manual, MPC CSD and with customer purchase order instructions.

Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. The information on this report, pertains only to the instrument identified.

All standards are traceable to the National Institute of Standards and Technology (NIST). Services rendered include proper manufacture's service instructions and are warranted for no less than (30) days. This report may not be reproduced in part or in whole without the prior written approval of the issuing MPC lab.

BG 9698



SUSPENSION PS SEISMIC LOGGER/RECORDER CALIBRATION DATA FORM

INSTRUMENT DATA

System mfg.:	OYO	Model no.:	3331
Serial no.:	15014	Calibration date:	10/4/2010
By:	Charles Carter	Due date:	10/4/2011
Counter mfg.:	Hewlett Packard	Model no.:	53131A
Serial no.:	3416A05377	Calibration date:	6/8/2010
By:	Micro Precision (LN)	Due date:	6/8/2011
Signal generator mfg.:	Agilent	Model no.:	33250A
Serial no.:	MY4000703	Calibration date:	8/17/2010
By:	Micro Precision (LN)	Due date:	8/17/2011

SYSTEM SETTINGS:

Gain:	20
Filter:	LCF: 5Hz; HCF: 20kHz
Range:	See sample period in table below
Delay:	4 ms
Stack (1 std):	1
System date = correct date and time	10/4/2010 3:20pm

PROCEDURE:

Set sine wave frequency to target frequency with amplitude of approximately 0.25 volt peak
 Note actual frequency on data form.
 Set sample period and record data file to disk. Note file name on data form.
 Pick duration of 9 cycles using PSLOG.EXE program, note duration on data form, and save as .sps file. Calculate average frequency for each channel pair and note on data form.
 Average frequency must be within +/- 1% of actual frequency at all data points.

Maximum error ((AVG-ACT)/ACT*100)% As found 0.22% As left 0.22%

Target Frequency (Hz)	Actual Frequency (Hz)	Sample Period (microS)	File Name	Time for 9 cycles Hn (msec)	Average Frequency Hn (Hz)	Time for 9 cycles Hr (msec)	Average Frequency Hr (Hz)	Time for 9 cycles V (msec)	Average Frequency V (Hz)
50.00	50.00	200	1	180.2	49.94	179.8	50.06	180.0	50.00
100.0	100.0	100	2	90.10	99.89	90.00	100.0	90.10	99.89
200.0	200.0	50	3	45.00	200.0	45.05	199.8	45.05	199.8
500.0	500.0	20	4	18.00	500.0	18.02	499.5	17.96	501.1
1000	1000	10	5	9.010	998.9	8.990	1001	9.000	1000
2000	2000	5	6	4.510	1996	4.505	1998	4.500	2000

Calibrated by:	Charles Carter	10/4/2010	<i>Charles Carter</i>
	Name	Date	Signature
Witnessed by:	Steve Boring	10/4/2010	<i>Steve Boring</i>
	Name	Date	Signature

Suspension PS Seismic Recorder/Logger Calibration Data Form Rev 2.0 July 21, 2008

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Enclosure

Photographs of Triaxial Specimens after Testing

**TABLE D-1
SUMMARY OF SOIL LABORATORY DATA**

Sample Information				USCS Group Symbol	In Situ Moisture Content, %	In Situ Dry Unit Weight, pcf	Sieve			Atterberg Limits			Other Tests
Boring Number	Sample Number	Depth, feet	Elevation, feet				Gravel, % > #4	Sand, %	Fines, % < #200	LL	PL	PI	
LD-B-101	SP-1	5.0-6.5	667.5	SC	10.5								
LD-B-101	SP-3	15.0-16.5	657.5	SC	14.1			30	31	16	15		
LD-B-101	SP-4	25.0-26.5	647.5	SC	17.2		22	37	42	33	16	17	
LD-B-101	MC-1	30.0-31.5	642.5	SC	10.2								
LD-B-101	SP-5	35.0-36.5	637.5	SC	11.9								
LD-B-101	PB-2	45.0-46.5	627.0	SC	16.5	116.7	15	39	47	34	19	15	
LD-B-101	SP-7	50.0-51.5	622.5	SC	6.4								
LD-B-101	MC-2	55.3-55.8	617.7	SC	12.1		25	43	32	33	16	17	
LD-B-101	SP-9	70.0-71.5	602.5	SC	12.1				27	32	17	15	
LD-B-101	MC-3	75.3-75.8	597.7	SC	11.9		26	39	35	37	16	21	
LD-B-101	PB-4	87.5-89.0	585.0	CH	21.0	101.2	1	7	92				DSS
LD-B-101	PB-4	87.5-89.0	584.5	CH	23.0	103.4							CONS
LD-B-101	PB-4	89.0-89.5	584.0	GC	20.0	108.5	51	4	45	70	22	48	TX-CIU
LD-B-101	SP-11	95.0-96.5	577.5	CH	28.9								
LD-B-101	SP-12	100.0-101.5	572.5	CH					81	59	22	37	
LD-B-101	SP-13	111.8-113.3	560.7	CH	27.3								
LD-B-101	PB-8	130.0-131.5	542.5	CH	24.1	98.9	0	6	94				DSS
LD-B-101	PB-8	130.0-131.5	542.0	CH	24.2	101.5							CONS
LD-B-101	PB-8	131.5-132.0	541.5	CH	21.5	107.1	18	19	63	63	21	42	TX-CIU, Gs=2.77
LD-B-101	SP-15	132.0-133.5	540.5	CL/CH	27.3								
LD-B-101	SP-17	152.3-153.8	520.2	CH	24.7								
LD-B-101	PB-12	170.0-172.0	502.0	CH	27.3	93.1	2	19	80				DSS
LD-B-101	PB-12	170.0-172.0	501.5	CH	37.1	80.9							CONS
LD-B-101	PB-12	172.0-172.5	501.0	CH	20.5	108.2	27	22	51	57	19	38	TX-CIU, Gs=2.69
LD-B-101	SP-19	172.5-174.0	500.0	CH	28.6								
LD-B-102	SP-1	4.0-5.5	622.2	GC	7.1								
LD-B-102	SP-3	14.5-15.5	612.2	SC	13.6		20	48	32	33	17	16	
LD-B-102	SP-5	24.0-25.5	602.2	SC	14.2								
LD-B-102	SP-6	29.0-30.5	597.5	SC	10.7		36	41	23	30	16	14	
LD-B-102	PB-1	36.5-37.0	590.2	GC	10.4	131.1	54	16	30	46	17	29	TX-CIU
LD-B-102	SP-7	45.0-46.5	581.2	GC	12.0		39	36	24	33	18	15	



**TABLE D-1
SUMMARY OF SOIL LABORATORY DATA**

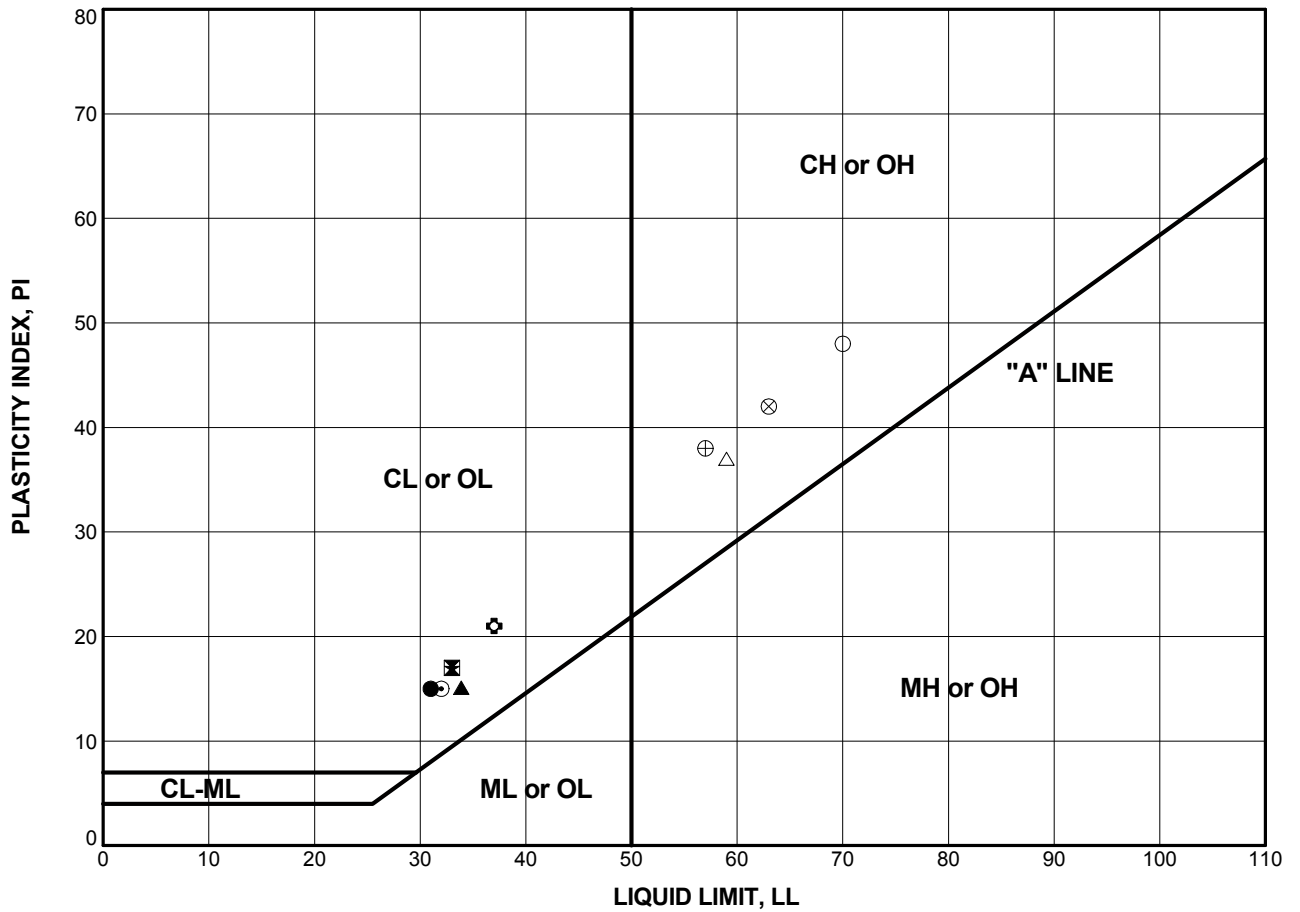
Sample Information				USCS Group Symbol	In Situ Moisture Content, %	In Situ Dry Unit Weight, pcf	Sieve			Atterberg Limits			Other Tests
Boring Number	Sample Number	Depth, feet	Elevation, feet				Gravel, % > #4	Sand, %	Fines, % < #200	LL	PL	PI	
LD-B-102	SP-9	54.0-55.5	572.2	GC	7.6		41	38	21				
LD-B-102	SP-12	81.5-83.0	544.7	GC	6.0		43	40	17	30	15	15	
LD-B-102	SP-13	91.5-93.0	534.7	GC/SC	11.7								
LD-B-102	PB-6	101.0-101.5	525.7	GC	10.1	130.7	56	25	19	41	16	25	TX-CIU
LD-B-102	SP-15	111.0-112.5	515.2	GC/SC	11.2								
LD-B-102	SP-17	126.5-128.0	499.7	GC/SC	10.8								
LD-B-103	SP-1	5.0-6.5	667.2	CL	14.8		15	20	65	48	21	27	
LD-B-103	SP-3	25.5-27.0	646.7	SC	19.1								
LD-B-103	SP-5	45.0-46.5	627.2	SC	13.6								
LD-B-103	PB-5	50.5--52.5	621.2	CL	11.4	122.3	7	34	59				DSS
LD-B-103	PB-5	50.5--52.5	620.7	CL	13.4	118.3							CONS
LD-B-103	PB-5	52.5-53.0	620.2	GC	13.8	122.7	38	34	28	39	17	22	TX-CIU, G _s =2.75
LD-B-103	SP-6	53.0-54.5	619.2	SC	14.9		14	49	38	30	15	15	
LD-B-103	PB-6	60.0-60.5	612.7	GC	14.4	121.5	52	29	19	40	17	23	TX-CIU
LD-B-103	SP-7	60.5-62.0	611.7	SC	18.7								
LD-B-103	SP-9	79.5-81.0	592.7	CH	22.2								
LD-B-103	SP-11	97.0-98.5	575.2	CH	24.0								

NOTES: 1. The laboratory tests were performed in general accordance with the following ASTM standards:

- Moisture Content - ASTM Test Method D2216
- Dry Unit Weight - ASTM Test Method D2937
- Particle Size Distribution Analysis by Sieving - ASTM Test Method D422
- Percent Passing No. 200 Sieve - ASTM Test Method D1140
- Atterberg Limits - ASTM Test Method D4318
- One-Dimensional Consolidation Test (CONS) - ASTM Test Method D2435
- Direct Simple Shear Test (DSS) - ASTM Test Method D6528
- Consolidated Undrained Triaxial Test with Pore Pressure Measurement (TX-CIU) - ASTM Test Method D4767

2. UCSC symbols are based on field visual classification for samples without sieve analysis data.



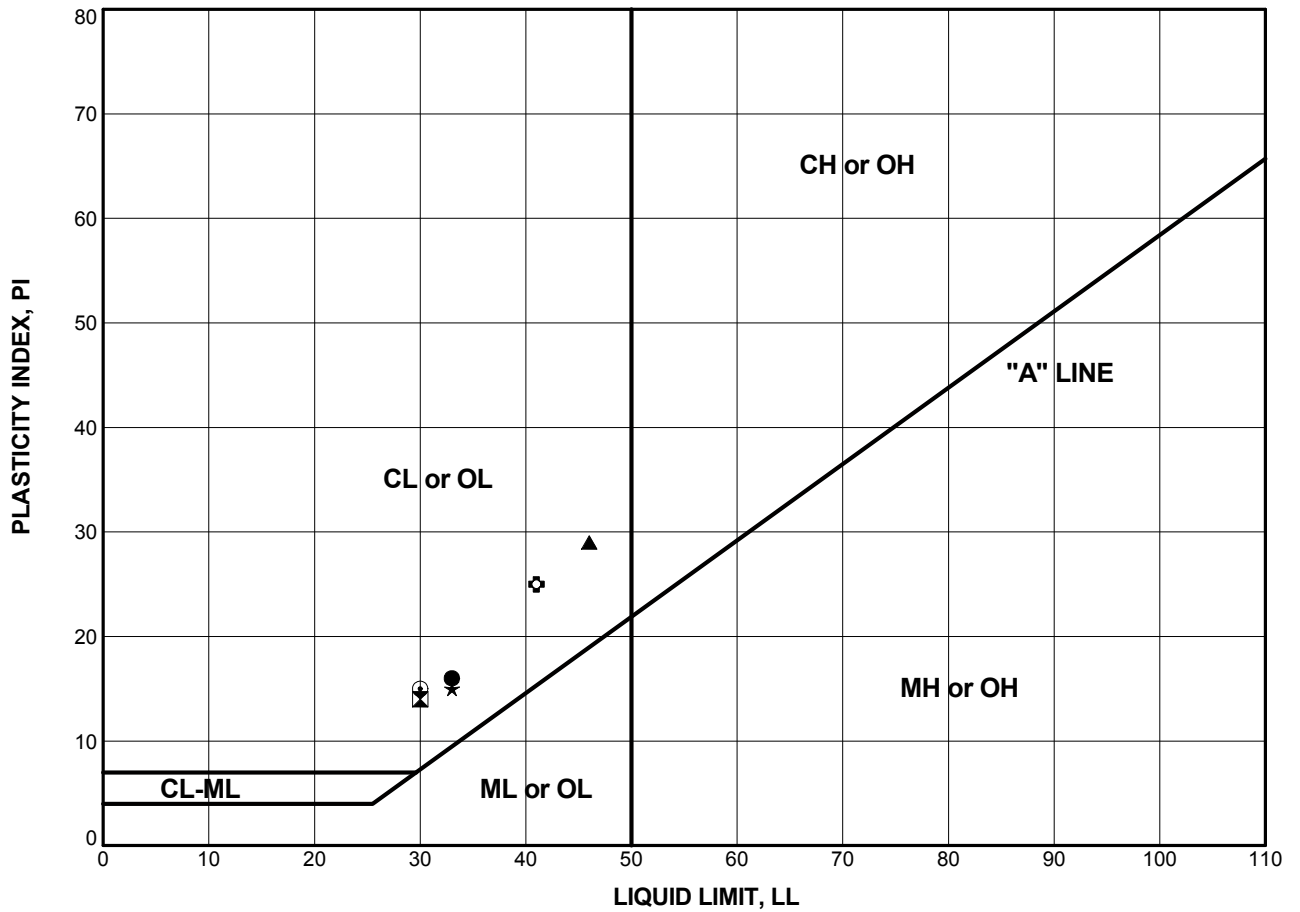


Boring Number	Sample Number	Depth (feet)	Test Symbol	Water Content (%)	LL	PL	PI	Classification
LD-B-101	SP-3	15.0-16.5	●	14.1	31	16	15	Clayey Sand with Gravel (SC)
LD-B-101	SP-4	25.0-26.5	☒	17.2	33	16	17	Clayey Sand with Gravel (SC)
LD-B-101	PB-2	45.0-46.5	▲	16.5	34	19	15	Clayey Sand (SC)
LD-B-101	MC-2	55.3-55.8	★	12.1	33	16	17	Clayey Sand with Gravel (SC)
LD-B-101	SP-9	70.0-71.5	⊙	12.1	32	17	15	Clayey Sand with Gravel (SC)
LD-B-101	MC-3	75.3-75.8	⊕	11.9	37	16	21	Clayey Sand with Gravel (SC)
LD-B-101	PB-4	89.0-89.5	○	20.0	70	22	48	Clayey Gravel (GC)
LD-B-101	SP-12	100.0-101.5	△		59	22	37	Fat Clay with Sand (CH)
LD-B-101	PB-8	131.5-132.0	⊗	21.5	63	21	42	Sandy Fat Clay with Gravel (CH)
LD-B-101	PB-12	172.0-172.5	⊕	20.5	57	19	38	Gravelly Fat Clay with Sand (CH)

PLASTICITY CHART

SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam



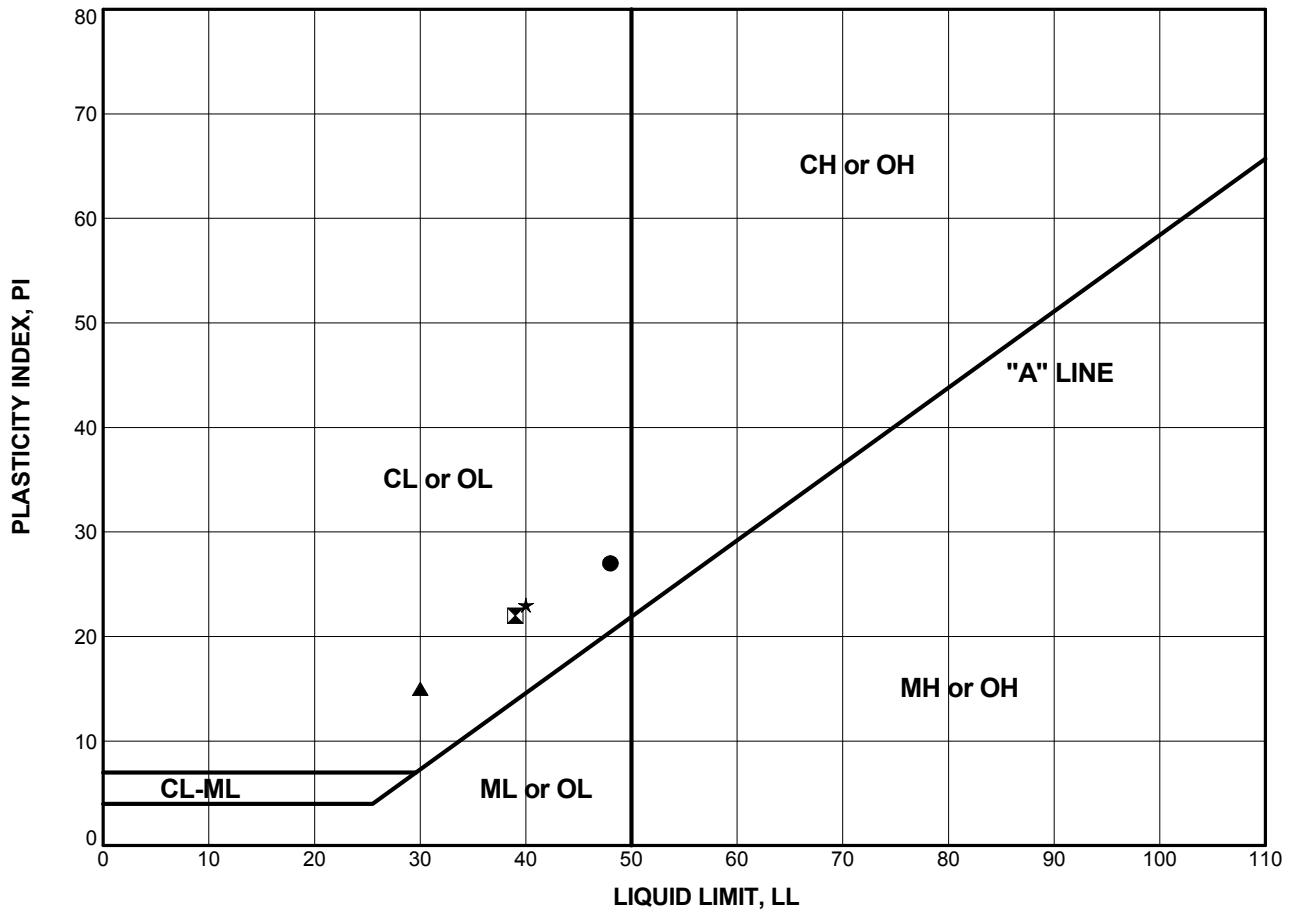


Boring Number	Sample Number	Depth (feet)	Test Symbol	Water Content (%)	LL	PL	PI	Classification
LD-B-102	SP-3	14.5-15.5	●	13.6	33	17	16	Clayey Sand with Gravel (SC)
LD-B-102	SP-6	29.0-30.5	⊠	10.7	30	16	14	Clayey Sand with Gravel (SC)
LD-B-102	PB-1	36.5-37.0	▲	10.4	46	17	29	Clayey Gravel with Sand (GC)
LD-B-102	SP-7	45.0-46.5	★	12.0	33	18	15	Clayey Gravel with Sand (GC)
LD-B-102	SP-12	81.5-83.0	⊙	6.0	30	15	15	Clayey Gravel with Sand (GC)
LD-B-102	PB-6	101.0-101.5	⊕	10.1	41	16	25	Clayey Gravel with Sand (GC)

PLASTICITY CHART
SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Report: ATTERBERG_PLOT_8.PTS; File: SCVWD_LENIHAN.GPJ; 10/3/2011





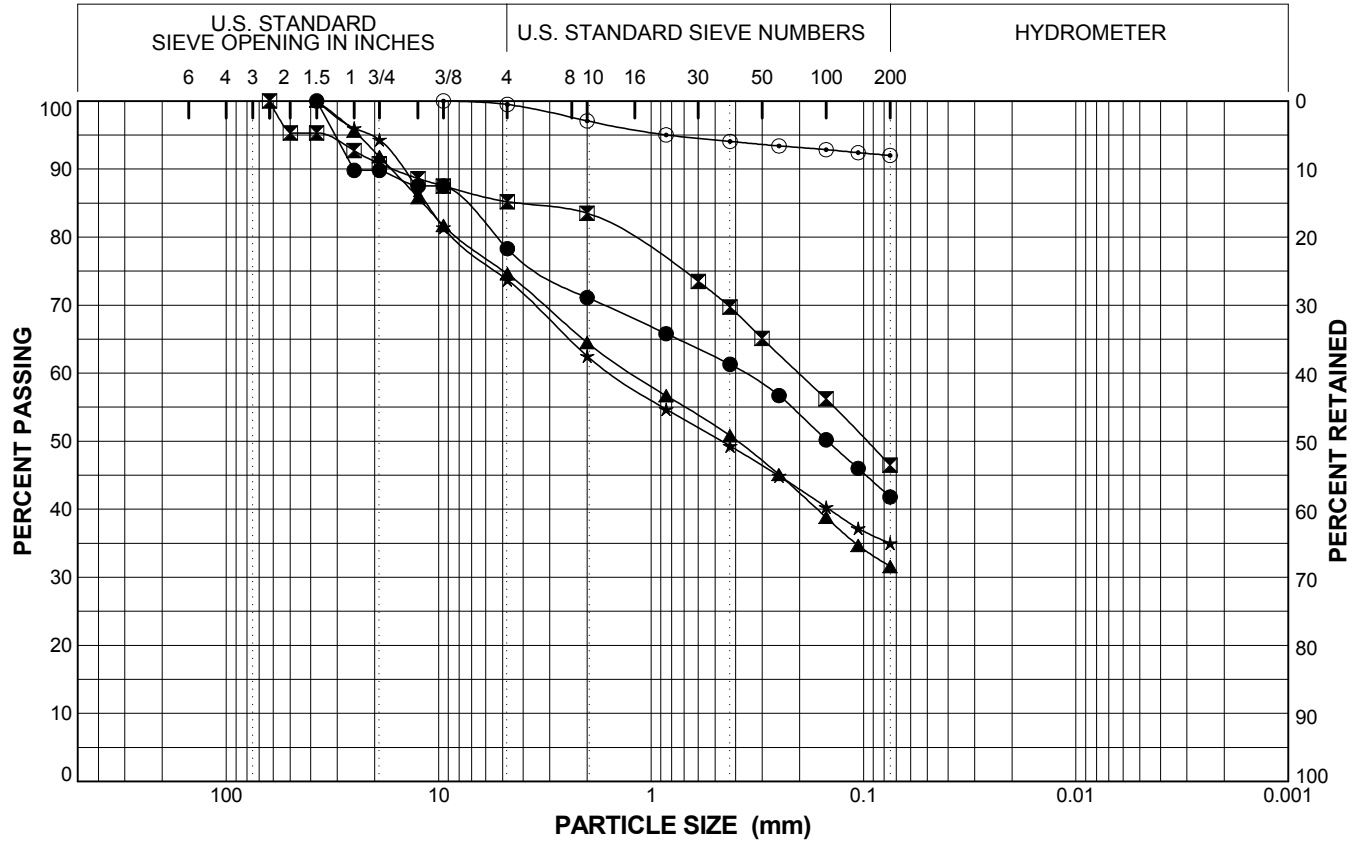
Boring Number	Sample Number	Depth (feet)	Test Symbol	Water Content (%)	LL	PL	PI	Classification
LD-B-103	SP-1	5.0-6.5	●	14.8	48	21	27	Sandy Lean Clay with Gravel (CL)
LD-B-103	PB-5	52.5-53.0	☒	13.8	39	17	22	Clayey Gravel with Sand (GC)
LD-B-103	SP-6	53.0-54.5	▲	14.9	30	15	15	Clayey Sand (SC)
LD-B-103	PB-6	60.0-60.5	★	14.4	40	17	23	Clayey Gravel with Sand (GC)

PLASTICITY CHART
SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Report: ATTERBERG_PLOT_8.PTS; File: SCVWD_LENIHAN.GPJ; 10/3/2011



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



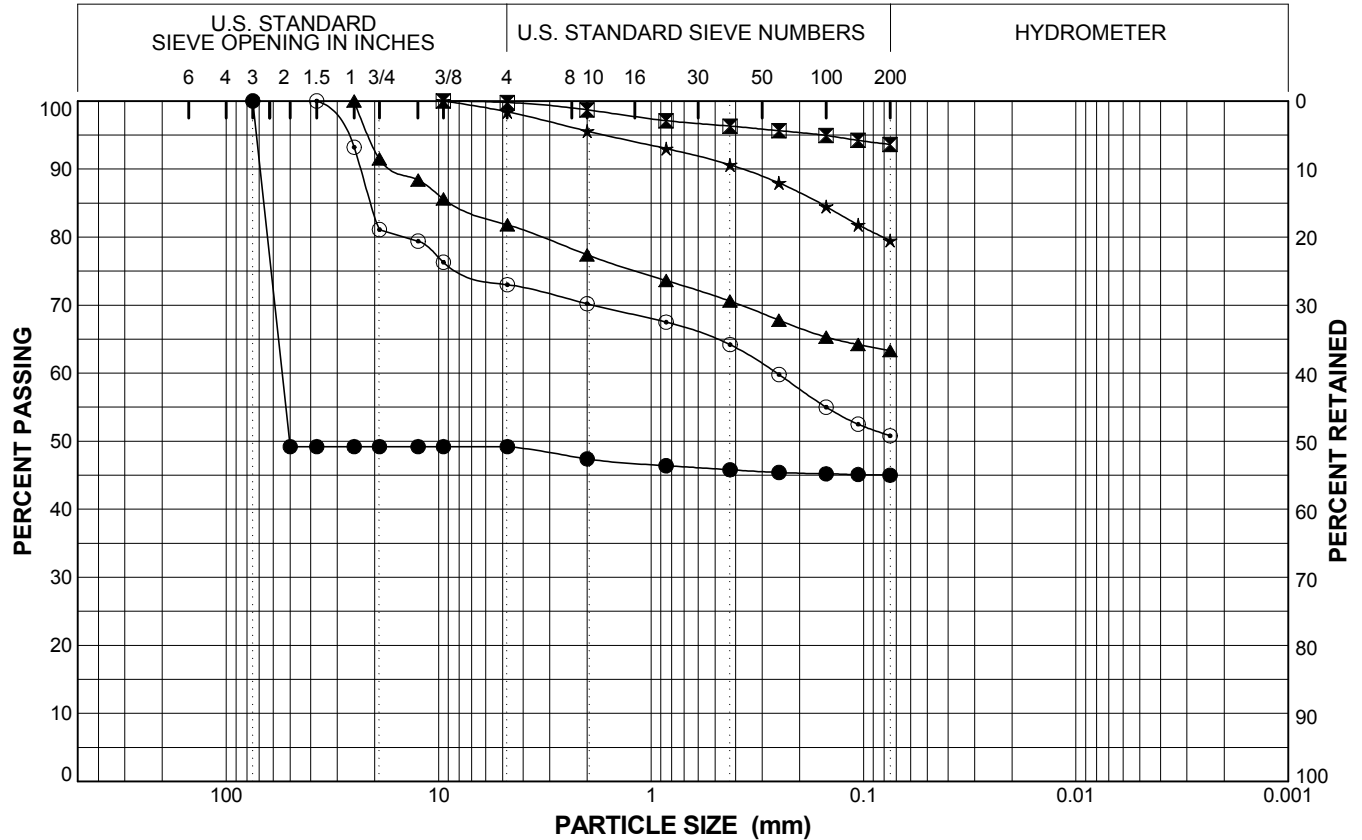
Boring Number	Sample Number	Depth (feet)	Symbol	%G	%S	%F	Classification / Notes
LD-B-101	SP-4	25.0-26.5	●	22	37	42	Clayey Sand with Gravel (SC)
LD-B-101	PB-2	45.0-46.5	☒	15	39	47	Clayey Sand (SC)
LD-B-101	MC-2	55.3-55.8	▲	25	43	32	Clayey Sand with Gravel (SC)
LD-B-101	MC-3	75.3-75.8	★	26	39	35	Clayey Sand with Gravel (SC)
LD-B-101	PB-4	87.5-89.0	⊙	1	7	92	Fat Clay (CH) DSS Test Sample

PARTICLE SIZE DISTRIBUTION CURVES

**SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam**

Figure D-4

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	%G	%S	%F	Classification / Notes
LD-B-101	PB-4	89.0-89.5	●	51	4	45	Clayey Gravel (GC) TX Test Sample
LD-B-101	PB-8	130.0-131.5	☒	0	6	94	Fat Clay with Sand (CH) DSS Test Sample
LD-B-101	PB-8	131.5-132.0	▲	18	19	63	Sandy Fat Clay with Gravel (CH) TX Test Sample
LD-B-101	PB-12	170.0-172.0	★	2	19	80	Fat Clay with Sand (CH) DSS Test Sample
LD-B-101	PB-12	172.0-172.5	⊙	27	22	51	Gravelly Fat Clay with Sand (CH) TX Test Sample

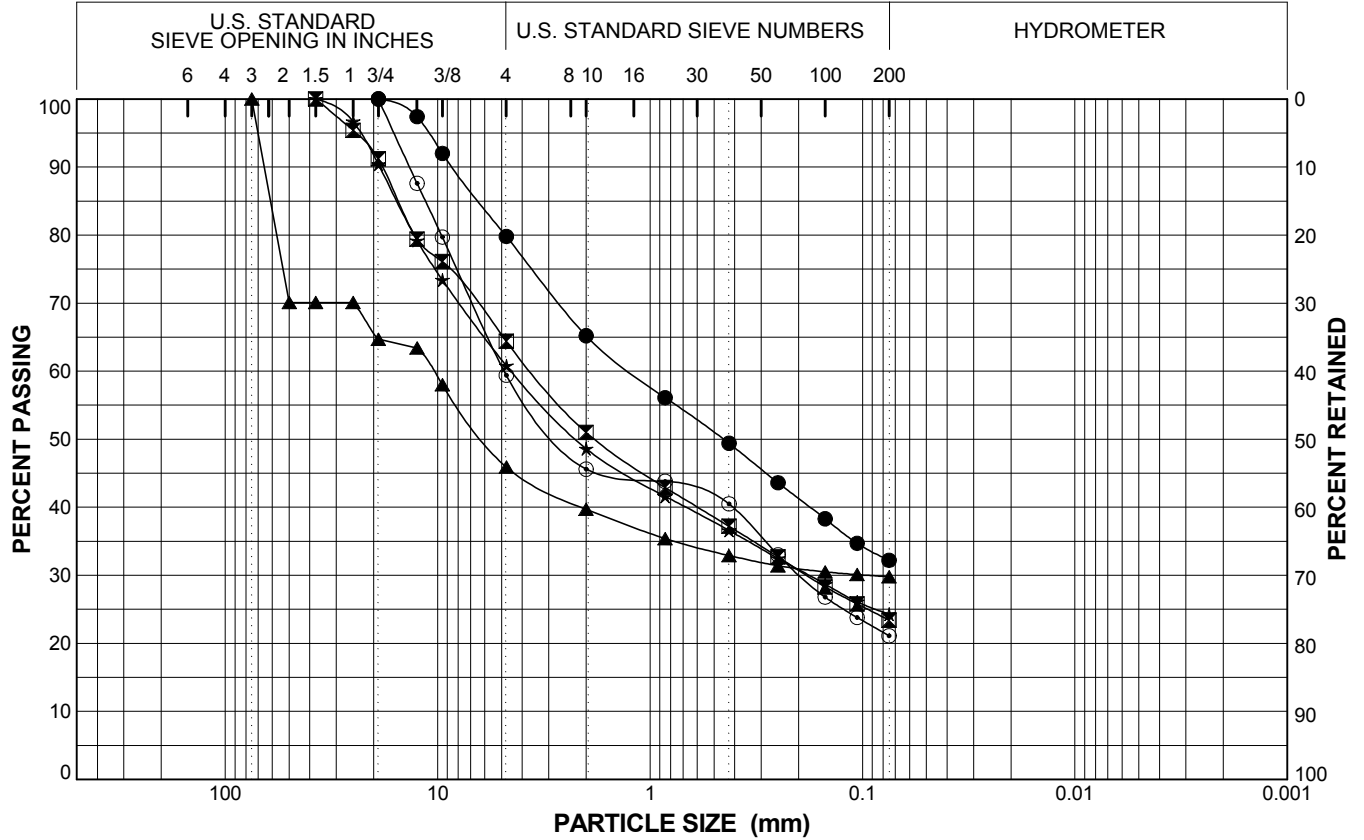
PARTICLE SIZE DISTRIBUTION CURVES

SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Figure D-5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	%G	%S	%F	Classification / Notes
LD-B-102	SP-3	14.5-15.5	●	20	48	32	Clayey Sand with Gravel (SC)
LD-B-102	SP-6	29.0-30.5	⊠	36	41	23	Clayey Sand with Gravel (SC)
LD-B-102	PB-1	36.5-37.0	▲	54	16	30	Clayey Gravel with Sand (GC) TX Test Sample
LD-B-102	SP-7	45.0-46.5	★	39	36	24	Clayey Gravel with Sand (GC)
LD-B-102	SP-9	54.0-55.5	⊙	41	38	21	Clayey Gravel with Sand (GC)

