

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/18/98  
 END DATE 11/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 013+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.64 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 33+28 "SN"  
 OFFSET 55.43 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/18/98	0.76	1540.9

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
	0.00	1A	SPT	2	9		w, PI, Sv	<b>SM</b>	Wet, loose, grey <b>Silty Sand</b> with estimated 10-20% very slightly plastic fines, 80-85% fine to coarse sand, 0-5% fine gravel.	Bulk sample taken from 0 - 1.5 meters.	
	0.46			4							5
▽											
1540.64	1										
	1.52	1B	SPT	2	7		w, PI, Sv	<b>SM</b>	Wet, loose, grey <b>Silty Sand</b> with estimated 10-20% very slightly plastic fines, 80-85% fine to coarse sand, 0-5% fine gravel.	Bulk sample taken from 0 - 1.5 meters.	
	1.98			3							4
1539.64	2										
	3.05	1C	SPT	3	9		w, PI, Sv	<b>SM</b>	Wet, loose, grey <b>Silty Sand</b> with estimated 10-20% very slightly plastic fines, 80-85% fine to coarse sand, 0-5% fine gravel.	Bulk sample taken from 0 - 1.5 meters.	
	3.51			4							5
1538.64	3										
1537.64	4										
1536.64	5										
1535.64	6										
1534.64	7										
1533.64	8										
1532.64	9										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/19/98  
 END DATE 11/19/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 014+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.33 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 34+66 "SN"  
 OFFSET 141.48 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/20/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/19/98	0.00	1541.3

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1540.33	0.00	1A	SPT	2	2		w, PI, Sv	<b>SM</b>	Wet, loose, dark grey <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.	Bulk sample taken from 0 - 1.5 meters.
	0.46			1						
1539.33	1.52	1B	SPT	2	6		w, PI, Sv	<b>SM</b>		
	1.98			3 3						
1538.33	3.05	1C	SPT	1	5		w, PI, Sv	<b>SC</b>	3.20 3.51	Wet, soft, light brown <b>Clayey Sand</b> with estimated 40% medium plastic fines, 60% fine to medium sand.
	3.51			2 3						
1537.33										
1536.33										
1535.33										
1534.33										
1533.33										
1532.33										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/18/98  
 END DATE 11/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 014+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1544.39 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 34+63 "SN"  
 OFFSET 11.44 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/18/98	0.00	1544.4

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1543.39	0.00	1A	SPT	1	5		w, PI, Sv	SM	Wet, loose, grey <b>Silty Sand</b> with 10% very slightly plastic fines, 90% fine to coarse sand. Minor fine gravel.	Bulk sample taken from 0 - 1.5 meters.
	0.46			2						
1542.39	1.52	1B	SPT	1	5		w, PI, Sv	SM	Wet, loose, blue grey <b>Silty Sand</b> with 25% low plastic fines, 75% fine to coarse sand.	1.83
	1.98			2						
1541.39	3.05	1C	SPT	2	5		w, PI, Sv	SM	Wet, medium dense, light brown <b>Silty Sand</b> with 20% non-plastic fines, 80% fine to coarse sand.	3.96
	3.51			3						
1540.39	4.57	1D	SPT	4	20		w, PI, Sv	SM	Wet, medium dense, light brown <b>Silty Sand</b> with 20% non-plastic fines, 80% fine to coarse sand.	5.03
	5.03			10						
1538.39										
1537.39										
1536.39										
1535.39										

# EXPLORATION LOG



START DATE 8/26/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 015+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.13 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 15+28 "SS"  
 OFFSET 283.60 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/26/98	3.66	1552.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1555.13	0.00	2A	SPT	2	7		w, PI, Sv	SM	Slightly moist to moist, loose to medium dense, brown grey <b>Silty Sand</b> with estimated 10-20% non-plastic fines, 80-85% fine to coarse sand, 5% fine gravel.	Bulk sample taken at 0.0-1.52 meters.
	0.46			3						
1554.13	1.52	2B	SPT	4	12		w, PI, Sv	SM	Granitic boulder.	
	1.98			6						
1553.13	2.90	2C	SPT	4	28			SM	Moist, dense, light brown <b>Silty Sand</b> with large gravel, cobbles and boulders.	
	3.05			7						
1552.13	3.51							SM	Moist to wet, medium dense, grey brown <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to medium sand.	
	4.57									
1551.13	5.03	2D	SPT	3 7 7	14					
1550.13										
1549.13										
1548.13										
1547.13										

# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 015+81 (DB-01)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1547.53 (m)  
 HAMMER DROP SYSTEM NA

STATION 35+81 "SN"  
 OFFSET 28.48 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1546.53	0.46							OL 0.15	Moist, loose, dark brown <b>Sandy Organic Clay</b> with estimated 50% low to non-plastic fines and 50% fine to coarse sand. Contains high density of meadow grasses. Wet, loose, dark brown <b>Silty Sand</b> with estimated 5% non-plastic fines, 85% fine to coarse sand, and 10% fine subrounded gravel. High mica content probably from weathered granitics. Wet, loose, dark brown, <b>Silty Sand</b> with 15% non-plastic fines, 81% fine to coarse sand, and 4% subrounded to subangular gravel. High mica content probably from weathered granitics. Wet, loose, blue-green to brown <b>Silty Sand</b> with 25% low plasticity fines, 73% fine to coarse sand, and 2% fine gravel. high mica content probably from weathered granitics. Easily excavated without difficulty, except for caving problems due to high water table. Area soils deposited by fluvial processes.	
	0.61	1A	GRAB					SM 0.46		
	0.91	1B	GRAB				PI, Sv			
	1.52							SM 1.37		
	1.83	1C	GRAB				PI, Sv	SM 1.83		
	1545.53	2								
1544.53	3									
1543.53	4									
1542.53	5									
1541.53	6									
1540.53	7									
1539.53	8									
1538.53	9									

# EXPLORATION LOG



START DATE 8/24/98  
 END DATE 8/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1550.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 15+83 "SS"  
 OFFSET 23.58 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / Rotary Mud  
 BACKFILLED Yes DATE 8/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/24/98	1.52	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1549.05	0.00	2A	SPT	5	10			SM	Slightly moist, medium dense, dark grey <b>Silty Sand</b> with 20% non-plastic fines, 80% fine to coarse sand. Grass matt to 0.15 meters.	
	0.46			5						
1548.05	1.52	2B	SPT	3	10		w, PI, Sv	SM	2.13	
	1.98			5						
1547.05	3.05	2C	SPT	5	23			SM	Wet, medium dense, light grey <b>Silty Sand</b> with 20% non-plastic fines, 80% fine to coarse sand.	
	3.51			10						
1546.05	4.57	2D	SPT	7	27		w, PI, Sv	SM	3" OD sampler used.	
	5.03			13						
1544.05	6.10	2E	SPT	17	50/127			SM	7.92	Gravel to 1.3 cm.
	6.40			50/127						
1542.05	7.62	2F	SPT	17	54			SM	7.92	Wet, medium dense, light grey <b>Poorly Graded Sand</b> with estimated 5% non-plastic fines, 95% fine to coarse sand.
	8.08			26						
1541.05	9.14	2G	SPT	4	27		w, PI, Sv	SP	9.91	Switch from auger to rotary mud.
	9.60			9						
				18						

# EXPLORATION LOG



START DATE 8/24/98  
 END DATE 8/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1550.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 15+83 "SS"  
 OFFSET 23.58 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / Rotary Mud  
 BACKFILLED Yes DATE 8/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/24/98	1.52	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS		
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd						
1539.05	10.67							SM	Wet, dense, light brown <b>Silty Sand</b> with 20% non-plastic fines, 80% fine to medium sand.			
	11.13	2H	SPT	4 11 21	32							
1538.05	12.19											
	12.65	2I	SPT	15 16 21	37							
1537.05	13.72											
	14.17	2J	SPT	17 26 31	57	w, PI, Sv						
1536.05	14.48											
	15.09										CL	Wet, soft, grey <b>Sandy Clay</b> with estimated 60% low to medium plastic fines, 40% very fine sand.
1535.05	15.39	2K	SPT	50/102	50/102							
	16.15											Very dense, grey, decomposed <b>Granitic boulder</b> .
1534.05	16.76											
	17.22	2L	SPT	26 31 36	67	w, PI, Sv, Sh						
1533.05	18.29											
	18.75	2M	SPT	19 25 40	65						SM	Wet, very dense, light brown <b>Silty Sand</b> with 25% very slightly plastic fines, 75% fine to medium sand. Minor coarser sand.
1532.05	18.75											
	19.00											
1531.05	19.00											

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 8/24/98  
 END DATE 8/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.99 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 16+11 "SN"  
 OFFSET 12.61 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/24/98	1.52	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	1A	SPT	5	11		w, Pl, Sv	SM	Dry, loose, light brown <b>Silty Sand</b> with grass mat to .15 meters.	Bulk sample taken from 0-1.5 meters.
	0.46			6						
1548.99	1								0.61	
	1.52							SM	Wet, loose, dark brown <b>Silty Gravelly Sand</b> with 15% non-plastic fines, 75% fine to coarse sand, 10% fine gravel.	
1547.99	2	1B	SPT	2 1 2	3		w, Pl, Sv		2.44	
1546.99	3									Wet, loose, brown grey <b>Silty Sand</b> with estimated 20-30% slightly plastic fines, 70-80% fine to coarse sand. Minor fine gravel.
	3.05									
	3.51	1C	SPT	3 3 5	8					
1545.99	4							SM		
	4.57									
1544.99	5	1D	SPT	3 5 8	13		w, Pl, Sv		5.49	
1543.99	6							SM	Wet, medium dense, brown grey <b>Silty Sand</b> with estimated 15% non-plastic fines, 85% fine to medium sand.	
	6.10									
	6.55	1E	SPT	6 14 15	29		w, Pl, Sv, Sh		6.71	
1542.99	7									
	7.62									
1541.99	8	1F	SPT	2 15 44?	44?					Suspect blow counts due to possible sand heave over-packing sampler from 7.6 - 12.6 meters.
	8.08									
1540.99	9									
	9.14									
	9.60	1G	SPT	28 50 50/102	50/102			SP		



**EXPLORATION LOG**



START DATE 8/24/98  
 END DATE 8/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.99 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 16+11 "SN"  
 OFFSET 12.61 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/24/98	1.52	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1538.99	10.67							SM	Lenses of coarser and finer sand with iron oxidation.	
	10.97	1H	SPT	24 50/127	50/127					
1537.99	12.19							SM	Wet, very dense, light reddish brown <b>Silty Sand</b> with estimated 15% non-plastic fines, 85% fine to medium sand.	
	12.65	1I	SPT	19 38 50/102	50/102					
1536.99	13.72							SM	Color change to rust brown with larger sand size.	
	14.17	1J	SPT	15 29 37	66		w, PI, Sv			
1534.99	15.24							SM	Wet, very dense, light brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand. Minor gravel. Decomposed granitic boulders. Granitic boulder 0.8 meter diameter.	
	15.39	1K	SPT	50	50					
1533.99	16.76							SM	Granitic boulder 0.8 meter diameter.	
	17.22	1L	SPT	4 40 50/102	50/102		w, PI, Sv			
1532.99	17.22									Sand heave 6 meters after sampling - abandoned hole.
1531.99	18									
1530.99	19									

# EXPLORATION LOG



START DATE 11/19/98  
 END DATE 11/19/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1543.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 36+11 "SN"  
 OFFSET 211.07 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/19/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/19/98	0.30	1543.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1542.83	0.00	3A	SPT	3	5		w, PI, Sv	SM	Wet, loose, dark grey to grey <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to medium plastic fines. Very loose with slightly plastic fines at 1.5 meters.	Bulk sample taken from 0 - 1.5 meters.
	0.46			2						
1541.83	1.52	3B	SPT	1	3		w, PI, Sv	SM	Wet, medium dense, grey <b>Silty Sand</b> with estimated 15% non-plastic fines, 85% fine to coarse sand.	
	1.98			1						
1540.83	3.05	3C	SPT	3	10		w, PI, Sv	SM		
	3.51			5						
1539.83	4									
1538.83	5									
1537.83	6									
1536.83	7									
1535.83	8									
1534.83	9									

**EXPLORATION LOG**



START DATE 8/25/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.56 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 36+35 "SN"  
 OFFSET 28.94 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Rotary Mud  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/25/98	1.07	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1548.56	0.00	3A	SPT	4	22		w, PI, Sv	SM	Slightly moist, medium dense, dark grey brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand. 0.61 Grass matt to 0.15 meters.	
	0.46			10						
	0.61			12						
1547.56	1.07	3B	SPT	3	6		w, PI, Sv, Sh	SM	Wet, loose, dark grey brown <b>Silty Sand</b> with estimated 15% non-plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	1.22			3						
	1.68			3						
1546.56	2.29	3D	SPT	2	4		w, PI, Sv	SM	Color change to brown.	
	2.44			2						
	2.90			2						
1545.56	3.05	3E	SPT	2	5		w, PI, Sv	SM	Wet, medium dense, light brown <b>Silty Sand</b> with estimated 15-25% non-plastic fines, 75-85% fine to medium sand. Minor coarser sand and gravel.	3" OD sampler used.
	3.51			2						
	3.66			3						
1544.56	4.11	3F	SPT	6	23		w, PI, Sv	SM	Wet, medium dense to dense, grey brown <b>Silty Sand</b> with estimated 15% slightly plastic fines, 85% fine to coarse sand. Minor gravel to 1.3 cm.	
	4.27			9						
	4.72			14						
1543.56	4.72	3G	SPT	8	24		w, PI, Sv	SM	Wet, medium dense, brown <b>Clayey Sand</b> with estimated 30% low plastic fines, 70% fine sand.	
	4.88			12						
	5.33			12						
1542.56	5.33	3H	SPT	6	17		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	5.49			7						
	5.94			10						
1541.56	6.10	3I	SPT	6	19		w, PI, Sv	SC	Wet, medium dense to dense, grey brown <b>Silty Sand</b> with estimated 15% slightly plastic fines, 85% fine to coarse sand. Minor gravel to 1.3 cm.	
	6.55			9						
	6.71			10						
1540.56	6.71	3J	SPT	6	21		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	7.16			10						
	7.92			11						
1540.56	7.92	3K	SPT	9	30		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	8.38			15						
	8.38			15						
1540.56	8.38	3L	SPT	6	32		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	9.14			11						
	9.60			21						
1540.56	9.14	3M	SPT	9	47		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	9.60			20						
	9.60			27						
1540.56	9.60	3N	SPT	21	63		w, PI, Sv	SM	Wet, very dense, light grey brown <b>Silty Sand</b> with estimated 15% very slightly plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	9.60			26						
	9.60			37						

## EXPLORATION LOG

SHEET 2 OF 3



START DATE 8/25/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.56 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 36+35 "SN"  
 OFFSET 28.94 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Rotary Mud  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/25/98	1.07	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1538.56	10.67							SM		
	11.13	3O	SPT	9 25 26	51		w, PI, Sv			
1537.56	12.19									
	12.65	3P	SPT	24 28 30	58		w, PI, Sv			
1536.56	13.11							CL	Sandy Clay lense.	
	13.72									
1535.56	14.02	3Q	SPT	49 50/127	50/127		w, PI, Sv	SP	Wet, very dense, light grey <b>Poorly Graded Sand</b> with estimated 5% non-plastic fines, 85% fine to coarse sand, 10% fine to medium gravel. Decomposed granitic cobbles and boulders.	
	15.39	3R	SPT	50/102	50/102		w, PI, Sv			
1534.56	16.15								Large degraded boulder.	
	16.76									
1532.56	17.07	3S	SPT	30 50/102	50/102		w, PI, Sv	SP	Wet, very dense, light grey <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to coarse sand. Minor gravel.  Degraded cobbles and boulders with few competent gravels to 2 cm.	
	18.44	3T	SPT	50/102	50/102		w, PI, Sv			
1531.56	18.44							SM	Soft zone encountered - possible clay lense 0.2 m thick.	
	19.81									
1530.56	19.81			31						

# EXPLORATION LOG



START DATE 8/25/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.56 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 36+35 "SN"  
 OFFSET 28.94 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Rotary Mud  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/25/98	1.07	1548.5

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	20.27	3U	SPT	38 42	80		w, Pl, Sv			
1528.56	21									
	21.34									
	21.49	3V	SPT	50/127	50/127		w, Pl, Sv		21.49	
1527.56	22									
1526.56	23									
1525.56	24									
1524.56	25									
1523.56	26									
1522.56	27									
1521.56	28									
1520.56	29									



## EXPLORATION LOG

SHEET 1 OF 1

START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 016+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.54 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 16+43 "SS"  
 OFFSET 204.71 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1555.54	0.00	3A	SPT	1	6			SM	Moist, loose, light grey <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to coarse sand.	Bulk sample taken at 0 - 1.52 meters.
	0.46			5						
1554.54	1.52	3B	SPT	7	50/102	50/102	w, PI, Sv	SM	Moist to wet, medium dense, light grey brown <b>Silty Sand</b> with estimated 15% non-plastic fines, 85% fine to very coarse sand. Abundant cobbles and boulders.	
	1.98			50/102						
1553.54	3.05	3C	SPT	6	16			SM	Moist, medium dense, light brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand. Minor gravel sized DG material.	
	3.51			10						
1552.54	4.57	3D	SPT	10	26			SM		
	5.03			14						
1551.54	5.03									
1550.54	6									
1549.54	7									
1548.54	8									
1547.54	9									

# EXPLORATION LOG



START DATE 8/26/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 017+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.53 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 37+28 "SN"  
 OFFSET 11.24 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/26/98	3.81	1548.7

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1551.53	0.00	3A	SPT	5	12			SM	Slightly moist to wet, medium dense to loose, dark grey <b>Silty Sand</b> with estimated 10-20% non-plastic fines, 80-85% fine to coarse sand, 5-10% fine gravel.	Bulk sample taken from 0-1.5 meters.
	0.46			7						
	1.52									
1550.53	1.98	3B	SPT	3 4 4	8		w, Pl, Sv	SM	1.98	
	3.05									
1549.53	3.51	3C	SPT	3 5 6	11		w, Pl, Sv	SM		
	4.57									
1548.53	5.03	3D	SPT	4 5 7	12			SM	5.03	
	5.03									
1546.53										
1545.53										
1544.53										
1543.53										

# EXPLORATION LOG



START DATE 8/26/98  
 END DATE 8/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 017+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1549.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 17+42 "SS"  
 OFFSET 131.93 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/26/98	1.62	1548.2