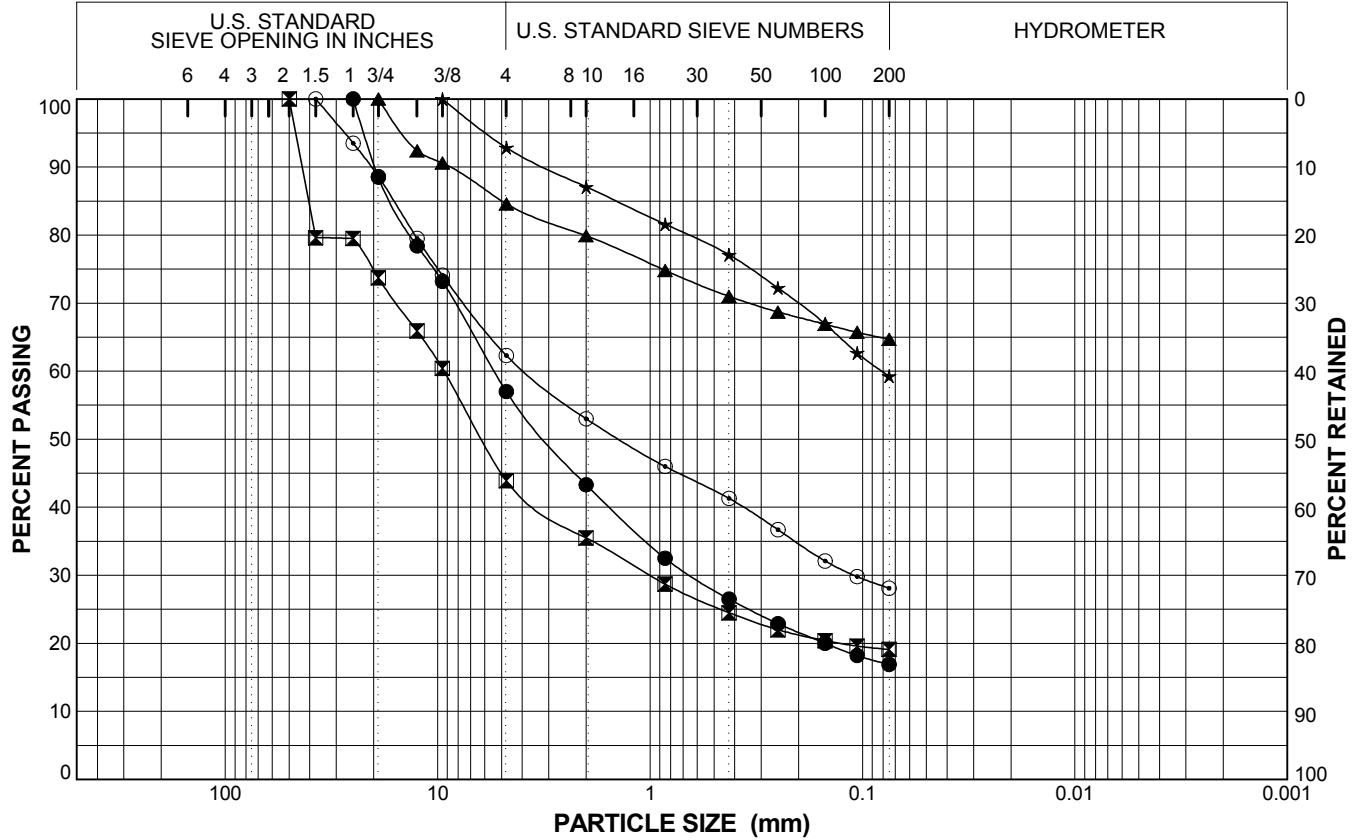
PARTICLE SIZE DISTRIBUTION CURVES

SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Figure D-6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	%G	%S	%F	Classification / Notes
LD-B-102	SP-12	81.5-83.0	●	43	40	17	Clayey Gravel with Sand (GC)
LD-B-102	PB-6	101.0-101.5	☒	56	25	19	Clayey Gravel with Sand (GC) TX Test Sample
LD-B-103	SP-1	5.0-6.5	▲	15	20	65	Sandy Lean Clay with Gravel (CL)
LD-B-103	PB-5	50.5-52.5	★	7	34	59	Sandy Lean Clay (CL) DSS Test Sample
LD-B-103	PB-5	52.5-53.0	⊙	38	34	28	Clayey Gravel with Sand (GC) TX Test Sample

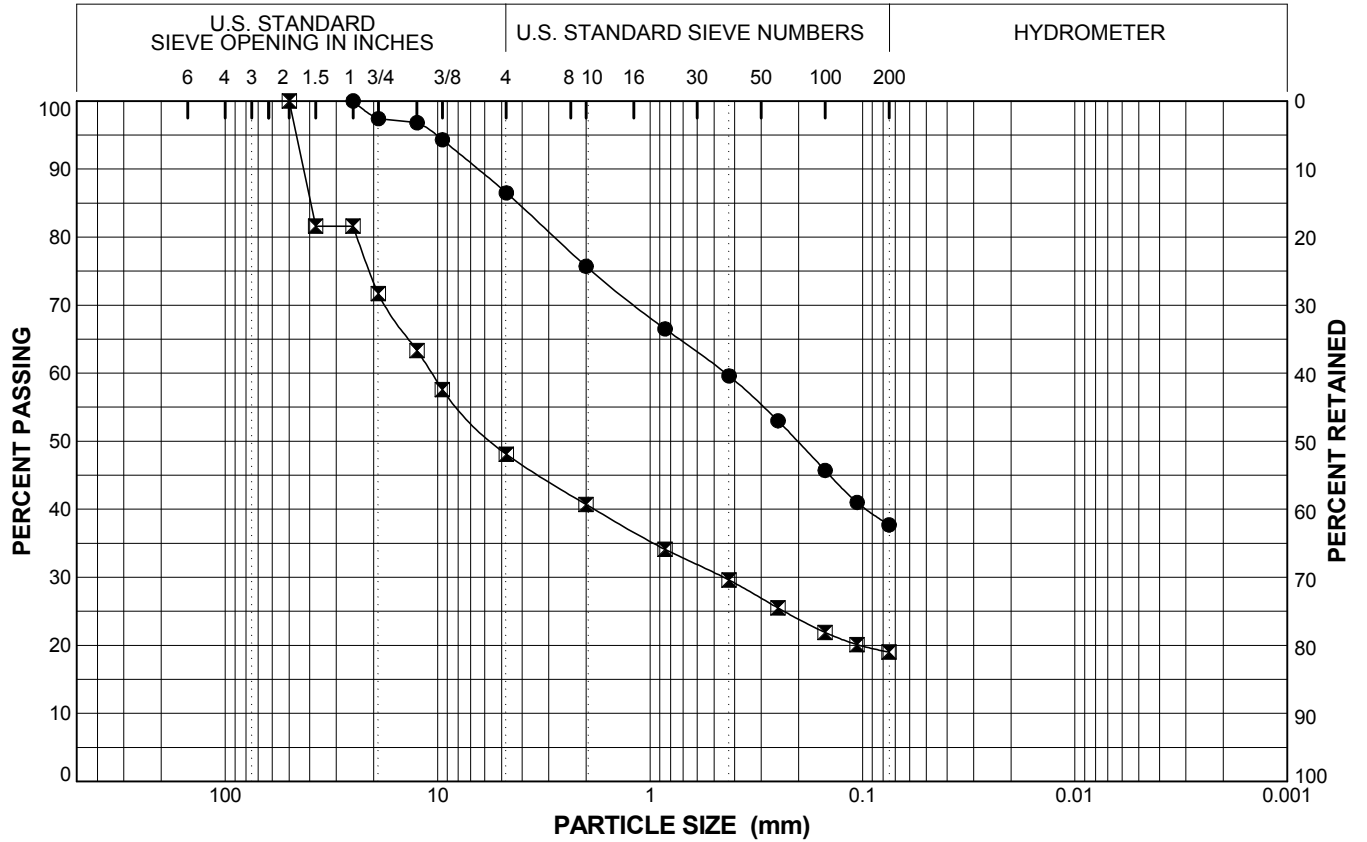
PARTICLE SIZE DISTRIBUTION CURVES

SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Figure D-7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	%G	%S	%F	Classification / Notes
LD-B-103	SP-6	53.0-54.5	●	14	49	38	Clayey Sand (SC)
LD-B-103	PB-6	60.0-60.5	⊠	52	29	19	Clayey Gravel with Sand (GC) TX Test Sample

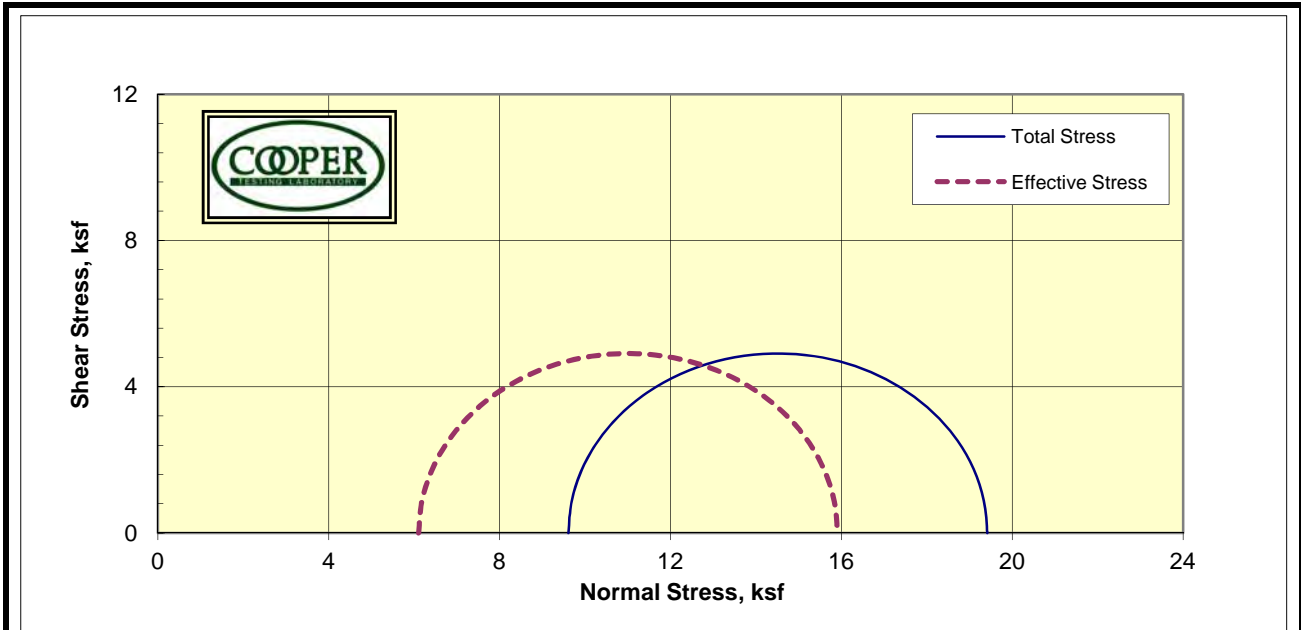
PARTICLE SIZE DISTRIBUTION CURVES

SCVWD Seismic Safety Evaluations (SSE2)
Lenihan Dam

Figure D-8

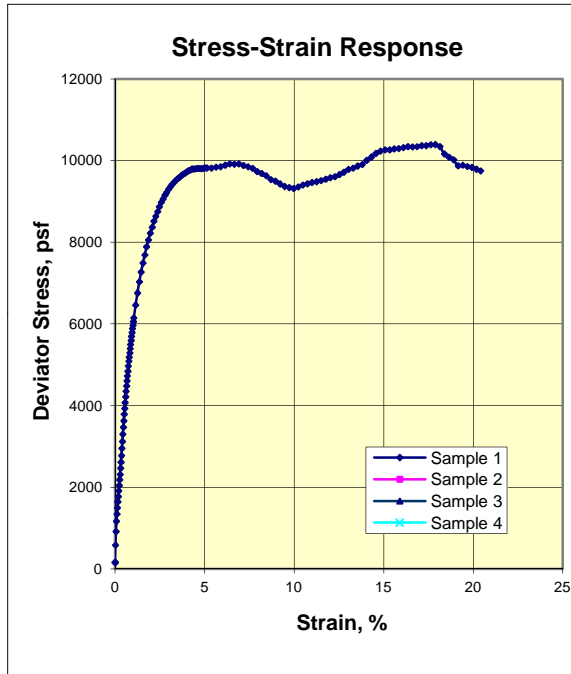


Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	20.0			
DD, pcf	108.5			
Sat. %	97.7			
Void Ratio	0.553			
Diameter in	3.88			
Height, in	8.05			
Final				
MC, %	21.9			
DD, pcf	105.9			
Sat. %	100.0			
Void Ratio	0.591			
Diameter, in	3.97			
Height, in	7.89			
Cell, psi	146.0			
BP, psi	79.3			
Effective Stresses At:				
Strain, %	5.0			
Deviator ksf	9.810			
Excess PP	3.507			
Sigma 1	15.915			
Sigma 3	6.104			
P, ksf	11.010			
Q, ksf	4.905			
Stress Ratio	2.607			
Rate in/min	0.0002			

Job No.: 414-050 Date: 8/29/2011

Client: Engco BY: DC

Project: Leniham Dam - 2106.2011

Sample 1)

	Gray CLAY w/ Gravel
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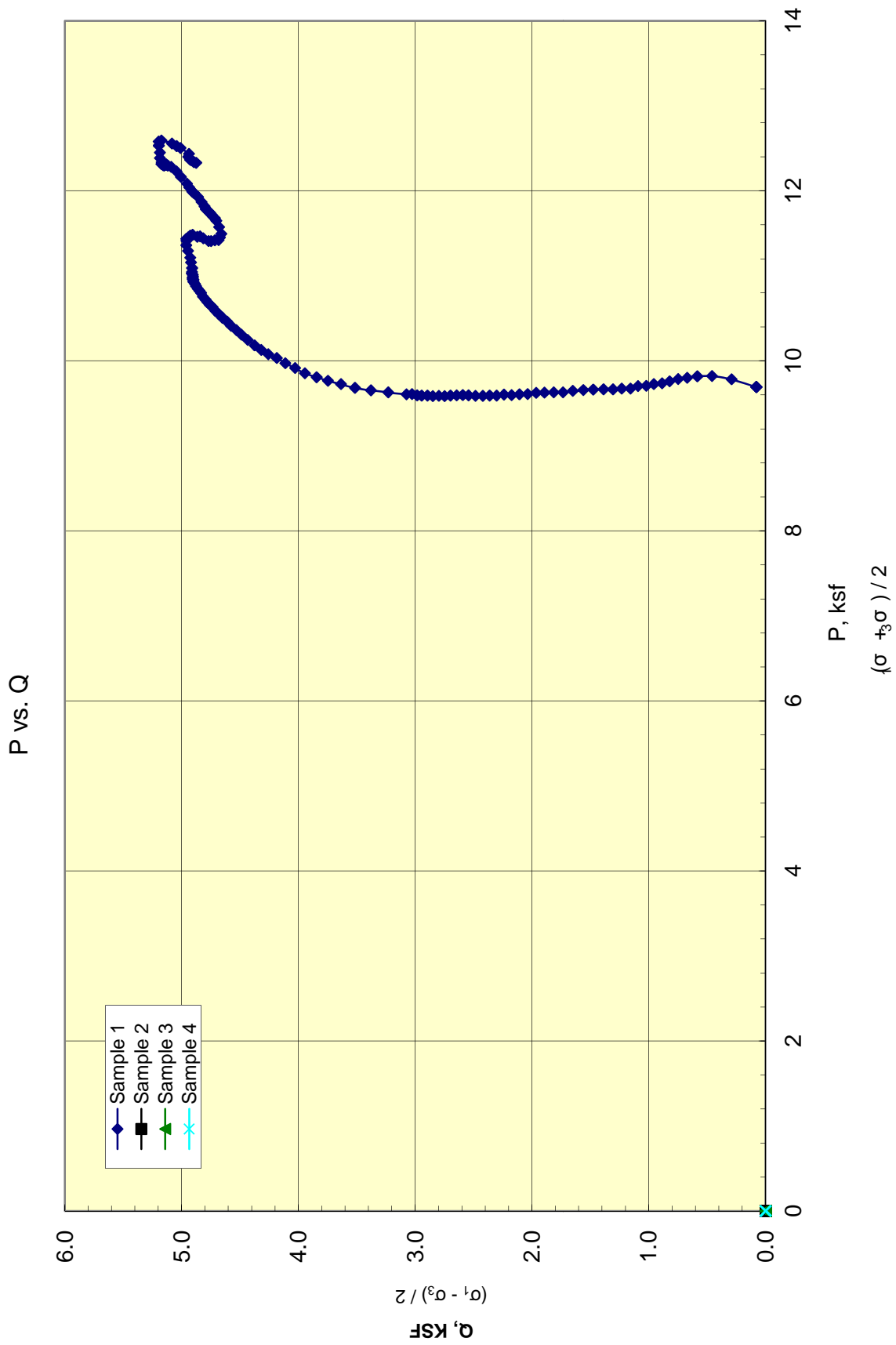
Sample 2)

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Sample 3)

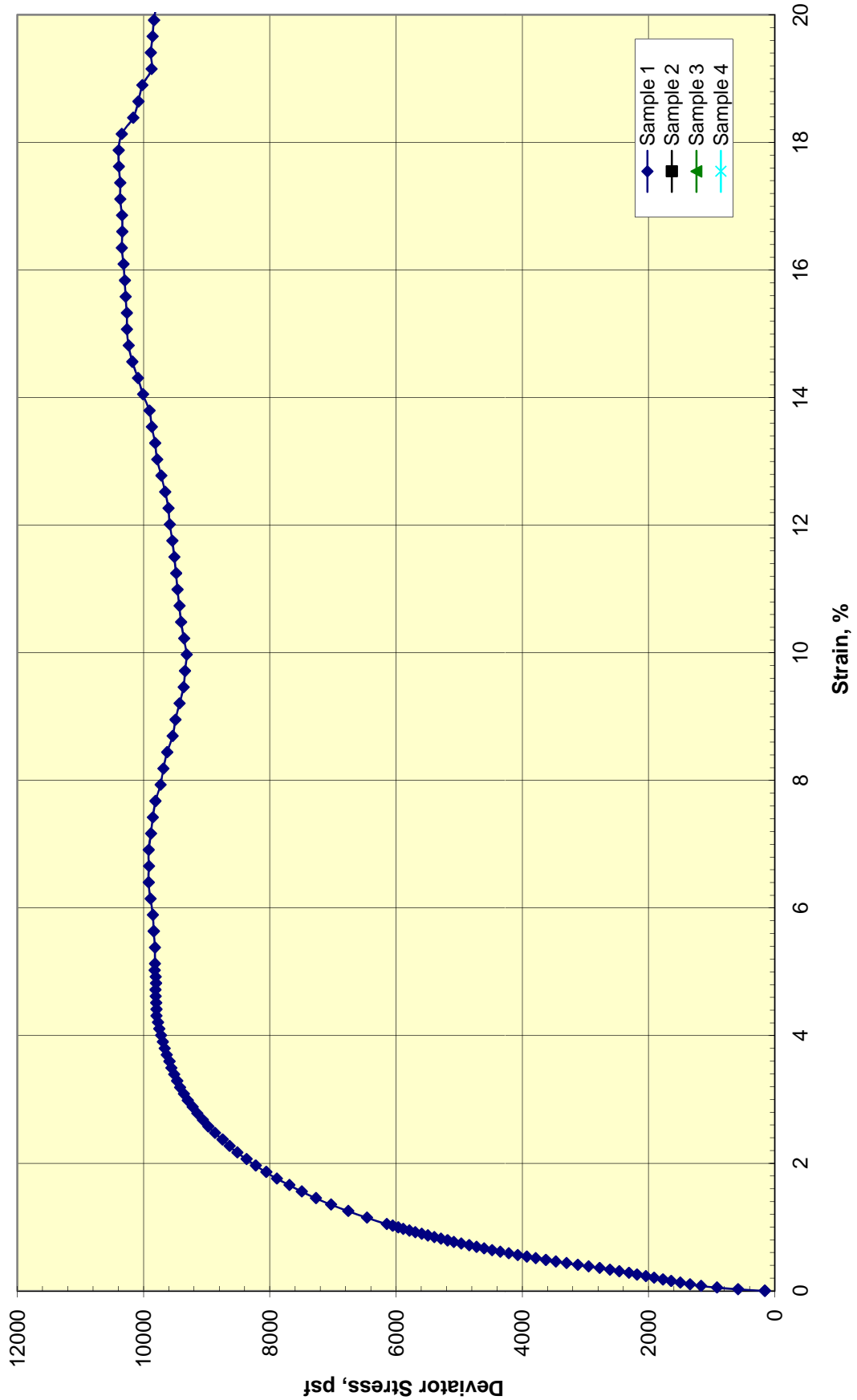
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CU Triaxial Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)
Summary Report



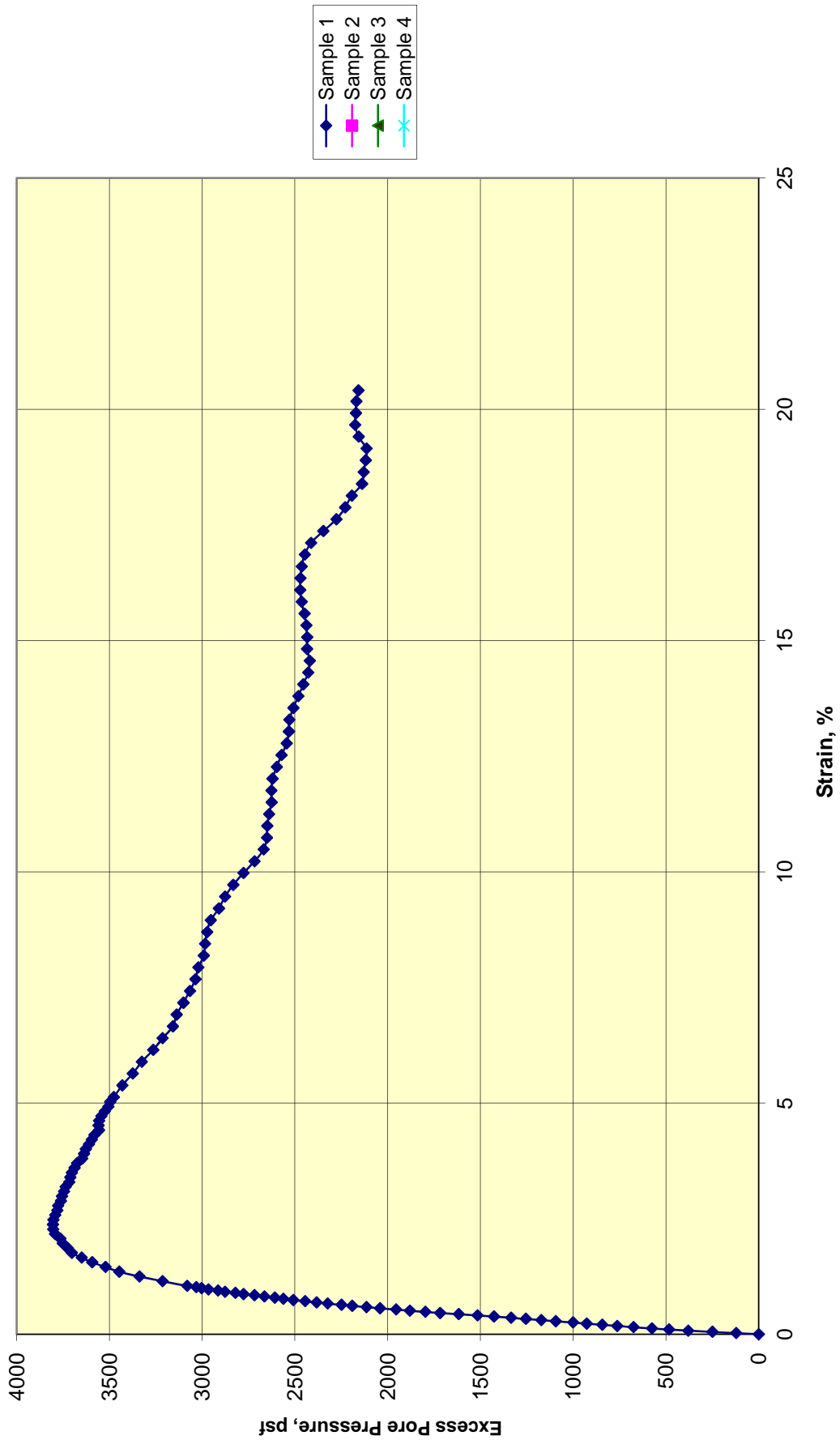
CU Triaxial Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)
 Stress Path Plot

Stress-Strain Curves



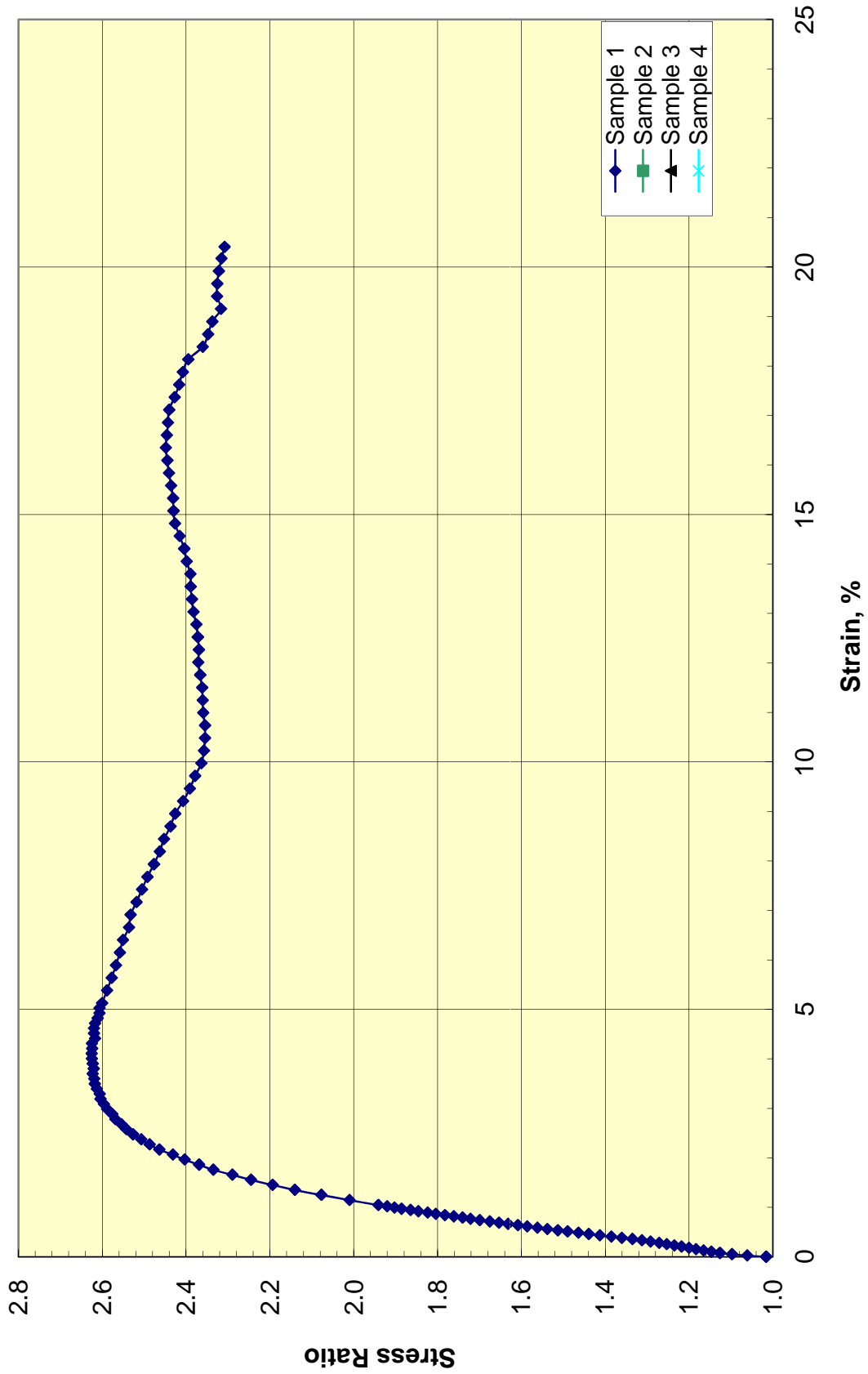
CU Triaxial Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)
Stress-Strain Plot

Pore Pressure Response



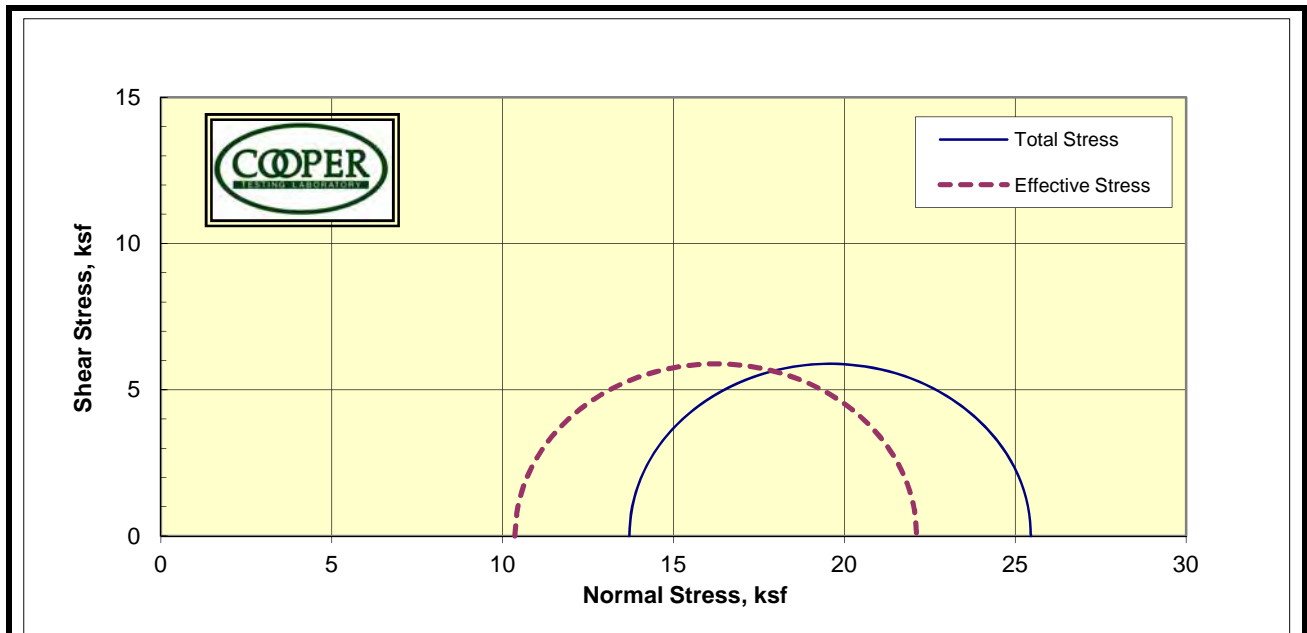
CU Triaxial Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)
Pore Pressure-Strain Plot

Stress Ratio Sigma1/Sigma3



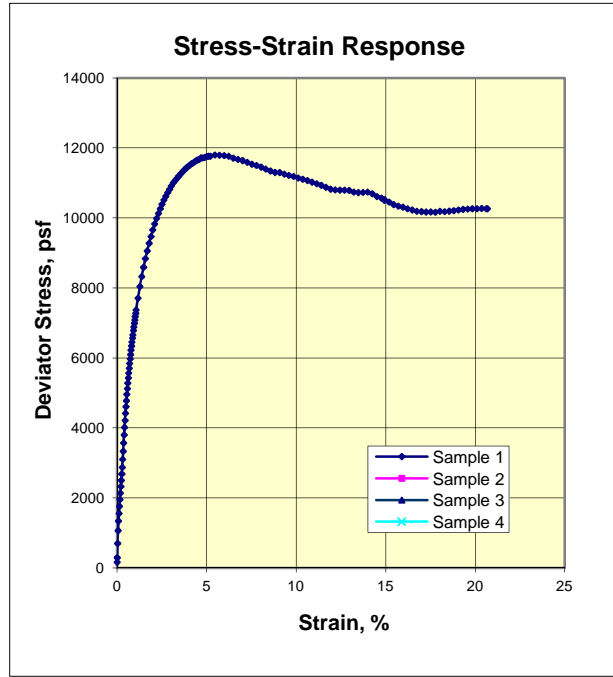
CU Triaxial Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	21.5			
DD, pcf	107.1			
Sat. %	97.0			
Void Ratio	0.614			
Diameter in	3.88			
Height, in	8.05			

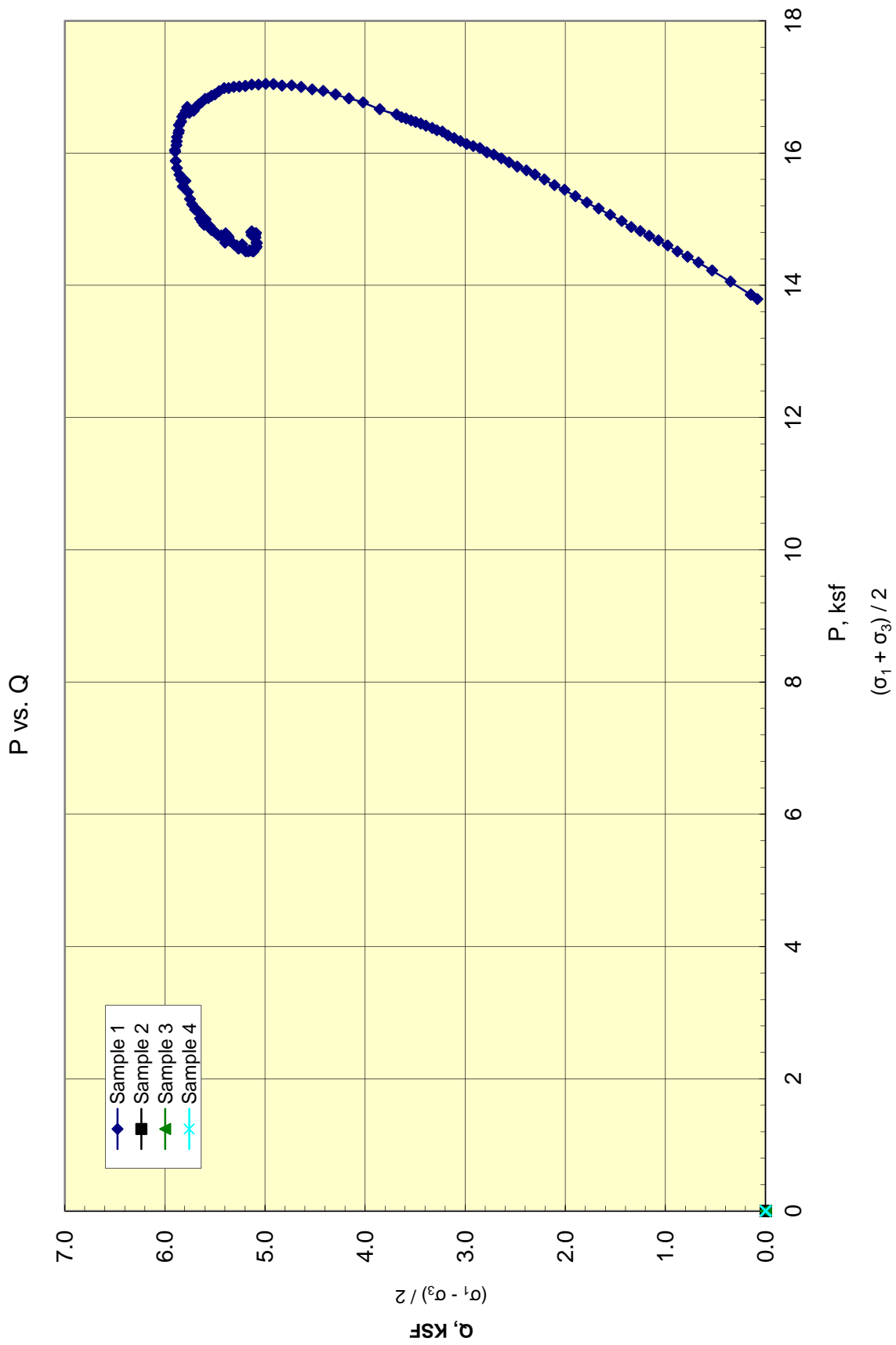
Final	
MC, %	20.6
DD, pcf	110.0
Sat. %	100.0
Void Ratio	0.571
Diameter, in	3.89
Height, in	7.79
Cell, psi	157.2
BP, psi	62.0

Job No.: 414-050 **Date:** 8/30/2011
Client: Engeo **BY:** DC
Project: Leniham Dam - 2106.2011

Sample 1)	Grayish Brown CLAY
Sample 2)	
Sample 3)	

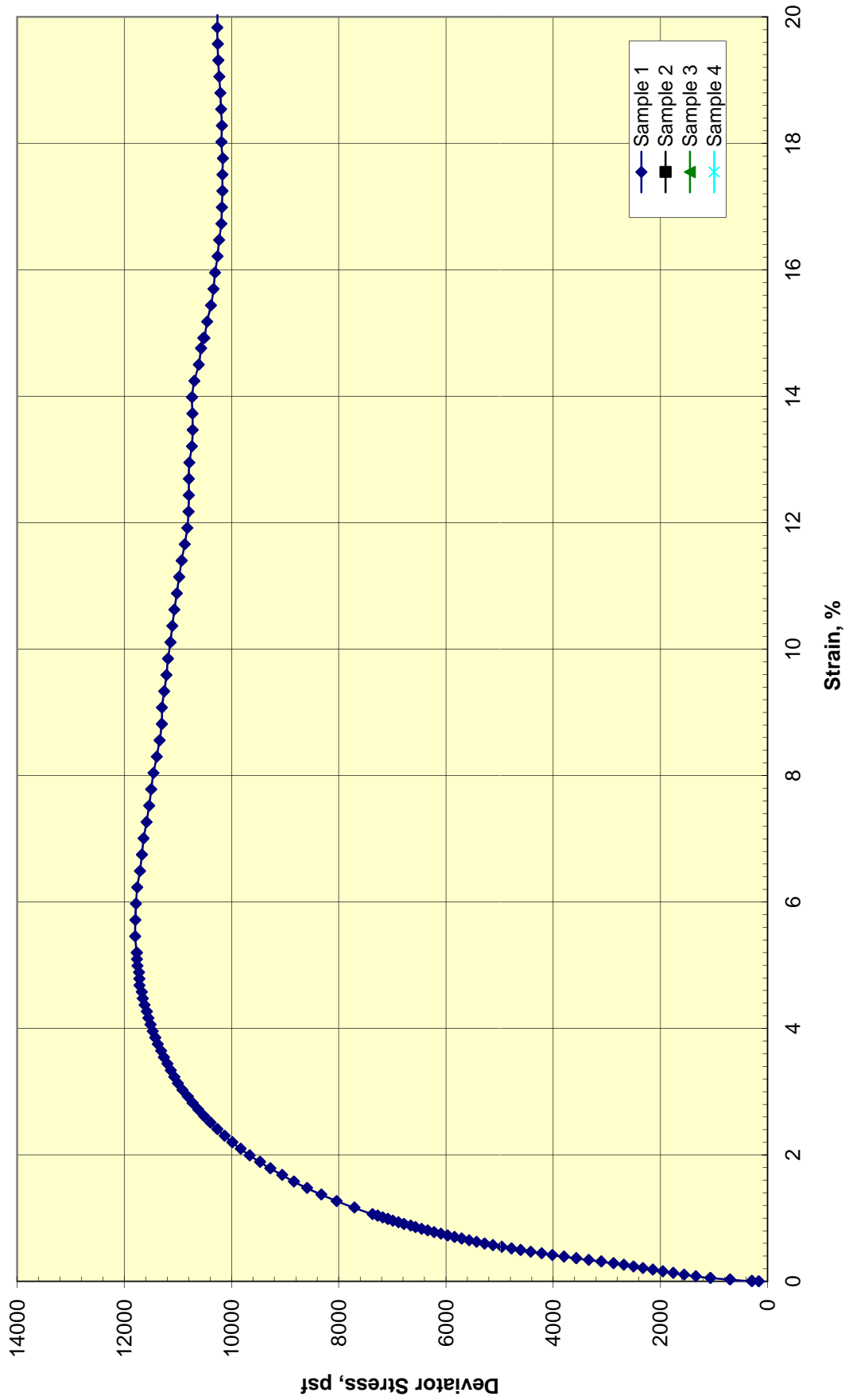
Effective Stresses At:	
Strain, %	5.0
Deviator ksf	11.758
Excess PP	3.345
Sigma 1	22.120
Sigma 3	10.362
P, ksf	16.241
Q, ksf	5.879
Stress Ratio	2.135
Rate in/min	0.0005

The cell pump ran out of travel during the test. The test stopped at 15% strain. The pump was reset and the test was continued. Some data points were changed on the stress-strain and pore pressure curves to smooth the transition. Consult lab for original data points.



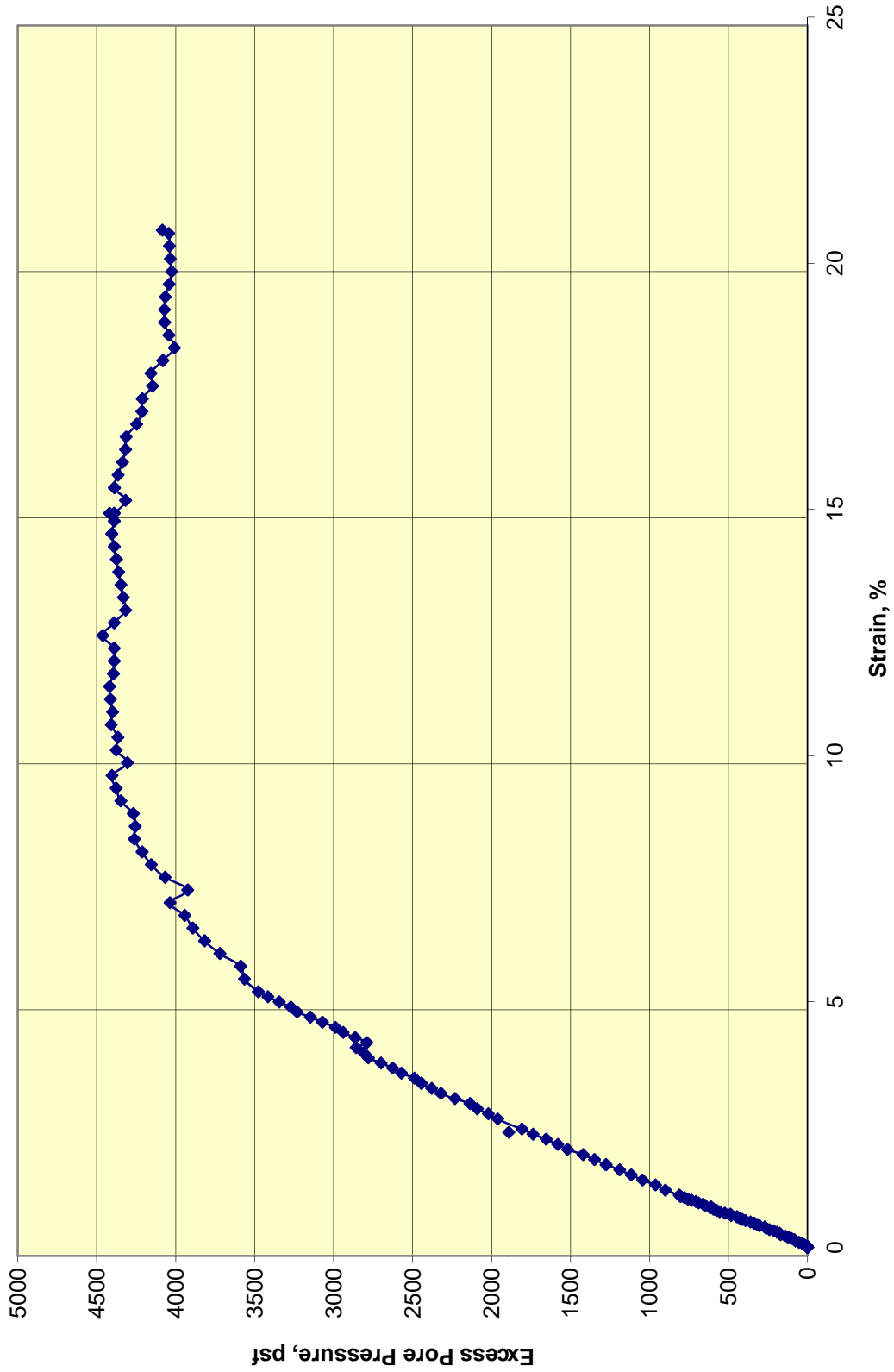
CU Triaxial Test - Boring LD-B-101 Sample PB-8 (130.0 ft to 132.0 ft)
Stress Path Plot

Stress-Strain Curves



CU Triaxial Test - Boring LD-B-101 Sample PB-8 (130.0 ft to 132.0 ft)
Stress-Strain Plot

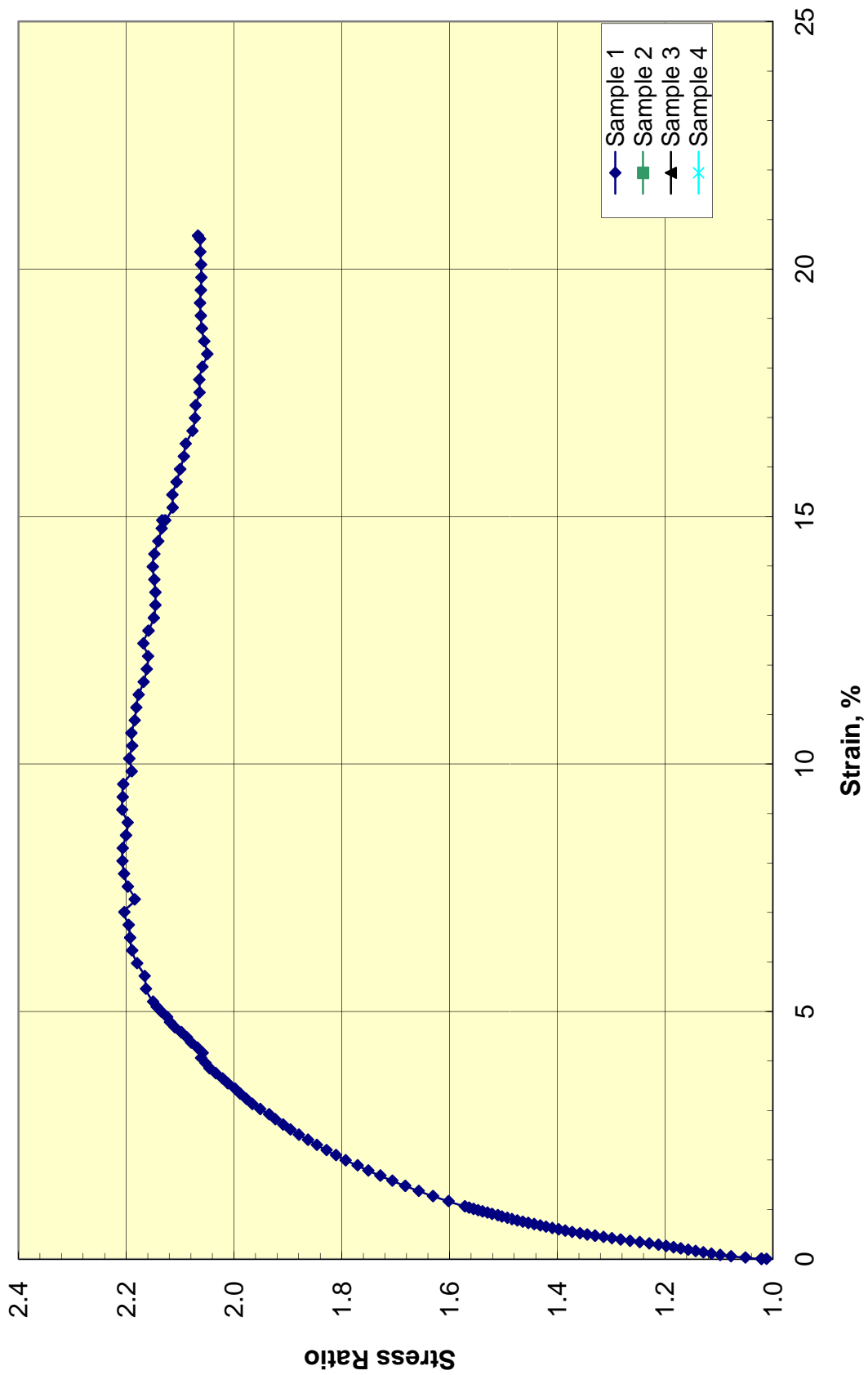
Pore Pressure Response



- Sample 1
- Sample 2
- Sample 3
- Sample 4

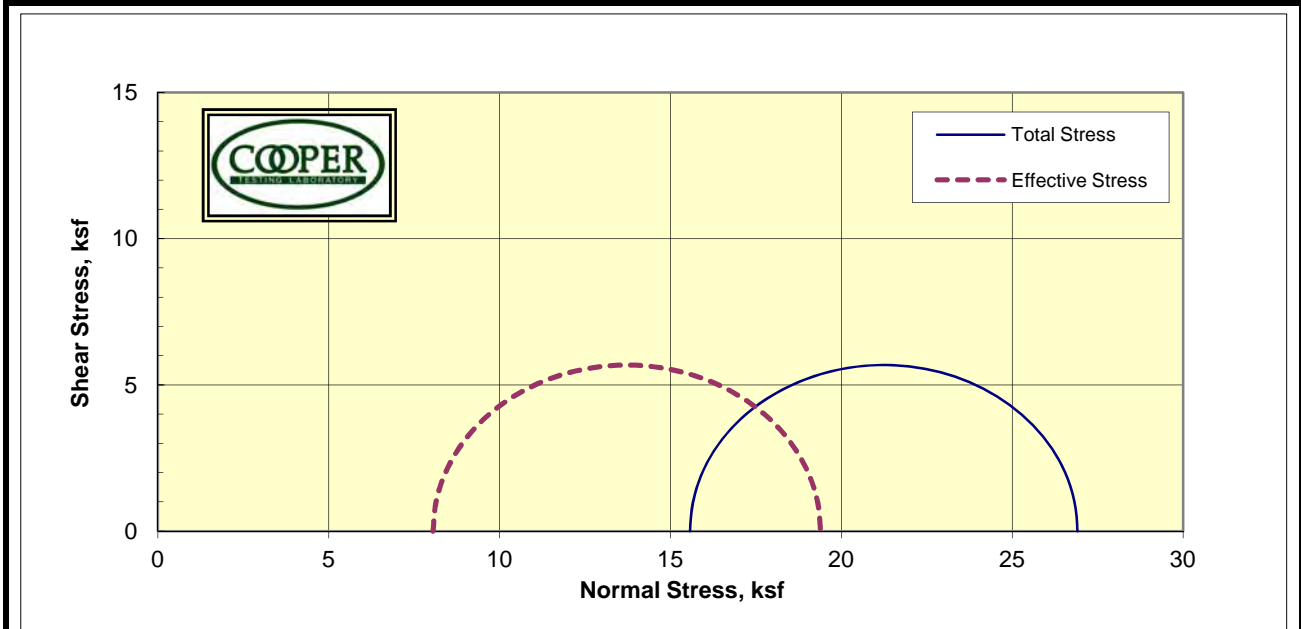
CU Triaxial Test - Boring LD-B-101 Sample PB-8 (130.0 ft to 132.0 ft)
Pore Pressure-Strain Plot

Stress Ratio σ_1/σ_3



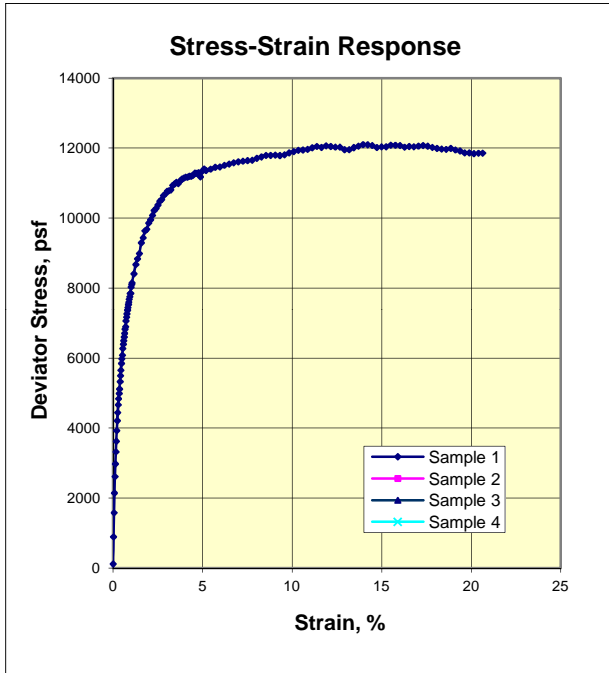
CU Triaxial Test - Boring LD-B-101 Sample PB-8 (130.0 ft to 132.0 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	20.5			
DD, pcf	108.2			
Sat. %	100.0			
Void Ratio	0.552			
Diameter in	3.89			
Height, in	8.06			
Final				
MC, %	19.9			
DD, pcf	109.3			
Sat. %	100.0			
Void Ratio	0.535			
Diameter, in	3.93			
Height, in	7.81			
Cell, psi	221.1			
BP, psi	113.0			
Effective Stresses At:				
Strain, %	5.0			
Deviator ksf	11.343			
Excess PP	7.514			
Sigma 1	19.396			
Sigma 3	8.053			
P, ksf	13.724			
Q, ksf	5.672			
Stress Ratio	2.409			
Rate in/min	0.0001			

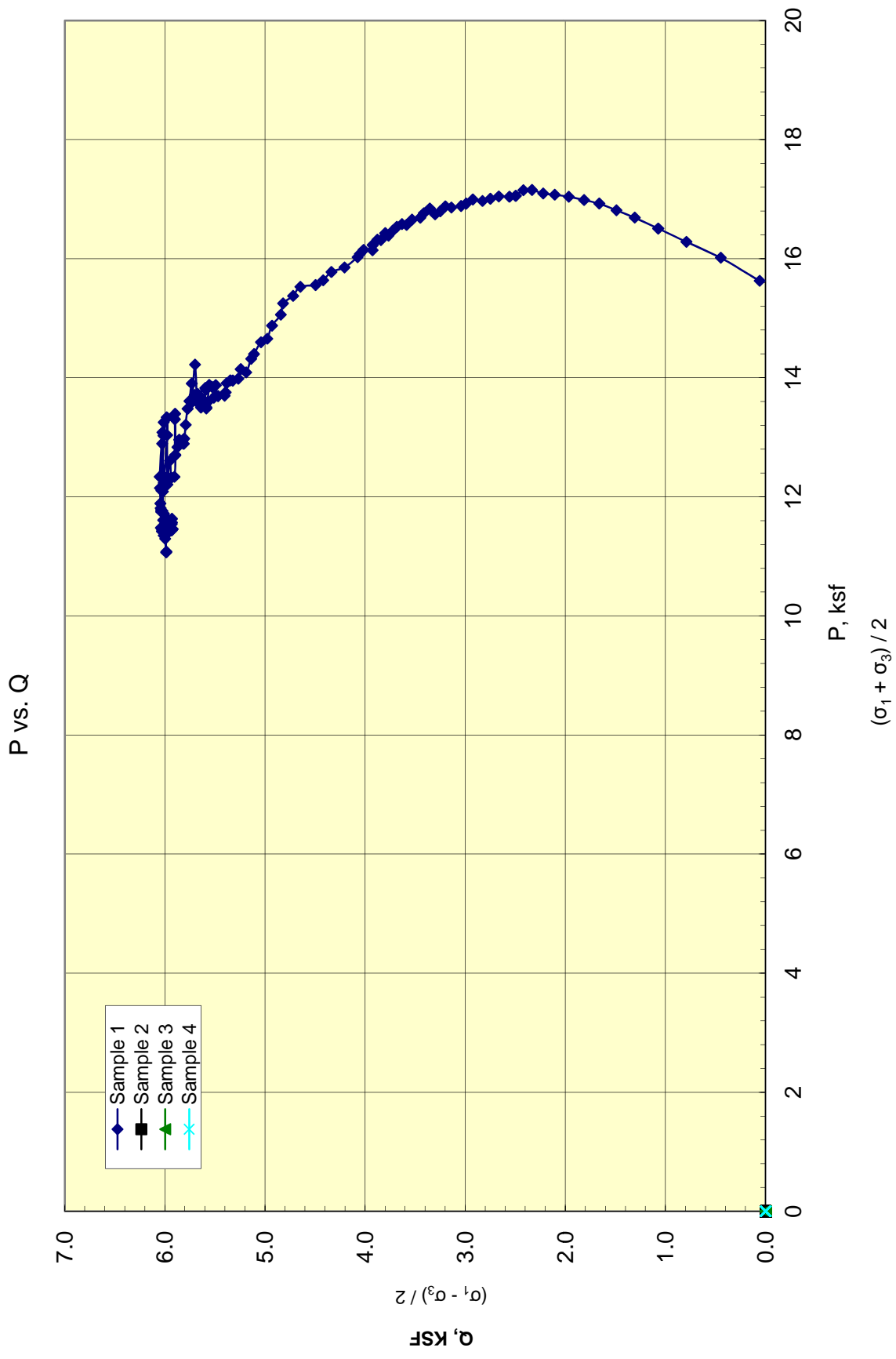
Job No.: 414-050 Date: 8/29/2011

Client: Engeo BY: DC

Project: Leniham Dam - 2106.2011

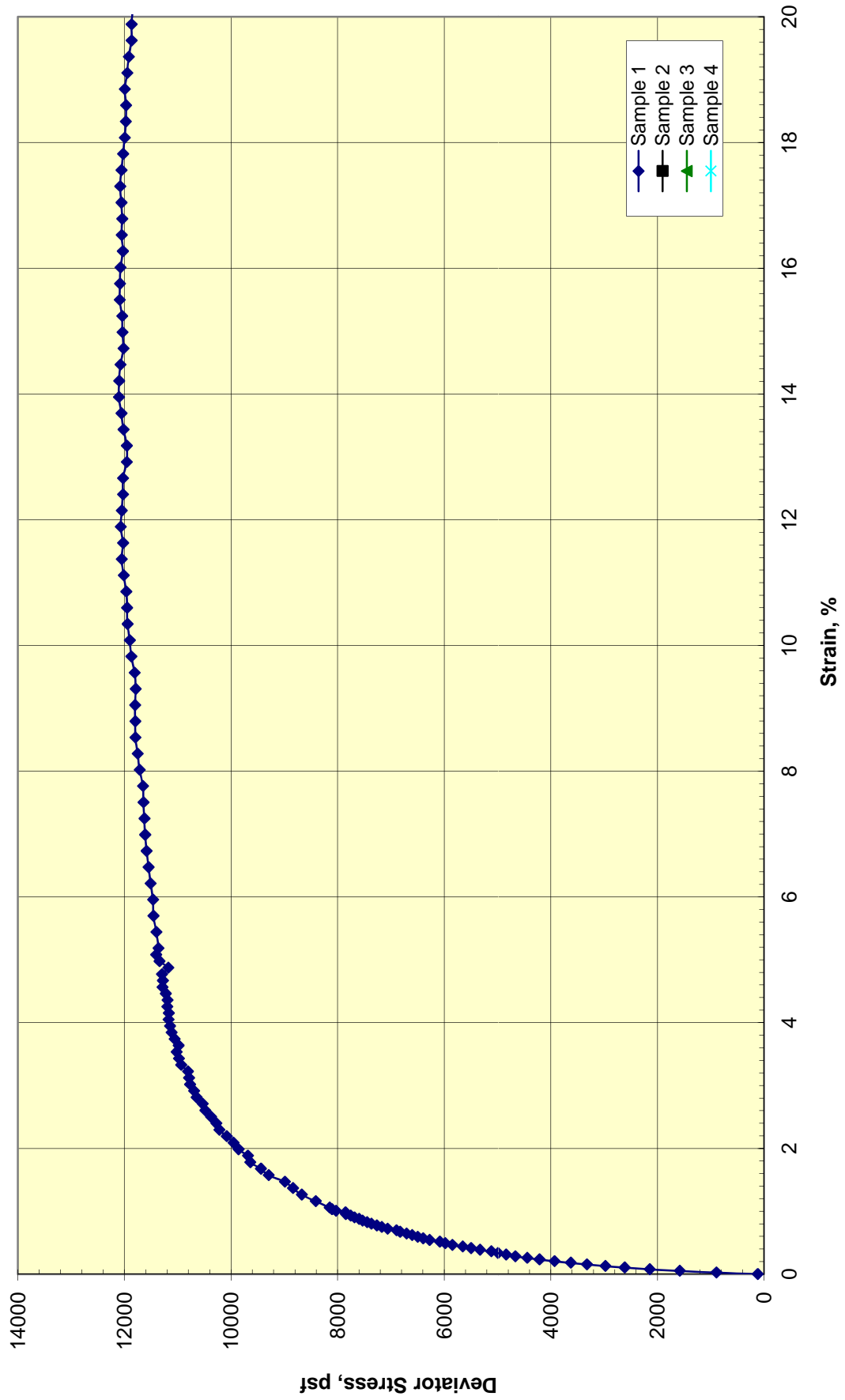
Sample 1)		Brown Sandy CLAY
Sample 2)		
Sample 3)		

CU Triaxial Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)
Summary Report



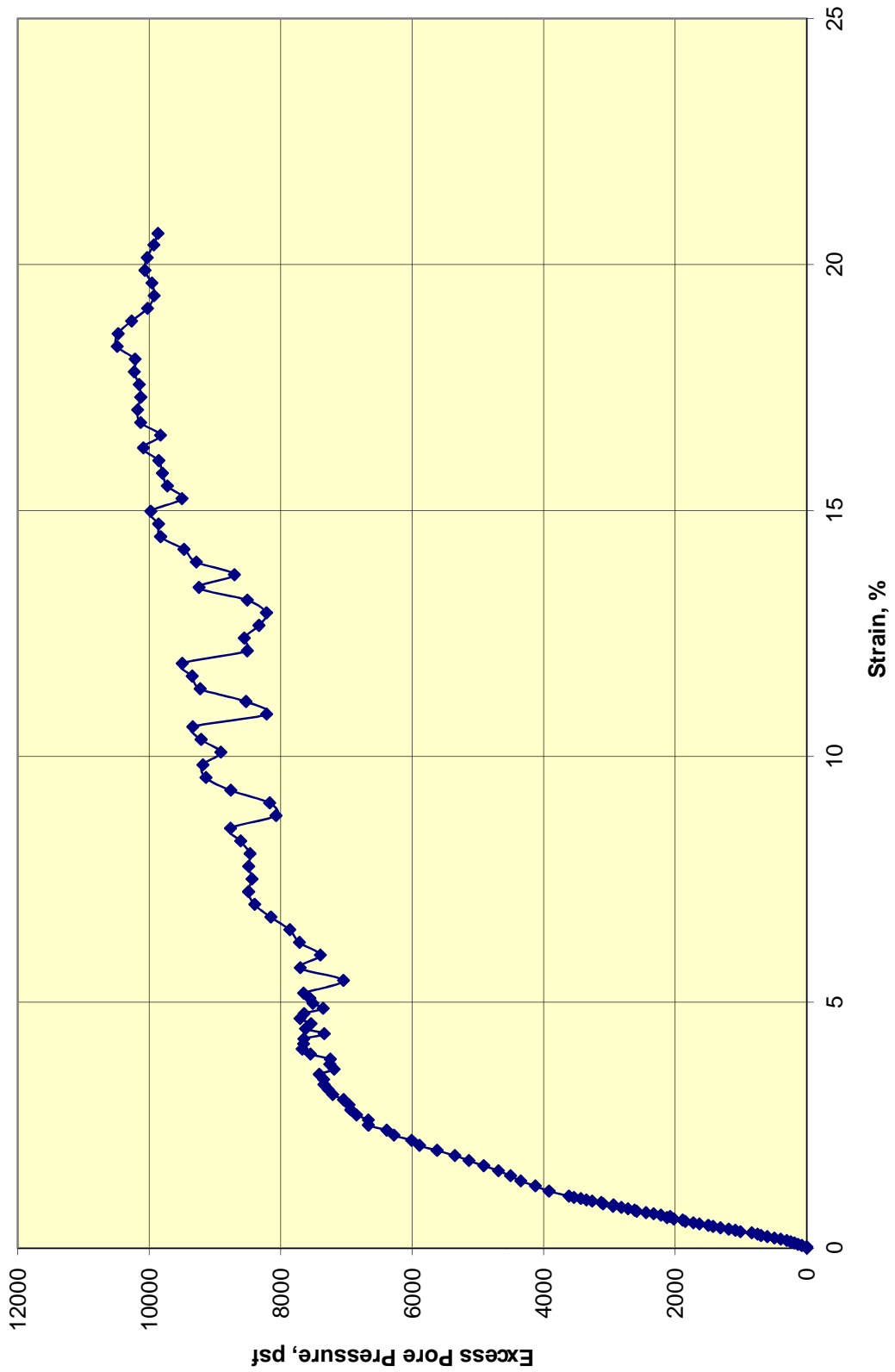
CU Triaxial Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)
 Stress Path Plot

Stress-Strain Curves



CU Triaxial Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)
Stress-Strain Plot

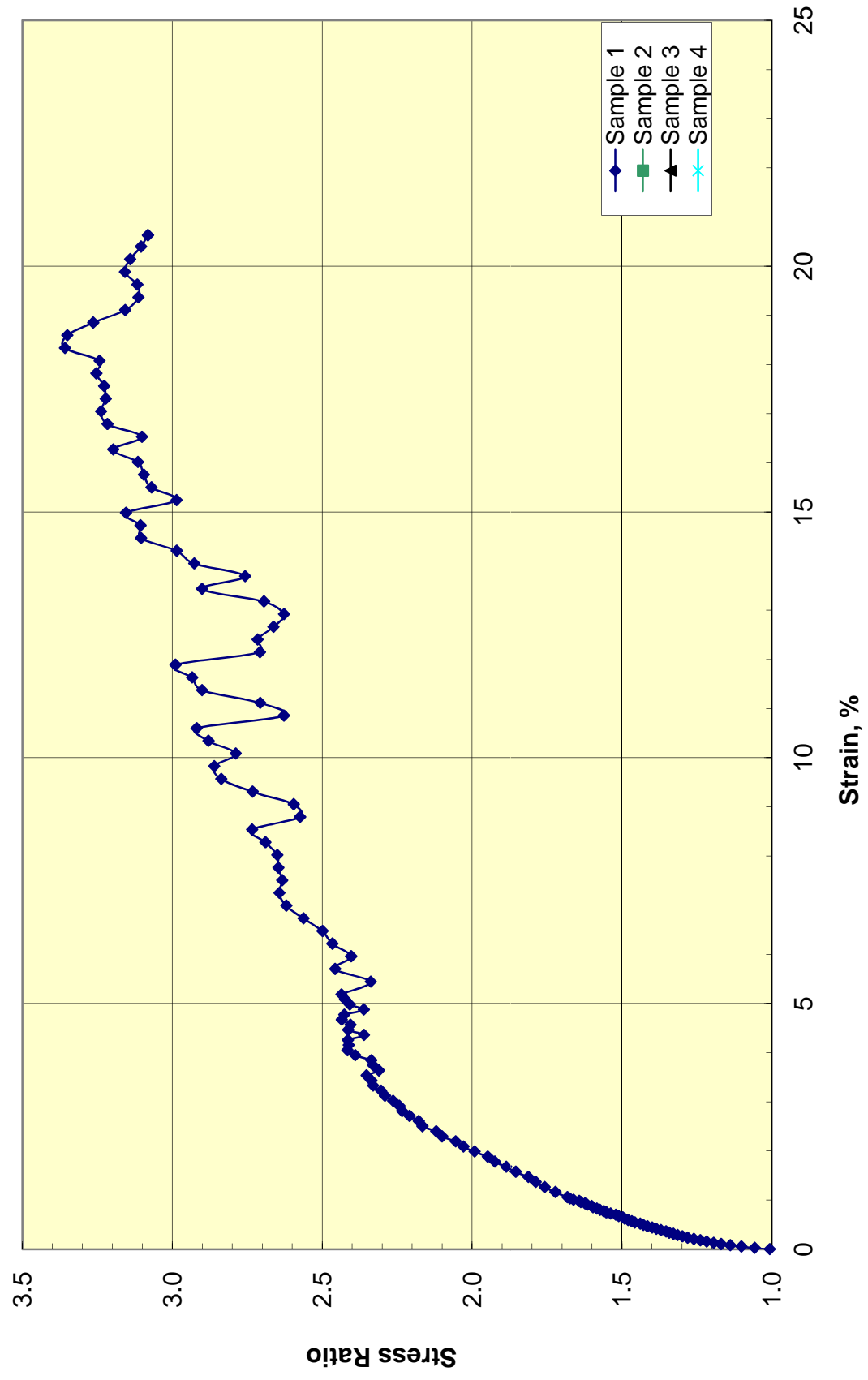
Pore Pressure Response



- Sample 1
- Sample 2
- Sample 3
- Sample 4

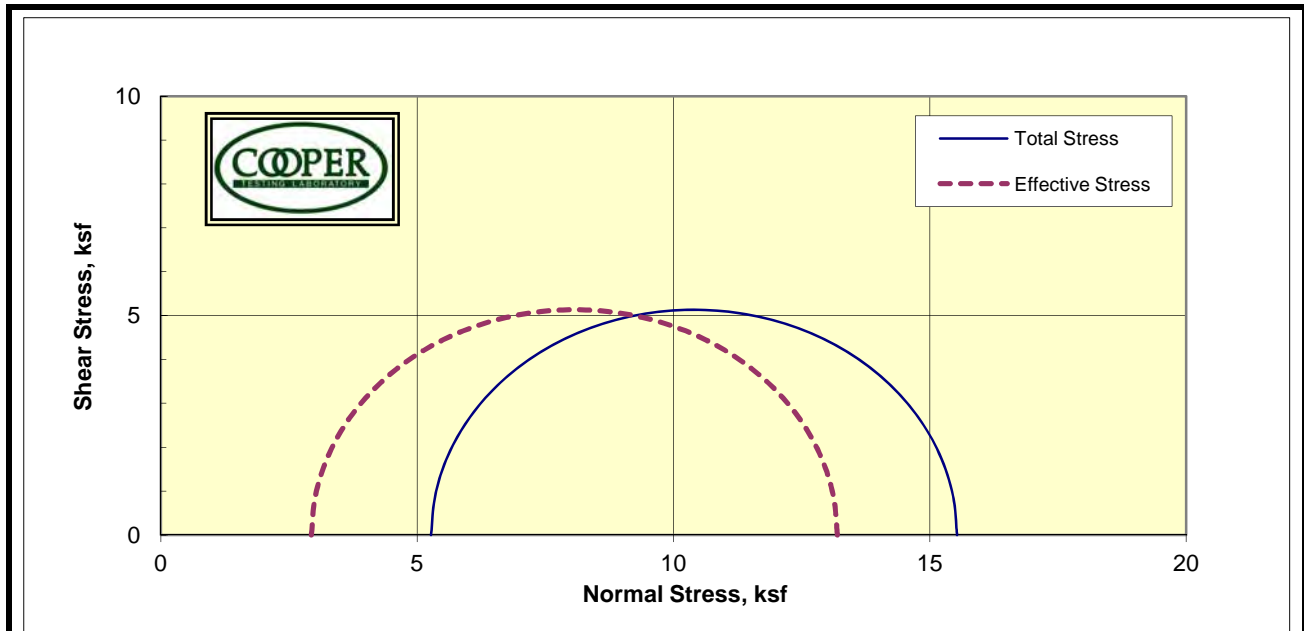
CU Triaxial Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)
Pore Pressure-Strain Plot