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
1548.83	0.00	2A	SPT	4	10			<b>SM</b>	Slightly moist to wet, loose to medium dense, dark grey to grey <b>Silty Sand</b> with estimated 10-20% non-plastic fines, 80-90% fine to coarse sand, 0-5% gravel.	Bulk sample taken from 0 - 1.5 meters.	
	0.46			6							
1547.83	1.52	2B	SPT	3	7		w, PI, Sv	<b>SM</b>			
	1.98			3							
				4							
1546.83	3.05	2C	SPT	3	10			<b>SM</b>			
	3.51			4							
1545.83	4.57	2D	SPT	4	22			<b>SM</b>			
	5.03			11							
1544.83	5.03							<b>SM</b>	5.03		
1543.83								<b>SM</b>			
1542.83								<b>SM</b>			
1541.83								<b>SM</b>			
1540.83								<b>SM</b>			



# EXPLORATION LOG



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 017+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1558.45 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 17+56 "SS"  
 OFFSET 135.89 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1557.45	0.00	4A	SPT	1	3			<b>SM</b>	Dry to moist, loose to medium dense, brown grey <b>Silty Sand</b> with estimated 10% non-plastic fines, 80% fine to coarse sand, 5-10% fine gravel.	Bulk sample taken at 0.0 - 1.52 meters.
	0.46			2						
1556.45	1.52	4B	SPT	4	8		w, PI, Sv	<b>SM</b>	Cobbles at 2.4 - 2.7 meters.	
	1.98			4 4						
1555.45	3.05	4C	SPT	4	11			<b>SM</b>	Cobbles at 3.65 - 3.96 meters.	
	3.51			5 6						
1554.45	4.57	4D	SPT	7	20			<b>SM</b>	Cobbles at 4.3 - 4.6 meters.	
	5.03			11 9						
1553.45	5.03									
1552.45										
1551.45										
1550.45										
1549.45										



## EXPLORATION LOG

SHEET 1 OF 1

START DATE 8/11/00  
 END DATE 8/11/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 018+07 (WQB-1)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1550.93 (m)  
 HAMMER DROP SYSTEM NA

STATION 38+07 "SN"  
 OFFSET 80.54 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/11/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1549.93	0.76							<b>SM</b>	0.30 Dry, loose, dark brown <b>Silty Sand</b> with estimated 20% non-plastic fines and 80% fine to coarse sand. Dry to slightly moist, loose to medium dense, dark brown <b>Poorly Graded Sand with Silt</b> with 12% non-plastic fines, 82% fine to coarse sand, and 6% fine gravel. Unit contains interbedded fine and coarse sands. Rootmass to 0.6m. Easily excavated.	
	1.07	1A	GRAB				PI, Sv			
1547.93	3.05							<b>SP SM</b>		
	3.35	1B	GRAB				PI, Sv			
1546.93	4									
1545.93	5									
1544.93	6									
1543.93	7									
1542.93	8									
1541.93	9									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 019+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1554.36 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 18+83 "SS"  
 OFFSET 12.00 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1553.36	0.00	4A	SPT	2	10			<b>SM</b>	Dry to wet, loose to medium dense, dark grey to brown <b>Silty Sand</b> with estimated 10-15% non-plastic fines, 75-85% fine to coarse sand, 5-10% gravel to 1cm.	Bulk sample taken from 0-1.5 meters.
	0.46			4						
1552.36	1.52	4B	SPT	5	9		w, Pl, Sv, Sh			
	1.98			5						
1551.36	3.05	4C	SPT	2	6		w, Pl, Sv			
	3.51			3						
1550.36	4.57	4D	SPT	9	18				5.03 Groundwater close to bottom of hole.	
	5.03			9						
1548.36	6									
1547.36	7									
1546.36	8									
1545.36	9									

# EXPLORATION LOG



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 019+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1554.60 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 38+99 "SN"  
 OFFSET 7.70 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1553.60	0.00	5A	SPT	2	7			<b>SM</b>	Dry to slightly moist, loose to medium dense, brown grey to light brown <b>Silty Sand</b> with estimated 15% non-plastic fines, 75% fine to coarse sand, 10% fine gravel.	Bulk sample FRW-5 at 0.0 - 1.52 meters.
	0.46			3						
1552.60	1.52	5B	SPT	3	7			<b>SM</b>		
	1.98			2						
1551.60	3.05	5C	SPT	7	19		w, Pl, Sv	<b>SM</b>		
	3.51			10						
1550.60	4.57	5D	SPT	11	31			<b>SM</b>	Decomposed boulders.	5.03
	5.03			17						
1548.60										
1547.60										
1546.60										
1545.60										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 020+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1554.58 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 39+99 "SN"  
 OFFSET 6.27 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	3.20	1551.4

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1553.58	0.00	5A	SPT	2	15			<b>SM</b>	Dry to wet, medium dense, grey brown <b>Silty Sand with Gravel</b> with estimated 10-20% non-plastic fines, 80% sand, 0-10% gravel to 2.5 cm.	Bulk sample taken from 0-1.5 meters.
	0.46			7						
1552.58	1.52	5B	SPT	5	15		w, PI, Sv			
	1.98			9						
1551.58	3.05	5C	SPT	5	16					Decomposed cobbles and boulders present.
	3.51			5						
1550.58	4.57	5D	SPT	10	45					Decomposed cobbles and boulders present.
	5.03			21						
1549.58	5.03									5.03
1548.58										
1547.58										
1546.58										
1545.58										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 020+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1560.68 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 20+39 "SS"  
 OFFSET 54.87 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1559.68	0.00	6A	SPT	1	10			<b>SM</b>	Dry to moist, medium dense to dense, grey to rust orange <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to coarse sand. Large surface boulders to 2 meters.	
	0.46			4						
1558.68	1.52	6B	SPT	6	24		w, Pl, Sv		Cobbles or partially decomposed boulders.	Bulk sample FRW-6 at 1.52 - 3.05 meters.
	1.98			13						
1557.68	3.05	6C	SPT	11	20				Abundant fully decomposed cobbles and boulders.	
	3.51			10						
1556.68	4.57	6D	SPT	13	33					
	5.03			18						
1555.68	5.03									
1554.68										
1553.68										
1552.68										
1551.68										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 022+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1561.34 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 41+74 "SN"  
 OFFSET 4.24 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	6A	SPT	1	5		w, PI, Sv	SM	Slightly moist, loose, light grey <b>Silty Sand</b> with estimated 15% non-plastic fines, 80% fine to coarse sand, 5% gravel.	
	0.46			2						
1560.34	1								0.91	
1559.34	2								Partially to totally decomposed granitic cobbles and boulders in a silty sand matrix.	Bulk sample taken from 1.5-3.7 meters.
1558.34	3	6B	SPT	50/0	50/0					
	3.05									
	3.20									
1557.34	4									
1556.34	5								4.57	No sample - refusal on boulder.
1555.34	6									
1554.34	7									
1553.34	8									
1552.34	9									

# EXPLORATION LOG



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 022+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.96 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 41+92 "SN"  
 OFFSET 86.22 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1555.96	0.00	7A	SPT	2	16			SM	Abundant surface boulders to 1.22 meters with Silty Sand.	Bulk sample FRW-7 at 0 - 1.5 meters.
	0.46			11						
1554.96	1.52	7B	SPT	3	9		w, Pl, Sv	SM	Hard Granitic boulder.	
	1.98			4 5						
1553.96	3.05	7C	SPT	10	29			SM	Dry to moist, loose to medium dense, light grey to brown <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to coarse sand, 5% fine gravel.	
	3.51			15 14						
1552.96	4.57	7D	SPT	7	60			SM	Silty Sand matrix with decomposed granitic cobbles and boulders.	
	5.03			20 40						
1550.96	6									
1549.96	7									
1548.96	8									
1547.96	9									



# EXPLORATION LOG



START DATE 12/11/98  
 END DATE 12/11/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 023+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.13 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 43+27 "SN"  
 OFFSET 1.71 LT  
 ENGINEER DC  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/11/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/11/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1567.13	0.00	A	SPT	6	32		w, PI, Sv	<b>SM</b>	0.34 Moist, medium dense, dark brown <b>Silty Sand</b> with 25% slightly plastic fines, 75% fine to coarse sand. Cobbles and boulders set in a silty sand matrix.	Bulk sample taken from 0.0-1.5 meters.
	0.46			8						
1566.13	1.52	B	SPT	12	35		w, PI, Sv	<b>SM</b>	1.13 Moist, medium dense, light brown <b>Silty Gravelly Sand</b> with estimated 15% non-plastic fines, 60% fine to coarse sand, 25% fine to medium gravel.	Hard granite cobbles and boulders.
	1.98			18						
1565.13	2.01								2.29 Refusal on boulder.	
	2.29									
1564.13										
1563.13										
1562.13										
1561.13										
1560.13										
1559.13										



## EXPLORATION LOG

SHEET 1 OF 1

START DATE 3/30/00

END DATE 3/30/00

JOB DESCRIPTION I-580 Freeway Extension Project

LOCATION Washoe County, Nevada

BORING 024+75

E.A. # 0079-01-5

GROUND ELEV. 1575.10 (m)

HAMMER DROP SYSTEM NA

STATION 23+53 "SS"

OFFSET 64.16 LT

ENGINEER SDB

EQUIPMENT Komatsu FC220

OPERATOR -

DRILLING METHOD Trackhoe

BACKFILLED Yes DATE 3/30/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/30/00	3.35	1571.7

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1574.10	0.76							SM	Moist, medium dense, brown <b>Silty Sand with Gravel</b> with estimated 20% low plasticity fines, 60% fine to coarse sand, and 20% fine to coarse rounded to subrounded gravel. Unit contains scattered granitic cobbles.	
	1.07	A	GRAB				PI, Sv			
1573.10	1.22							SM	Moist, medium dense, black <b>Silty Sand</b> with 19% non-plastic fines, 78% fine to coarse sand, and 3% fine gravel. Unit contains cobbles and boulders to 20% of unit. DG parent material. High mica content. Fine rootmass to 1.1 m. Unit also has odd odor.	
	1.22									
1572.10	3.35							SC	Moist to wet, medium dense, blue-green <b>Clayey Sand with Gravel</b> with 18% medium plasticity fines, 62% fine to coarse sand, and 20% fine to coarse gravel. Unit contains scattered interbedded sand with silt and scattered subrounded cobbles and boulders to 20% of unit.	
	3.66	B	GRAB				PI, Sv			
1571.10	4.57								Slight to moderate water entry into test pit during excavation. Extensive caving during excavation.	
1570.10										
1569.10										
1568.10										
1567.10										
1566.10										

**EXPLORATION LOG**



START DATE 3/30/00  
 END DATE 3/30/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 024+76  
 E.A. # 0079-01-5  
 GROUND ELEV. 1571.08 (m)  
 HAMMER DROP SYSTEM NA

STATION 23+69 "SS"  
 OFFSET 9.51 LT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/30/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/30/00	2.74	1568.3

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1570.08	1							SM	Moist, medium dense, dark brown <b>Silty Sand</b> with estimated 25% non-plastic to low plasticity fines, 65% fine to coarse sand, and 10% fine to coarse gravel. Unit contains scattered granitic cobbles and boulders.	
	1.07							0.30		
1569.08							PI, Sv	SM	Moist, medium dense, brown to dark brown <b>Silty Sand with Gravel</b> with estimated 20% non-plastic to low plasticity fines, 65% fine to coarse sand, and 15% fine to coarse gravel. Unit also contains slightly to highly weathered granitic boulders and cobbles comprising 30 to 40% of unit.	
	1.37	A	GRAB					0.61		
1568.08	2							SM	Moist to wet, medium dense, brown to dark brown <b>Silty Sand</b> with 15% non-plastic fines, 80% fine to coarse sand, and 5% fine gravel. Unit also contains granitic cobbles and boulders comprising 30% of unit. high concentrations of mica in unit. Variable FeOx staining. Unit contains scattered clayey sand nodules to approximately 4 inch diameter. Fine rootmass to 1 m.	
	3									
1567.08							PI, Sv		Moderate to high water entry into test pit during excavation.	
	3.35									
1566.08										
	3.66	B	GRAB					3.66		
1565.08	4									
1564.08	5									
1563.08	6									
1562.08	7									
	8									
	9									



# EXPLORATION LOG

START DATE 3/30/00  
 END DATE 3/30/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 024+77  
 E.A. # 0079-01-5  
 GROUND ELEV. 1566.92 (m)  
 HAMMER DROP SYSTEM NA

STATION 43+67 "SN"  
 OFFSET 18.58 RT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/30/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/30/00	2.29	1564.6

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1565.92	0.91 1.22	A	GRAB				PI, Sv	SM	0.30 Dry, loose, light brown to grey <b>Silty Sand with Gravel</b> with estimated 15% non-plastic fines, 70% fine to coarse sand, 15% fine to coarse gravel. Moist, medium dense, dark brown <b>Silty Sand with Gravel</b> with 12% non-plastic fines, 65% fine to coarse sand, and 23% fine to coarse gravel. Unit contains subangular to subrounded, moderately weathered granitic cobbles and boulders to 1 meter in diameter, comprising approximately 30-50% of unit. Unit also contains abundant mica flakes. Fine rootmass to 1.5 meters.	
1564.92	2							SM	2.74	
1563.92	3							SW SM	Wet, medium dense, dark brown <b>Well-Graded Sand with Silt</b> with 10% non-plastic fines, 78% fine to coarse sand, and 12% fine to coarse gravel. Unit contains moderately weathered subrounded to subangular granitic cobbles and boulders comprising approximately 20 to 30% of unit.	
1562.92	3.96 4.27	B	GRAB				PI, Sv	SM	4.27	
1561.92	5									High water entry into test pit during excavation. Moderate difficulty excavating test pit.
1560.92	6									
1559.92	7									
1558.92	8									
1557.92	9									

# EXPLORATION LOG



START DATE 12/3/98  
 END DATE 12/3/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 027+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1578.25 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 27+54 "P"  
 OFFSET 50.03 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/3/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/3/98	2.13	1576.1

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A	SPT	1	2		w, PI, Sv	<b>SM</b>	Very moist, very loose, dark grey <b>Silty Sand</b> with estimated 25% slightly plastic fines, 75% fine to coarse sand.	Bulk sample taken from 0.0-1.5 meters.
	0.46			1						
1577.25	1							<b>SC</b>	Wet, loose, red brown <b>Clayey Sand</b> with estimated 35% medium plastic fines, 65% fine to coarse sand.	
	1.52									
1576.25	1.98	B	SPT	11 19 16	35		w, PI, Sv			
	2									
1575.25	3	C	SPT	13 16 17	33					
	3.51									
1574.25	4								Soft, completely weathered, grey brown to grey <b>Granitic Bedrock</b> .	
	4.57									
1573.25	5	D	SPT	15 29 25	54					
	5.03									
1572.25	6	E	SPT	17 26 29	55					
	6.10			6.55						
1571.25	7									
1570.25	8									
1569.25	9									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 12/2/98  
 END DATE 12/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 028+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1566.78 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 27+88 "P"  
 OFFSET 21.13 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/3/98	1.52	1565.3

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A	SPT	2	2			<b>SM</b>	Very moist, very loose, grey brown <b>Silty Sand</b> with estimated 15-20% non-plastic fines, 80-85% fine to coarse sand.	Bulk sample taken from 0 - 1.5 meters.
	0.46			1						
1565.78	1								0.76	
	1.52									
1564.78	1.98	B	SPT	13 18 28	46		w, PI, Sv			
1563.78	3									
	3.05									
	3.51	C	SPT	14 13 19	32					
1562.78	4									
	4.57									
1561.78	5	D	SPT	20 30 50	80					
1560.78	6									
	6.10									
	6.55	E	SPT	22 41 42	83				6.55	
1559.78	7									
1558.78	8									
1557.78	9									

**EXPLORATION LOG**



START DATE 12/4/98  
 END DATE 12/4/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 029+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1587.92 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 29+04 "P"  
 OFFSET 39.37 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/4/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/4/98	5.33	1582.6

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1586.92	0.00	A	SPT	2	18				Soft, completely weathered, grey <b>Granitic Bedrock.</b>	Bulk sample taken from 0.0-1.5 meters.
	0.46			13						
1585.92	1.52	B	SPT	27	81		w, Pl, Sv			
	1.98			38 43						
1584.92	3.05	C	SPT	33	45		w, Pl, Sv			
	3.51			45						
1583.92	4.57	D	SPT	23	84		w, Pl, Sv, Sh			
	5.03			34 50						
1581.92	6.10	E	SPT	19	93			6.55		Water level measured 5 min. after drilling.
	6.55			43 50						
1580.92	7									
1579.92	8									
1578.92	9									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 12/4/98  
 END DATE 12/4/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 029+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1582.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 29+48 "P"  
 OFFSET 3.52 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/4/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/4/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1581.28	0.00	A	SPT	2	19			SC	Wet, loose to medium dense, brown <b>Clayey Sand</b> residual soil derived from granitic bedrock. Soft, completely weathered, grey tan <b>Granitic Bedrock.</b>	Bulk sample taken from 0.4-1.5 meters.
	0.46			14						
1580.28	1.52	B	SPT	20	45		w, Pl, Sv			
	1.98			22 23						
1579.28	3.05	C	SPT	11	51		w, Pl, Sv			
	3.51			23 28						
1578.28	4.57	D	SPT	13	51					
	5.03			21 30						
1576.28	6.10	E	SPT	30	46					
	6.55			46						
1575.28	7.62	F	SPT	16	36					
	8.08			36						
1573.28	9.14	G	SPT	31	50/114				9.60	
	9.60			50/114						



# EXPLORATION LOG



START DATE 12/4/98  
 END DATE 12/4/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 030+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1596.74 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 30+39 "P"  
 OFFSET 27.66 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger/HQ Core  
 BACKFILLED Yes DATE 12/4/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/4/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A	SPT	8	60			SC	Moist, very dense, red brown <b>Clayey Gravelly Sand</b> with estimated 35% medium plastic fines, 45% fine to coarse sand, 20% gravel. Volcanic surface boulders to 1.8 meters.	
	0.46			28						
1595.74	0.91	B							1.22	Switch from auger to core - refusal on boulder.
1594.74	2.44	C						Soft, completely weathered, grey brown to grey <b>Granitic Bedrock</b> .		
1593.74										
1592.74	3.96	D								
1591.74										
	5.49	E								
1590.74	6.10	F							6.10	
1589.74										
1588.74										
1587.74										

# EXPLORATION LOG



START DATE 12/1/98  
 END DATE 12/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 031+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1581.76 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 31+00 "P"  
 OFFSET 12.73 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1580.76	0.00	A	SPT	1	2		w, Pl, Sv	SM	Moist, loose to medium dense, dark brown <b>Silty Sand</b> with estimated 30% low plastic fines, 60% fine to coarse sand, 10% fine gravel.	Bulk sample taken from 0.0-1.5 meters.
	0.46			1						
1579.76	1.52	B	SPT	7	22		w, Pl, Sv, Sh		Soft, completely weathered, brown <b>Granitic Bedrock</b> .	
	1.98			11 11						
1578.76	3.05	C	SPT	10	46					
	3.51			20 26						
1577.76	4									
1576.76	5									
1575.76	6									
1574.76	7									
1573.76	8									
1572.76	9									



## EXPLORATION LOG

START DATE 3/24/00  
 END DATE 3/24/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 031+05  
 E.A. # 0079-01-5  
 GROUND ELEV. 1586.16 (m)  
 HAMMER DROP SYSTEM NA

STATION 30+94 "P"  
 OFFSET 3.09 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/24/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/24/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1585.16	0.91							SC SM	Moist, medium dense to dense, brown to olive brown, <b>Silty, Clayey Sand</b> with approximately 22% low plastic fines, 77% fine to coarse sand, and trace fine gravel.	
	1.22	A	GRAB				MC, SA, PI,			
1584.16	1.83							SW SM	1.83 Slightly moist, dense, olive brown, <b>Well Graded Sand with Silt</b> with approximately 12% non-plastic fines, 82% fine to coarse sand, 6% fine gravel.	Moderately to well cemented from 1.8 meters to bottom of hole.
	2.13	B	GRAB				MC, SA, PI			
1583.16	3.05							SW SM	3.66	
	3.35	C	GRAB							
1582.16	4.57							SM	Slightly moist, dense, olive brown, <b>Silty Sand</b> with approximately 15% non-plastic fines, 80% fine to coarse sand, 5% fine gravel.	
	4.88	D	GRAB				MC, SA, PI			
1581.16	5.79							SM	6.10	
	6.10	E	GRAB							
1579.16	7									
1578.16	8									
1577.16	9									

# EXPLORATION LOG



START DATE 12/4/98  
 END DATE 12/4/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 032+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1594.47 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 31+91 "P"  
 OFFSET 57.33 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/4/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/4/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1593.47	0.00	A	SPT	6	50				Soft, completely weathered, grey <b>Granitic Bedrock.</b>	
	0.46			22						
1592.47	1.52	B	SPT	27	50/127		w, Pl, Sv			
	1.98			50/127						
1591.47	3.05	C	SPT	50	50		w, Pl, Sv			
	3.51			50						
1590.47	4.57	D	SPT	14	50/127					
	5.03			38						
1588.47	6.10	E	SPT	33	50/102				6.55	
	6.55			50/102						
1587.47	7									
1586.47	8									
1585.47	9									

# EXPLORATION LOG



START DATE 12/1/98  
 END DATE 12/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 032+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1577.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 32+47 "P"  
 OFFSET 5.34 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/1/98	4.57	1572.7

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
	0.00	A	SPT	4	25		w, PI, Sv	SC	Moist, medium dense to dense, light brown <b>Clayey Sand</b> with estimated 30% medium plastic fines, 70% fine to medium sand.	
	0.46			9						
1576.28	1								1.07	
	1.52	B	SPT	50/127	50/127		w, PI, Sv		Very soft to soft, completely weathered, grey <b>Granitic Bedrock</b> .	
	1.68									
1575.28	2									
1574.28	3	C	SPT	34	50					
	3.05			50						
	3.35									
1573.28	4									
	4.57	D	SPT	50	50					
	4.72									
1572.28	5									
1571.28	6	E	SPT	26	50					
	6.10			50						
	6.40								6.40	
1570.28	7									
1569.28	8									
1568.28	9									

# EXPLORATION LOG



START DATE 12/1/98  
 END DATE 12/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 033+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1582.02 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 33+98 "P"  
 OFFSET 69.58 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1581.02	0.00	A	SPT	3	24				Soft, completely weathered, grey <b>Granitic Bedrock.</b>	Bulk sample taken from 0 - 1.6 meters.
	0.46			7						
1580.02	1.52	B	SPT	21	85		w, Pl, Sv		Iron oxidation with slight clay alteration. Possible shear zone.	
	1.98			43 42						
1579.02	3.05	C	SPT	10	47		w, Pl, Sv		Purplish grey color with alteration to clay mineralogy to 4.2 meters.	
	3.51			23 24						
1578.02	4.57	D	SPT	7	33				Purplish grey color with alteration to clay mineralogy to 4.2 meters.	
	5.03			14 19						
1576.02	6.10	E	SPT	20	50				Purplish grey color with alteration to clay mineralogy to 4.2 meters.	
	6.55			50						
1575.02	7.62	F	SPT	12	67				Purplish grey color with alteration to clay mineralogy to 4.2 meters.	
	8.08			28 39						
1574.02	8.08								8.08	
1573.02										



## EXPLORATION LOG

START DATE 3/24/00  
 END DATE 3/24/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 034+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.12 (m)  
 HAMMER DROP SYSTEM NA

STATION 33+99 "P"  
 OFFSET 8.95 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/24/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/24/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1571.12	0.91							SM	Very moist, loose to medium dense, dark brown to dark grey, <b>Silty Sand</b> with approximately 17% non-plastic fines, 81% fine to coarse sand, and trace fine gravel.	Trench caved below groundwater table immediately after excavation.
	1	1.22	A	GRAB			MC, SA, PI			
1570.12	1.83							SM	Wet, medium dense, dark grey, <b>Silty Sand</b> with approximately 20% non-plastic fines, 72% fine to coarse sand, 8% fine to coarse gravel.	
	2	2.13	B	GRAB			MC, SA, PI			
1569.12	3									
1568.12	4									
1567.12	5									
1566.12	6									
1565.12	7									
1564.12	8									
1563.12	9									

# EXPLORATION LOG



START DATE 12/1/98  
 END DATE 12/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 034+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1567.08 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 34+15 "P"  
 OFFSET 55.68 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/1/98	0.91	1566.2

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A	SPT	3	11		w, PI, Sv	<b>SM</b>	Moist to wet, medium dense to loose, dark brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.	
	0.46			5						
1566.08	1									
	1.52	B	SPT	2	8		w, PI, Sv	<b>SM</b>	2.44 Wet, loose, grey to blue grey <b>Silty Sand</b> with estimated 30% non-plastic fines, 70% fine to coarse sand.	
	1.98			3						
1565.08	2			5						
	3.05	C	SPT	9	26		w, PI, Sv	<b>SM</b>	3.81 Wet, very dense, grey brown <b>Silty Sand - Clayey Sand</b> with estimated 20% non-plastic to low plastic fines, 75% fine to coarse sand, 5% fine gravel.	
	3.51			17						
1564.08	3			30	73		w, PI, Sv	<b>SM</b>	4.57 Wet, very dense, grey <b>Silty Gravelly Sand</b> with estimated 10% non-plastic fines, 80% fine to coarse sand, 10% fine gravel.	
1563.08	4			40						
	4.57	D	SPT	33	40/127			<b>SM</b>	5.03 Refusal on granitic boulder.	
	5.03			33						
1562.08	5			22	40/127			<b>SM</b>	6.10 Refusal on granitic boulder.	
1561.08	6			32						
	6.55	E	SPT	40/127	40/127			<b>SM</b>	6.86 Refusal on granitic boulder.	
	6.55			40/127						
1560.08	7									
1559.08	8									
1558.08	9									



# EXPLORATION LOG



START DATE 12/1/98  
 END DATE 12/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 034+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1581.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 34+77 "P"  
 OFFSET 66.24 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/1/98	3.90	1577.8

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
	0.00	A	SPT	2	50/127				Soft, completely weathered, light brown <b>Granitic Bedrock.</b>	
	0.46			19						
1580.67	1									
	1.52	B	SPT	50/127	50/127					
	1.68									
1579.67	2									
1578.67	3 3.05	C	SPT	24	57		w, Pl, Sv			
	3.51			22						
1577.67	4									
	4.57	D	SPT	35/64	35/64					
	4.72									
1576.67	5									
1575.67	6 6.10	E	SPT	50/127	50/127				6.25	
	6.25									
1574.67	7									
1573.67	8									
1572.67	9									

# EXPLORATION LOG



START DATE 12/2/98  
 END DATE 12/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 035+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1573.71 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 35+59 "P"  
 OFFSET 9.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/2/98	0.00	1573.7

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1572.71	0.00	A					w, Pl, Sv	SC	Wet, loose to medium dense, light greenish grey <b>Clayey Sand</b> with estimated 25% medium plastic fines, 75% fine sand. Grass roots to 0.24 meters.	
	1.52									
	1.98	B		3	7		w, Pl, Sv, Sh			
1571.71	2.13	C					w, Pl, Sv	SM	Wet, medium dense, greenish blue <b>Silty Sand</b> with estimated 15-20% slightly plastic fines, 80-85% fine sand.	
	3.05									
1570.71	3.35	D		20	45			SM	Wet, medium dense, green blue <b>Clayey Sand</b> with estimated 30% medium plastic fines, 70% fine sand. Interbedded silty sand.	
	4.57	E								
1569.71	4.57							SC	Highly interbedded with silty sand.	
	6.40	F								
1568.71										
1567.71										
1566.71										
1565.71										
1564.71										



# EXPLORATION LOG

SHEET 1 OF 1

START DATE 12/2/98  
 END DATE 12/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 036+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1587.91 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 36+30 "P"  
 OFFSET 69+61 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/2/98	0.15	1587.8

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A						SM	Wet, loose to medium dense, light greenish grey <b>Silty Sand</b> with estimated 30% low plastic fines, 70% fine sand. Grass roots to 0.24 meters.	
1586.91	0.91	B					w, Pl, Sv, Sh			
1585.91	1.83	C		3	13					
	2.29			6						
1584.91	2.74							SM	Wet, medium dense, greenish blue <b>Silty Sand</b> with estimated 25% low to medium plastic fines, 75% fine sand.	
	3.35									
1583.91	3.66	D		1	13		w, Pl, Sv	SC	Wet, medium dense, green blue <b>Clayey Sand</b> with estimated 30% medium plastic fines, 70% fine sand. Interbedded silty sand.	
	3.81			8						
1582.91	4.88	E					w, Pl, Sv			
1581.91	6.40	F							Highly interbedded with silty sand.	
1580.91										
1579.91										
1578.91										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 12/10/98  
 END DATE 12/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 037+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1577.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 37+02 "P"  
 OFFSET 5.59 RT  
 ENGINEER DC  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 12/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1576.66	0.00	A	SPT	5	13		w, PI, Sv	SM	0.15 Dark brown <b>Top Soil</b> . Moist, stiff, brown <b>Sandy Clay</b> .	
	0.46			8						
1575.66	1.52	B	SPT	26	32/51		w, PI, Sv	SM	0.76 Dry, very dense, light brown <b>Silty Gravelly Sand</b> composed of granitic material.	
	1.98			23 32/51						
1574.66	3.05	C	SPT	12	58		w, PI, Sv	CL	2.29 Moist, very stiff, light olive <b>Sandy Clay</b> .	
	3.51			23 35						
1573.66	4.57	D	SPT	6	50				3.11 Soft, reddish brown to tan and grey, completely weathered <b>Granitic Bedrock</b> .	
	5.03			25 25						
1571.66	6									
1570.66	7									
1569.66	8									
1568.66	9									

# EXPLORATION LOG



START DATE 12/10/98  
 END DATE 12/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 038+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1575.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 38+60 "P"  
 OFFSET 0.11 RT  
 ENGINEER DC  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1574.21	0.00	A					w, Pl, Sv	CH	Moist, stiff, brown <b>Sandy Clay</b> with estimated 55% high plastic fines, 45% very fine to coarse sand. Minor gravel.	
	0.61	B				w, Pl, Sv, Sh				
	0.91	C								
1573.21	1.52	D					w, Pl, Sv	SM	Moist to wet, medium dense, brown <b>Silty Sand</b> with estimated 25% non-plastic fines, 75% fine to coarse sand. Interbedded thin clay and clayey sand lenses.	
	2.44	E								
	2.90									
1572.21	3.96	F						SM	Wet, medium dense, grey <b>Silty Sand</b> with estimated 10-20% non-plastic fines, 80-90% fine to medium sand. Interbedded poorly graded sand and clayey sand lenses.  Medium plastic clay lense.	
	6.10	H								
	6.10									
1570.21	5.49	G								
1569.21	6.10	H								
1568.21	7									
1567.21	8									
1566.21	9									

# EXPLORATION LOG

SHEET 1 OF 2



START DATE 10/25/99  
 END DATE 10/25/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 039+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1570.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 39+39 "P"  
 OFFSET 6.03 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/30/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/26/99	2.80	1568.1

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1569.86	0.61	A					w, Pl, Sv	SC	Slightly moist, very dense, brown <b>Clayey Gravelly Sand</b> with estimated 20-30% medium plastic fines, variable sand and gravel.	
	1							SC	Moist, dense, brown grey <b>Clayey Gravelly Sand</b> with estimated 20-30% medium plastic fines, 65% fine to coarse sand, 15% gravel.	
1568.86	2									
	2.44	B					w, Pl, Sv		Moist, very dense, rust, slightly cemented <b>Silty Gravelly Sand</b> . Variable gradation.	
1567.86	3							SM		
	4									
1566.86	5									
	6									
1565.86	7									
	7.01	C	SPT	21 33 50/102	50/102					
1564.86	8							SM		
	7.47									
1563.86	9								Possible ground water below 9.14 meters.	

NV\_DOT 0079015D.GPJ NV\_DOT.GDT 5/11/01

# EXPLORATION LOG



START DATE 10/25/99  
 END DATE 10/25/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 039+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1570.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 39+39 "P"  
 OFFSET 6.03 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/30/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/26/99	2.80	1568.1

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1559.86	11									
1558.86	12							12.19		
1557.86	13									
1556.86	14									
1555.86	15									
1554.86	16									
1553.86	17									
1552.86	18									
1551.86	19									







# EXPLORATION LOG

START DATE 10/25/99  
 END DATE 10/26/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 039+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1571.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 39+89 "P"  
 OFFSET 10.49 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/30/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/26/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1570.67	0.61	A					w, Pt, Sv	SM	Moist, very dense, brown grey <b>Silty Gravelly Sand - Silty Sandy Gravel</b> with 15% non-plastic to slightly plastic fines, 40-50% fine to coarse sand, 35-45% fine to coarse gravel. Abundant surface cobbles and boulders.	
1569.67	2									
1568.67	3									
	3.66									
1567.67	3.81	B	SPT	50/102	50/102					
1566.67	5.18	C					w, Pt, Sv			
1565.67	6									
1564.67	7									
1563.67	8									
1562.67	9							8.23	Wet, very dense, red to rust brown <b>Silty Gravelly Sand</b> with estimated 20% non-plastic to slightly plastic fines, variable sand and gravel percentages. Minor large gravel and small cobbles.	

# EXPLORATION LOG



START DATE 10/25/99  
 END DATE 10/26/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 039+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1571.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 39+89 "P"  
 OFFSET 10.49 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/30/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/26/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1560.67	11							SM		
1559.67	12									
1558.67	13								12.80	
1557.67	14									
1556.67	15									
1555.67	16									
1554.67	17									
1553.67	18									
1552.67	19									

# EXPLORATION LOG



START DATE 12/10/98  
 END DATE 12/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 040+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1571.44 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 40+01 "P"  
 OFFSET 8.85 RT  
 ENGINEER DC  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1570.44	0.00	A					w, Pl, Sv		Hard volcanic cobbles in weathered, brown gravel and silty clay matrix.  Matrix composed of sandier material.  Matrix contains high percentage of clay fines.  Silty Gravelly Sand with small cobbles.  Cobbles and boulders with little silty sand matrix.	
	1.37	B					w, Pl, Sv			
1569.44										
1568.44	2.90	C								
1567.44										
	4.42	D								
1566.44	5.18	E					<b>SM</b>			
1565.44	6.10	F								
1564.44										
1563.44										
1562.44										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/28/98  
 END DATE 9/28/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 041+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1591.14 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 41+13 "P"  
 OFFSET 47.75 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/28/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/28/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1590.14	0.00	A						CH	Moist, very stiff, dark brown <b>Sandy Gravelly Clay</b> with estimated 50-60% high plastic fines, 20-30% fine to coarse sand, 10-30% gravel. Surface boulders to 3 meters in diameter.	
	0.91	B					SC			
	1.52	C						SM	Moist, dense, brown grey <b>Silty Gravelly Sand</b> with estimated 15% non-plastic fines, 40-60% fine to coarse sand, 25-45% fine to coarse gravel. Hard volcanic cobbles comprise up to 70% of soil mass.	
1589.14	2.29	D								
	3.44	E								
1587.14	4.21	F								
	4.57	G								
1586.14	5.27	H								
1585.14	6.10	I						6.10		
1584.14	7									
1583.14	8									
1582.14	9									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/26/98  
 END DATE 9/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 041+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1579.20 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 41+83 "P"  
 OFFSET 18.39 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/26/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, hard, brown <b>Clayey Sandy Gravel</b> with 40% high plastic fines, 20% fine to coarse sand, 40% gravel. Volcanic cobbles comprise 30-50% of soil mass.	
	0.61	B					w, Pl, Sv			
1578.20	1									
	1.52	C					w, Pl, Sv			
1577.20	2	D								
	2.13									
1576.20	3									
	3.66	E							3.66	
1575.20	4									
1574.20	5									
1573.20	6									
1572.20	7									
1571.20	8									
1570.20	9									



# EXPLORATION LOG



START DATE 9/27/98  
 END DATE 9/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 043+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1585.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 42+79 "P"  
 OFFSET 3.81 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1584.80	0.00	A					w, Pl, Sv	<b>CH</b>	0.70	Moist, very stiff to hard, red brown <b>Sandy Clay</b> with estimated 70% high plastic fines, 30% fine to medium sand. Variable gravel, cobbles and boulders. Surface boulders to 2.5 meters.
	0.61	B					w, Pl, Sv, Sh			
	1.22	C					w, Pl, Sv	<b>SC GC</b>	1.52	Moist, very dense, brown <b>Clayey Sandy Gravelly - Clayey Gravelly Sand</b> with variable 20-40% medium to high plastic fines, 20-60% fine to coarse sand, 20-40% gravel. Cobbles common.
	1.52	D								
	1583.80	2								Volcanic cobbles and boulders set in a clayey sand matrix. Cobbles and boulders comprise up to 90% of soil mass.
1582.80	3 3.05	E							Clayey Sand lense.	
1581.80	4									
1580.80	5									
1579.80	6									
1578.80	7									
1577.80	8									
1576.80	9									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/27/98  
 END DATE 9/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 044+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1595.99 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 44+07 "P"  
 OFFSET 38.73 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1594.99	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, very dense, brown <b>Clayey Gravelly Sand</b> with estimated 30-40% low to medium plastic fines, 50-60% fine to coarse sand, 0-20% gravel. Hard volcanic cobbles comprise 30% of soil mass. Surface boulders to 1.5 meters in diameter.	
1593.99	1.68	B								
1592.99	3.20	C								
1591.99	4.48	D								
1590.99	5.24	E								
1589.99	6.10	F								6.10
1588.99										
1587.99										
1586.99										