Stress Ratio σ_1/σ_3



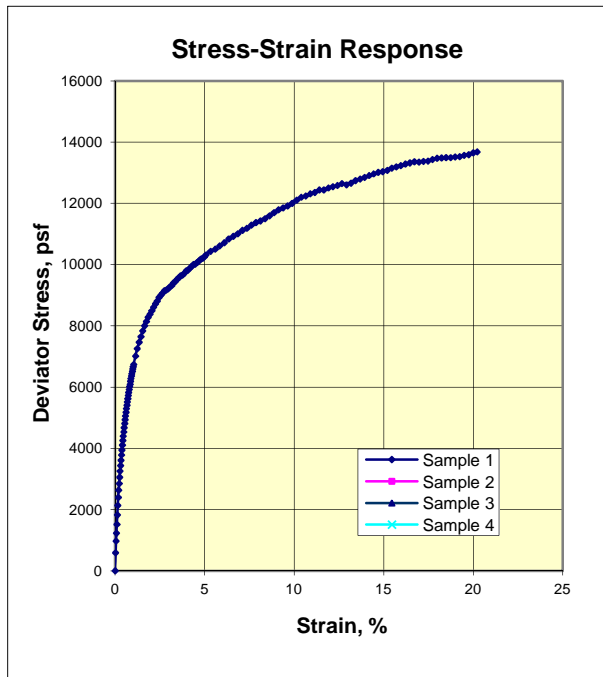
CU Triaxial Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	10.4			
DD, pcf	131.1			
Sat. %	98.3			
Void Ratio	0.285			
Diameter in	3.88			
Height, in	8.05			
Final				
MC, %	9.4			
DD, pcf	134.4			
Sat. %	100.0			
Void Ratio	0.253			
Diameter, in	3.85			
Height, in	7.97			
Cell, psi	98.2			
BP, psi	61.6			
Effective Stresses At:				
Strain, %	5.0			
Deviator ksf	10.260			
Excess PP	2.335			
Sigma 1	13.196			
Sigma 3	2.936			
P, ksf	8.066			
Q, ksf	5.130			
Stress Ratio	4.495			
Rate in/min	0.0005			

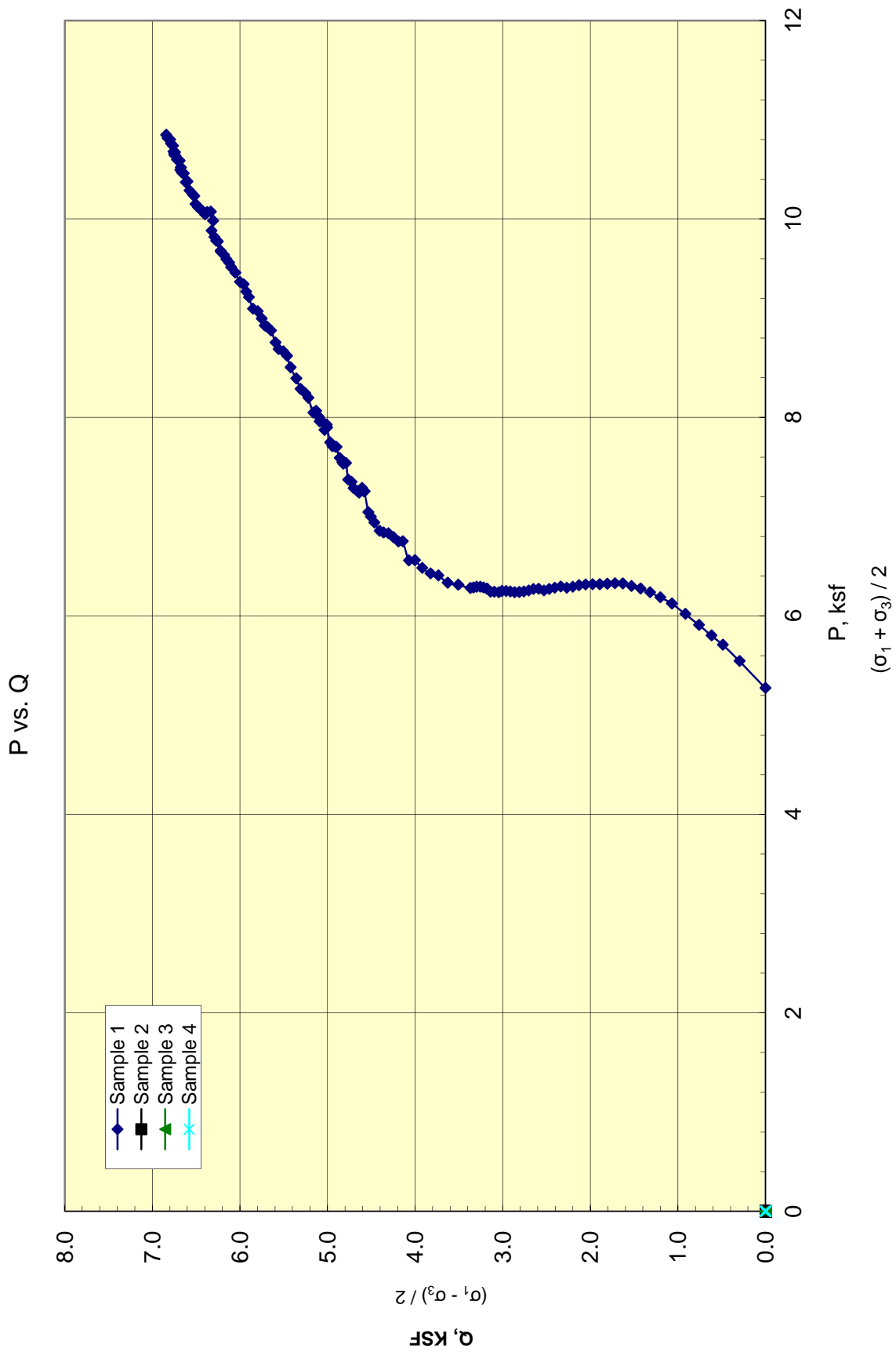
Job No.: 414-050 Date: 8/30/2011

Client: Engco BY: DC

Project: Leniham Dam - 2106.2011

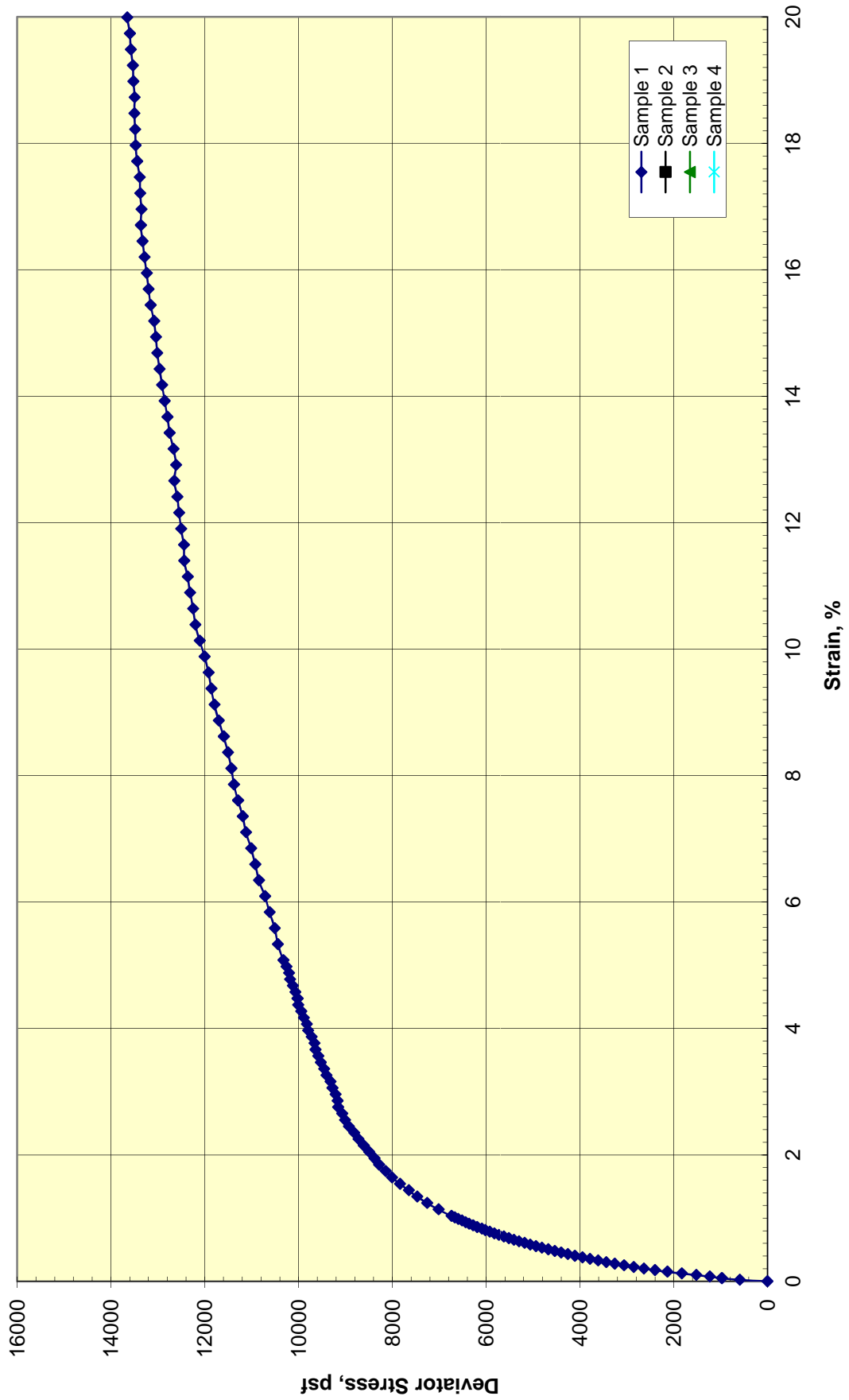
Sample 1)		Olive Brn Sa CLAY w/Gr
Sample 2)		change to Clayey GRAVEL
Sample 3)		

CU Triaxial Test - Boring LD-B-102 Sample PB-1 (35.0 ft to 37.0 ft)
Summary Report



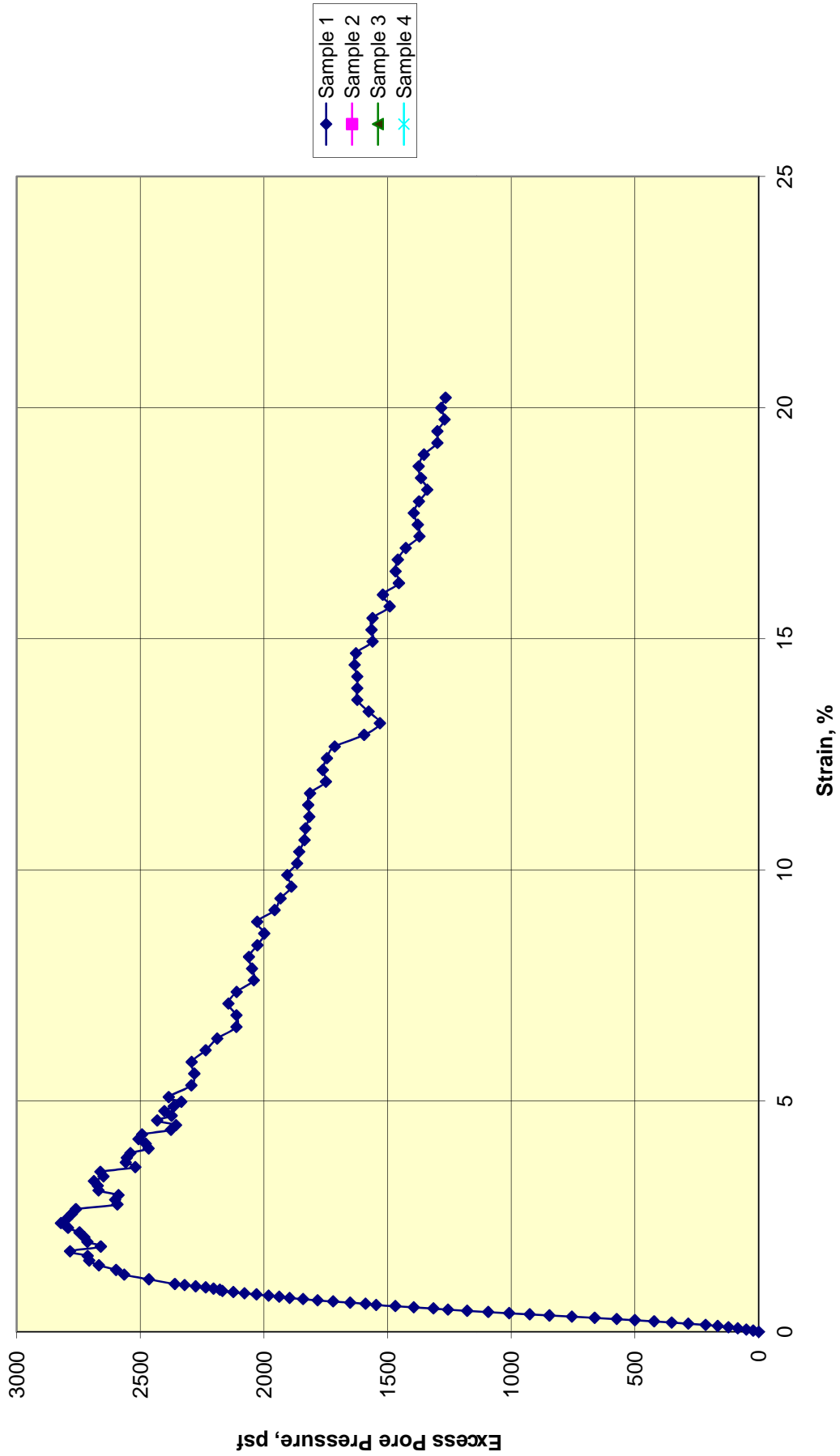
CU Triaxial Test - Boring LD-B-102 Sample PB-1 (35.0 ft to 37.0 ft)
 Stress Path Plot

Stress-Strain Curves



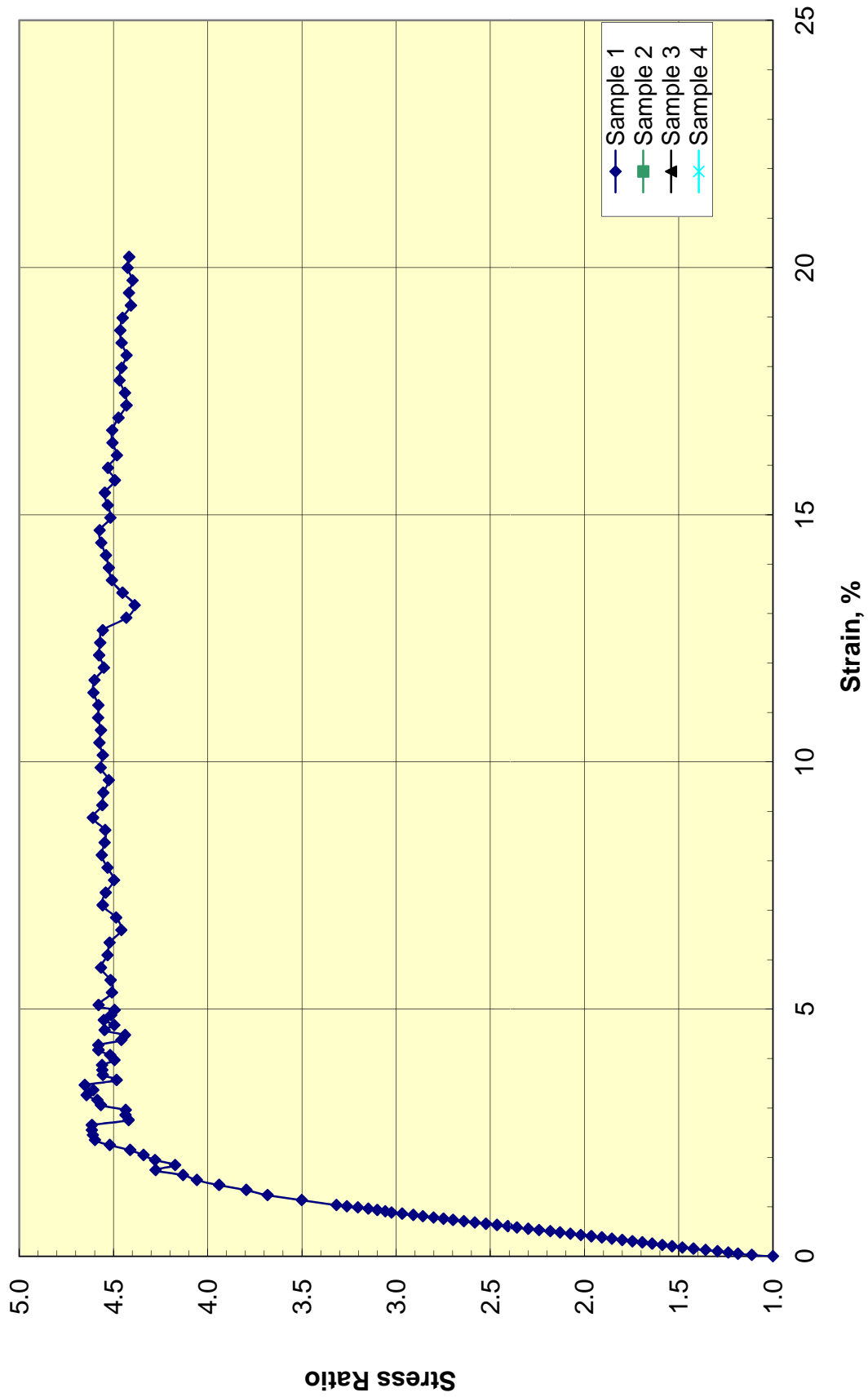
CU Triaxial Test - Boring LD-B-102 Sample PB-1 (35.0 ft to 37.0 ft)
Stress-Strain Plot

Pore Pressure Response



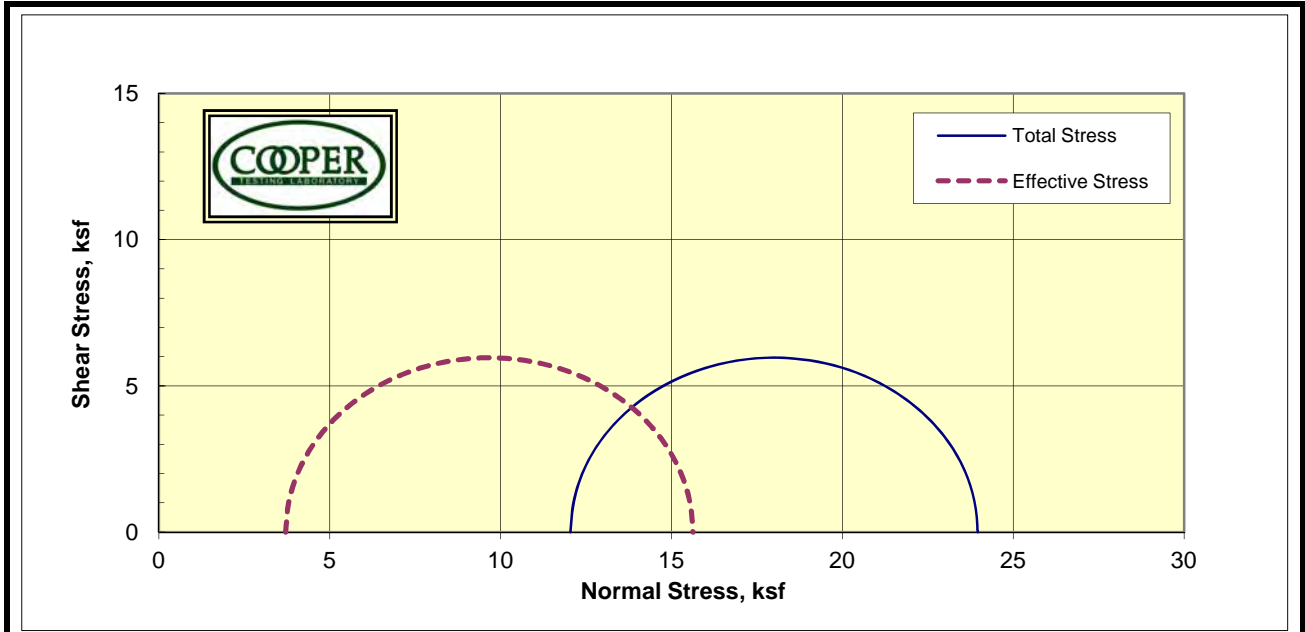
CU Triaxial Test - Boring LD-B-102 Sample PB-1 (35.0 ft to 37.0 ft)
Pore Pressure-Strain Plot

Stress Ratio Σ_1/Σ_3



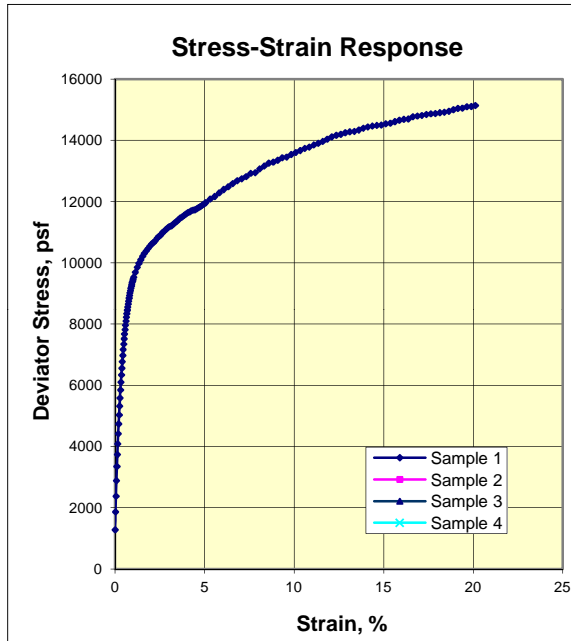
CU Triaxial Test - Boring LD-B-102 Sample PB-1 (35.0 ft to 37.0 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	10.1			
DD, pcf	130.7			
Sat. %	94.6			
Void Ratio	0.289			
Diameter in	3.88			
Height, in	5.07			

	Final
MC, %	9.5
DD, pcf	134.1
Sat. %	100.0
Void Ratio	0.257
Diameter, in	3.87
Height, in	4.97
Cell, psi	163.3
BP, psi	79.7

Job No.: 414-050 Date: 9/6/2011

Client: Engeo BY: DC

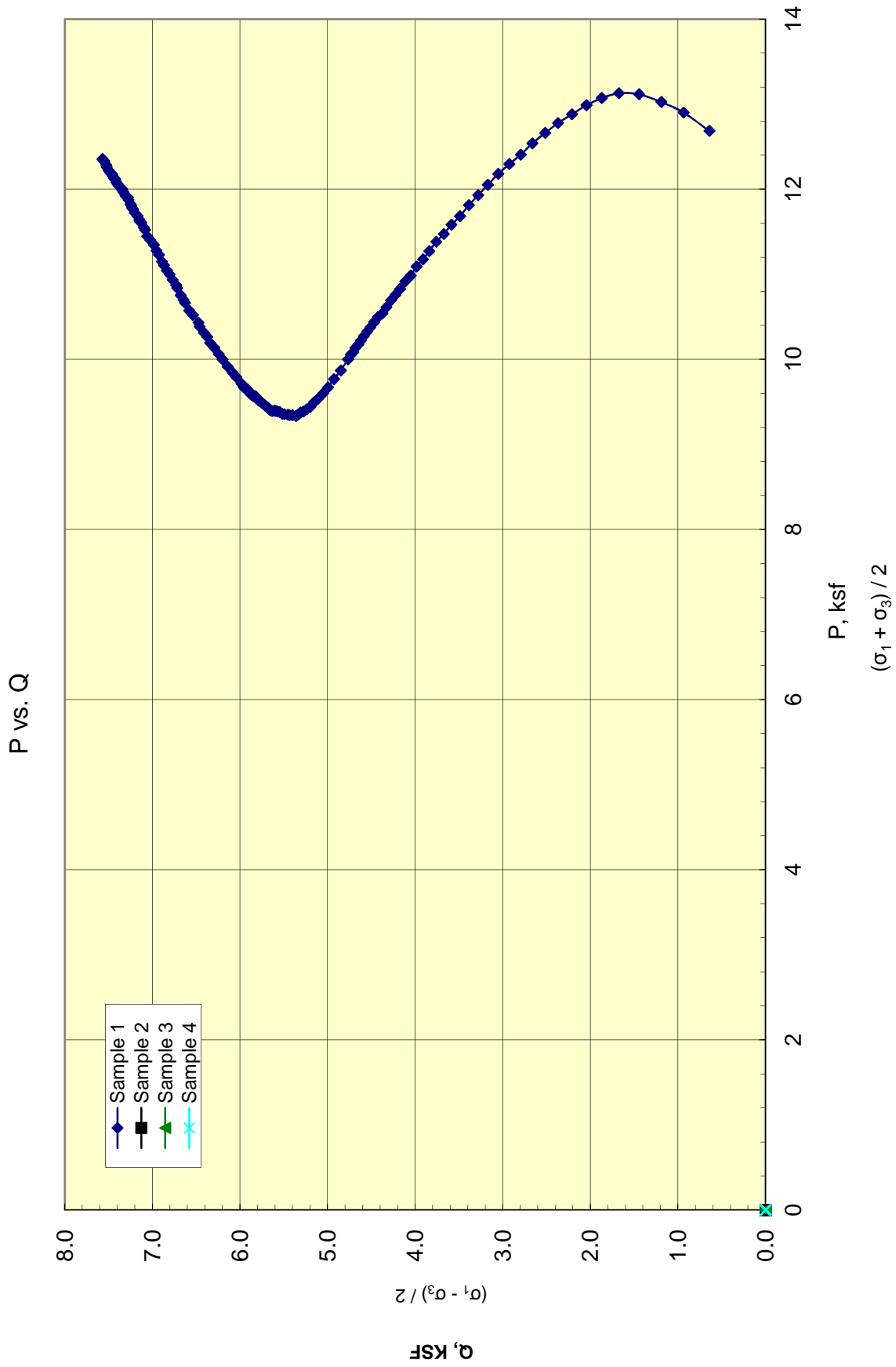
Project: Leniham Dam - 2106.2011

Sample 1)	Gray Clayey GRAVEL w/ Sand
Sample 2)	
Sample 3)	

Sample Height:Diameter ratio less than the normal 2:1 due to limited amount of suitable sample. The test was run at client's request and engineering judgement should be used when interpreting these results.

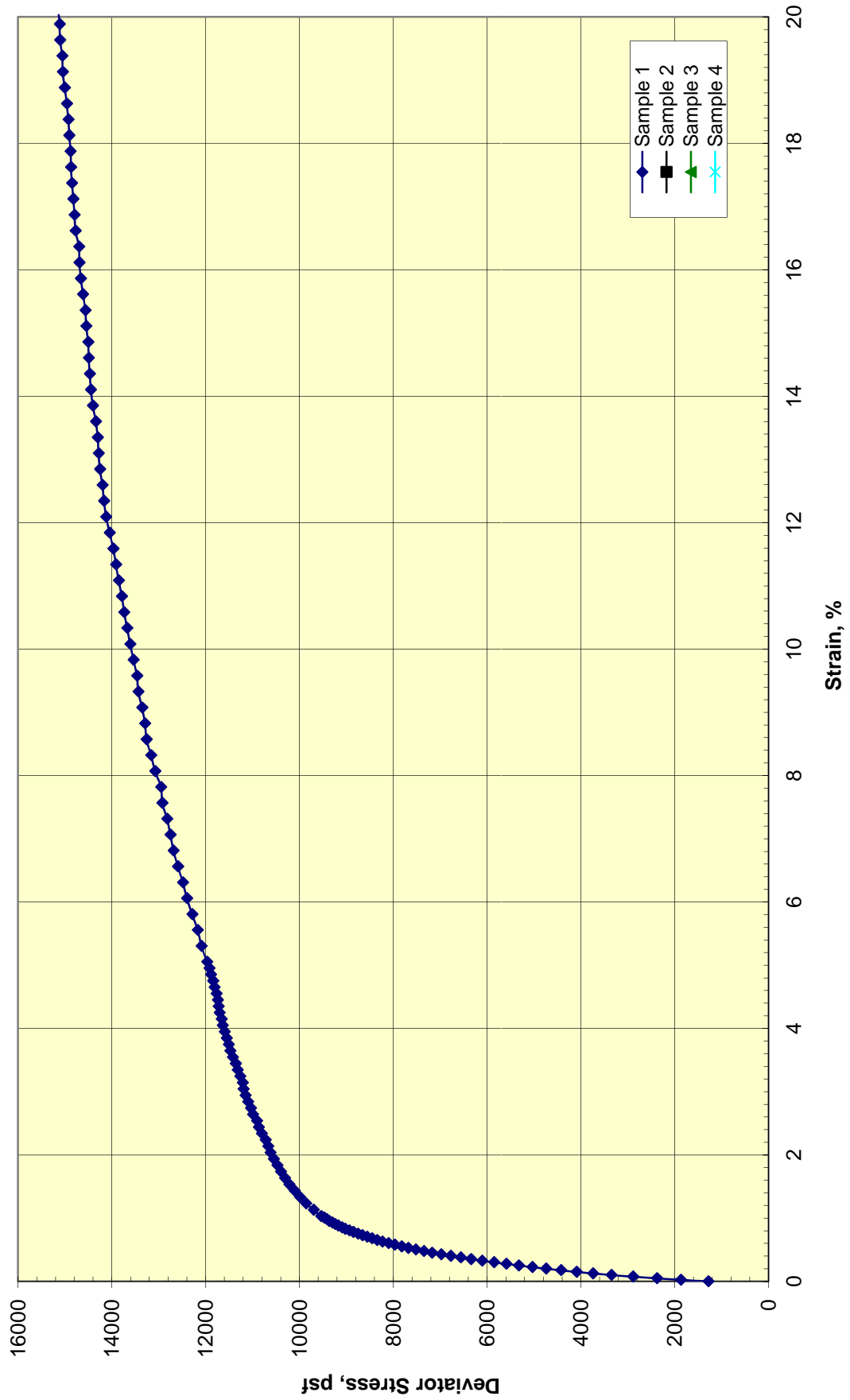
	Effective Stresses At:
Strain, %	5.0
Deviator ksf	11.918
Excess PP	8.332
Sigma 1	15.629
Sigma 3	3.711
P, ksf	9.670
Q, ksf	5.959
Stress Ratio	4.211
Rate in/min	0.0004

CU Triaxial Test - Boring LD-B-102 Sample PB-6 (99.0 ft to 101.5 ft)
Summary Report



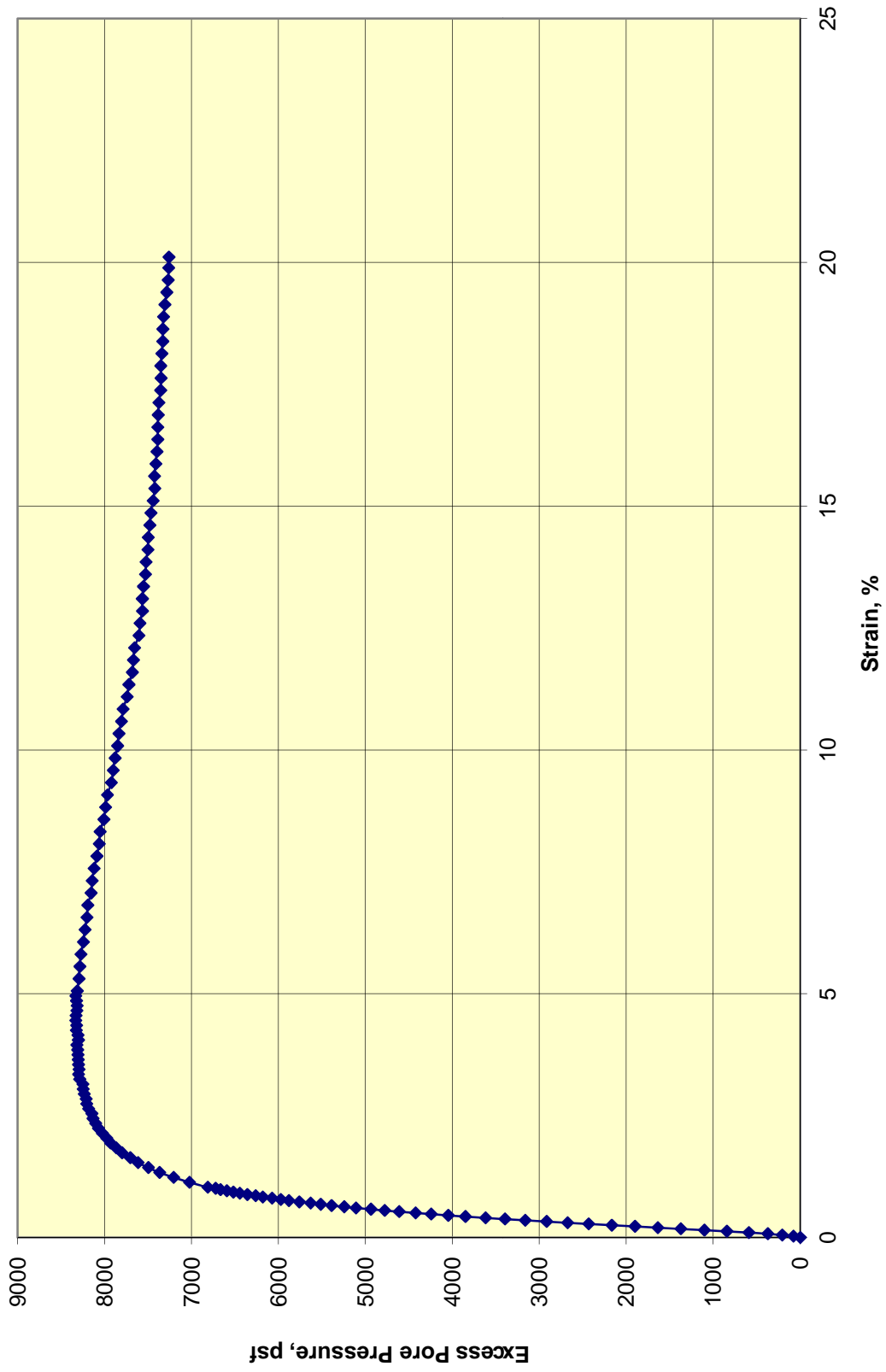
CU Triaxial Test - Boring LD-B-102 Sample PB-6 (99.0 ft to 101.5 ft)
Stress Path Plot

Stress-Strain Curves



CU Triaxial Test - Boring LD-B-102 Sample PB-6 (99.0 ft to 101.5 ft)
Stress-Strain Plot