# EXPLORATION LOG



START DATE 9/26/98  
 END DATE 9/26/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 044+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1580.77 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 44+53 "P"  
 OFFSET 15.04 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/26/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/26/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1579.77	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, very dense, tan brown <b>Clayey Gravelly Sand</b> with estimated 30-40% medium to high plastic fines, 50-60% fine to coarse sand, 10% gravel. Abundant hard volcanic cobbles comprise 20-30% of soil mass. Surface boulders to 1 meter.	
1578.77	1.52	B					w, Pl, Sv			<b>SM</b>
1577.77	3.05	C		50/127	50/127					
1576.77										
1575.77										
1574.77										
1573.77										
1572.77										
1571.77										

# EXPLORATION LOG



START DATE 9/27/98  
 END DATE 9/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 045+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1601.99 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 45+34 "P"  
 OFFSET 44.90 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1600.99	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, very dense, dark brown <b>Clayey Gravelly Sand</b> with estimated 30% medium to high plastic fines, 60% fine to coarse sand, 10% gravel. More clay fines exist in zones of decomposing volcanic sediments. Surface boulders to 1.5 meters in diameter. Single hard, fractured Volcanic boulder.	
	0.76	B					0.85			
1599.99	2.29	C					w, Pl, Sv	<b>SC SM</b>	Moist, very dense, brown <b>Silty and Clayey Sand</b> . Highly variable with gravelly lenses and cobbles comprising 10-20% of soil mass.	
1598.99	3.81	D					3.81			
1597.99	6.10	F							Hard, fractured Volcanic boulders set in a silty to clayey sand matrix. Core contained 3 boulders with very little matrix.	
1596.99	5.33	E								
1595.99	6.10	F						6.10		
1594.99										
1593.99										
1592.99										

# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 045+42 (DB-03)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1579.13 (m)  
 HAMMER DROP SYSTEM NA

STATION 45+42 "P"  
 OFFSET 50.95 RT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR Dan  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 9/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1578.13	0.46							<b>SC</b>	Dry to moist, medium dense, dark brown <b>Clayey Sand</b> , with 32% medium plasticity fines, 61% fine to coarse sand, and 7% fine subrounded gravel. Contains few moderately weathered andesite cobbles. Topsoil. Zone between 0.61 m to 0.82m contains small sandy lean clay pockets.  Dry to moist, dense, light brown to tan <b>Well-Graded Gravel with Sand</b> , with 3% low plasticity fines, 19% fine to coarse sand, and 78% fine to coarse gravel. Contains moderately weathered andesite cobbles and boulders to 355 mm diameter with slight FeOx staining. Difficult excavation with practical refusal at 1.19m.	
	0.76	3A	GRAB				PI, Sv			
	0.91									
	1.19	3B	GRAB				PI, Sv	<b>GW</b>		
1577.13	2									
1576.13	3									
1575.13	4									
1574.13	5									
1573.13	6									
1572.13	7									
1571.13	8									
1570.13	9									

# EXPLORATION LOG



START DATE 9/24/98  
 END DATE 9/25/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 046+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1591.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 46+51 "P"  
 OFFSET 8.17 RT  
 ENGINEER SDB/MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/25/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/25/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1590.80	0.00	A					w, Pl, Sv	SM	Volcanic cobbles and small boulders set in a silty gravelly sand matrix. Cobbles comprise up to 70% of soil mass.	
	0.76	B					w, Pl, Sv, Sh			
1589.80	1.98	C						SM	3.05	
	2.44	D								
1588.80	3.66	E						SM	Moist, dense, brown <b>Silty Gravelly Sand</b> with estimated 15% slightly plastic fines, 65-75% fine to coarse sand, 10-20% gravel. Hard cobbles comprise 10-20% of soil mass.	
	3.96	F								
1587.80	5.18	G						SM	Volcanic cobbles comprise 60-70% of soil mass.	
	5.94	H								
1586.80	6.40	I						SM	Volcanic cobbles comprise 60-70% of soil mass.	
	6.68	J								
1585.80	7.62	K						SM	Volcanic cobbles comprise 60-70% of soil mass.	
	8.69	L								
1584.80								SM		
1583.80										
1582.80										

# EXPLORATION LOG

SHEET 2 OF 2



START DATE 9/24/98  
 END DATE 9/25/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 046+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1591.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 46+51 "P"  
 OFFSET 8.17 RT  
 ENGINEER SDB/MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/25/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/25/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.21	M							Large fractured volcanic boulders.	
1580.80	11.28	N						11.28		
1579.80	12									
1578.80	13									
1577.80	14									
1576.80	15									
1575.80	16									
1574.80	17									
1573.80	18									
1572.80	19									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/27/98  
 END DATE 9/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 046+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1610.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 46+59 "P"  
 OFFSET 58.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1609.05	0.00	A					w, Pl, Sv	<b>CH</b>	0.30 High plastic <b>Sandy Clay</b> with surface boulders to 1.5 meters in diameter. Hard volcanic cobbles and boulders with clayey gravelly sand matrix.	
	1									
1608.05	1.52	B					w, Pl, Sv			
	2									
1607.05	3.05	C							3.51 Moist, dense, brown grey <b>Silty Sand</b> with estimated 15% slightly plastic fines, 85% fine sand. Interbedded gravelly lenses. Hard volcanic cobbles comprise up to 50% of soil mass.	
	3									
1606.05	3.96	D						<b>SM</b>		
	4									
1605.05	4.88	E								
	5									
1604.05	6.40	F								
	6									
1603.05										
1602.05										
1601.05										

# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/28/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 047+47  
 E.A. # 0079-01-5  
 GROUND ELEV. 1596.56 (m)  
 HAMMER DROP SYSTEM NA

STATION 47+47 "P"  
 OFFSET 8.83 RT  
 ENGINEER DC  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/28/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/28/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1595.56	0.91							SC	Very moist, medium dense to dense, brown, <b>Clayey Sand with Gravel</b> with approximately 29% low plastic fines, 45% fine to coarse sand, 26% fine to coarse gravel.	
	1.22	A	GRAB				MC, SA, PI			
1594.56	1.83							GM	Moist, dense to very dense, brown, <b>Silty Gravel with Sand</b> with approximately 14% low plastic fines, 38% fine to coarse sand, 48% fine to coarse gravel with <5% small cobbles.	
	2.13	B	GRAB				MC, SA, PI			
1593.56	3.66							SM	Moist, very dense, brown, <b>Silty Sand with Gravel</b> with approximately 16% non-plastic fines, 49% fine to coarse sand, 35% fine to coarse gravel with approximately 15% small cobbles.	
	3.96	C	GRAB				MC, SA, PI			
1592.56										
1591.56										
1590.56										
1589.56										
1588.56										
1587.56										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/24/98  
 END DATE 9/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 047+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1596.65 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 47+47 "P"  
 OFFSET 7.40 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/24/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A							Surface boulders to 1.3 meters.	Placed casing to 1.8 meters.
1595.65	1								Hard volcanic cobbles and boulders to 1 meter in diameter set in a Silty Gravelly Sand matrix. Cobbles and boulders comprise 60-80% of soil mass.	
	1.52	B								
1594.65	2									
	3.05	C							Decomposed granitic cobble.	
1593.65	3									
	3.96	D								
1592.65	4									
	4.88	E								
1591.65	5									
	6.10	F								
1590.65	6									
	7									
1589.65	7									
	7.62	G								
1588.65	8									
	9									
1587.65	9								9.14	



# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 047+64 (WQB-2)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1604.98 (m)  
 HAMMER DROP SYSTEM NA

STATION 47+64 "P"  
 OFFSET 39.72 LT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR Dan  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1603.98	0.46							SC	Moist, medium dense, dark brown <b>Clayey Sand</b> , with 23% medium plasticity fines, 69% fine to coarse sand, and 8% fine to coarse subrounded gravel.	
	0.76	4A	GRAB				PI, Sv			
	1.22							GW GM	Moist, dense, brown to grey <b>Well-Graded Gravel with Silt and Sand</b> , with 8% medium plasticity fines, 40% fine to coarse sand, and 52% fine to coarse gravel. Contains highly weathered andesite cobbles to 380 mm diameter and few subrounded to subangular moderately weathered 'corestone' andesite cobbles.	
	1.52	4B	GRAB				PI, Sv			
1602.98	2									
1601.98	3									
1600.98	4									
1599.98	5									
1598.98	6									
1597.98	7									
1596.98	8									
1595.98	9									

# EXPLORATION LOG



START DATE 9/24/98  
 END DATE 9/24/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 049+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1612.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 48+99 "P"  
 OFFSET 1.52 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/24/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/24/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1611.24	0.00	A					w, Pl, Sv	SC SM	Moist, dense, brown <b>Silty to Clayey Gravelly Sand</b> with estimated 15% slight to low plastic fines, 60% fine to coarse sand, 25% gravel. Few cobbles. Surface boulders to 1 meter.	
	1.22									
1610.24	2.44	B					w, Pl, Sv		Abundant decomposed granitic cobbles and small boulders.	
	2.90									
1609.24	3.96	C							Small hard volcanic boulder.	
	4.27									
1608.24	4.27	E		31 50/102	50/102				Abundant small hard volcanic cobbles up to 50% of soil mass. Few decomposed granitics.	
	5.49									
1607.24	5.49	F								
1606.24										
1605.24										
1604.24										
1603.24										

# EXPLORATION LOG



START DATE 9/23/98  
 END DATE 9/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 050+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1614.71 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 50+44 "P"  
 OFFSET 2.08 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS		
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd						
1613.71	0.00	A					w, Pl, Sv	<b>SM</b>	Moist, dense, brown <b>Silty Gravelly Sand</b> with abundant hard volcanics and decomposed granitics. Variable gradation with few clayey zones.  Decomposed granitic boulder 0.7 meters in diameter.  Few hard volcanic cobbles - mainly decomposed granitic cobbles and small boulders.  Small volcanic cobbles comprise 60-70% of soil mass.			
1612.71	1.52	B					w, Pl, Sv					
1611.71	3.05	C										
1610.71	3.66	D										
1609.71	4.57	E										
1608.71	5.49	F										
1608.71	6.10	G					6.10					
1607.71												
1606.71												
1605.71												

# EXPLORATION LOG



START DATE 9/23/98  
 END DATE 9/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 052+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1620.55 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 52+06 "P"  
 OFFSET 16.93 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1619.55	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, dense, brown <b>Clayey Sand</b> with estimated 30-40% medium plastic fines, 60-70% fine to coarse sand. Minor gravel. Abundant volcanic and decomposed granitic cobbles.	
	1.22									
1618.55	1.52	B						<b>SM</b>	Moist, dense, brown <b>Silty Gravelly Sand</b> with estimated 10-20% slightly plastic fines, 60-80% fine to coarse sand, 10-20% gravel. Abundant hard volcanic and decomposed granitic cobbles and boulders.	
1617.55	3.05	C					w, Pl, Sv, Sh			
1616.55	4.57	D							Cobbles and boulders comprise 40% of soil mass below 3 meters.	
1615.55	6.10	E					w, Pl, Sv			
1614.55	6.10									
1613.55										
1612.55										
1611.55										



## EXPLORATION LOG

START DATE	9/23/98		STATION	53+53 "P"
END DATE	9/23/98		OFFSET	9.58 LT
JOB DESCRIPTION	I-580 Freeway Extension Project		ENGINEER	MG
LOCATION	Washoe County, Nevada		EQUIPMENT	Acker
BORING	053+50		OPERATOR	Peterson
E.A. #	0079-01-5		DRILLING METHOD	HQ Core
GROUND ELEV.	1632.20 (m)		BACKFILLED	Yes DATE 9/23/1998
HAMMER DROP SYSTEM	Rope - Cathead			

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Moist, dense, brown <b>Silty Gravelly Sand</b> . Surface boulders to 1.3 meters.	
1631.20	1.28	B					w, Pl, Sv	SM		
1630.20	1.68								Moist, dense, brown <b>Clayey Sand</b> with estimated 20-40% medium plastic fines, 60-80% very fine to coarse sand. Minor gravel. Small boulders at 1.5 and 2 meters.	
	2.80	C						SC		
1629.20	2.80								Moist, dense, brown <b>Silty Gravelly Sand</b> with estimated 20% slightly plastic fines, 60-70% fine to coarse sand, 10-20% gravel. Abundant hard volcanic and decomposed granitic cobbles and boulders.	
1628.20	4.27	D								
1627.20	4.88	E						SM	Clay lense 0.3 meters thick.	
1626.20	6.10	F								
1625.20										
1624.20										
1623.20										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/18/98  
 END DATE 9/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 055+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1637.45 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 54+92 "P"  
 OFFSET 1.59 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/18/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1636.45	0.00 1	A					w, Pl, Sv	CL	Moist, stiff, brownish red <b>Sandy Gravelly Clay</b> 50-60% medium to high plastic fines, 30-40% fine to coarse sand, 10% gravel. Surface cobbles and boulders to 1 meter. Moist, dense, brown <b>Silty Gravelly Sand</b> . Abundant decomposed granitic cobbles with few hard volcanics. Minor small boulders. Minor zones with clayey fines.	
1635.45	1.52 2	B					w, Pl, Sv, Sh	SM		
1634.45	3.05 3								3.05	
1633.45	4									
1632.45	5									
1631.45	6									
1630.45	7									
1629.45	8									
1628.45	9									

# EXPLORATION LOG



START DATE 9/18/98  
 END DATE 9/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 056+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1644.37 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 56+44 "P"  
 OFFSET 31.28 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/18/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1643.37	0.00	A					w, Pl, Sv	CL	Moist, stiff, brown <b>Sandy Clay</b> with estimated 60-65% medium plastic fines, 35-40% very fine sand. Minor gravel and cobbles. Surface boulders to 1.7 meters.	
	0.61									
1642.37	1.37	B					w, Pl, Sv	GM	Moist, dense, brown <b>Silty Sandy Gravel</b> with estimated 15% slightly plastic fines, 40-45% fine to coarse sand, 40-45% gravel. Cobbles comprise up to 20% of mass.	
	1.52									
1641.37	2.29	C					w, Pl, Sv	GM	Few to no cobbles at 3.5-5.5 meters.	
	2.74									
1640.37	3.81	D					w, Pl, Sv	GM	Few to no cobbles at 3.5-5.5 meters.	
	4.57									
1639.37	5.33	E F					w, Pl, Sv	GM	Few to no cobbles at 3.5-5.5 meters.	
	6.10									
1638.37	6.86	G H					w, Pl, Sv, Sh w, Pl, Sv	GM	Soft to moderately hard, fractured, highly weathered, dark grey to brick red <b>Andesite Bedrock</b> .	
	8.38									
1637.37	8.38	I					w, Pl, Sv, Sh w, Pl, Sv	GM	Soft to moderately hard, fractured, highly weathered, dark grey to brick red <b>Andesite Bedrock</b> .	
	9.14									
1636.37	9.14	J					w, Pl, Sv, Sh w, Pl, Sv	GM	Soft to moderately hard, fractured, highly weathered, dark grey to brick red <b>Andesite Bedrock</b> .	
	9.14									
1635.37	9.14	J					w, Pl, Sv, Sh w, Pl, Sv	GM	Zone of highly weathered and degraded formation.	

# EXPLORATION LOG

SHEET 1 OF 3



START DATE 9/17/98  
 END DATE 9/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1635.72 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+15 "P"  
 OFFSET 11.33 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/18/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1634.72	0.00	A1					w, Pl, Sv, Sh	GC GM	Moist, dense, brown <b>Silty to Clayey Sandy Gravel</b> with estimated 10-15% slight to low plastic fines, 25-35% fine to coarse sand, 50-60% gravel. Abundant cobbles and boulders.	Placed casing to 1.2 meters - no sample recovered.
	1.22									
1633.72	1.83	A2								
	2.13	A		18						
	2.29			46	50/76					
1632.72	3.05	C		50/76			w, Pl, Sv	GC GM	Lenses with fewer clay fines and fewer boulders.	
	3.66									
1631.72	4	D					GC GM	Abundant hard volcanic cobbles comprising more than 40% of total mass.		
1630.72	5.18	E F					w, Pl, Sv	GC GM	Large hard volcanic boulders.	
	6.71									
1628.72	7	G					GC GM	Abundant cobbles with silty sand matrix. Few decomposed granitic cobbles.		
1627.72	8.23	H I					w, Pl, Sv	GC GM	Moist, dense to very dense, brown <b>Silty Sandy Gravel</b> . Few cobbles.	
	9.75									



# EXPLORATION LOG



START DATE 9/17/98  
 END DATE 9/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1635.72 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+15 "P"  
 OFFSET 11.33 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/18/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1624.72	11 11.28	J						<b>GM</b>	Abundant cobbles and zones of gravel.	
1623.72	12 12.80	K					Small hard volcanic boulders.			
1622.72	13									
1621.72	14 14.33	L								
1620.72	15 15.85	M					Large hard boulder.			
1619.72	16						Clean gravelly sand lense 0.2 meters thick.			
1618.72	17 17.37	N								
1617.72	18 18.90	O					18.14		Soft, highly fractured, highly weathered dark grey <b>Andesite Bedrock</b> .	
1616.72	19 19.96	P					19.81			

# EXPLORATION LOG



START DATE 9/17/98  
 END DATE 9/18/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1635.72 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+15 "P"  
 OFFSET 11.33 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/18/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/18/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1614.72	21 21.34	Q							Hard, fractured, weathered <b>Andesite Bedrock</b> . More competent with depth.	9-17-98 / 9-18-98
1613.72	22									
1612.72	23									
1611.72	24									
1610.72	25									
1609.72	26									
1608.72	27									
1607.72	28									
1606.72	29									

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 8/18/99  
 END DATE 8/18/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+34  
 E.A. # 0079-01-5  
 GROUND ELEV. 1627.75 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+34 "P"  
 OFFSET 6.72 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/18/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/18/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1626.75	1							SC	Brown, dry to slightly moist, soft to moderately hard, weakly cemented to well cemented, <b>Clayey Sand With Gravel</b> , with estimated 30% low to medium plastic fines, 45% fine to coarse sand, 25% fine to coarse gravel with cobbles of grey andesite.  Moderately severe weathered volcanic cobble. Sand lense.	
	1.52									
1625.75	2	A	SPT	50/51	50/51	50			2.44	
1624.75	3	B	SPT	50/76	50/76	50		CL	Brown, moist, soft to moderately hard, <b>Sandy Clay with Gravel</b> , with estimated 50% low to medium plastic fines, 30% fine to coarse sand, 20% fine to coarse gravel.	
1623.75	4								3.35	Fresh volcanic cobbles.
									4.11	Brown, moist, soft, <b>Clayey Sand with Gravel</b> .
1622.75	5							SC		
1621.75	6								6.10	Fresh volcanic cobbles.
1620.75	7								7.19	Unknown lithology - No Recovery (Sand?)
1619.75	8									
1618.75	9							SC	8.99	Brown, moist, soft, <b>Clayey Sand with Gravel</b> Fresh volcanic cobble.

# EXPLORATION LOG



START DATE 8/18/99  
 END DATE 8/18/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+34  
 E.A. # 0079-01-5  
 GROUND ELEV. 1627.75 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+34 "P"  
 OFFSET 6.72 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/18/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/18/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1616.75	11								Fresh volcanic cobble. 10.52	
1615.75	12									
1614.75	13									
1613.75	14									
1612.75	15									
1611.75	16									
1610.75	17									
1609.75	18									
1608.75	19									

# EXPLORATION LOG



START DATE 8/14/99  
 END DATE 8/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+76  
 E.A. # 0079-01-5  
 GROUND ELEV. 1603.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+73 "P"  
 OFFSET 6.95 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1602.83	1								Hard, highly fractured, slightly weathered, dark grey <b>Andesite Bedrock</b> .	
1601.83	2									
	2.44								Very thin clay fracture infilling.	
	2.59	A	SPT	50/0	50/0					
1600.83	3								Soft to slightly hard, highly weathered, shattered, dark grey <b>Andesite Bedrock</b> .	
1599.83	4							3.96		
1598.83	5								Slightly more competent with fewer fractures.	
	5.49									
	5.64	B	SPT	50/140	50/140				Soft and shattered with clay infilling.	
1597.83	6									
1596.83	7								Slightly more competent with fewer fractures.	
	7.01									
	7.16	C	SPT	50/0	50/0				Soft and shattered with clay infilling.	
1595.83	8									
1594.83	9								Soft and shattered with clay infilling.	
	9.91									

# EXPLORATION LOG



START DATE 8/14/99  
 END DATE 8/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+76  
 E.A. # 0079-01-5  
 GROUND ELEV. 1603.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+73 "P"  
 OFFSET 6.95 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.06	D	SPT	50/76	50/76					
1592.83	11								10.36 Slightly hard to moderately hard, slightly fractured, highly to moderately weathered, red brown to grey <b>Andesite Bedrock</b> .	
1591.83	12								12.19 Soft to slightly hard, non-fractured, highly weathered, grey <b>Andesite Breccia</b> . Clasts are moderately hard to hard.	
1590.83	13									
1589.83	14									
1588.83	15									
1587.83	16									
1586.83	17									
	17.53									
	17.68	E	SPT	50/64	50/64					
1585.83	18									
1584.83	19									

# EXPLORATION LOG

SHEET 3 OF 3



START DATE 8/14/99  
 END DATE 8/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 058+76  
 E.A. # 0079-01-5  
 GROUND ELEV. 1603.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 58+73 "P"  
 OFFSET 6.95 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1582.83	21								Slightly hard to moderately hard zone.	
1581.83	22									
1580.83	23								Slightly fractured.	
1579.83	24									
1578.83	25									
1577.83	26									
1576.83	27									
1575.83	28									
1574.83	29									
									29.87	

# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/20/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 059+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.49 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 59+41 "P"  
 OFFSET 7.68 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/20/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/20/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1604.49	1							<b>SC</b>	Brown to grey, dry to slightly moist, dense to very dense, <b>CLAYEY SAND WITH GRAVEL</b> with 15% medium plastic fines, 70% fine to coarse sand, 15% fine to coarse gravel. Unit contains interbeds of Sandy Clay.	
	1.52									
1603.49	2	A	SPT	15 30 50	80	83	w, Pl, Sv			
	1.91									
	2.44									
1602.49	3	B	SPT	16 27 27	54	83				
	2.82									
1602.49	3	B1					w, Pl, Sv		2.96	Red brown to grey, highly fractured, moderately to highly weathered <b>ANDESITE</b> bedrock.
	3.05									
1601.49	4									
	4.42									
	4.52	C	SPT	50/102	50/102	75				
	4.88								4.88	
1600.49	5	C1					w, Pl, Sv			Red grey to red brown, highly to completely weathered <b>ANDESITE</b> bedrock.
	5.73									
1599.49	6	D	SPT	35 50/140	50/140	87	w, Pl, Sv			
	5.98									
1598.49	7									
	7.56									
	7.92									Dark grey, unfractured, fresh <b>ANDESITE</b> bedrock.
1597.49	8									Dark brown to grey, completely weathered <b>ANDESITE</b> bedrock.
	9.08									
1596.49	9	E	SPT	48 50/127	50/127	91	w, Pl, Sv		9.36	Dark brown, moderately fractured, moderately weathered <b>ANDESITE</b> bedrock.
	9.34									



# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/20/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 059+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.49 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 59+41 "P"  
 OFFSET 7.68 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/20/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/20/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1594.49	11								10.06 Brown to grey, highly fractured to shattered, slightly weathered <b>ANDESITE</b> bedrock. (Possible pyroclastic flow).	
1593.49	12 12.19	E1					w, Pl, Sv		12.25 Red brown, highly fractured, highly to completely weathered <b>PYROCLASTIC FLOW</b> .	
1592.49	13									
1591.49	14	F	SPT	50/89	50/89	100				
1590.49	15 15.24	G					w, Pl, Sv			
1589.49	16								16.18 Red brown to grey, slightly to highly fractured, slightly to moderately weathered <b>ANDESITE</b> bedrock.	
1588.49	17									
1587.49	18								17.80 Brown and grey mottled, moderately to completely weathered <b>PYROCLASTIC FLOW</b> .	
1586.49	19									

## EXPLORATION LOG

SHEET 3 OF 4



START DATE 8/19/99  
 END DATE 8/20/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 059+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.49 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 59+41 "P"  
 OFFSET 7.68 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/20/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/20/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1584.49	21									
								21.52		
1583.49	22								Grey, slightly to moderately fractured <b>ANDESITE</b> bedrock, with a 2" wide, clay filled fracture zone at 72.0 feet.	
								22.25		
								22.52	Dark brown, completely weathered <b>ANDESITE?</b> bedrock.	
1582.49	23								Red grey, highly fractured to shattered, slightly to moderately weathered <b>ANDESITE</b> bedrock.	
								24.20		
1581.49	24								Red grey, slightly fractured, slightly weathered <b>ANDESITE</b> bedrock.	
								24.51	Red grey to red brown, highly fractured to shattered, slightly to moderately weathered <b>ANDESITE</b> bedrock.	
1580.49	25									
								27.68		
1579.49	26								Red brown to red grey, highly fractured to shattered, slightly to moderately weathered <b>ANDESITE</b> bedrock.	
								28.59		
1578.49	27								Grey, moderately fractured, slightly weathered <b>ANDESITE</b> bedrock.	
								29.20		
1577.49	28								Grey, shattered, moderately to highly weathered <b>ANDESITE</b> bedrock.	
								29.66		
1576.49	29								Grey, moderately to highly fractured, slightly weathered <b>ANDESITE</b> bedrock.	

# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/20/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 059+42  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.49 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 59+41 "P"  
 OFFSET 7.68 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/20/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/20/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1574.49	31									
1573.49	32									
1572.49	33									
1571.49	34									
1570.49	35									
1569.49	36									
1568.49	37									
1567.49	38									
1566.49	39									

# EXPLORATION LOG



START DATE 9/14/98  
 END DATE 9/15/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 060+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1624.70 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 60+14 "P"  
 OFFSET 11.73 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / HQ Core  
 BACKFILLED Yes DATE 9/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1623.70	0.00	A	SPT	2	50		w, Pl, Sv, Sh	<b>SM</b>	Moist, dense to very dense, brown <b>Silty Gravelly Sand</b> with estimated 20-30% non-plastic fines, 50-60% fine to coarse sand, 10-30% gravel. Abundant Granitic and Volcanic cobbles and boulders. Granitic boulders are fully decomposed while Volcanics are very hard and only slightly weathered.	Refusal at 1 meter with auger - switch to core.
	0.46			43						
1622.70	1									
1621.70	2							3.05		
1620.70	3.20	B	SPT	50/0	50/0		w, Pl, Sv		Moist, dense, brown <b>Silty Gravelly Sand</b> with estimated 20% non-plastic to slightly plastic fines, 60-80% fine to coarse sand, 0-20% gravel. Few cobbles and small boulders.	
	3.51									
1619.70	3									
1618.70	4.72	C	SPT	12	50				Alternating hard Volcanic and partially decomposed Granitic cobbles and boulders with minor matrix from 4.3 - 5.8 meters.	
	5.03			50						
1617.70	4									
1616.70	6.10	D	SPT	20	31		w, Pl, Sv		Silty Gravelly Sand contains low plastic fines with few cobbles and no boulders.	
	6.55			17 14						
1615.70	5									
1615.70	7.62	E	SPT	12	41				No cobbles or boulders present.	
	8.08			19 22						
1615.70	9.14	E1	SPT	50/0	50/0		w, Pl, Sv			
	9.45									

# EXPLORATION LOG



START DATE 9/14/98  
 END DATE 9/15/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 060+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1624.70 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 60+14 "P"  
 OFFSET 11.73 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / HQ Core  
 BACKFILLED Yes DATE 9/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1613.70	10.67 11.13	F	SPT	18 20 26	46			SM	Occasional cobbles.	
1612.70	12.19									
1611.70	12.65	G H	SPT	11 37 50/102	50/102		w, Pl, Sv			
1610.70	14									
1609.70	15									
1608.70	16									
1607.70	17								Thin, medium dense Silty Sand lenses with few decomposed granitic boulders.	
1606.70	18									
1605.70	19							SM	18.44 Moist, dense, rust brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to medium sand.	
									19.51 Moist, very dense, brown grey <b>Silty Gravelly Sand</b> with estimated 15-20% non-plastic fines,	

# EXPLORATION LOG



START DATE 9/14/98  
 END DATE 9/15/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 060+25  
 E.A. # 0079-01-5  
 GROUND ELEV. 1624.70 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 60+14 "P"  
 OFFSET 11.73 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / HQ Core  
 BACKFILLED Yes DATE 9/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
1603.70	21							<b>SM</b>	40-65% fine to coarse sand, 20-40% gravel. Highly variable with cobbles.		
1602.70	22										
1601.70	23										
1600.70	24									Silty Sand lenses.	
1599.70	25										
1598.70	26										
1597.70	27								Silty Gravelly Sand matrix with abundant decomposed boulders.		
	27.58										
1596.70	28										
1595.70	29										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/15/98  
 END DATE 9/16/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 061+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1621.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 61+49 "P"  
 OFFSET 7.24 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 9/16/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/16/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	1A	SPT	4	60		w, Pl, Sv	SC	Slightly moist to moist, very dense, brown <b>Clayey Gravelly Sand</b> with estimated 20-30% low plastic fines, 60-70% fine to coarse sand, 0-20% gravel.	
	0.46			18						
1620.21	1									
	1.52								Moist, dense to very dense, grey brown <b>Silty Gravelly Sand</b> with estimated 10-20% non-plastic to slightly plastic fines, 0-80% fine to coarse sand, 10-20% gravel. Abundant cobbles and boulders composed of hard volcanics and decomposed granite.	Refusal with auger on boulder - switch to rotary mud - met refusal - switch to core.
	1.68	1B	SPT	50/0	50/0					
1619.21	2									
1618.21	3									
	3.05									
	3.51	1C	SPT	36 40 49	89		w, Pl, Sv	SM		
1617.21	4									
1616.21	5									
1615.21	6								6.10	
1614.21	7									
1613.21	8									
1612.21	9									



## EXPLORATION LOG

START DATE 3/24/00  
 END DATE 3/24/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 062+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1619.82 (m)  
 HAMMER DROP SYSTEM NA

STATION 62+01 "P"  
 OFFSET 0.26 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/24/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/24/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1618.82	0.91							SW SC	Slightly moist, dense, brown, <b>Well Graded Sand with Clay and Gravel</b> with approximately 9% low plastic fines, 53% fine to coarse sand, 38% fine to coarse gravel with approximately 10% small cobbles.	
	1-1.22	A	GRAB				MC, SA, PI			
1617.82	1.83							SW SM	Slightly moist, very dense, brown, <b>Well graded Sand with Silt and Gravel</b> with approximately 9% non-plastic fines, 69% fine to coarse sand, 22% fine to coarse gravel with approximately 15% small cobbles.	
	2-2.13	B	GRAB				MC, SA, PI			
1616.82	3.66							SM	Slightly moist, very dense, brown, <b>Silty Sand with Gravel</b> with approximately 15% non-plastic fines, 67% fine to coarse sand, 18% fine to coarse gravel with approximately 15% small cobbles.	
	3-3.96	C	GRAB				MC, SA, PI			
1615.82	4									
1614.82	5									
1613.82	6									
1612.82	7									
1611.82	8									
1610.82	9									





## EXPLORATION LOG

START DATE	8/12/99			
END DATE	8/12/99			
JOB DESCRIPTION	I-580 Freeway Extension Project		STATION	162+97 "P1A"
LOCATION	Washoe County, Nevada		OFFSET	16.85 LT
BORING	062+90		ENGINEER	MG
E.A. #	0079-01-5		EQUIPMENT	Acker
GROUND ELEV.	1616.25 (m)		OPERATOR	Peterson
HAMMER DROP SYSTEM	Rope - Cathead		DRILLING METHOD	HQ Core
			BACKFILLED	Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1615.25	0.00	A					w, Pl, Sv	SC	Moist, dense to very dense, red brown <b>Clayey Gravelly Sand</b> with estimated 35% medium plastic fines, 50% fine to coarse sand, 15% gravel.	
	0.91	B					w, Pl, Sv			
1614.25	1.52	C	SPT	25	64			SM	Moist, very dense, brown <b>Clayey Gravelly Sand</b> with estimated 15% medium plastic fines, 55% fine to coarse sand, 30% gravel.	
	1.98			28						
1613.25	2.29	D	SPT	24	50/127			SM	Moist, very dense, brown <b>Silty Gravelly Sand</b> with estimated 20% fines, 50% sand, 30% gravel with fine to medium cobbles. Poor recovery - gradation difficult to estimate.	
	2.74			47						
1612.25	3.96	E	SPT	25	77			SM		
	4.42			37						
1611.25	5.18	F	SPT	50/127	50/127			SM		
	5.64			50/127						
1609.25	7.01	G	SPT	7	23		w, Pl, Sv	SC	Moist, medium dense to dense, grey <b>Clayey Sand</b> with estimated 35% medium plastic fines, 55% fine to coarse sand, 10% fine gravel. Interbedded with Silty Sand, Sandy Silt and Sandy Clay.	
	7.47			12						
1608.25	8.53	H	SPT	8	34			SC		
	8.99			13						
1607.25	8.99									



# EXPLORATION LOG

START DATE 9/16/98  
 END DATE 9/16/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 063+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1616.25 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 162+97 "P1A"  
 OFFSET 16.85 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core / SS Sampling  
 BACKFILLED Yes DATE 9/16/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/16/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1615.25	0.00	1A	SPT	10	26/102		w, PI, Sv	<b>SM</b>	Moist, dense, grey to brown <b>Silty Gravelly Sand</b> with estimated 10-20% non-plastic to slightly plastic fines, 60-70% fine to coarse sand, 10-20% gravel. Cobbles and boulders abundant. Partially cemented high plastic <b>Sandy Clay</b> . Moist, very dense, cemented <b>Silty Sand</b> with estimated 20% non-plastic to low plastic fines, 80% fine to medium sand. Minor gravel. Gradation and PI difficult to estimate.	Core drilling with split spoon sampling.
	0.46			10						
	1.52									
	1.83	1B	SPT	10	50/127		w, PI, Sv	<b>SM</b>		
1614.25	2							2.13	Hard volcanics and decomposed granitic cobbles and small boulders with Silty Sand matrix.	
1613.25	3									
1612.25	3.51	C							3.51	
	4.57	D						<b>SM</b>	4.57	Moist, medium dense, brown grey to brown <b>Silty Sand</b> with estimated 10-20% non-plastic to slightly plastic fines, 80-90% fine to coarse sand. Minor gravelly lenses and few cobbles.
1611.25	5									
1610.25	6									
1609.25	7									
1608.25	8									
1607.25	9									

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 8/12/99  
 END DATE 8/12/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 063+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.98 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 63+62 "P1"  
 OFFSET 3.51 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1604.98	1							SC	Moist, dense to very dense, brown <b>Clayey Gravelly Sand</b> with 15% medium plastic fines, 50% fine to coarse sand, 35% fine to coarse gravel.	
	1.52									
1603.98	2	A	SPT	31 50/127	50/127		w, Pl, Sv			
	1.98									
	2.44								2.44	
1602.98	3	B	SPT	25 37 50/76	50/76		w, Pl, Sv	SC	Moist, hard, grey, extremely variable <b>Sandy Clay, Clayey Sand, and Silty Sand</b> with variable amounts of gravel.	
	2.90									
1601.98	4	C	SPT	10 22 19	41				3.96	
	3.96									
	4.42									
	4.57	D					w, Pl, Sv			
1600.98	5							SC	Moist, dense, orange tan <b>Clayey Sand</b> with 10% medium plastic fines, 90% fine to coarse sand. Minor gravel.	
	5.49									
1599.98	6	E	SPT	5 8 11	19				6.10	
	5.94									
1598.98	7	F	SPT	8 7 16	23			CH	Moist, very stiff, grey <b>Sandy Clay</b> with 80-90% medium and high plastic fines, 10-20% very fine sand. Interbedded silty sand. Soil grades between high and medium plastic clay.	
	7.01									
	7.47									
1597.98	8									
	8.53									
1596.98	9	G	SPT	4 8 18	26		w, Pl, Sv			
	8.99									
	9.75									
				8						

**EXPLORATION LOG**



START DATE 8/12/99  
 END DATE 8/12/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 063+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.98 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 63+62 "P1"  
 OFFSET 3.51 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/16/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
	10.21	H	SPT	12	26				10.06 Single completely weathered <b>Granitic Boulder</b> .		
1594.98	11			14							
	11.58			15					11.43		
1593.98	12.04	I	SPT	37	50/127				Moist, dense to very dense, brown to grey <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to medium sand.		
	12.04			50/127							
1592.98	13.11							<b>SM</b>			
	13.56	J	SPT	21	56				13.56		
1591.98	14			24							
				32							
1590.98	15										
1589.98	16										
1588.98	17										
1587.98	18										
1586.98	19										