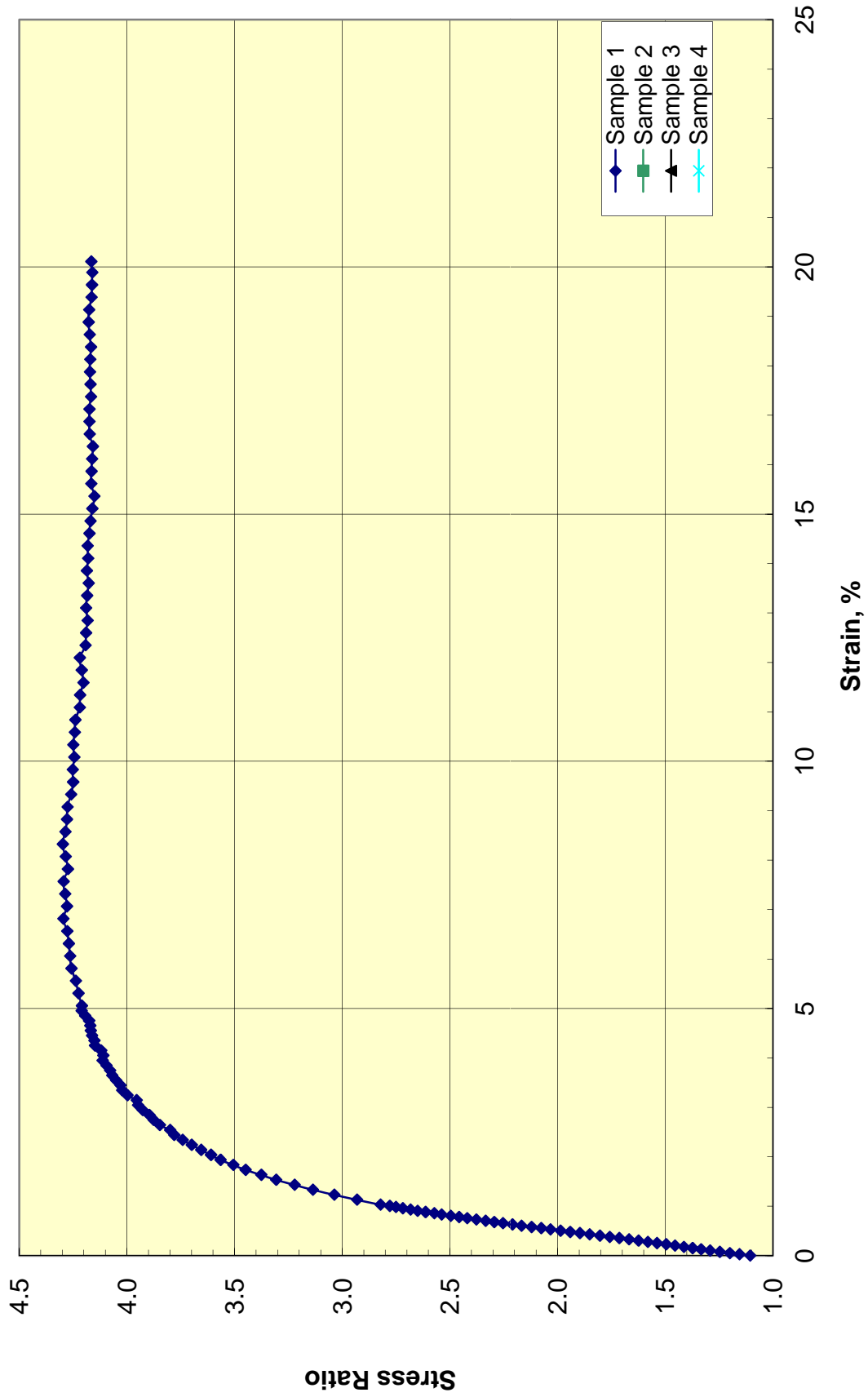
Pore Pressure Response



- Sample 1
- Sample 2
- Sample 3
- Sample 4

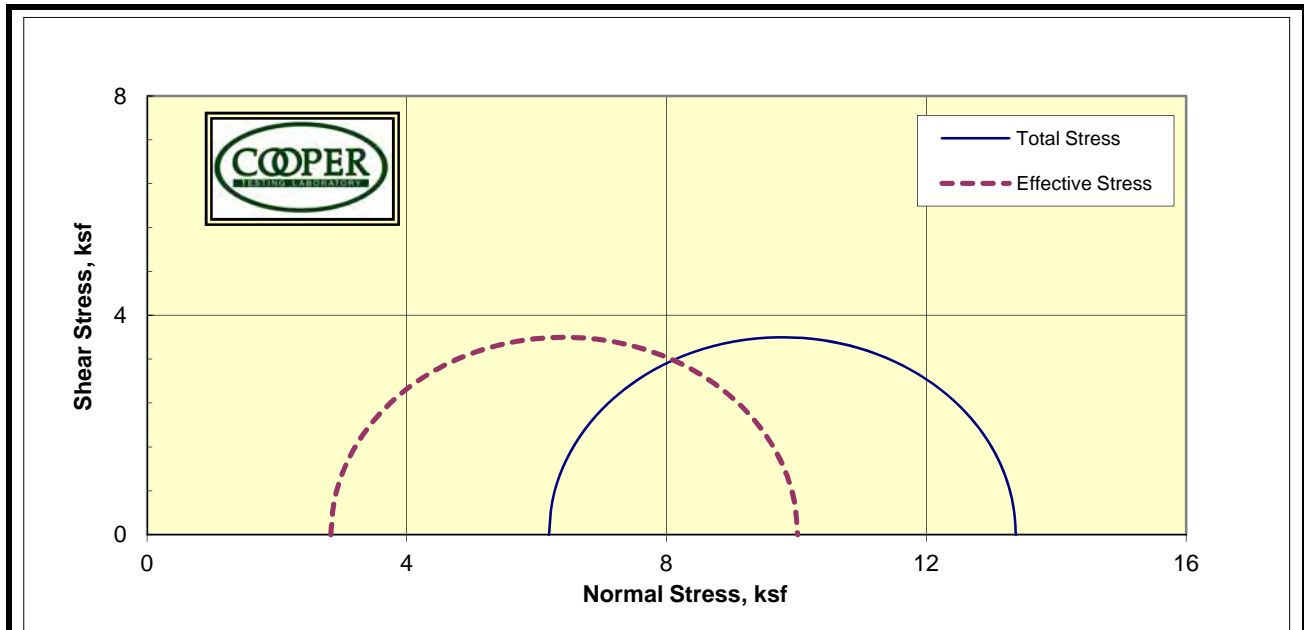
CU Triaxial Test - Boring LD-B-102 Sample PB-6 (99.0 ft to 101.5 ft)
Pore Pressure-Strain Plot

Stress Ratio Σ_1/Σ_3



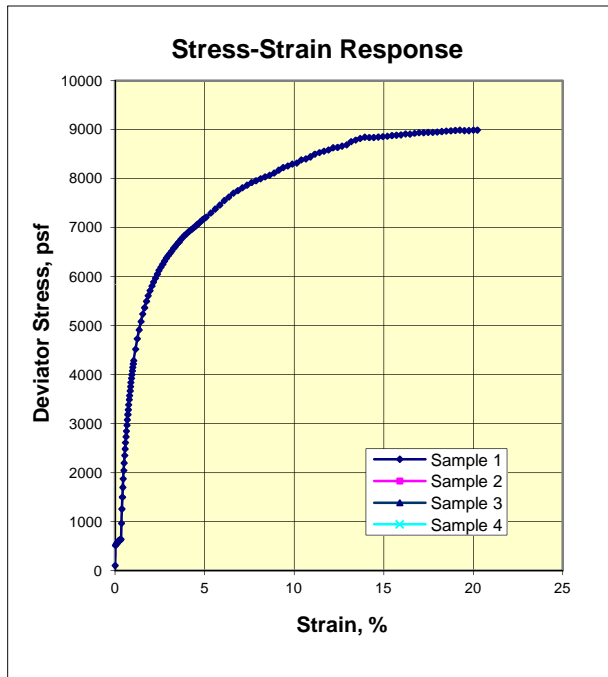
CU Triaxial Test - Boring LD-B-102 Sample PB-6 (99.0 ft to 101.5 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	13.8			
DD, pcf	122.7			
Sat. %	95.3			
Void Ratio	0.398			
Diameter in	3.88			
Height, in	8.05			
Final				
MC, %	13.1			
DD, pcf	126.2			
Sat. %	100.0			
Void Ratio	0.360			
Diameter, in	3.85			
Height, in	7.96			
Cell, psi	95.1			
BP, psi	52.1			
Effective Stresses At:				

Job No.: 414-050 Date: 9/7/2011

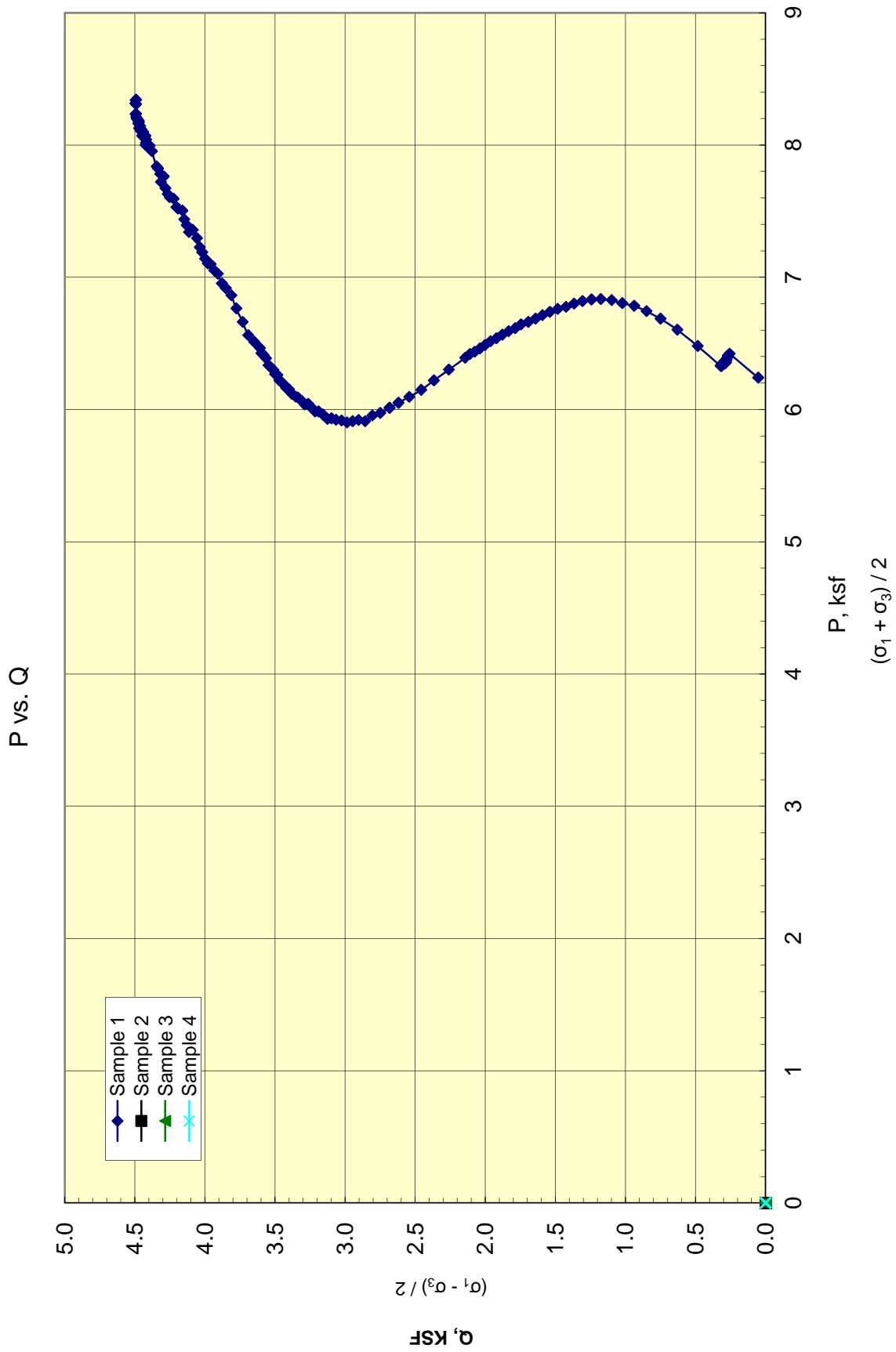
Client: Engco BY: DC

Project: Leniham Dam - 2106.2011

Sample 1)	Bluish Gray Clayey SAND w/ Gravel
Sample 2)	
Sample 3)	

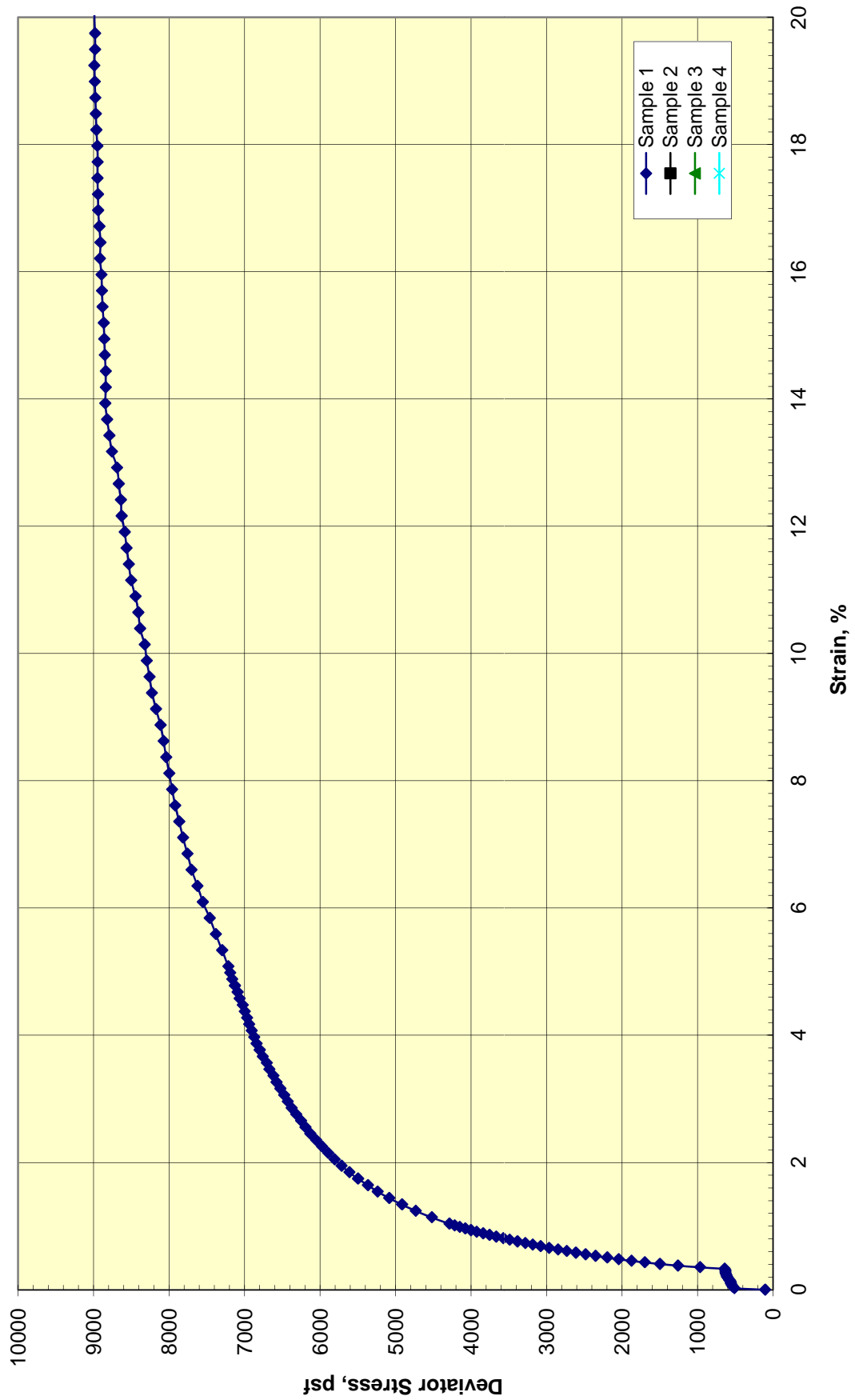
Strain, %	5.0
Deviator ksf	7.192
Excess PP	3.358
Sigma 1	10.021
Sigma 3	2.829
P, ksf	6.425
Q, ksf	3.596
Stress Ratio	3.542
Rate in/min	0.0004

CU Triaxial Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)
Summary Report



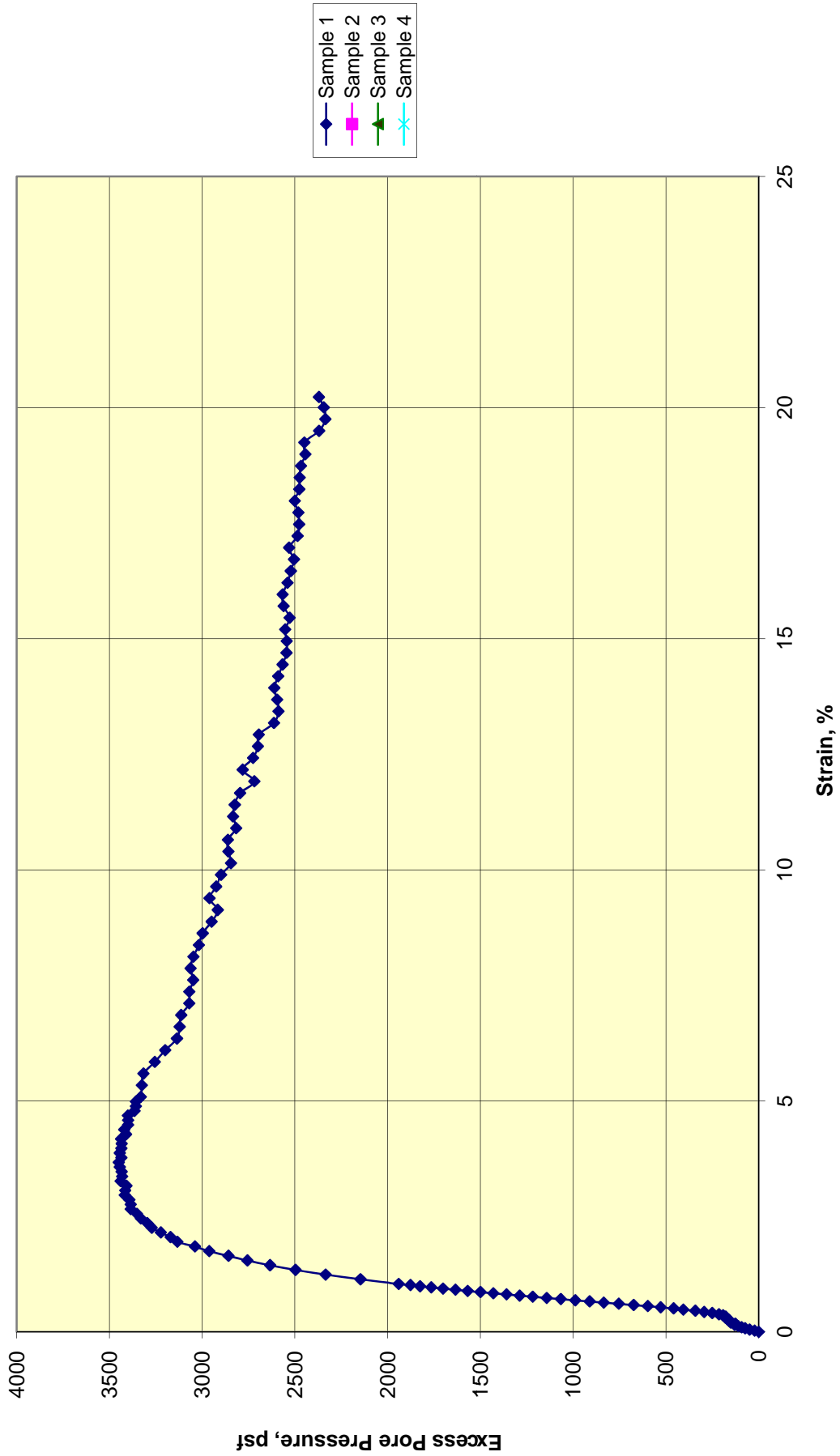
CU Triaxial Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)
Stress Path Plot

Stress-Strain Curves



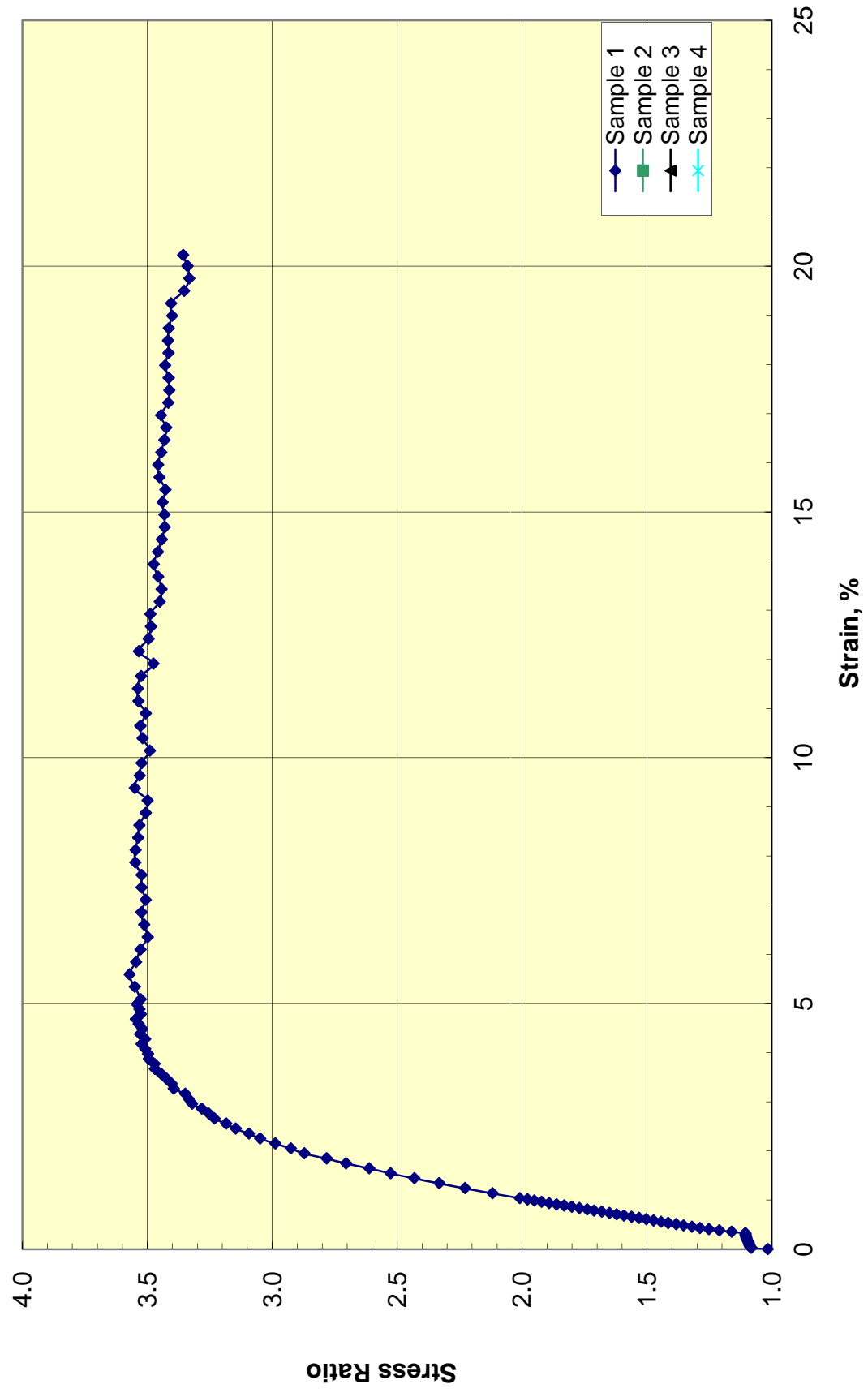
CU Triaxial Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)
Stress-Strain Plot

Pore Pressure Response



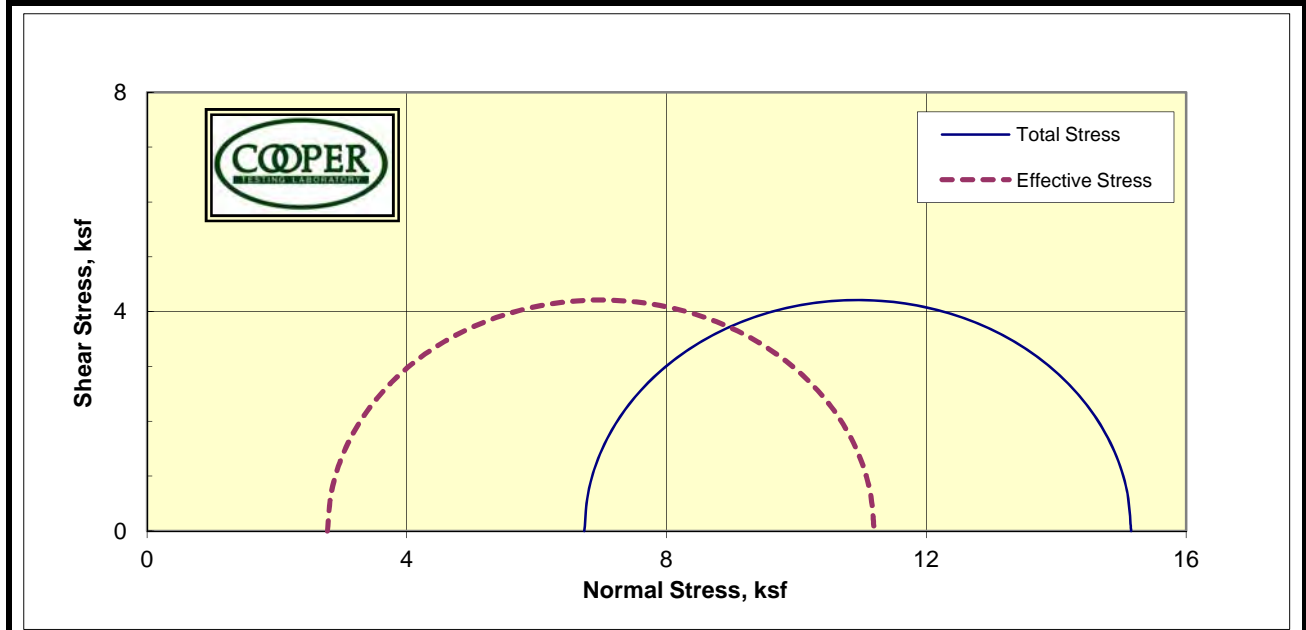
CU Triaxial Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)
Pore Pressure-Strain Plot

Stress Ratio σ_1/σ_3



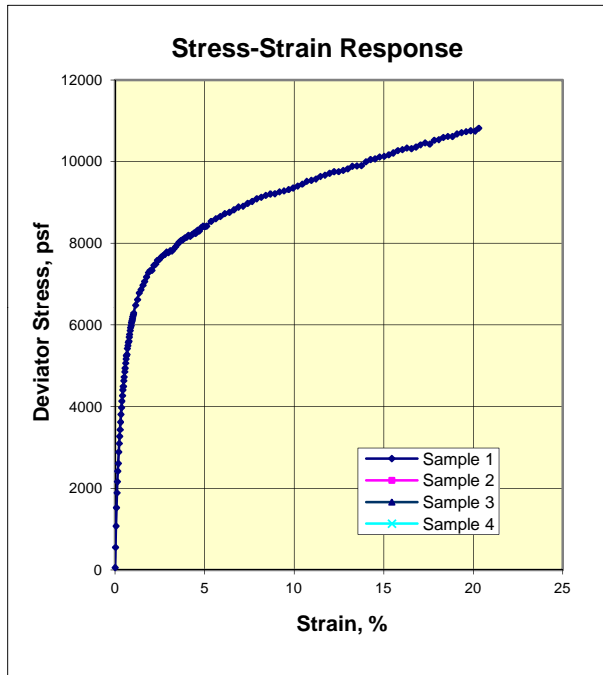
CU Triaxial Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)
Stress Ratio-Strain Plot

Triaxial Consolidated Undrained with Pore Pressure
ASTM D4767



Total :

Effective:



Sample:	1	2	3	4
MC, %	14.4			
DD, pcf	121.5			
Sat. %	96.1			
Void Ratio	0.412			
Diameter in	3.88			
Height, in	8.05			
Final				
MC, %	13.1			
DD, pcf	126.2			
Sat. %	100.0			
Void Ratio	0.360			
Diameter, in	3.84			
Height, in	7.93			
Cell, psi	108.6			
BP, psi	61.8			
Effective Stresses At:				

Job No.: 414-050 Date: 9/8/2011

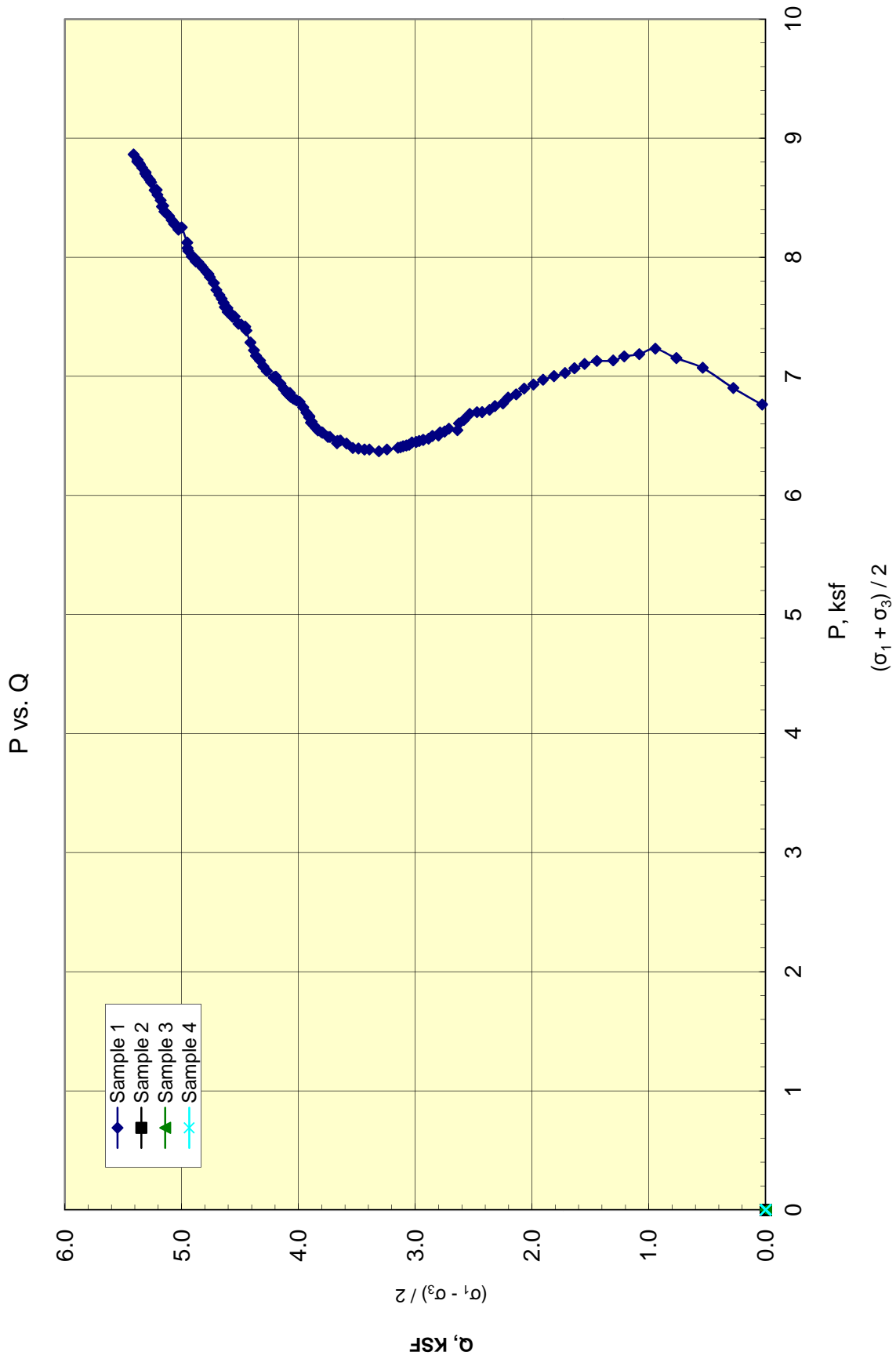
Client: Engeo BY: DC

Project: Leniham Dam - 2106.2011

Sample 1)	Gray Clayey SAND w/ Gravel*
Sample 2)	
Sample 3)	

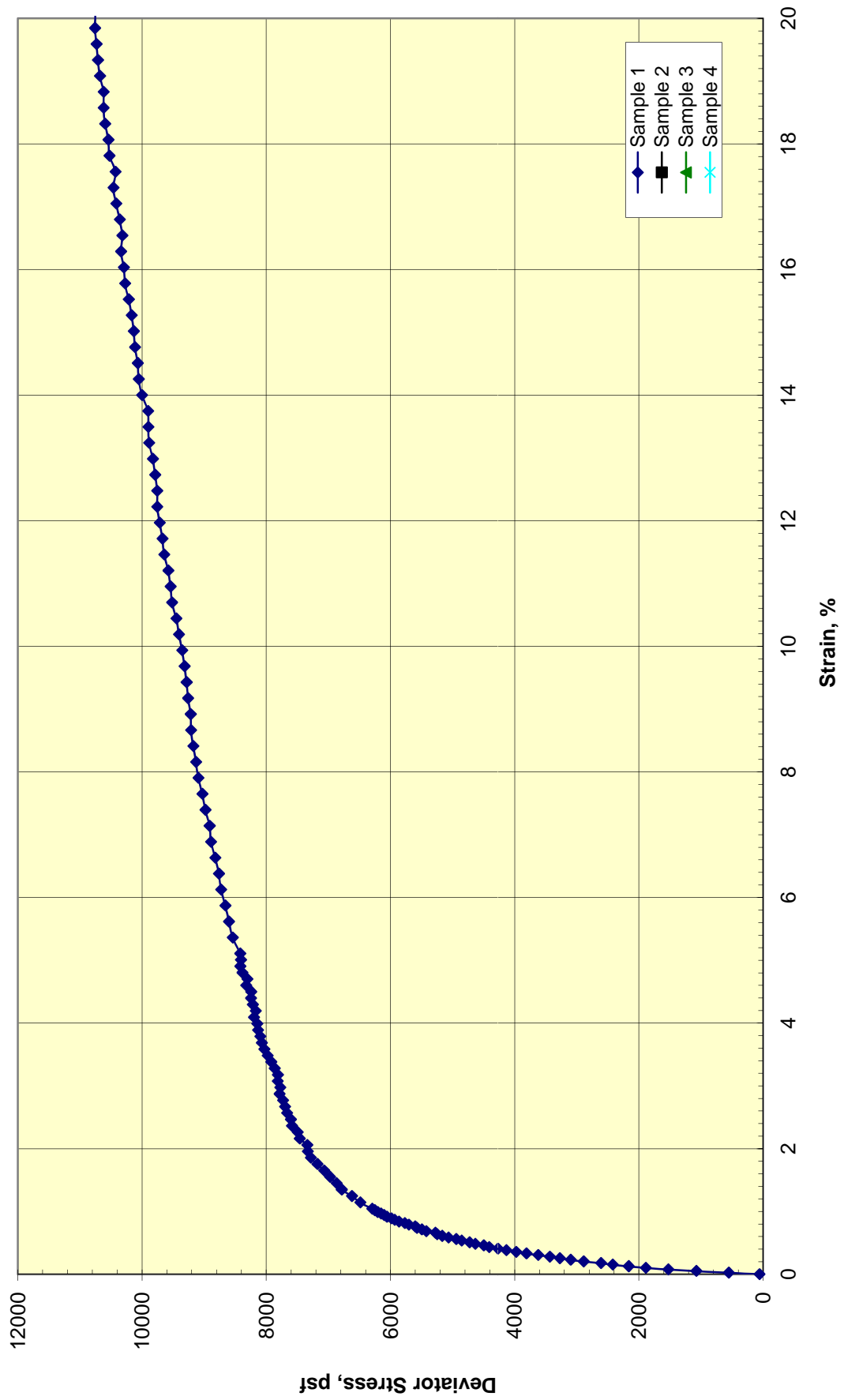
Strain, %	5.0
Deviator ksf	8.420
Excess PP	3.956
Sigma 1	11.197
Sigma 3	2.777
P, ksf	6.987
Q, ksf	4.210
Stress Ratio	4.032
Rate in/min	0.0002