# EXPLORATION LOG



START DATE 10/26/99  
 END DATE 10/26/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 064+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1605.65 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 164+18 "P1A"  
 OFFSET 10.71 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/26/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/26/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1604.65	0.00	A					w, Pl, Sv	SC	Moist, very dense, brown to dark brown <b>Clayey Gravelly Sand</b> with estimated 30% medium plastic fines, 45% fine to coarse sand, 25% gravel. Few small cobbles.	
	1						0.91			
1603.65	1.52	B	SPT	22	57		w, Pl, Sv	SC	Moist, dense, brown <b>Clayey Sand</b> with estimated 20% low plastic plastic fines, 80% fine to coarse sand.	
	2			26						
1602.65	1.98	C	SPT	7	26		w, Pl, Sv	SC	Slightly moist, medium dense, light brown <b>Clayey Sand</b> with estimated 45% medium plastic fines, 55% fine to coarse sand. Interbedded Silty Sand and Sandy Silt.	
	3			12						
1601.65	2.74	D	SPT	15	51			CH	Slightly moist, hard, brown <b>Sandy Clay</b> with estimated 90% high plastic fines, 10% fine sand. Interbedded Sandy Silt and Silty Sand.	
	4			25						
1599.65	4.27	E	SPT	12	31		w, Pl, Sv	CH		
	5			14						
1598.65	4.72	F	SPT	12	34			CH		
	6			15						
1597.65	5.79	G	SPT	12	57			SP	Slightly moist, very dense, brown grey <b>Poorly Graded Sand</b> with estimated 5% non-plastic fines, 95% fine sand.	
	7			30						
1596.65	7.32									
	8								8.84	
	7.77									
	8.84									
	8.84									
	9.30									
									9.60	



# EXPLORATION LOG

START DATE 9/14/98  
 END DATE 9/14/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 064+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1602.37 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 164+35 "P1A"  
 OFFSET 0.77 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1601.37	0.00							CL	Moist, very stiff, reddish brown <b>Sandy Clay</b> with estimated 50-60% medium plastic fines, 40-50% very fine to fine sand. Coarser sand lenses present.	
	1.04									
	1.22	B					w, Pl, Sv, Sh		Moist, hard, light green grey <b>Sandy Clay</b> with estimated 80-90% high plastic fines, 10-20% very fine sand. Interbedded Sandy Silt and thin Silty Sand lenses.	
1600.37	2									
1599.37	3							CH		
	3.66	C					w, Pl, Sv			
1598.37	4	D A					w, Pl, Sv			
	3.96									
1597.37	5									
	5.18	E					w, Pl, Sv		Moist, stiff, light green grey <b>Sandy Clay</b> with estimated 50-60% medium to high plastic fines, 40-50% very fine to fine sand. Minor gravelly and sandy lenses.	
1596.37	6							CL		
	6.71									
1595.37	7							SP	Moist, dense, brown <b>Gravelly Sand</b> with estimated 5% non-plastic fines, 55% fine to coarse sand, 40% gravel to 2cm.	
	7.47									
1594.37	8							ML	Moist, very stiff, grey <b>Sandy Silt</b> with estimated 70% non-plastic fines, 30% very fine sand.	
	8.08									
1593.37	9									

# EXPLORATION LOG



START DATE 8/19/99  
 END DATE 8/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 065+36 (DB-05)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1599.23 (m)  
 HAMMER DROP SYSTEM NA

STATION 165+36 "P1A"  
 OFFSET 48.10 LT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR Dan  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1598.23	0.30							<b>SC</b>	Dry, dense, brown <b>Clayey Sand</b> with 36% high plasticity fines and 64% fine to coarse sand. Grades gently into underlying unit. Topsoil.	
	0.61	5A	GRAB				PI, Sv			
	0.76							<b>GW</b>	Dry, dense, light brown <b>Well-Graded Gravel with Sand</b> , with 2% low plasticity fines, 30% fine to coarse sand, and 68% fine to coarse subrounded gravel. Contains highly to moderately weathered andesite and granite with abundant sand lenses.	
	1.04	5B	GRAB				PI, Sv	1.04	Dry, dense, yellow-brown to grey <b>Andesite</b> . Moderately to highly fractured and slightly to moderately weathered with angular to subangular excavated fragments. Difficult excavation with practical refusal at 1.82m.	
1597.23	2									
1596.23	3									
1595.23	4									
1594.23	5									
1593.23	6									
1592.23	7									
1591.23	8									
1590.23	9									

# EXPLORATION LOG



START DATE 8/11/00  
 END DATE 8/11/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 065+36 (WQB-3)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1580.28 (m)  
 HAMMER DROP SYSTEM NA

STATION 65+36 "P1"  
 OFFSET 89.46 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/11/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1579.28	0.30							SC	Dry, loose to medium dense, dark brown <b>Clayey Sand</b> with 28% medium plasticity fines, 70% fine to coarse sand, and 2% fine gravel. Rootmass to 0.3m.	
	0.61	2A	GRAB				PI, Sv			
	1.22							SC	Dry to moist, dense to very dense, tan <b>Clayey Sand</b> with 32% high plasticity fines, 62% fine to coarse sand, and 6% fine gravel. Unit contains moderately weathered cobbles to 152mm diameter to 25% of unit. Moderate difficulty excavating.	
	1.52	2B	GRAB				PI, Sv			
1578.28	2									
1577.28	3									
1576.28	4									
1575.28	5									
1574.28	6									
1573.28	7									
1572.28	8									
1571.28	9									



# EXPLORATION LOG



START DATE 9/13/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 066+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1598.19 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 165+99 "P1A"  
 OFFSET 10.38 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Highly to moderately weathered, moderately fractured, brown grey <b>Volcaniclastic Conglomerate</b> . Easily crumbles to silty sand.	
	0.61	B					w, Pl, Sv, Sh			
1597.19	1									
	1.52	C					w, Pl, Sv			
1596.19	2									
1595.19	3							3.02		
1594.19	4									
1593.19	5									
1592.19	6									
1591.19	7									
1590.19	8									
1589.19	9									

# EXPLORATION LOG



START DATE 9/13/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 067+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1612.07 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 167+61 "P1A"  
 OFFSET 37.07 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Highly to moderately weathered, highly fractured, dark blue-gray to black <b>Andesite Bedrock</b> . Weathered to gravel-sized fragments. Matrix of silty, clayey sand - variable material. Andesite gravel fragments. Sheared fault zone.  Easily broken, crumbles.  Poor recovery.  Poor recovery.	
1611.07	1									
1610.07	2									
1609.07	3									
1608.07	4									
1607.07	5									
1606.07	6									
1605.07	7									
1604.07	8									
1603.07	9									

# EXPLORATION LOG



START DATE 9/13/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 067+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1612.07 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 167+61 "P1A"  
 OFFSET 37.07 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1601.07	11									
1600.07	12 12.19	B					w, Pl, Sv		10.67	
1599.07	13									
1598.07	14									
1597.07	15									
1596.07	16									
1595.07	17									
1594.07	18									
1593.07	19									

# EXPLORATION LOG



START DATE 9/12/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 069+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1619.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 168+98 "P1A"  
 OFFSET 51.03 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1618.83	0.00 - 1	A					w, Pl, Sv	<b>GC</b>	Dense, dark red-brown <b>Clayey Gravel with Sand</b> .	
1617.83	1.52 - 2	B					w, Pl, Sv	<b>GM</b>	Moist, dense, grey-brown, <b>Silty Gravel with Sand</b> .	
1616.83	4.57 - 3	C					w, Pl, Sv	<b>GM</b>	Soft, highly weathered, fractured <b>Volcanic Mudflow</b> . Contains volcanic gravel fragments.	
1615.83	6.10 - 4	D					w, Pl, Sv	<b>GM</b>	Several metavolcanic fragments.	
1614.83	9.14 - 5	E					w, Pl, Sv	<b>GM</b>	Multicolored volcanic gravels, typically dark-grey to black.	

# EXPLORATION LOG



START DATE 9/12/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 069+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1619.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 168+98 "P1A"  
 OFFSET 51.03 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1608.83	11								Soft to slightly hard, highly weathered, fractured, tan to tan brown <b>Volcanic Bedrock</b> .	
1607.83	12							13.72		
1606.83	13								Hard, slightly weathered, grey to dark grey <b>Andesite Bedrock</b> .	
1605.83	14							14.78		
1604.83	15								Soft to slightly hard, highly weathered, fractured, tan to tan brown <b>Volcanic Bedrock</b> .	
1603.83	16							17.04		
1602.83	17								Highly fractured, moderately weathered, hard, grey <b>Andesite</b> . Clayey sand fracture filling	
1601.83	18							17.83		
1600.83	19								Loss of drilling fluid return.	

# EXPLORATION LOG



START DATE 9/12/98  
 END DATE 9/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 069+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1619.83 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 168+98 "P1A"  
 OFFSET 51.03 LT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1598.83	21									
1597.83	22								Low to moderate fracturing.	
1596.83	23								Highly fractured, continued loss of drilling fluid recovery.	
1595.83	24									
1594.83	25									
1593.83	26									
1592.83	27									
1591.83	28								27.43	
1590.83	29									

# EXPLORATION LOG



START DATE 12/13/98  
 END DATE 12/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 070+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1607.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 170+56 "P1A"  
 OFFSET 8.35 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1606.80	0.00	A					w, Pl, Sv	SC	Moist, dense, brown <b>Clayey Sand</b> with estimated 30-40% medium plastic fines, 60-70% fine to coarse sand. Minor gravel and surface cobbles and boulders to 1 meter diameter.	
	1									
1605.80	1.52	B					w, Pl, Sv	SC	Siltier lenses with up to 10% gravel and small cobbles.	
	1.68	C					w, Pl, Sv			
1604.80	3.05	D						SM	3.35 Moist, dense to very dense, brown <b>Silty Gravelly Sand</b> with estimated 25-35% slight to low plastic fines, 55-75% fine to coarse sand, 5-10% gravel. Partially cemented soil nodules in zones.	
1603.80	4.57	E						SM	Soft clayey zones with no recovery.	
1601.80	6.10	F					w, Pl, Sv	SM	7.32 Soft to moderately hard, weathered, slightly fractured, grey to brown grey <b>Volcaniclastic Conglomerate</b> .	
	7.01	G					w, Pl, Sv, Sh			
1599.80	7.62	H						SM		
	8									
1598.80	9.14	I								



## EXPLORATION LOG

START DATE 12/13/98  
 END DATE 12/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 070+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1607.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 170+56 "P1A"  
 OFFSET 8.35 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1596.80	10.67	J								
1595.80	11.58	K					w, Pl, Sv, Sh		11.37	Moderately to slightly hard, slightly to moderately weathered, fractured to highly fractured, grey <b>Andesite Bedrock</b> (Alta Formation). Weathering increases with depth.
1594.80	13.11	L								
1593.80	14.63	M								
1592.80	16.15	N								Orange high plastic clay in fractures.
1591.80	16.76	O							16.76	
1590.80	17									
1589.80	18									
1588.80	19									



## EXPLORATION LOG

SHEET 1 OF 2



START DATE 12/13/98  
 END DATE 12/14/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 072+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1614.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 171+96 "P1A"  
 OFFSET 7.99 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/14/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1613.05	0.00	A					w, Pl, Sv		Soft, highly to completely weathered, shattered, grey <b>Andesite Bedrock</b> (Alta Formation).  Thin clay seam.	
	1.52	B					w, Pl, Sv			
1612.05	2.44	C								
	3.35	D					w, Pl, Sv			
1611.05	3.81	E								
	4.27	F					w, Pl, Sv			
1610.05	4.57							4.57	Moderately hard, moderately weathered, highly fractured, grey to olive brown <b>Andesite bedrock</b> .	
	5.64	G								
1609.05	6.10	H					w, Pl, Sv		Clay seam.	
	7.16	I								
1608.05	8.69	J							Void or very soft clay zone to 7.9 meters - no recovery.	
	9.60	K								
1607.05									Completely weathered below 8.5 meters.	

# EXPLORATION LOG



START DATE 12/13/98  
 END DATE 12/14/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 072+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1614.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 171+96 "P1A"  
 OFFSET 7.99 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/14/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1603.05	10.82 11	L							Clay fracture infilling from intense weathering.	
1602.05	11.73 12 12.19	M N						12.19		
1601.05	13									
1600.05	14									
1599.05	15									
1598.05	16									
1597.05	17									
1596.05	18									
1595.05	19									

# EXPLORATION LOG

SHEET 1 OF 3



START DATE 12/14/98  
 END DATE 12/16/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1582.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 73+80 "P1"  
 OFFSET 4.39 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/16/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/16/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1581.67	0.00	A					w, Pl, Sv	CL	Sandy Gravelly Clay old roadway fill.	
	1.07									
1580.67	1.52	B					w, Pl, Sv,		Soft, completely to highly weathered, shattered, dark grey to brown, undifferentiated Metasedimentary Bedrock.	
	1.68	C					Sh			
1579.67	3.05	D					w, Pl, Sv			
	3.66	E								
1578.67	4.42	F					w, Pl, Sv			
	5.03	G								
1577.67	5.79	H					w, Pl, Sv		Bedrock is slightly hard and extremely fractured.	
	6.64	I								
1575.67	7.71	J					w, Pl, Sv, Sh			
	9.24									
1574.67	9.69	K	SPT	9 35 50/76	50/76					

# EXPLORATION LOG



START DATE 12/14/98  
 END DATE 12/16/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1582.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 73+80 "P1"  
 OFFSET 4.39 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/16/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/16/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1571.67	10.27	L						Possible shear zone to 13.7 meters.	Poor to no recovery - extremely difficult drilling conditions.	
	10.73	M								
	11.16	N								
1570.67	11.89	O								
	12									
	12.37	P								
1569.67	13									
	13.41									
	13.87	Q	SPT	16 26 40	66					
1568.67	14	R								
	14.17	S								
1567.67	14.94									
	15.09	T	SPT	50/102	50/102					
1566.67	16								Lost hole due to caving - auger down and continued coring.	
	16.46									
	16.61	U	SPT	50/76	50/76					
1565.67	17									
	17.65	V								
1564.67	18									
	18.87	W								
1563.67	19							Slight alteration in zones.		

# EXPLORATION LOG



START DATE 12/14/98  
 END DATE 12/16/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1582.67 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 73+80 "P1"  
 OFFSET 4.39 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 12/16/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
12/16/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	20.24	X								Poor recovery.
1561.67	21									
	21.64	Y					w, Pl, Sv		21.64	
1560.67	22									
1559.67	23									
1558.67	24									
1557.67	25									
1556.67	26									
1555.67	27									
1554.67	28									
1553.67	29									

# EXPLORATION LOG



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+90  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.54 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+01 "P1"  
 OFFSET 7.95 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1571.54	0.00	A					w, Pl, Sv		Soft, completely weathered, brown grey, disturbed <b>Metasedimentary Bedrock</b> . Unit is a possible landslide deposit with a Clayey to Silty Sandy Gravel consistency.           Formation changes color to dark grey.           Difficult drilling - fines washing away - poor recovery.           Soft zone - drilled with no head pressure to 9.75 meters. No recovery.	
	1.52	B					w, Pl, Sv			
1570.54	2.44									
	2.74	C	SPT	30 50/51	50/51					
1569.54	3.05	D					w, Pl, Sv			
	3.81									
1568.54	4.11	E	SPT	28 50/102	50/102					
	5.33									
	5.49	F	SPT	45	45					
1566.54										
	6.86									
1565.54	7.01	G	SPT	50/102	50/102					
1564.54										
1563.54										

# EXPLORATION LOG



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+90  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.54 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+01 "P1"  
 OFFSET 7.95 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1561.54	11								Color change to dark grey. Formation slightly more intact with little fine matrix.	
1560.54	12									
1559.54	13							13.41	Moderately hard, dark grey, weathered, shattered to highly fractured <b>Metasedimentary Bedrock</b> .	
1558.54	14									
1557.54	15								Zone of faulting 1 meter thick.	
1556.54	16									
1555.54	17									
1554.54	18									
1553.54	19									

# EXPLORATION LOG



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 073+90  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.54 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+01 "P1"  
 OFFSET 7.95 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1551.54	21								Harder and slightly less fractured.	
1550.54	22									
1549.54	23									
1548.54	24									
1547.54	25									
1546.54	26									
1545.54	27									
1544.54	28									
1543.54	29									
								29.72		



# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/31/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.58 (m)  
 HAMMER DROP SYSTEM NA

STATION 174+30 "P1A"  
 OFFSET 0.42 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 3/31/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/31/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1552.58	1							GC	Moist to slightly moist, moderately to well cemented, olive brown to grey, <b>Outwash Deposits</b> with soil index properties of a Clayey Gravel with Sand.	
1551.58	2									
1550.58	3									
1549.58	4									
1548.58	5							GP GC	Slightly moist, moderately to well cemented, olive grey to green, <b>Reworked Metasediments and Outwash Deposits</b> with the soil index properties of a Clayey Gravel/Sand.	
1547.58	6									
1546.58	7									
1545.58	8									
1544.58	9									
										8.84
									Moderately hard to hard, moderately weathered, variably fractured, blue grey, <b>Metasedimentary Bedrock</b>	
									Close Fractured.	

# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/31/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.58 (m)  
 HAMMER DROP SYSTEM NA

STATION 174+30 "P1A"  
 OFFSET 0.42 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 3/31/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/31/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1542.58	11								Very Close Fractured with clay fracture filling.	
1541.58	12									
1540.58	13									
1539.58	14							Shattered.		
1538.58	15									
1537.58	16									
1536.58	17							Very Close Fractured to Shattered with minor fracture filling.		
1535.58	18									
1534.58	19							Shattered.		

# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/31/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.58 (m)  
 HAMMER DROP SYSTEM NA

STATION 174+30 "P1A"  
 OFFSET 0.42 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 3/31/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/31/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1532.58	21									
1531.58	22								Close Fractured with minor fracture filling.	
1530.58	23								Very Close Fractured.	
1529.58	24								Close Fractured.	
1528.58	25								Very Close Fractured to Shattered with minor fracture filling.	
1527.58	26									
1526.58	27									
1525.58	28									
1524.58	29									

## EXPLORATION LOG

SHEET 4 OF 4



START DATE 3/28/00  
 END DATE 3/31/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.58 (m)  
 HAMMER DROP SYSTEM NA

STATION 174+30 "P1A"  
 OFFSET 0.42 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 3/31/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/31/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
									30.18	
1522.58	31									
1521.58	32									
1520.58	33									
1519.58	34									
1518.58	35									
1517.58	36									
1516.58	37									
1515.58	38									
1514.58	39									

# EXPLORATION LOG



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+49 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+61 "P1"  
 OFFSET 10.76 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1551.24	1								Slightly moist, very dense, brown to brown grey <b>Silty Gravelly Sand</b> of the Mount Rose Fan Complex. Abundant cobbles and boulders both competent and completely weathered.	
1550.24	2									
1549.24	3	3.35	A				w, Sv			
1548.24	4									
1547.24	5									
1546.24	6							<b>SM</b>		
1545.24	7	7.32	B				w, Sv			
1544.24	8									
1543.24	9									

## EXPLORATION LOG

SHEET 2 OF 3



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+49 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+61 "P1"  
 OFFSET 10.76 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1541.24	11									
1540.24	12									
1539.24	13							13.11	Shattered, weathered, disturbed <b>Metasedimentary Bedrock</b> . Harder dark grey rock fragments in soft, brown grey, fine matrix with a consistency of Silty Sandy Gravel. Possible landslide deposit.	
1538.24	14									
1537.24	15									
1536.24	16	16.15	C				w, Sv			
1535.24	17									
1534.24	18									
1533.24	19									

# EXPLORATION LOG



START DATE 10/5/99  
 END DATE 10/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+49 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+61 "P1"  
 OFFSET 10.76 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	20.42	D					w, Pt, Sv		Poor recovery to 19.8 meters with better recovery to bottom of hole. Formation is fairly uniform throughout.	
1531.24	21									
1530.24	22									
1529.24	23									
1528.24	24									
1527.24	25									
1526.24	26									
1525.24	27									
1524.24	28									
1523.24	29									
									29.78	

**EXPLORATION LOG**



START DATE 8/22/99  
 END DATE 10/2/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+49 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1547.08 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+62 "P1"  
 OFFSET 7.20 LT  
 ENGINEER JRO/MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/2/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/2/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1546.08	1							SP	Slightly moist, moderately dense, brown to grey, <b>Poorly Graded Sand With Gravel</b> with <5% non-plastic fines, 70% fine to coarse sand, 30% fine to coarse gravel.	
	1.52									
1545.08	2	A	SPT	6 8 12	20	56		SC	Moist, moderately dense, pale green, <b>Clayey Sand With Gravel</b> with 30% low plastic fines, 50% fine to coarse sand, 20% fine gravel.	
	1.98									
1544.08	3	B	SPT	9 18 27	45	67		GC	Moist, dense, brown, <b>Clayey Gravel</b> with 30% low plastic fines, 10% fine to coarse sand, 60% fine to coarse gravel.	
	2.59									
1543.08	4							SC	Moist, dense, brown to grey, <b>Clayey Sand With Gravel</b> with 20% low plastic fines, 50% fine to coarse sand, 30% fine to coarse gravel.	
	3.05									
1542.08	5							GC	Moist, dense, grey to pale green, <b>Clayey Gravel</b> with 30% low plastic fines, 10% fine to coarse sand, 60% fine to coarse gravel.	
	3.66									
1541.08	6	C	SPT	16 50/127	50/127	36		SC	Moist, dense, brown to grey, <b>Clayey Sand With Gravel</b> with 20% low plastic fines, 50% fine to coarse sand, 30% fine to coarse gravel.	
	4.27									
1540.08	7							GC	Moist, dense, grey to pale green, <b>Clayey Gravel</b> with 30% low plastic fines, 10% fine to coarse sand, 60% fine to coarse gravel.	
	4.57									
1539.08	8	D	SPT	50/64	50/64	80		GC	Very hard, slightly weathered, highly fractured, dark blue grey, <b>Metasedimentary Bedrock</b> . Fracture filling comprises approximately 25-50% of rock mass and is composed of low to medium plastic Sandy Clay and Clayey Sand.	
	6.55									
1538.08	9							GC	Fracture filling comprises 50-60% of rock mass.	
	6.71									
								GC	Hard, moderately weathered, shattered, dark blue grey to green grey, <b>Metasedimentary Bedrock</b> . Fracture filling comprises approximately 30-40% of rock mass.	
	8.75									



# EXPLORATION LOG



START DATE 8/22/99  
 END DATE 10/2/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 074+49 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1547.08 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 74+62 "P1"  
 OFFSET 7.20 LT  
 ENGINEER JRO/MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/2/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/2/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1536.08	11								Abundant FeOx in fractures.	
1535.08	12									
1534.08	13									
1533.08	14							13.78	Hard to very hard, slightly to moderately weathered, moderately to highly fractured, dark blue grey, <b>Metasedimentary Bedrock</b> .	
1532.08	15							15.42		
1531.08	16								Soft, highly weathered, shattered, disturbed <b>Metasedimentary Bedrock</b> with olive matrix and dark grey rock fragments. Possible landslide deposit. Fracture filling comprises 60-70% of rock mass.	
1530.08	17									
1529.08	18									
1528.08	19									



# EXPLORATION LOG



START DATE 11/4/99  
 END DATE 11/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.31 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+74 "P1"  
 OFFSET 0.88 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1550.31	1								Hard, moderately fractured, blue grey, slightly weathered <b>Metasedimentary Bedrock</b> conglomerate.           Shattered zone with clay infilling 0.7 meters thick.           Highly fractured and moderately weathered with few small shattered zones.	
1549.31	2									
1548.31	3									
1547.31	4									
1546.31	5									
1545.31	6									
1544.31	7									
1543.31	8									
1542.31	9									

# EXPLORATION LOG



START DATE 11/4/99  
 END DATE 11/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.31 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+74 "P1"  
 OFFSET 0.88 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1540.31	11									
1539.31	12							11.89	Moderately fractured and slightly weathered.	
1538.31	13									
1537.31	14									
1536.31	15									
1535.31	16									
1534.31	17									
1533.31	18							18.29	Very hard, moderately to highly fractured, blue grey to dark grey, fine grained <b>Metasedimentary Bedrock.</b>	
1532.31	19									

# EXPLORATION LOG



START DATE 11/4/99  
 END DATE 11/7/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Angle)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.31 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+74 "P1"  
 OFFSET 0.88 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/7/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/7/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1530.31	21									
1529.31	22									
1528.31	23									
1527.31	24								Highly fractured to shattered and slightly weathered.	
1526.31	25									
1525.31	26							26.21		
1524.31	27									
1523.31	28									
1522.31	29							29.41		

# EXPLORATION LOG



START DATE 11/1/99  
 END DATE 11/3/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+68 "P1"  
 OFFSET 30.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/3/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/3/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1533.04	1							<b>SC</b>	Slightly moist, dense, brown grey <b>Clayey Gravelly Sand</b> colluvium with estimated 25% low plastic fines, 55-60% fine to coarse sand, 15-20% fine to medium gravel.  Poor recovery.     Minor small cobbles.	
1532.04	2									
	2.44									
	2.90	A	SPT	17 19 21	40					
1531.04	3									
	3.96									
1530.04	4	B	SPT	10 13 15	28					
	4.42									
1529.04	5									
	5.49									
	5.94	C	SPT	16 22 12	34					
1528.04	6									
	7.01									
1527.04	7	D	SPT	11 19 19	38					
	7.47									
1526.04	8									
	8.53									
	8.53									
1525.04	9	E	SPT	35 27 25	52				Slightly moist, dense to very dense, brown grey <b>Silty Gravelly Sand</b> with estimated 20-25% slightly plastic fines, 50-60% fine to coarse sand, 15-30% fine to coarse gravel. Few small to medium cobbles.	

# EXPLORATION LOG



START DATE 11/1/99  
 END DATE 11/3/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+68 "P1"  
 OFFSET 30.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/3/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/3/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1523.04	10.06	F	SPT	14	44			SM		
	10.52			19						
1522.04	11.43	G	SPT	17	44					
	11.89			20						
1521.04	13.11	H	SPT	25	67				Zones of clayey fines around few degraded volcanic boulders.	
	13.56			33						
1520.04	14								Poor recovery.	
1519.04	15								15.54	
1518.04	16								Hard, slightly weathered, reddish brown, slightly to moderately fractured <b>Volcaniclastic Conglomerate</b> .	
1517.04	17								17.68	
1516.04	18								Soft to slightly hard, brown grey, highly to completely weathered, highly fractured <b>Volcanic Mudflow</b> .	
1515.04	19									

# EXPLORATION LOG



START DATE 11/1/99  
 END DATE 11/3/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+68 "P1"  
 OFFSET 30.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/3/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/3/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1513.04	21									
1512.04	22							22.10	Soft, completely weathered, brown to olive grey, disturbed <b>Metasedimentary Bedrock</b> fault gouge material.	
1511.04	23							23.93	Slickenside.	
1510.04	24								Soft, olive grey, completely weathered, disturbed <b>Metasedimentary Bedrock</b> fault gouge material.	
1509.04	25									
1508.04	26									
1507.04	27									
1506.04	28									
1505.04	29									



# EXPLORATION LOG



START DATE 11/1/99  
 END DATE 11/3/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+50 (Vert.)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+68 "P1"  
 OFFSET 30.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/3/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/3/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	30.18									
	30.63	I	SPT	19 26 34	60				30.63	
1503.04	31									
1502.04	32									
1501.04	33									
1500.04	34									
1499.04	35									
1498.04	36									
1497.04	37									
1496.04	38									
1495.04	39									

## EXPLORATION LOG

SHEET 1 OF 4



START DATE 4/6/00  
 END DATE 4/7/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+73  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.34 (m)  
 HAMMER DROP SYSTEM NA

STATION 76+73 "P1"  
 OFFSET 18.97 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/7/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/7/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1558.34	1							CL 0.70	Very moist to moist, soft, olive grey/green to olive brown, <b>Metasedimentary Bedrock</b> very severely to completely weathered with the soil index properties of a Lean Clay.	
1557.34	2							1.52	Soft to moderately hard, severely to moderately weathered, olive brown/green/grey, <b>Metasedimentary Bedrock</b> very close fractured to shattered.	
1556.34	3								Moderately hard, slightly to very slightly weathered, olive brown/grey to blue grey, <b>Meta conglomerate Bedrock</b> close to very close fractured. A horizontal clay seam (2.5 cm) is present at the base of this unit.  Shallow to moderate dip angle.	
1555.34	4								Moderate to steep dip angle. Moderate clay fracture filling.	
1554.34	5									
1553.34	6							5.82	Hard, fresh, blue grey, <b>Meta conglomerate Bedrock</b> variably fractured.  Moderately close to close fractured, with moderate (35-55 degree) dip angle.	
1552.34	7								Close to very close fractured with steep (55-85 deg.) to vertical dip angle (85-90 deg.).	
1551.34	8								Moderately close to close fractured with moderate to steep dip angle.	
1550.34	9								Close to very close fractured with moderate to steep dip angle.	

# EXPLORATION LOG



START DATE 4/6/00  
 END DATE 4/7/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+73  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.34 (m)  
 HAMMER DROP SYSTEM NA

STATION 76+73 "P1"  
 OFFSET 18.97 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/7/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/7/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1548.34	11									
1547.34	12									
1546.34	13									Loss of circulation at 12.5 to 13 meters.
1545.34	14									
1544.34	15								Moderately close to close fractured, with moderate to steep dip angle.	
1543.34	16									
1542.34	17									
1541.34	18									
1540.34	19									

# EXPLORATION LOG



START DATE 4/6/00  
 END DATE 4/7/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+73  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.34 (m)  
 HAMMER DROP SYSTEM NA

STATION 76+73 "P1"  
 OFFSET 18.97 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/7/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/7/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1538.34	21									
1537.34	22									
1536.34	23								Shattered zone at 22.8 to 23.3 meters.	
1535.34	24								Moderately close to close fractured, with shallow to moderate dip angle.	
1534.34	25								Shattered zone at 24.4 to 25 meters.	
1533.34	26								Close to very close fractured with moderate dip angle.	
1532.34	27								Shattered zone at 26.8 to 26.9 meters.	
1531.34	28								Close to very close fractured, with moderate to steep dip angle.	Loss of circulation at 27.1 meters - not regain by completion of hole.
1530.34	29									

# EXPLORATION LOG



START DATE 4/6/00  
 END DATE 4/7/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 076+73  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.34 (m)  
 HAMMER DROP SYSTEM NA

STATION 76+73 "P1"  
 OFFSET 18.97 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/7/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/7/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1528.34	31								Moderate to high clay content in fractures.	
									30.57	
1527.34	32									
1526.34	33									
1525.34	34									
1524.34	35									
1523.34	36									
1522.34	37									
1521.34	38									
1520.34	39									

# EXPLORATION LOG



START DATE 11/7/99  
 END DATE 11/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 77+22 "P1"  
 OFFSET 2.89 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1558.24	1								Moderately hard, weathered, shattered, grey to brown <b>Metasedimentary Bedrock</b> . Clayey sand infilling in fractures.	
								1.22		
1557.24	2								Hard, moderately to highly fractured, dark grey <b>Metasedimentary Bedrock</b> .	
1556.24	3									
1555.24	4									
1554.24	5							4.88		
1553.24	6								Hard, shattered to highly fractured, dark grey <b>Metasedimentary Bedrock</b> .	
1552.24	7									
1551.24	8									
1550.24	9									



**EXPLORATION LOG**



START DATE 11/7/99  
 END DATE 11/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1559.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 77+22 "P1"  
 OFFSET 2.89 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
									20.18	
1538.24	21									
1537.24	22									
1536.24	23									
1535.24	24									
1534.24	25									
1533.24	26									
1532.24	27									
1531.24	28									
1530.24	29									



# EXPLORATION LOG



START DATE 10/11/99  
 END DATE 11/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1548.96 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 77+79 "P1"  
 OFFSET 28.70 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1547.96	1								Soft, completely weathered, green grey to grey <b>Metasedimentary Bedrock</b> weathered to Sandy Silt.	
1546.96	2									
	2.44									
	2.90	A	SPT	11 20 21	41		w, Pl, Sv		Very soft and weathered to Sandy Clay with medium plastic fines.	
1545.96	3									
	3.96									
1544.96	4	B	SPT	10 10 18	28				Hard, slightly weathered, dark grey, highly fractured to shattered, fine grained <b>Andesite Bedrock</b> .	
	4.42									
1543.96	5									
	5.49	C					w, Pl, Sv		Hard, slightly weathered, grey, shattered <b>Andesite Bedrock</b> .	
1542.96	6									
1541.96	7									
1540.96	8								Poor recovery.	
1539.96	9									

# EXPLORATION LOG



START DATE 10/11/99  
 END DATE 11/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1548.96 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 77+79 "P1"  
 OFFSET 28.70 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1537.96	11								Poor recovery.	
1536.96	12								Clay infilling in fractures.	
1535.96	13								Poor recovery.	
1534.96	14									
1533.96	15									
1532.96	16							15.39	Hard, slightly weathered, grey to dark grey, highly fractured <b>Andesite Bedrock</b> . Shattered zone with clay infilling 0.3 meters thick.	
1531.96	17									
1530.96	18								Moderately fractured for 0.6 meters.	
1529.96	19							18.90	Highly fractured to shattered.	

# EXPLORATION LOG



START DATE 10/11/99  
 END DATE 11/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1548.96 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 77+79 "P1"  
 OFFSET 28.70 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.96	21							20.27	Moderately to highly fractured with near vertical fractures.	
1526.96	22							21.64	Highly fractured with minor clay infilling.	
1525.96	23							22.86	Shattered shear zone with clay infilling. Drilling washed most of the clay from fractures.	
1524.96	24							24.54	Highly fractured to shattered.	
1523.96	25									
1522.96	26								Small shattered zone with clay infilling.	
1521.96	27									
1520.96	28							28.35		
1519.96	29									

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 4/3/00  
 END DATE 4/4/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+90  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.94 (m)  
 HAMMER DROP SYSTEM NA

STATION 77+90 "P1"  
 OFFSET 16.45 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/4/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/4/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1568.94	0.00							CL	0.30 Very moist, soft, olive grey/green, <b>Lean Clay with Gravel</b> Moderately hard to hard, variably fractured, olive grey/green to blue grey, <b>Metasedimentary Bedrock</b> Very close fractured, with brown clay fracture filling. Shattered, with minor fracture filling.	
	0.85		CORE			71				
	1.22	1	CORE			83				
1567.94	1.83		CORE			85		CL	2.68 2.99 Moist, very soft to soft, pale white to yellow brown, <b>Lean Clay</b> Moderately hard to hard, variably fractured, olive grey/green to blue grey, <b>Metasedimentary Bedrock</b> Shattered with minor fracture filling.	
	2.29	2	CORE			67				
	2.74		CORE			67				
1566.94	3.26	3	CORE			65		CL	2.68 2.99 Moist, very soft to soft, pale white to yellow brown, <b>Lean Clay</b> Moderately hard to hard, variably fractured, olive grey/green to blue grey, <b>Metasedimentary Bedrock</b> Shattered with minor fracture filling.	
	3.87		CORE			60				
	4.11	4	CORE			50				
1565.94	4.50		CORE			40		CL	Very close fractured. Shattered.	
	4.94		CORE			69				
	5.12	5	CORE			100				
1564.94	5.39		CORE			100		CL	Close to very close fractured, with moderate to steep dip angle, very minor to no fracture filling.	
	5.79		CORE			38				
	6.10	6	CORE			90				
1563.94	6.32		CORE			53		CL	Minor to moderate fracture filling.	
	6.77		CORE			100				
	6.93	7	CORE			70				
1562.94	7.16		CORE			65		CL	No fracture filling.	
	7.32		CORE			75				
	7.47		CORE			100				
1561.94	7.92		CORE			100		CL	Very close fractured to shattered.	
	8.05	8	CORE			75				
	8.23		CORE			67				
1560.94	8.84		CORE			25		CL	Close fractured with steep dip angle, minor clay fracture filling. Very close fractured to shattered, with minor to moderate fracture filling.	
	9.14	9	CORE			70				
	9.36		CORE			80				
	9.69		CORE			45				
	10.00		CORE			70				

# EXPLORATION LOG



START DATE 4/3/00  
 END DATE 4/4/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 077+90  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.94 (m)  
 HAMMER DROP SYSTEM NA

STATION 77+90 "P1"  
 OFFSET 16.45 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/4/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/4/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1558.94	10.36		CORE			95				
	10.67		CORE			80				
	11.00		CORE			95				
	11.34		CORE			55				
	11.89		CORE			100				
1557.94	12							Close fractured with shallow to steep dip angle.		
			CORE			88				
1556.94	13							13.11	Loss of circulation from 12.5 to 12.8 meters.	
	13.11									
								CL	Moist, soft, yellow brown to olive brown, <b>Lean Clay with Gravel</b>	
	13.81		CORE			45				
1555.94	14							13.72	Hard, very close fractured to shattered, blue grey, <b>Metasedimentary Bedrock</b> with minor to moderate clay fracture filling.	
	14.54		CORE			60				
	14.94		CORE			90				
1554.94	15									
	15.09		CORE			80				
	15.91		CORE			37				
1553.94	16									
	16.15		CORE			100				
	16.76		CORE			40				
1552.94	17							17.07		
	17.07		CORE			71				
1551.94	18									
1550.94	19									