*grading to Olive Brown Clayey SAND w/ Gravel



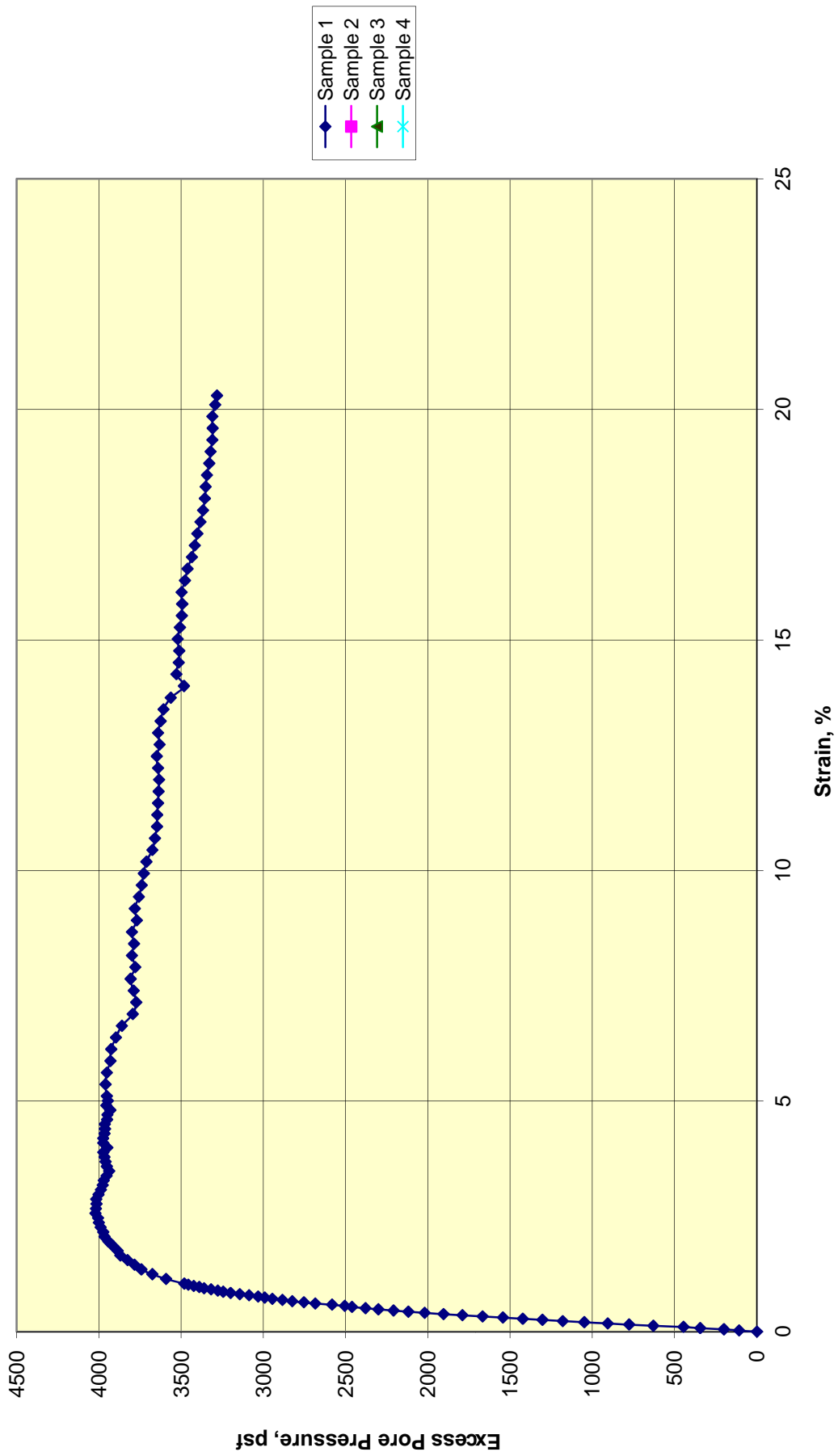
CU Triaxial Test - Boring LD-B-103 Sample PB-6 (58.0 ft to 60.5 ft)
Stress Path Plot

Stress-Strain Curves



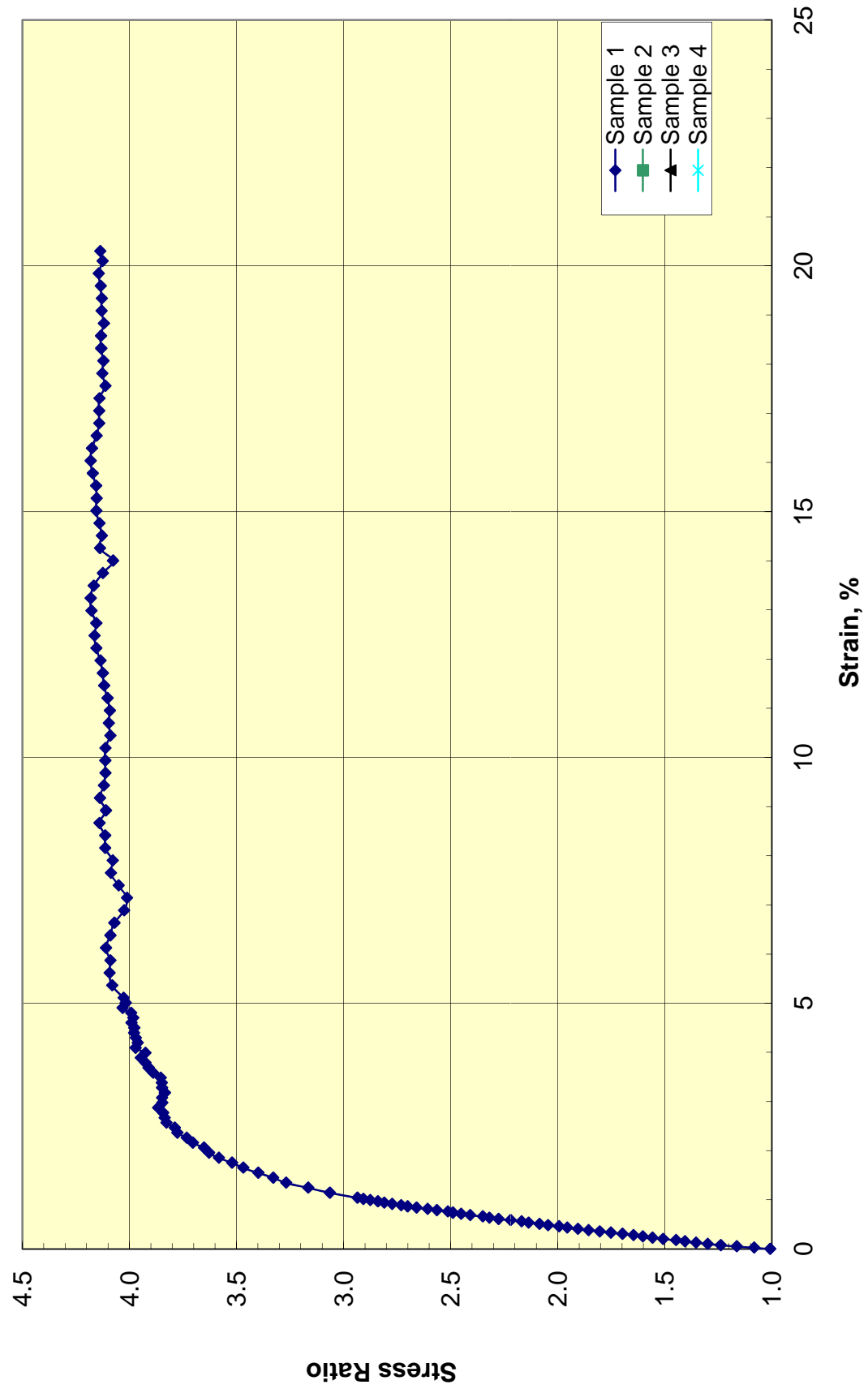
CU Triaxial Test - Boring LD-B-103 Sample PB-6 (58.0 ft to 60.5 ft)
Stress-Strain Plot

Pore Pressure Response



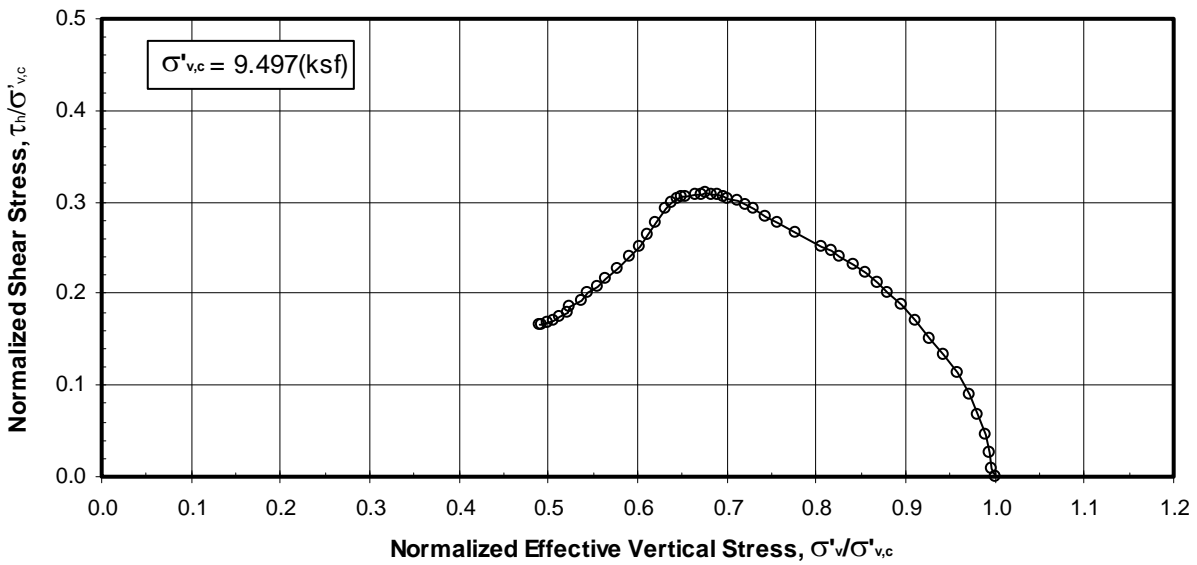
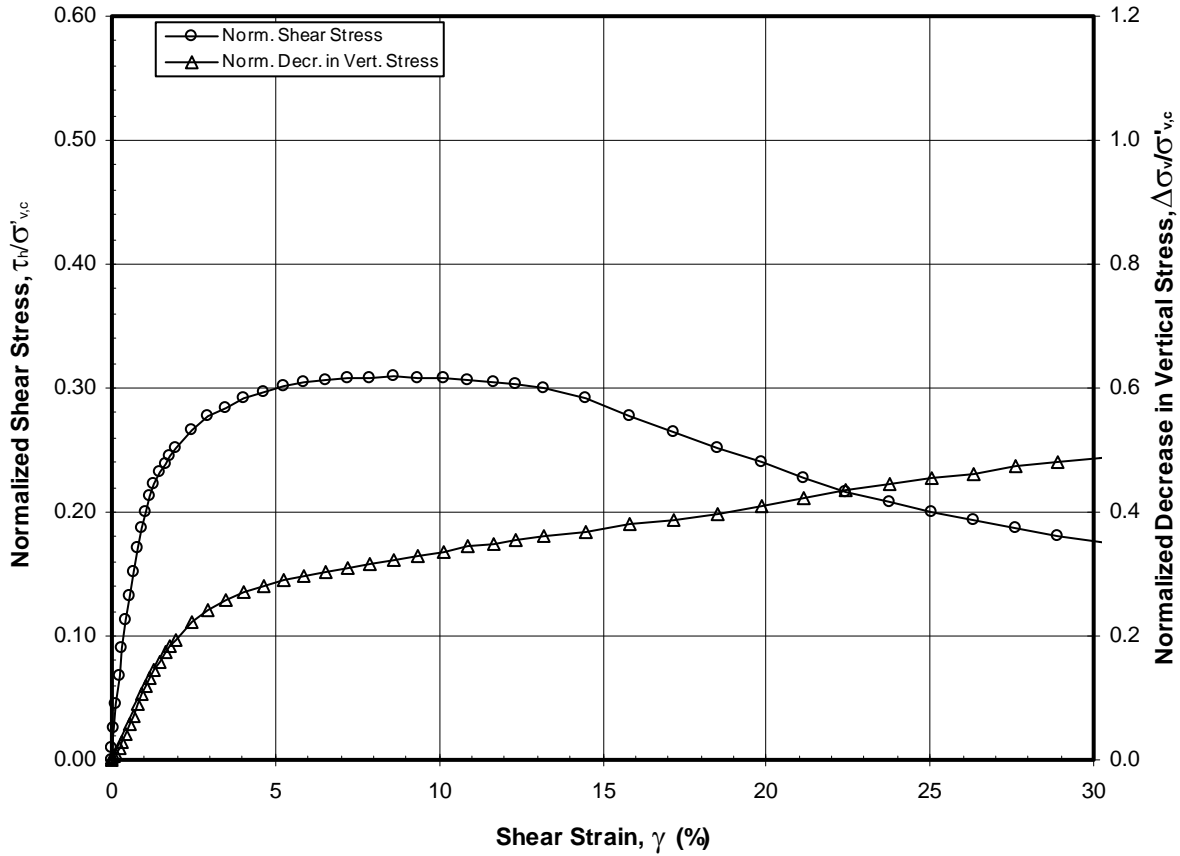
CU Triaxial Test - Boring LD-B-103 Sample PB-6 (58.0 ft to 60.5 ft)
Pore Pressure-Strain Plot

Stress Ratio Sigma1/Sigma3



CU Triaxial Test - Boring LD-B-103 Sample PB-6 (58.0 ft to 60.5 ft)
Stress Ratio-Strain Plot

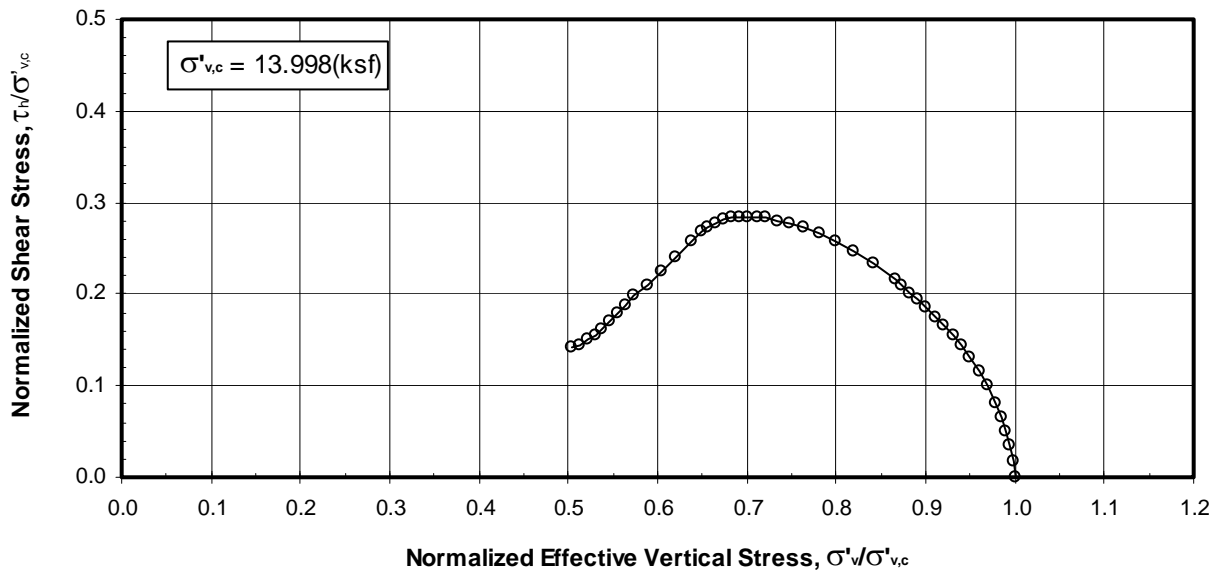
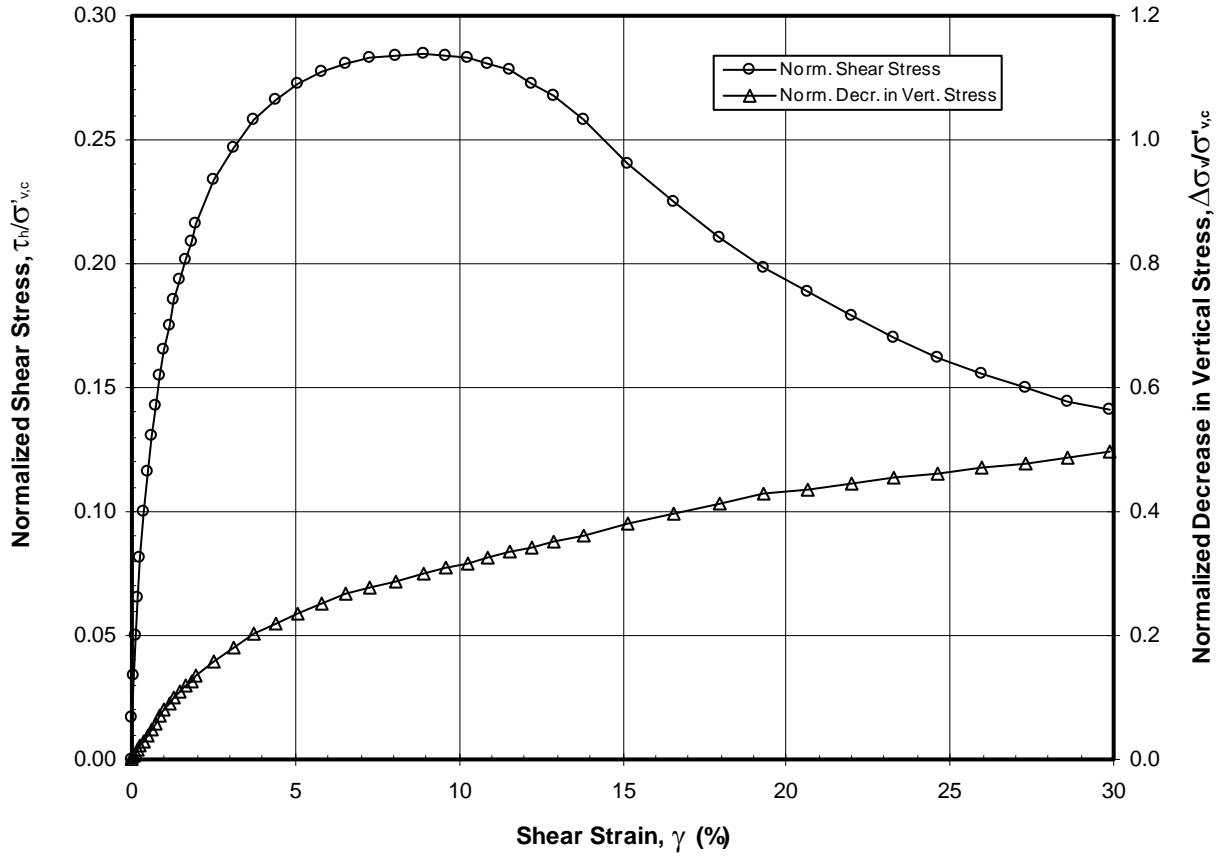
FUGRO CONSULTANTS INC.



STATIC DSS TEST
 K_0 Consolidation - OCR = 1
 Sample: PB-4a - Depth: 87.30 ft
 Boring LD-B-101

Figure D-16

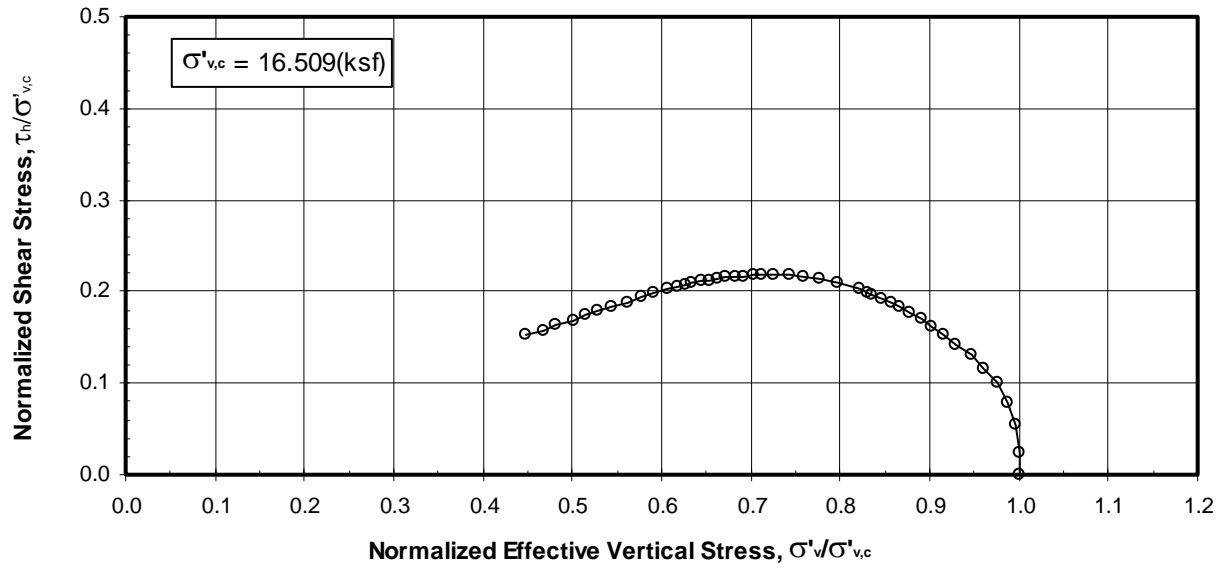
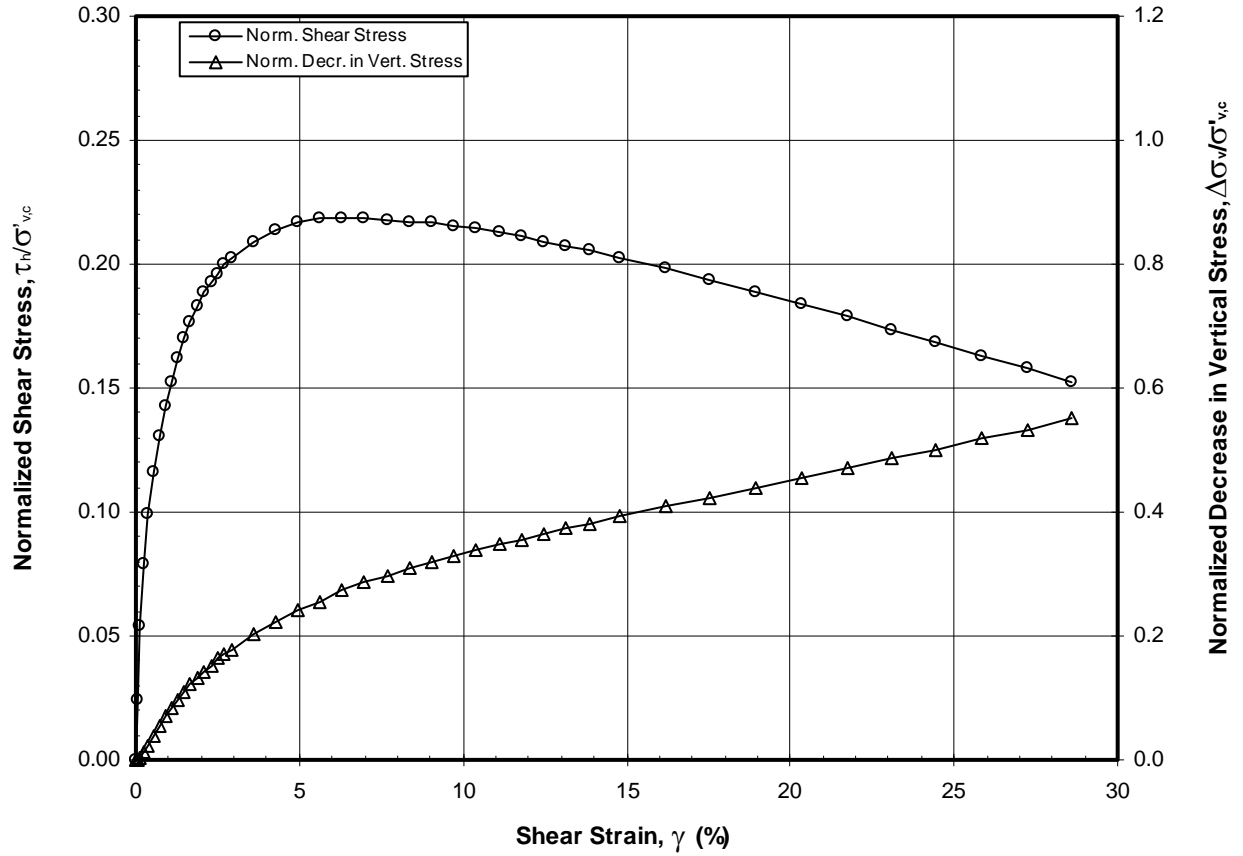
FUGRO CONSULTANTS INC.



STATIC DSS TEST
 K_o Consolidation - OCR = 1
 Sample: PB-8a - Depth: 130.00 ft
 Boring LD-B-101

Figure D-17

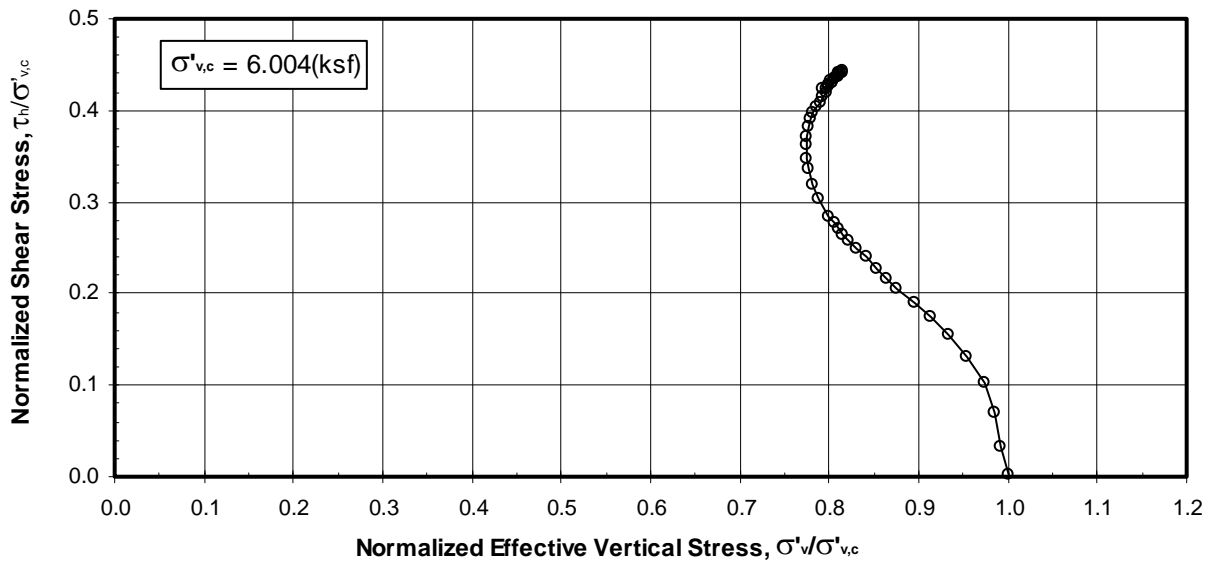
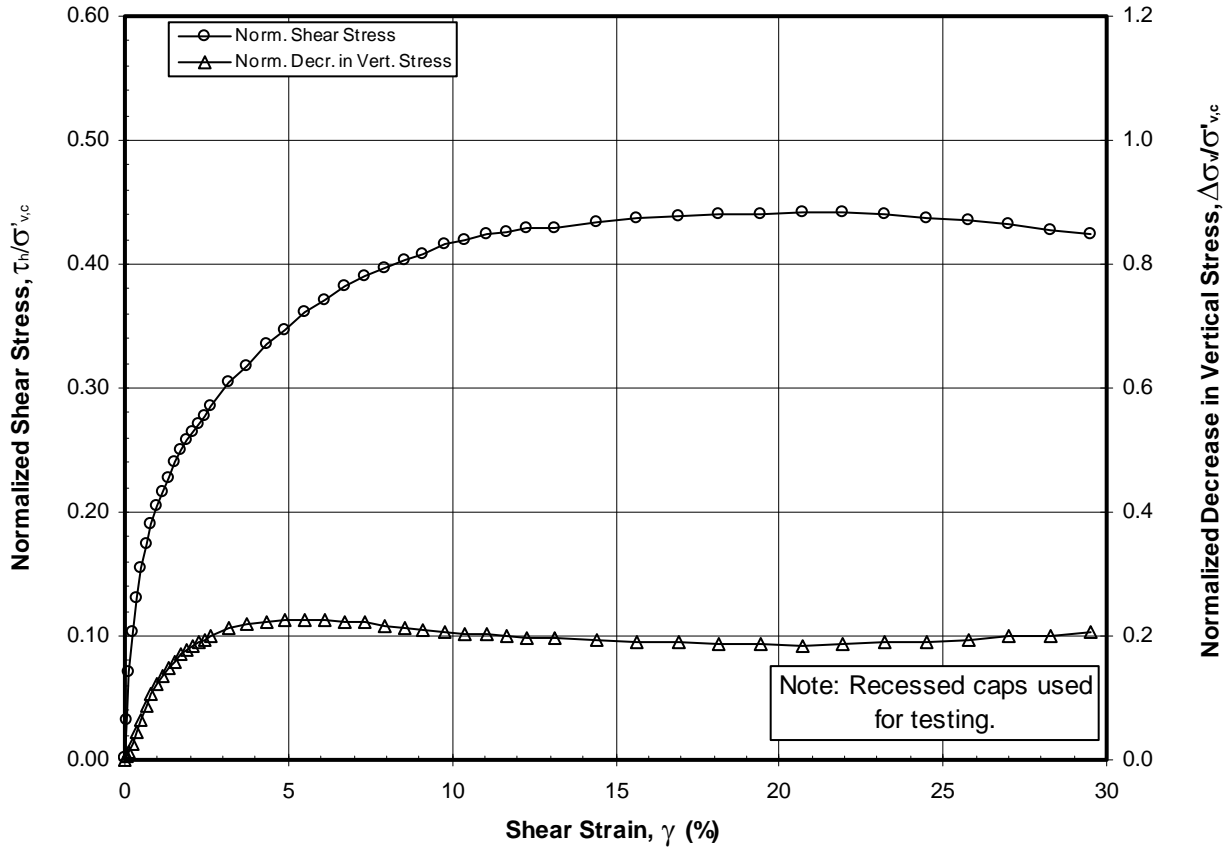
FUGRO CONSULTANTS INC.



STATIC DSS TEST
 K_0 Consolidation - OCR = 1
 Sample: PB-12a - Depth: 170.00 ft
 Boring LD-B-101

Figure D-18

FUGRO CONSULTANTS INC.



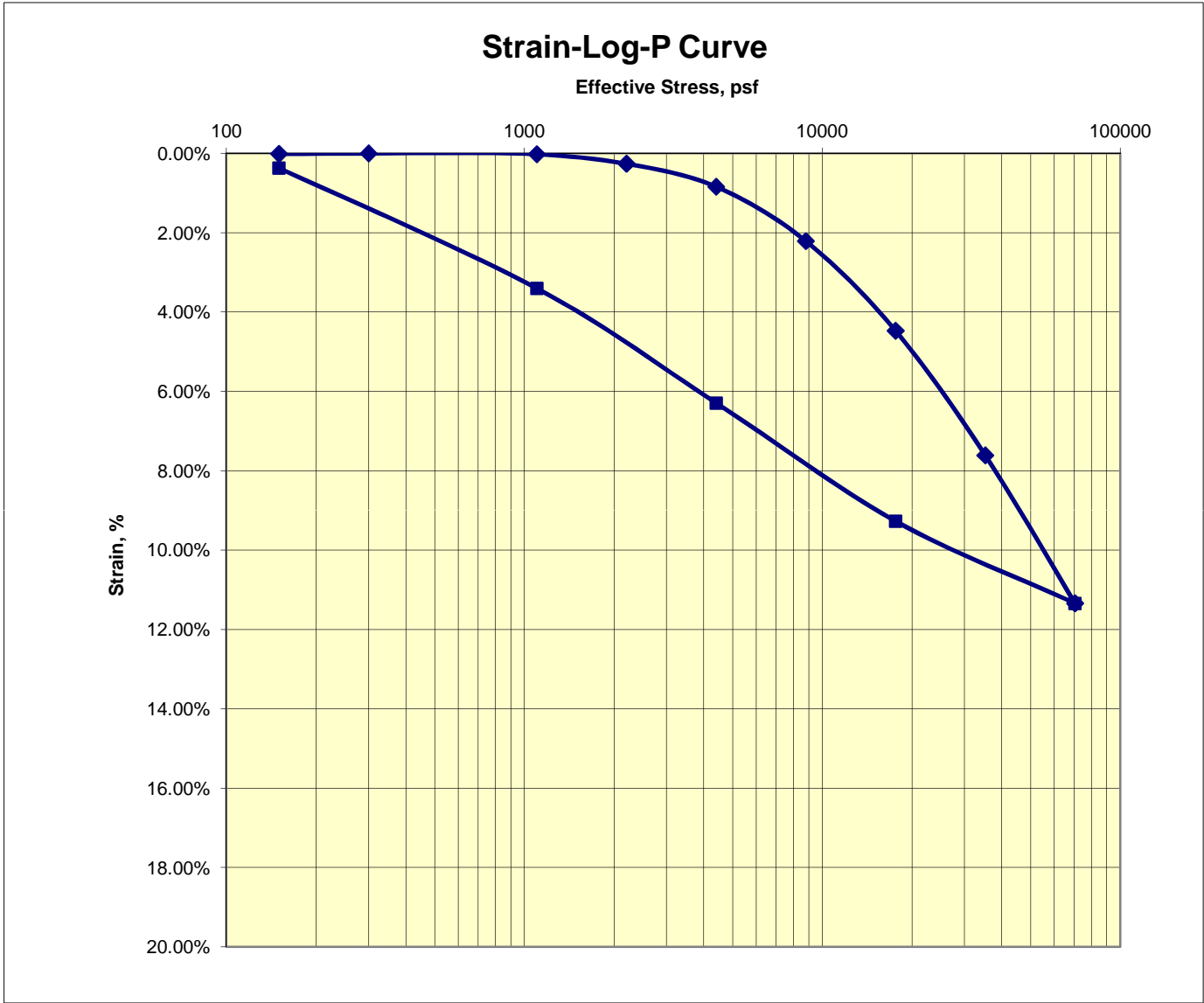
STATIC DSS TEST
 K_0 Consolidation - OCR = 1
 Sample: PB-5a - Depth: 50.50 ft
 Boring LD-B-103



Consolidation Test

ASTM D2435

Job No.: 414-050	Boring: LD-B-101	Run By: MD
Client: Engeo	Sample: PB-4	Reduced: PJ
Project: Leniham - 2106.2011	Depth, ft.: 87.5(Tip-12.5")	Checked: PJ/DC
Soil Type: Gray Sandy CLAY w/ Gravel & Weathered Claystone		Date: 9/7/2011



Ass. Gs = 2.8	Initial	Final
Moisture %:	23.0	24.8
Dry Density, pcf:	103.4	103.3
Void Ratio:	0.690	0.693
% Saturation:	93.4	100

Remarks: This sample exhibited a tendency to swell.

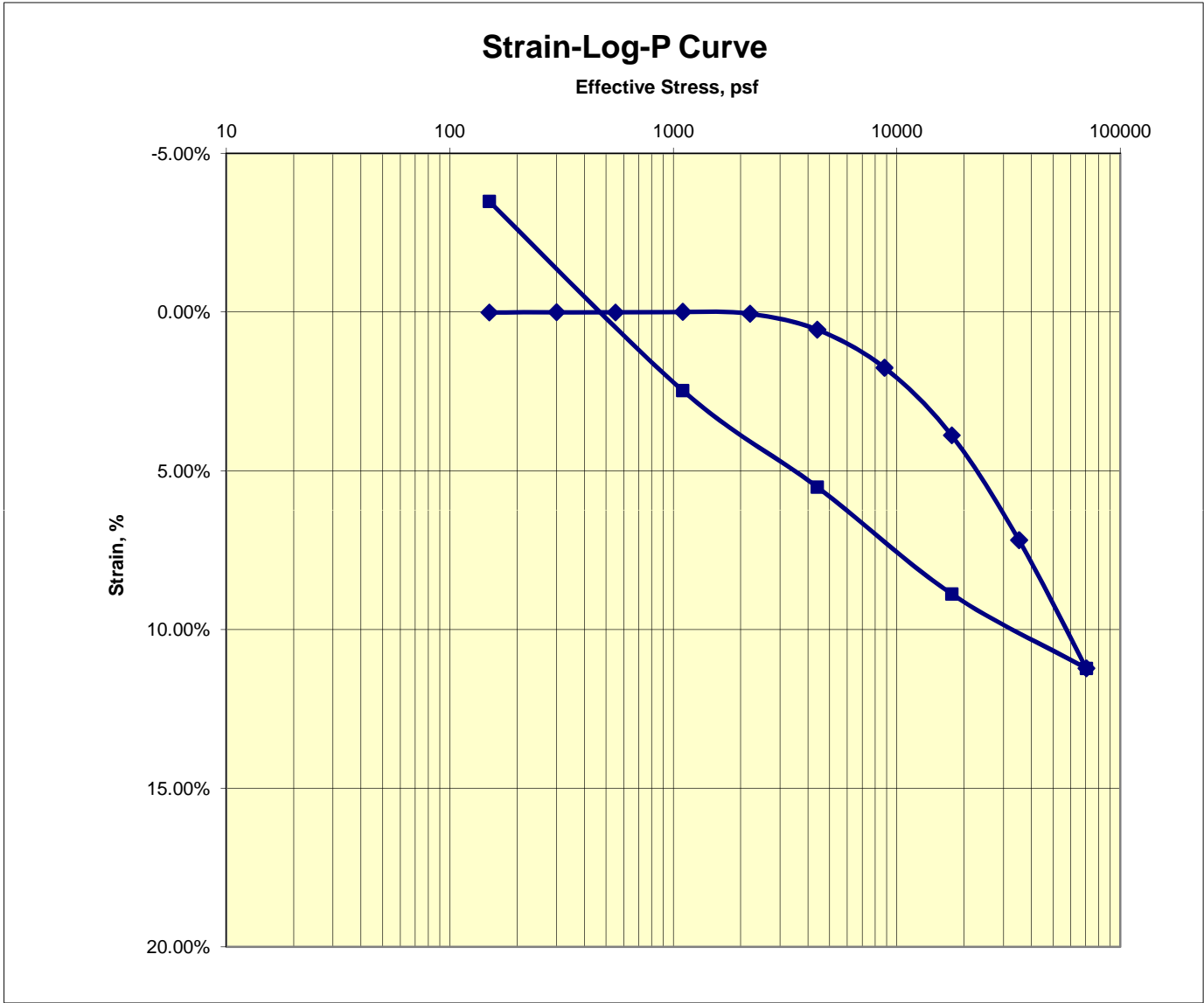
Consolidation Test - Boring LD-B-101 Sample PB-4 (87.5 ft to 89.0 ft)



Consolidation Test

ASTM D2435

Job No.: 414-050	Boring: LD-B-101	Run By: MD
Client: Engeo	Sample: PB8	Reduced: PJ
Project: Lenihan Dam - 2106.2011	Depth, ft.: 130-132.0(Tip-10.75)	Checked: PJ/DC
Soil Type: Grayish Brown CLAY		Date: 9/7/2011



Ass. Gs = 2.77	Initial	Final
Moisture %:	24.2	28.4
Dry Density, pcf:	101.5	96.8
Void Ratio:	0.704	0.786
% Saturation:	95.0	100

Remarks: This sample exhibited a strong tendency to swell.

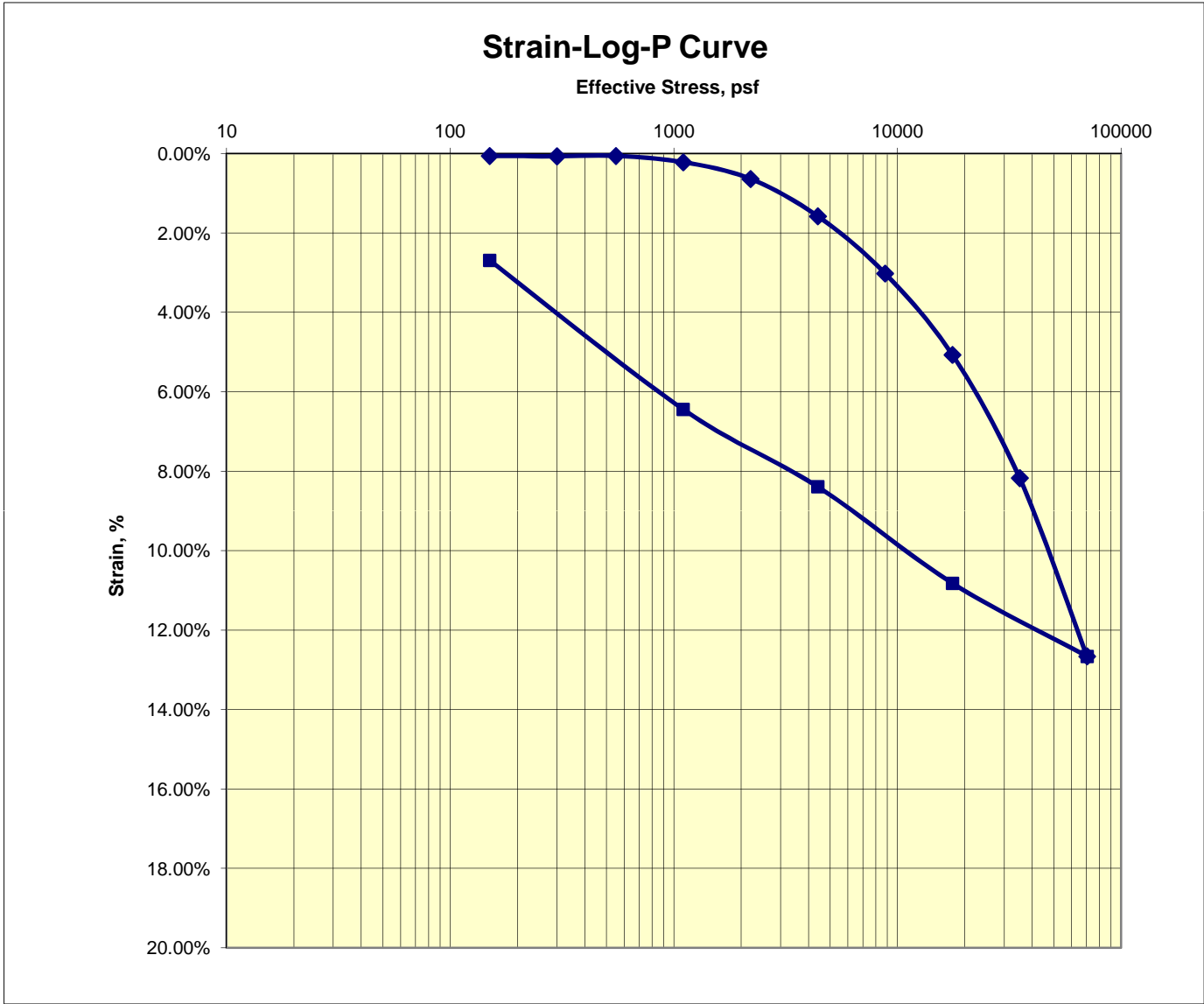
Consolidation Test - Boring LD-B-101 Sample PB-8 (130.0 ft to 132.0 ft)



Consolidation Test

ASTM D2435

Job No.: 414-050	Boring: LD-B-101	Run By: MD
Client: Engeo	Sample: P12	Reduced: PJ
Project: Lenihan Dam - 2106.2011	Depth, ft.: 170-172.5(Tip)	Checked: PJ/DC
Soil Type: Brown Sandy CLAY		Date: 9/7/2011



Ass. Gs = 2.69	Initial	Final	Remarks:
Moisture %:	37.1	38.5	
Dry Density, pcf:	80.9	82.6	
Void Ratio:	1.075	1.034	
% Saturation:	92.7	100	

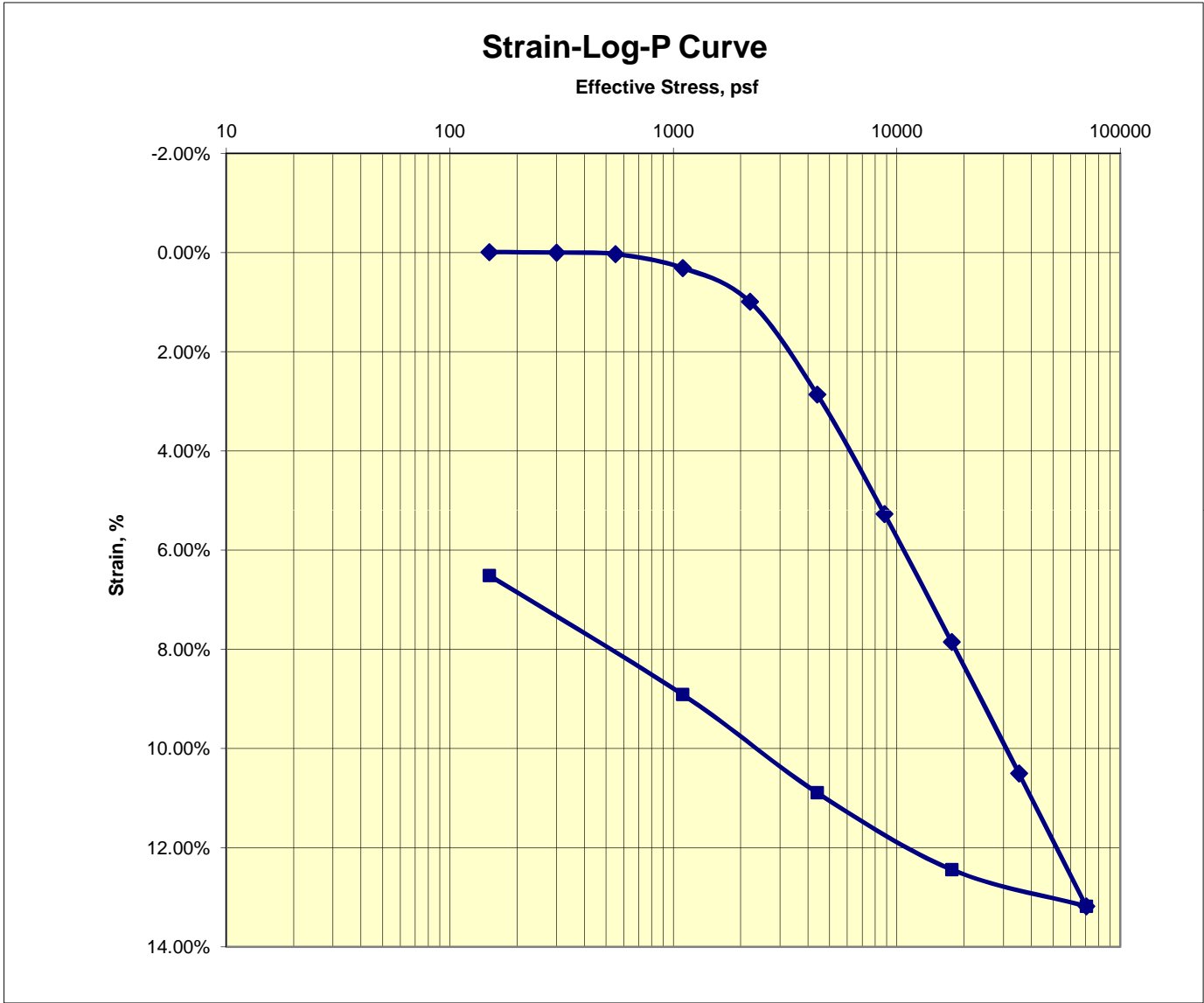
Consolidation Test - Boring LD-B-101 Sample PB-12 (170.0 ft to 172.5 ft)



Consolidation Test

ASTM D2435

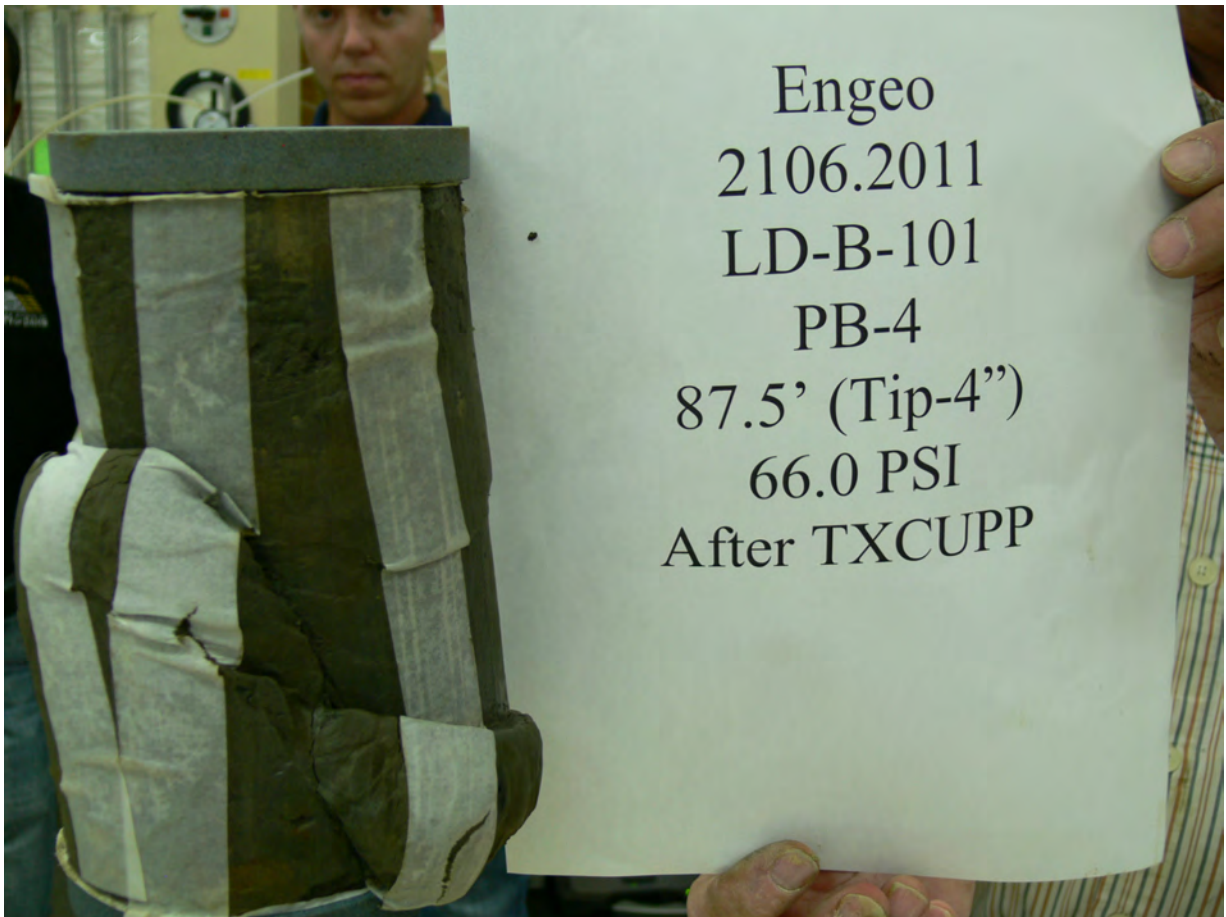
Job No.: 414-050	Boring: LD-B-103	Run By: MD
Client: Engeo	Sample: PB-5	Reduced: PJ
Project: Lenihan Dam - 2106.2011	Depth, ft.: 50.5(Tip)	Checked: PJ/DC
Soil Type: Bluish Gray Clayey SAND w/ Gravel		Date: 9/7/2011

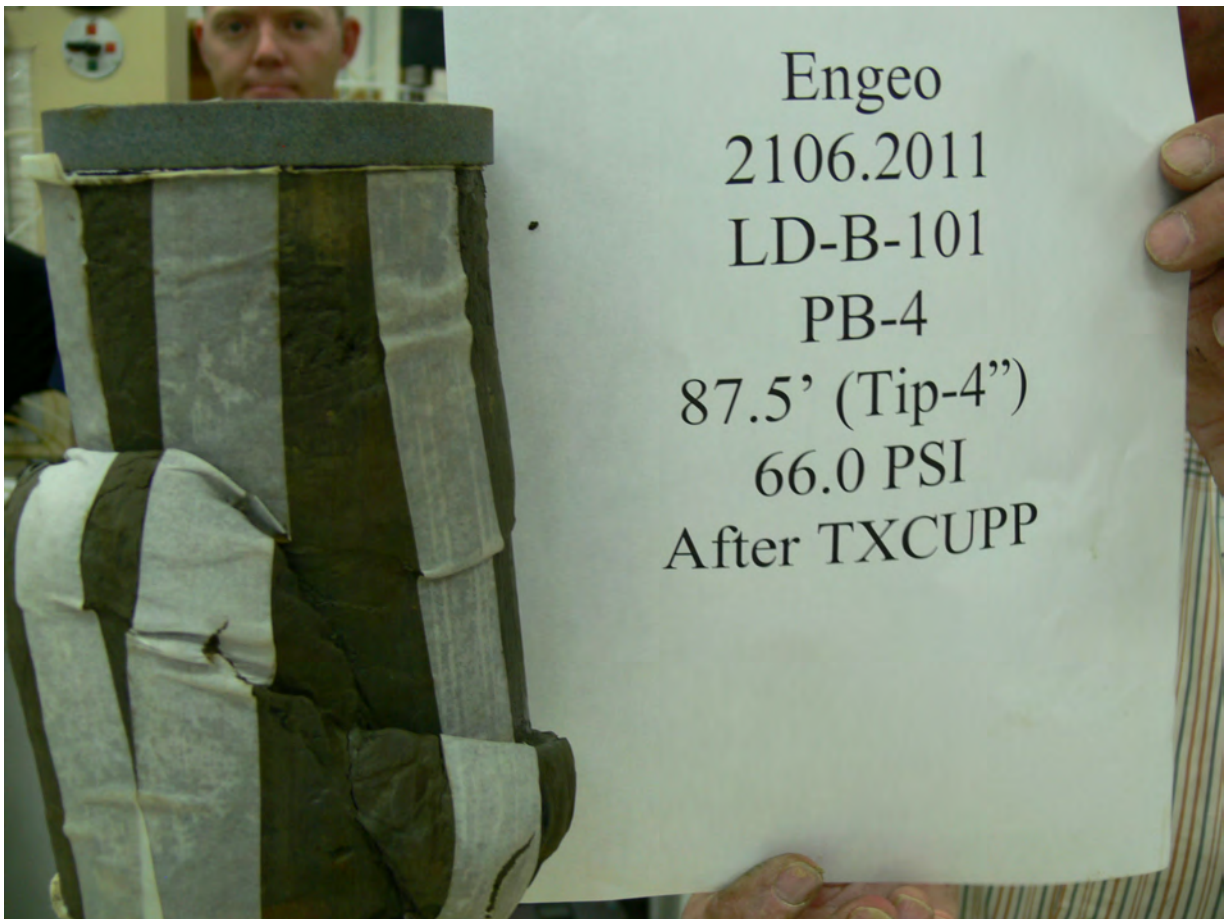


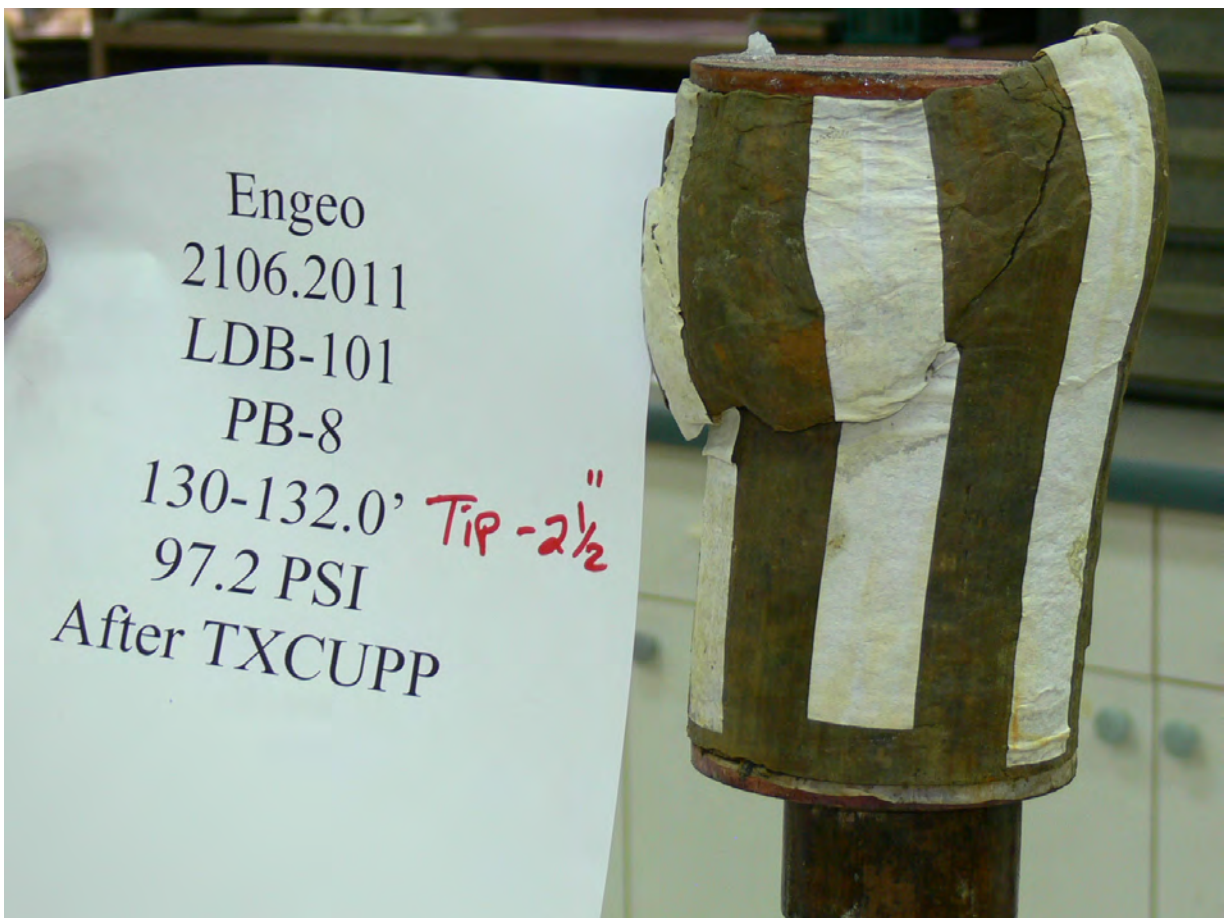
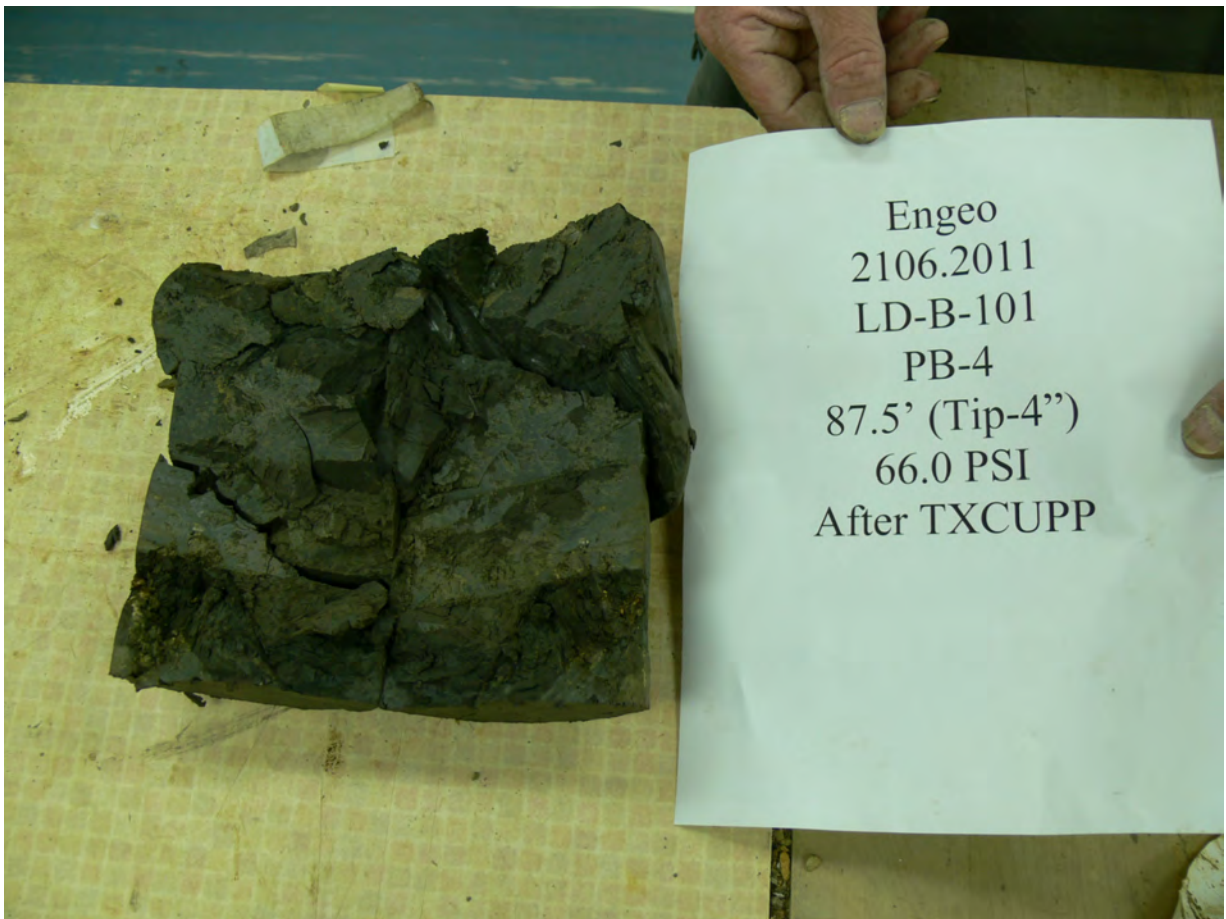
Ass. Gs = 2.75	Initial	Final	Remarks:
Moisture %:	13.4	13.2	
Dry Density, pcf:	118.3	126.0	
Void Ratio:	0.452	0.363	
% Saturation:	81.9	100	

Consolidation Test - Boring LD-B-103 Sample PB-5 (50.5 ft to 53.0 ft)

Enclosure







Engeo
2106.2011
LDB-101
PB-8
130-132.0'
97.2 PSI
After TXCUPP

TIP - 2 1/2"



Engeo
2106.2011
LDB-101
PB-8
130-132.0'
97.2 PSI
After TXCUPP

TIP - 2 1/2"



Engeo
2106.2011
LDB-101
PB-8
130-132.0' 97.2 PSI
After TXCUPP

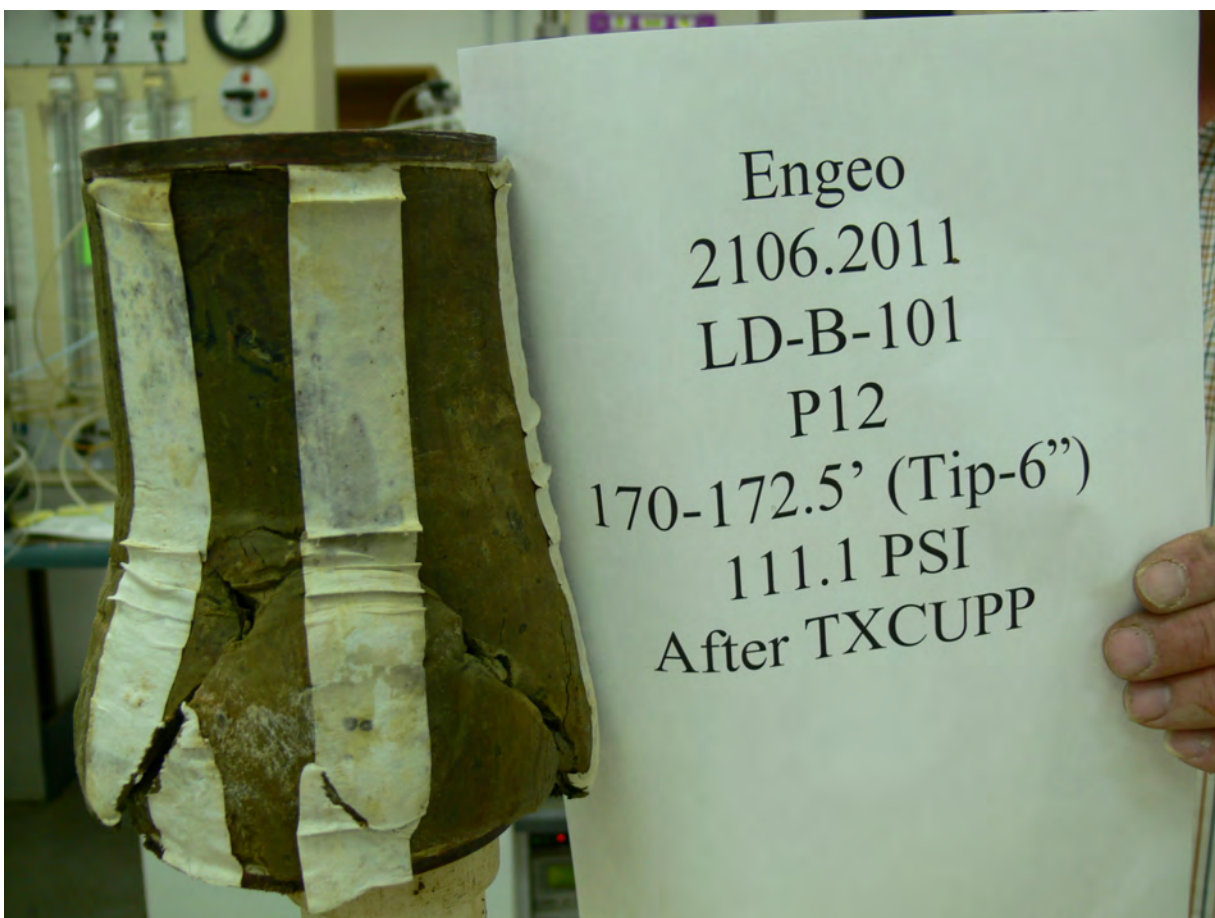
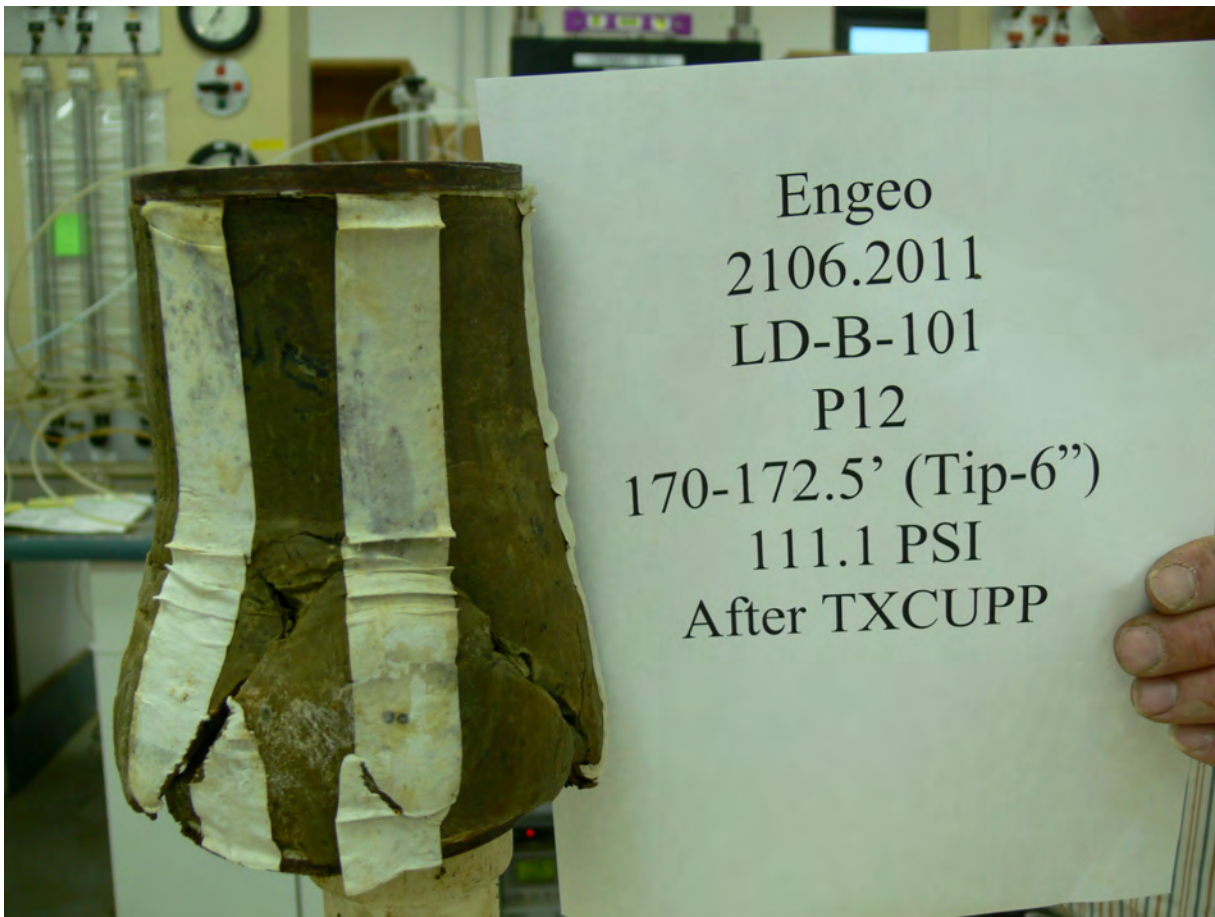
TIP - 2 1/2"

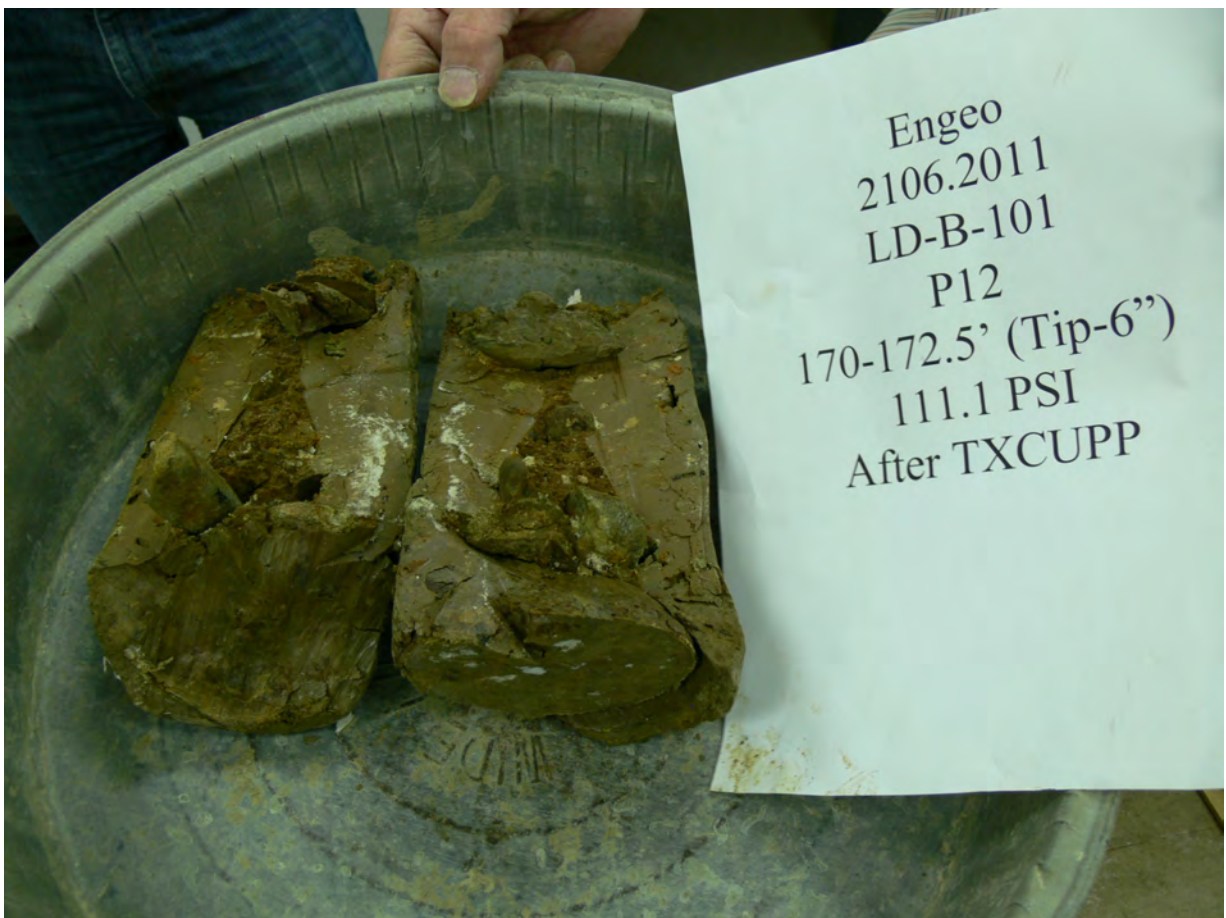
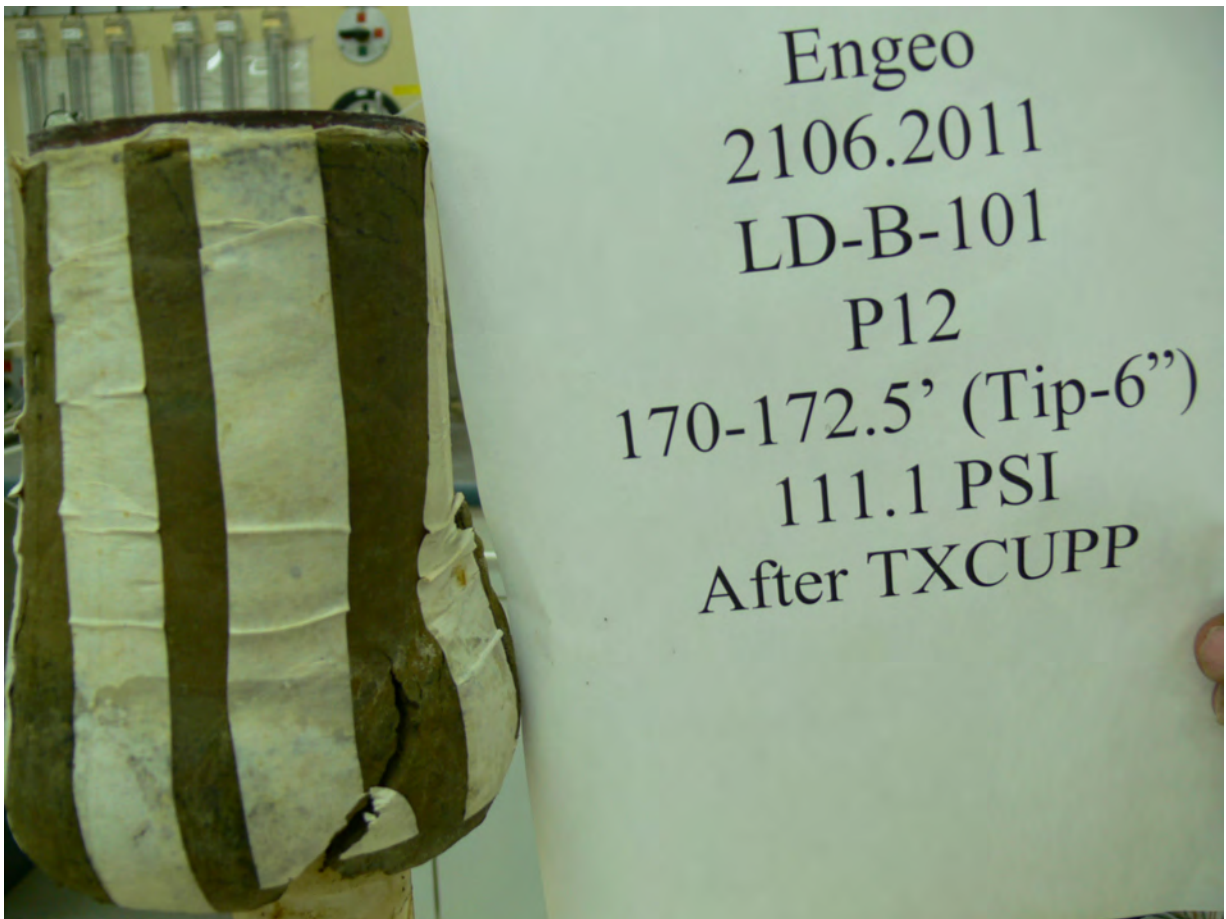


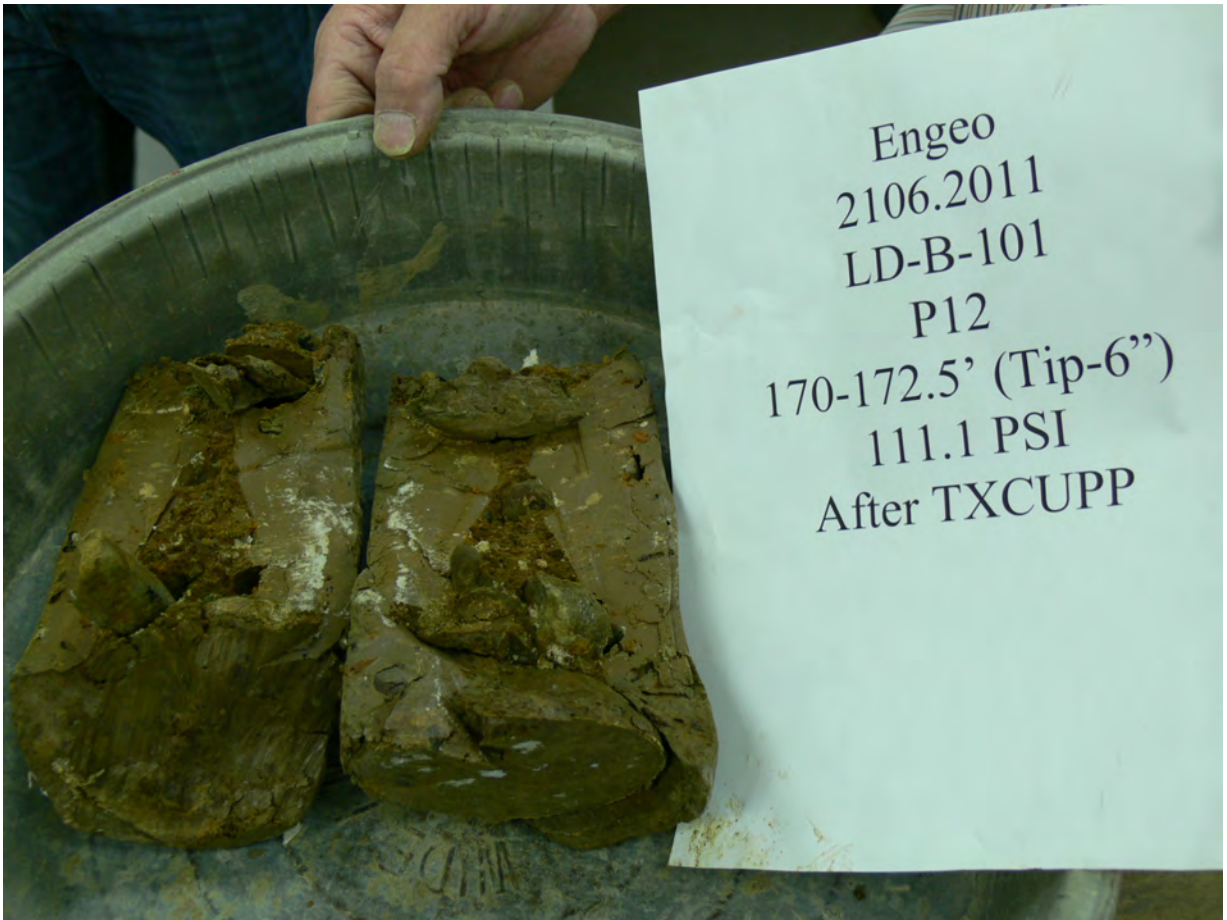
Engeo
2106.2011
LDB-101
PB-8
130-132.0' 97.2 PSI
After TXCUPP

TIP - 2 1/2"

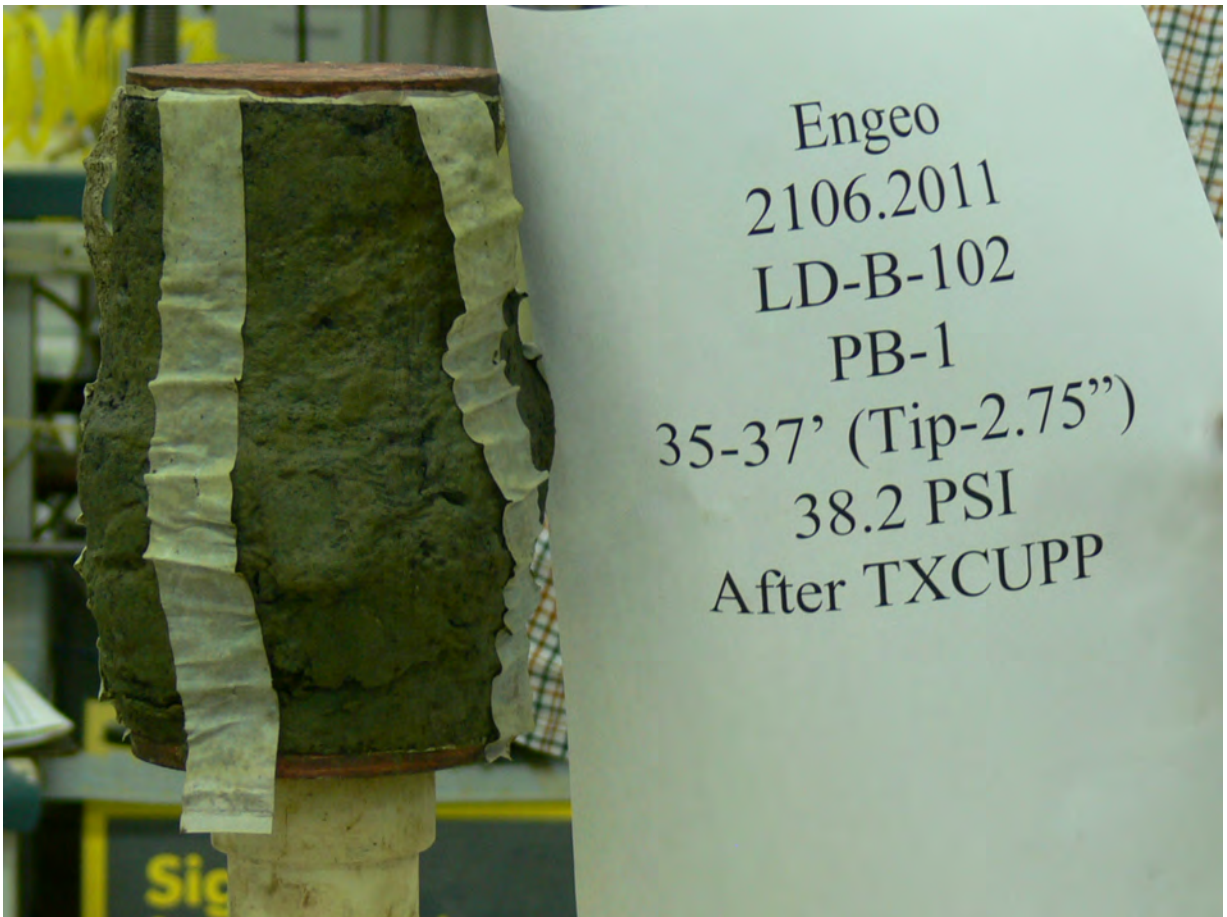




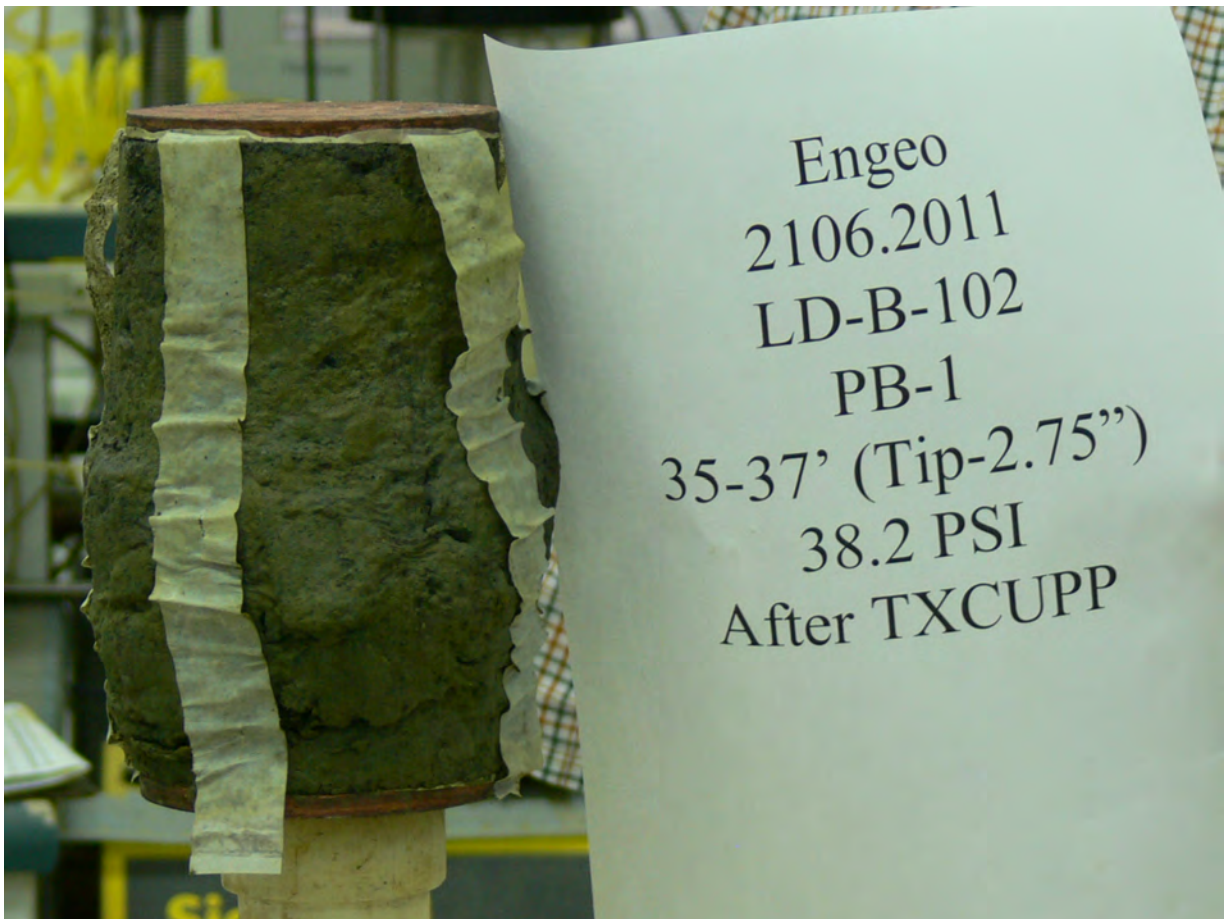




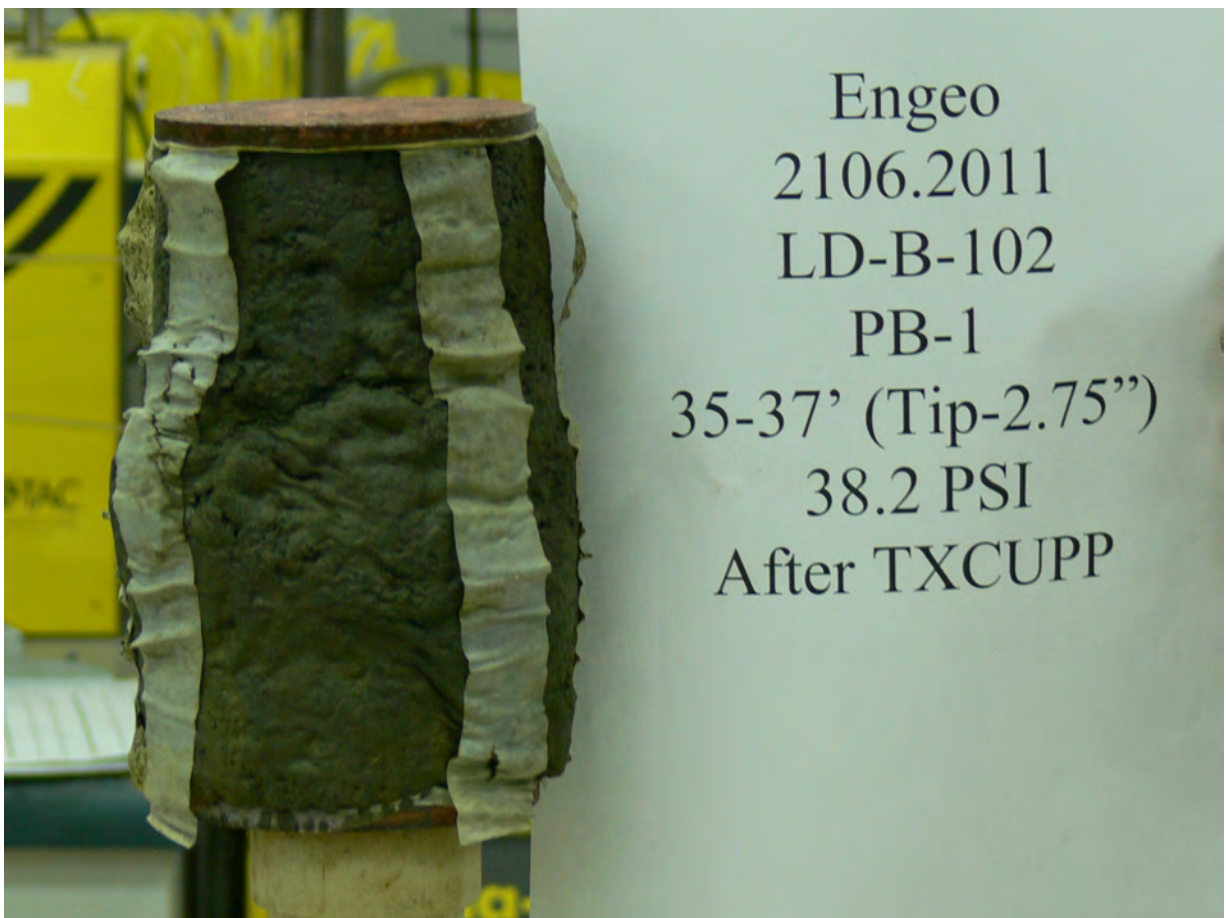
Engeo
2106.2011
LD-B-101
P12
170-172.5' (Tip-6")
111.1 PSI
After TXCUPP



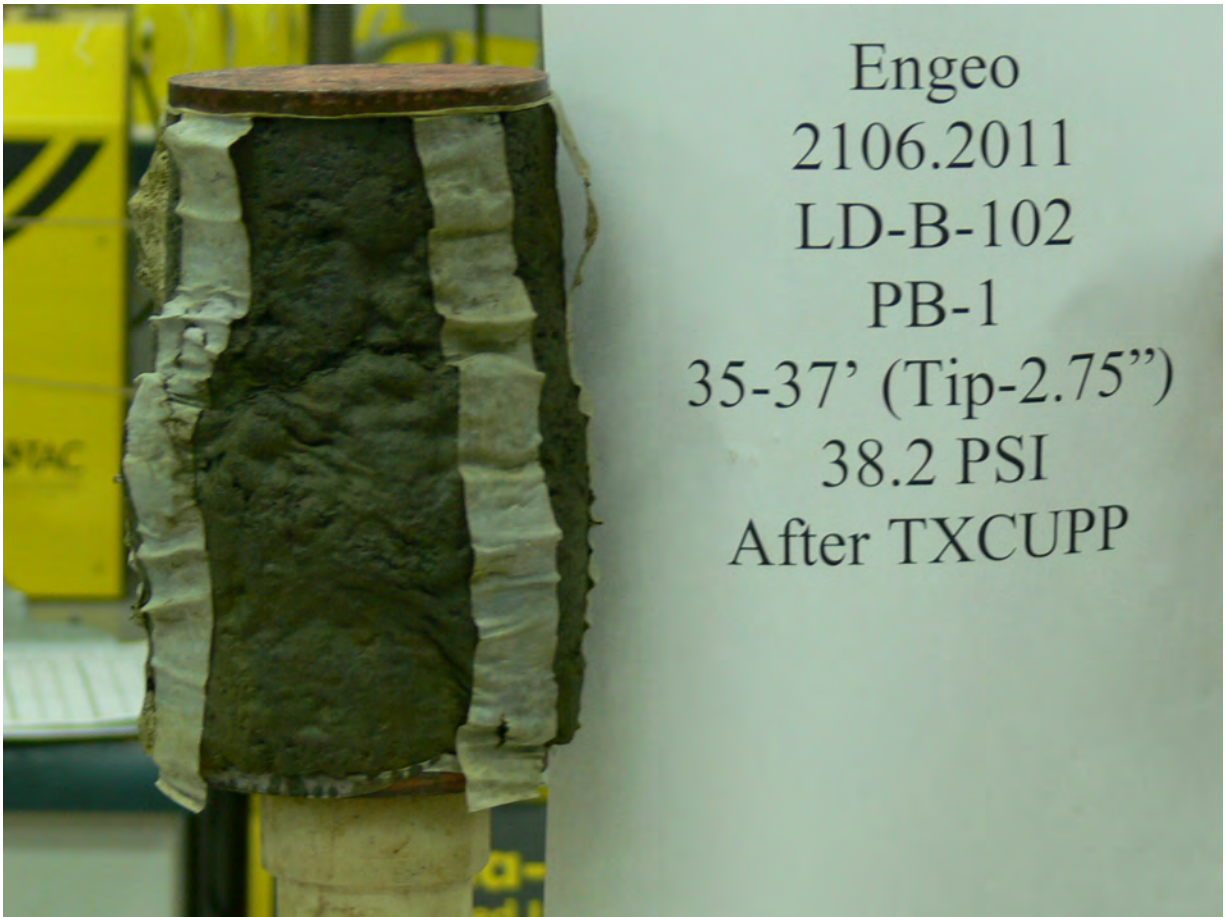
Engeo
2106.2011
LD-B-102
PB-1
35-37' (Tip-2.75")
38.2 PSI
After TXCUPP

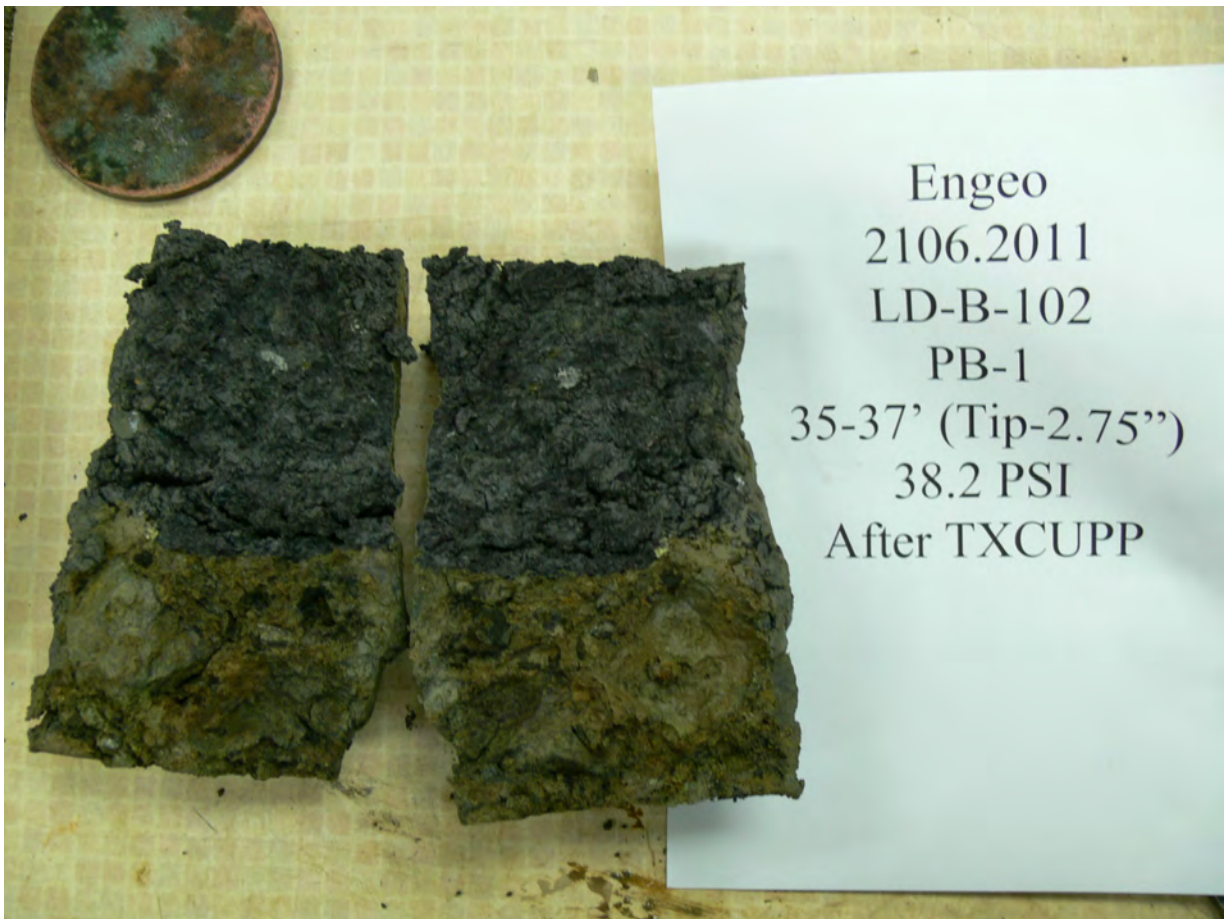


Engeo
2106.2011
LD-B-102
PB-1
35-37' (Tip-2.75")
38.2 PSI
After TXCUPP



Engeo
2106.2011
LD-B-102
PB-1
35-37' (Tip-2.75")
38.2 PSI
After TXCUPP



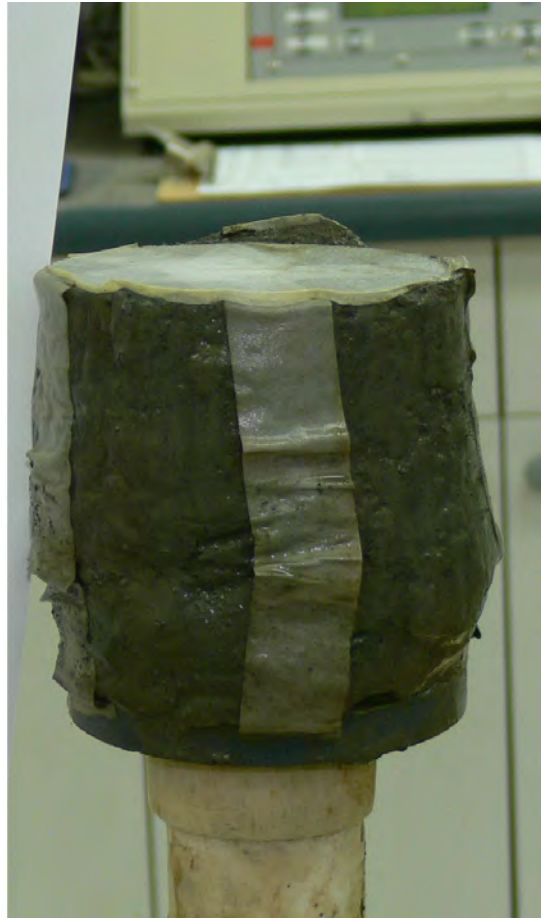


Engeo
2106.2011
LD-B-102
PB-1
35-37' (Tip-2.75")
38.2 PSI
After TXCUPP

Engeo
2106.2011
LD-B-102
PB6
99-101.5'
83.3 PSI
After TXCUPP

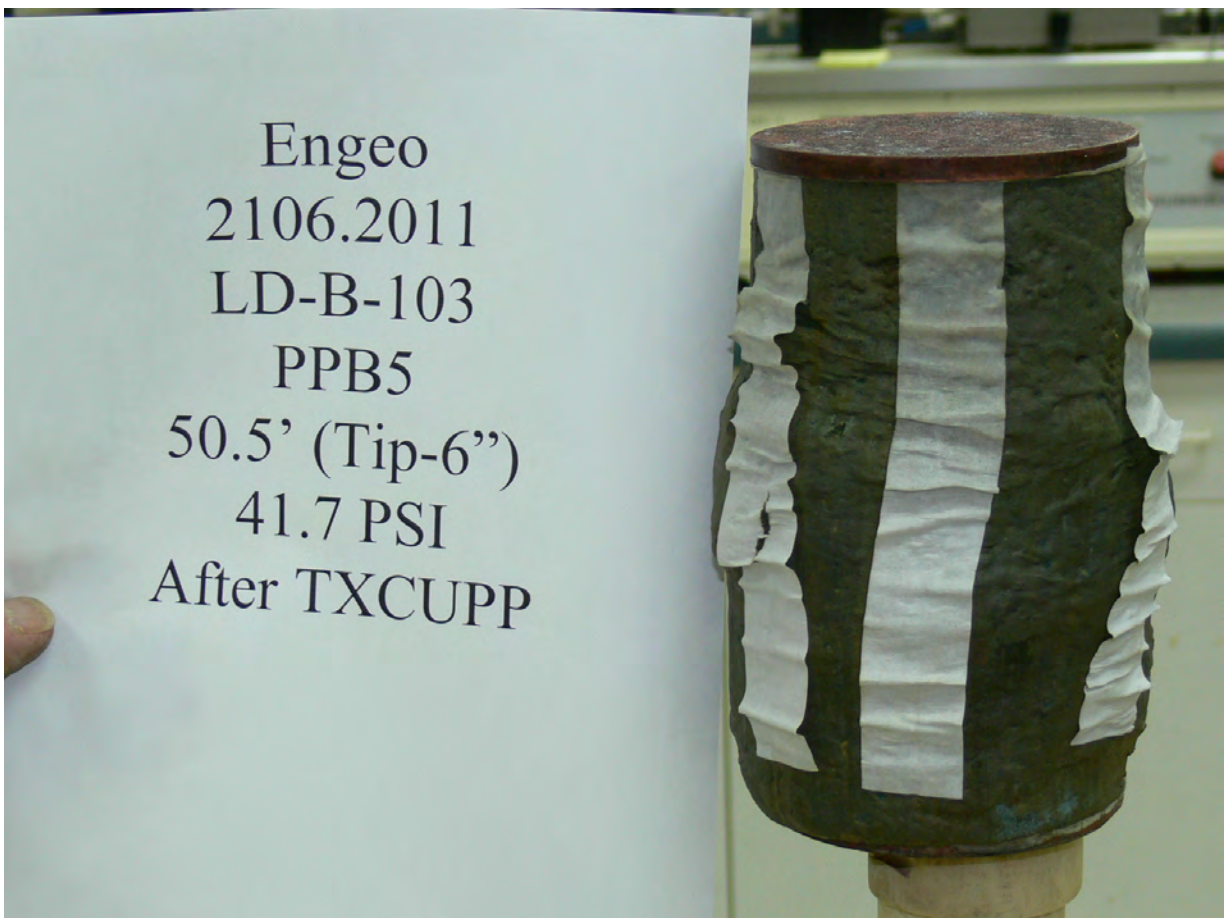
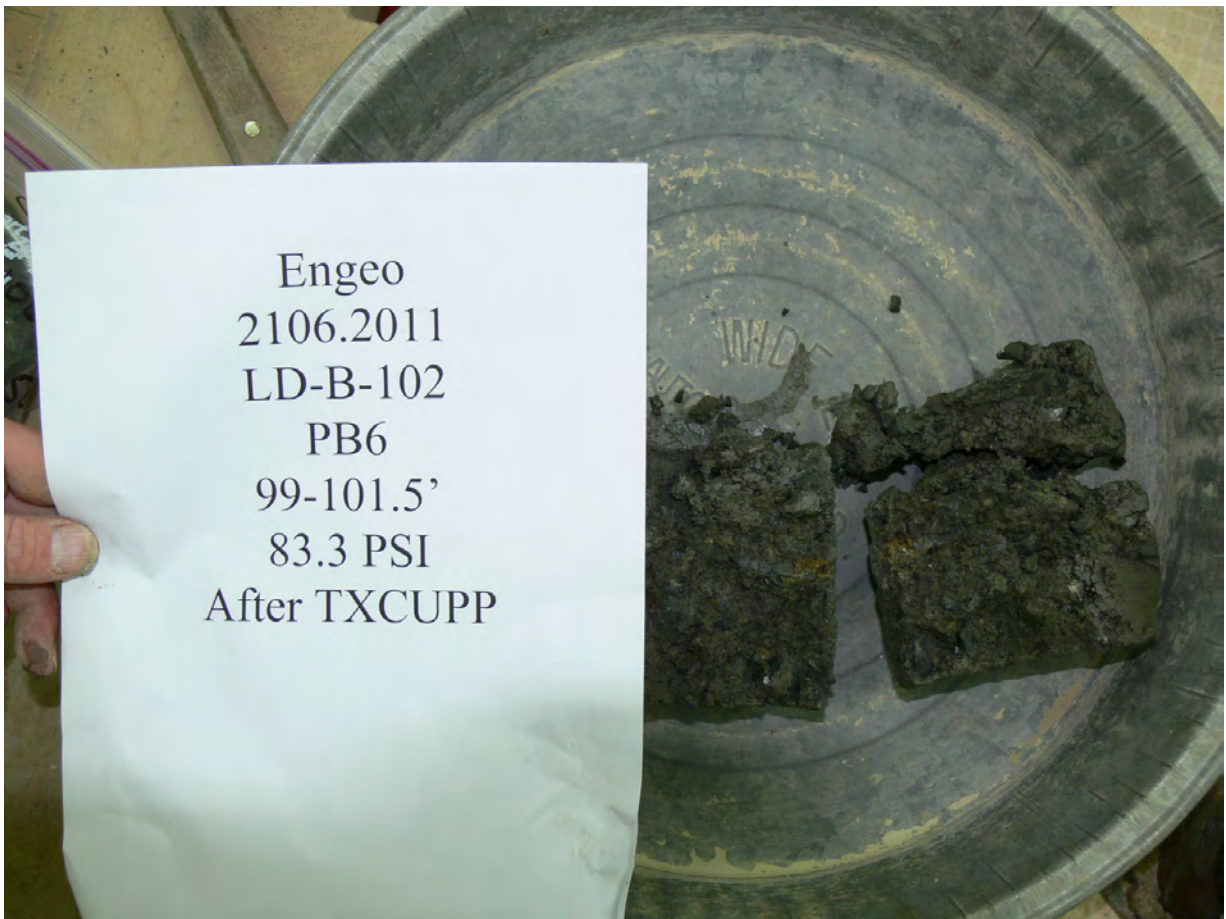


Engeo
2106.2011
LD-B-102
PB6
99-101.5'
83.3 PSI
After TXCUPP



Engeo
2106.2011
LD-B-102
PB6
99-101.5'
83.3 PSI
After TXCUPP





Engeo
2106.2011
LD-B-103
PPB5
50.5' (Tip-6")
41.7 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PPB5
50.5' (Tip-6")
41.7 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PB6
58'
48.6 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PB6
58'
48.6 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PB6
58'
48.6 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PB6
58'
48.6 PSI
After TXCUPP



Engeo
2106.2011
LD-B-103
PB6
58'
48.6 PSI
After TXCUPP