# EXPLORATION LOG



START DATE 4/8/00  
 END DATE 4/9/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+38  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.33 (m)  
 HAMMER DROP SYSTEM NA

STATION 78+38 "P1"  
 OFFSET 0.11 LT  
 ENGINEER SDB  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/9/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/9/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1568.33	1								Moist, medium dense, dark brown to green-brown <b>Clayey Sand with Gravel</b> with estimated 20-30% medium plasticity fines, 40-50% fine to coarse sand, and 30-40% fine to coarse gravel. Variable unit.	
1567.33	2									
1566.33	3						<b>SC</b>	Basalt boulder from 2.8m to 3.0m.		
1565.33	4									
1564.33	5									
1563.33	6							6.10		
1562.33	7							Soft to moderately hard, highly fractured, moderately weathered, gray-green <b>Metasediments</b> . Moderately to heavy clay formation along fractures. Heavy FeOx staining from 6.1m to 6.8m.		
1561.33	8									
1560.33	9									

# EXPLORATION LOG



START DATE 4/8/00  
 END DATE 4/9/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+38  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.33 (m)  
 HAMMER DROP SYSTEM NA

STATION 78+38 "P1"  
 OFFSET 0.11 LT  
 ENGINEER SDB  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/9/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/9/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1558.33	11									
1557.33	12								Poor recovery from 12.5m to 14.0m.	
1556.33	13									
1555.33	14								Slight to heavy FeOx staining on fractures from 14.0m to 15.5m.	
1554.33	15								15.54	
1553.33	16									
1552.33	17									
1551.33	18									
1550.33	19									

**EXPLORATION LOG**



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1567.88	0.00	A	SPT	13	37		w, Pl, Sv	SM	Moist, dense, brown <b>Silty Gravelly Sand</b> 10-20% non-plastic fines, 70-90% fine to coarse sand, 0-20% gravel. Cobbles comprise up to 10% of soil mass.	
	0.46			18						
1566.88	2.13	B	SPT	6	19		w, Pl, Sv	SM		
	2.59			6						
1565.88	3.51	C	SPT	9	23		w, Pl, Sv, Sh	SM		
	3.96			10						
1564.88	4.57	D					w, Pl, Sv	SM		
	5.03									
1563.88	5.49	E	SPT	8	35			SM		
	6.10			15						
1562.88	6.55	F					w, Pl, Sv	SM		
	7.01									
1561.88	7.01	G	SPT	15	50/127			SM		
	7.62			29						
1560.88	7.92	H					w, Pl, Sv	SM	7.77	
	8.38									
1559.88	8.38	I	SPT	21	74		w, Pl, Sv, Sh, C	SM	Soft, completely weathered, highly fractured, variable colored (tan, olive green, blue) <b>Metasedimentary Bedrock</b> . Bedrock has been altered to medium to high plastic clay material.	
	9.14			30						
1559.88	9.45	K					w, Pl, Sv	SM		
	9.75									
	9.75	J	SPT	27	50			SM		
				50						



# EXPLORATION LOG



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1557.88	10.97									
	11.43	L	SPT	21 24 44	68					
1556.88	12									
	12.50									
	12.80	M	SPT	36 50/102	50/102					
1555.88	13									
1554.88	14.02									
	14.17	N	SPT	50/0	50/0					
1553.88	15									
1552.88	16									
1551.88	17									
1550.88	18									
1549.88	19									

Bedrock is slightly harder with less clay alteration.

Color change to green-blue.

Slightly hard and shattered.

14.63

Moderately hard to hard, weathered, highly fractured to shattered, blue grey to grey **Metasedimentary Bedrock.**

Fractures occur on 5-10 cm. spacing.

Very thin clay infilling. Small zones of highly weathered bedrock.

Zone 0.3 meters thick of highly weathered, shattered, green to green-grey bedrock with high plastic clay infilling.

Abundant clay fracture infilling.

# EXPLORATION LOG



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1547.88	21								Less clay infilling.	
1546.88	22									
1545.88	23									
1544.88	24									
1543.88	25								Moderately to highly fractured with moderate clay infilling.	
1542.88	26									
1541.88	27								Moderately to highly fractured with preferred orientations at 45, 60 & 85 degrees with clay infilling to 3 mm.	
1540.88	28									
1539.88	29									

# EXPLORATION LOG



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1537.88	31									
1536.88	32									
1535.88	33									
1534.88	34									
1533.88	35									
1532.88	36									
1531.88	37								Slightly to moderately fractured for 0.8 meters - no clay infilling.	
1530.88	38									
1529.88	39									

# EXPLORATION LOG



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.88	41								Moderately fractured with moderate clay infilling	
1526.88	42								Highly fractured.	
1525.88	43								Abundant clay infilling.	
1524.88	44									
1523.88	45									
1522.88	46									
1521.88	47								Moderately to highly fractured with moderate clay infilling. Fracture orientations mainly between 45-90 degrees.	
1520.88	48									
1519.88	49									

# EXPLORATION LOG



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1517.88	51								Highly fractured with abundant clay infilling.	
1516.88	52									
1515.88	53								Fractures at 60 degrees.	
									Highly fractured with thin clay infilling.	
1514.88	54								Fractures dominant at 35 degrees.	
									Shattered zone 0.3 meters thick.	
1513.88	55								Shattered zone 0.1 meters thick.	
									Shattered zone 0.6 meters thick.	
1512.88	56								Highly fractured.	
1511.88	57									
1510.88	58									
									Fractures at 65 degrees with thin clay infilling.	
1509.88	59								Shattered zone 0.1 meters thick.	
									Shattered zone 0.3 meters thick. Thin clay	

# EXPLORATION LOG

SHEET 7 OF 7



START DATE 1/5/99  
 END DATE 1/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+40  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+49 "P1"  
 OFFSET 11.59 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/11/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1507.88	61								infilling.	
1506.88	62								60.96	
1505.88	63									
1504.88	64									
1503.88	65									
1502.88	66									
1501.88	67									
1500.88	68									
1499.88	69									

# EXPLORATION LOG



START DATE 10/9/99  
 END DATE 10/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.47 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+82 "P1"  
 OFFSET 33.40 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1568.47	1								Moist, dense to very dense, brown <b>Silty Gravelly Sand</b> with estimated 20% non-plastic fines, variable sand and gravel percentage. Cobbles to 8 in. diameter. Surface cobbles and boulders.	Lost circulation.
	1.52	A					w, Pt, Sv			
1567.47	2							<b>SM</b>		
	2.44									
	2.90	B	SPT	9 15 13	28					
1566.47	3									
	3.81									
1565.47	4	C	SPT	50/127	50/127					
	5.49									
	5.64	D	SPT	50/114	50/114					
	5.79	E					w, Pt, Sv			
1563.47	6								Soft, highly to completely weathered, olive to olive grey, highly fractured <b>Metasedimentary Bedrock</b> .	
	5.79									
1562.47	7									
	8.53									
	8.69	F	SPT	50/140	50/140					
1561.47	8									
	9.14	G					w, Pt, Sv			
1560.47	9									

# EXPLORATION LOG



START DATE 10/9/99  
 END DATE 10/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.47 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+82 "P1"  
 OFFSET 33.40 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1558.47	11									
1557.47	12								Completely weathered, tan - olive green, low strength Phyllite weathered to a silt/clay mixture 1 meter thick.	
1556.47	13									
1555.47	14							14.33	Hard, dark grey, highly fractured, weathered, fine grained <b>Andesite Bedrock</b> . Fractures commonly at 30 to 40 degrees.	
1554.47	15									
1553.47	16								Clay seam 0.3 meters thick.	
1552.47	17									
1551.47	18									
1550.47	19									



# EXPLORATION LOG

SHEET 3 OF 3



START DATE 10/9/99  
 END DATE 10/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1569.47 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 78+82 "P1"  
 OFFSET 33.40 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1548.47	21								Shattered fault or landslide zone 0.3 meters thick.	
1547.47	22								Thin clay seam.	
1546.47	23								Thin clay seam.	
1545.47	24									
1544.47	25									
1543.47	26								Zones of slightly weathered, moderately fractured bedrock.	
1542.47	27									
1541.47	28									
1540.47	29									
									29.72	

# EXPLORATION LOG



START DATE 4/1/00  
 END DATE 4/3/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+74  
 E.A. # 0079-01-5  
 GROUND ELEV. 1586.77 (m)  
 HAMMER DROP SYSTEM NA

STATION 78+74 "P1"  
 OFFSET 17.99 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/4/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/3/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1585.77	0.00					75		CL	Moist to slightly moist, soft to very stiff, brown, <b>Sandy Lean Clay with Gravel</b> represents completely weathered metasedimentary bedrock.	
	1.22		CORE				0.91			
1584.77	2.74					100			Moderately hard to hard, variably fractured, blue grey, <b>Metasedimentary Bedrock</b> Very close fractured to shattered.  Clay seam - moist, very stiff, olive brown.	
	3.11		CORE							
1583.77	3.51					100				
	3.90		CORE							
	4.15		CORE							
1582.77	4.45					100				
	4.72		CORE							
	5.49		CORE							
1581.77	6.04					100				
	6.71		CORE							
1580.77	7.47					100				
	8.23		CORE							
1579.77	9.45					100				
	10.00		CORE							

**EXPLORATION LOG**



START DATE 4/1/00  
 END DATE 4/3/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+74  
 E.A. # 0079-01-5  
 GROUND ELEV. 1586.77 (m)  
 HAMMER DROP SYSTEM NA

STATION 78+74 "P1"  
 OFFSET 17.99 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/4/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/3/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1575.77	10.36		CORE			100			Very close fractured to shattered, with moderate clay fracture filling and moderate to steep dip angle.	
	10.82		CORE			60				
1574.77	11.13								Close to very close fractured, with moderate to steep dip angle, very minor fracture filling.	
	11.89		CORE			80				
1573.77	12								Close to very close fractured, with moderate to steep dip angle, very minor fracture filling.	
	12.80		CORE			100				
1572.77	13								White clay fracture filling at 13.7 meters.	Loss of circulation from 13.7 to 14.9 meters.
	13.41		CORE			100				
1571.77	13.81					95			White clay fracture filling at 13.7 meters.	Loss of circulation from 13.7 to 14.9 meters.
	14		CORE			83				
1570.77	14.17								Intermittant circulation from 15.8 to 18.6 meters.	
	14.94		CORE			100				
1569.77	15.03								Intermittant circulation from 15.8 to 18.6 meters.	
	15.85		CORE			100				
1568.77	16								Intermittant circulation from 15.8 to 18.6 meters.	
	16.46		CORE			90				
1567.77	16.76					80			Intermittant circulation from 15.8 to 18.6 meters.	
	17		CORE			80				
1567.77	17.45								Intermittant circulation from 15.8 to 18.6 meters.	
	17.98		CORE			80				
1567.77	18								Close to moderately close fractured with shallow dip angle.	Loss of Circulation from 18.6 to 20.1 meters.
	19		CORE			100				
1567.77	19.20								Close to moderately close fractured with shallow dip angle.	Loss of Circulation from 18.6 to 20.1 meters.
	19.75		CORE			100				
	19.99		CORE			90				

# EXPLORATION LOG



START DATE 4/1/00  
 END DATE 4/3/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 078+74  
 E.A. # 0079-01-5  
 GROUND ELEV. 1586.77 (m)  
 HAMMER DROP SYSTEM NA

STATION 78+74 "P1"  
 OFFSET 17.99 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR Larson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 4/4/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
4/3/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1565.77	20.42		CORE			100		<p style="text-align: center;">Shattered zone at 20.4 to 20.7 meters.</p> <p style="text-align: center;">Close to very close fractured with steep dip angle with minor to moderate fracture filling.</p>		
	21.03		CORE			100				
1564.77	21.88		CORE			80				
	22		CORE			50				
	22.25		CORE			0				
1563.77	22.56		CORE			0				
	22.86		CORE							
	23.10		CORE							
1562.77	23.47		CORE							
	24.08		CORE							
	24.69		CORE							
1561.77	25		CORE							
	25.30		CORE							
1560.77	25.91		CORE							
	26		CORE							
1559.77	26.33		CORE							
	27.13		CORE			95				
1558.77	28		CORE			0				
	28.44		CORE							
1557.77	28.96		CORE			0				
	29							28.96		



# EXPLORATION LOG

START DATE 1/12/99  
 END DATE 1/13/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 079+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.51 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 76+65 "P1"  
 OFFSET 23.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/13/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/13/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Soft to moderately hard, weathered to highly weathered, highly fractured, brown grey <b>Metasedimentary Bedrock</b> .  Soft clay seam 5 cm. thick. Completely weathered.	
1571.51	1									
	1.52	B					w, Pl, Sv		2.13  Hard, slightly weathered, highly fractured, dark grey <b>Metasedimentary Bedrock</b> . Fracture spacing 5-10 cm. at 20 degrees.	
1570.51	2									
	3.05	C							Fracture at 50 degrees with thin clay infilling.	
1569.51	3									
	3.51	D							Fracture at 65 degrees with 2.5 cm. clay infilling.	
1568.51	4									
	4.11	E							Highly fractured with thin clay infilling. Shattered zone 0.5 meters thick.	
1567.51	5									
	4.57	F							6.10  Clay seam 2.5 cm thick.	
1566.51	6									
	5.18	G								
	5.79	H								
	6.10	I								
1565.51	7									
1564.51	8									
1563.51	9									

# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/28/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 079+51  
 E.A. # 0079-01-5  
 GROUND ELEV. 1572.53 (m)  
 HAMMER DROP SYSTEM NA

STATION 79+66 "P1"  
 OFFSET 24.76 RT  
 ENGINEER DC  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/28/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/28/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1571.53	0.91							GC	Soft to moderately hard, moderately to highly weathered, olive brown/grey, <b>Metasedimentary Bedrock</b> with the soil index properties of a Clayey Gravel with Sand, with approximately 23% medium plastic fines, 38% fine to coarse sand, 39% fine to coarse gravel.	
	1.22	A	GRAB				MC, SA, PI			
1570.53	1.83							GP GC	1.52 Soft to moderately hard, highly weathered, olive brown, <b>Metasedimentary Bedrock</b> with the soil index properties of a Poorly Graded Gravel with Clay and Sand, with approximately 7% low plastic fines, 19% fine to coarse sand, 74% fine to coarse gravel with approximately 15% small cobbles.	
	2.13	B	GRAB				MC, SA, PI			
1569.53	3									
1568.53	4									
1567.53	5									
1566.53	6									
1565.53	7									
1564.53	8									
1563.53	9									

# EXPLORATION LOG



START DATE 11/4/98  
 END DATE 11/4/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 082+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1564.02 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 82+67 "P1"  
 OFFSET 41.31 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/4/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/4/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
	0.00								Slightly hard to moderately hard, highly weathered, fractured <b>Volcaniclastic Mudflows</b> . Thin soft zones along fractures.		
1563.02	0.91	A					w, Pl, Sv				
		B					Sh, P				
	1.52										
1562.02											
		C					w, Pl, Sv				
1561.02	3.05							Soft and weathered from 3-4 meters.			Lost circulation.
	3.66	E					w, Pl, Sv, Sh				
1560.02		D					w, Pl, Sv				
	4.57							Hard clay lense 0.3 meters thick.			
1559.02								Clay lense 6 cm. thick.			
	5.64										
1558.02		G						Soft and degraded to Clayey Gravelly Sand with 20-30% low to medium plastic fines from 5.8-7.6 meters.			
1557.02	6.83	H									
	7.38	I									
1556.02	8.17	J									
		K									
1555.02	8.90							8.90 Clay lense.			

# EXPLORATION LOG



START DATE 11/4/98  
 END DATE 11/5/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 084+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1567.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 84+20 "P"  
 OFFSET 6.48 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/5/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/5/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	CL	<b>Sandy Clay</b> surface soil with hard volcanic boulders to 1.2 meters.	
	0.76							0.46	Hard, slightly weathered, fractured, dark grey to grey <b>Andesite Bedrock</b> .	
1566.80	1									
	1.52	B					w, Pl, Sv			
		C								
1565.80	2								Clay seam 15 cm. thick.	
	2.29									
1564.80	3	D							Highly fractured with thick clay fracture infilling.	
	3.81									
1563.80	4								Thin shattered zone with clay infilling.	
		E								
1562.80	5									
	5.33									
1561.80	6	F							Moderately fractured with little to no clay infilling.	
	6.86									
1560.80	7									
	7.62	G					w, Pl, Sv			
	7.92	H								
1559.80	8								Shattered with high plastic clay infilling from 7.9-9.1 meters.	
	8.53	I					w, Pl, Sv			
	8.87	J								
1558.80	9									
		K								



# EXPLORATION LOG



START DATE 11/4/98  
 END DATE 11/5/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 084+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1567.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 84+20 "P"  
 OFFSET 6.48 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/5/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/5/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.24									
1556.80	11	L								
	11.58									
1555.80	12	M							Shattered zones with clay infilling.	
	12.95									
1554.80	13	N							Shattered zones with clay infilling.	
	14.17									
1553.80	14									
	15.30	O								
1552.80	15									
	16.37	P							Highly fractured with minor clay infilling.	
1551.80	16									
	17.28	Q							Clay seam. Shattered with minor clay infilling.	
1550.80	17									
	17.89	R								
1549.80	18	S								
	18.29								18.29	
1548.80	19									

# EXPLORATION LOG



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1567.03	1								Hard, slightly to moderately weathered, fractured to highly fractured, dark grey <b>Andesite Bedrock</b> . Fractures occur on 0.15 to 0.3 meter intervals.  Thin clay seam. Fractures occur at 15-30 degrees.  Clay seam.  Highly fractured with thin clay infilling and zones of intense weathering.  Zones of shattered bedrock.	Placed casing to 1.1 meters - no sample.
1566.03	2									
1565.03	3									
1564.03	4									
1563.03	5									
1562.03	6									
1561.03	7									
1560.03	8									
1559.03	9									

# EXPLORATION LOG



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1557.03	11									
1556.03	12								Few shattered zones with mainly competent bedrock.	
1555.03	13								Shattered bedrock with clay infilling - poor recovery.	
1554.03	14								Slightly fractured to 16.8 meters.	
1553.03	15									Add circulation return compound with no success.
1552.03	16								16.76	
1551.03	17								Very soft to soft, extremely weathered and altered, grey to brick red <b>Andesite bedrock</b> . Altered to Sandy Clay.	
1550.03	18								17.83 18.29	Hard, weathered, fractured, grey to dark grey <b>Andesite Bedrock</b> .
1549.03	19									Very soft, highly to completely weathered, red <b>Andesite Bedrock</b> . Degraded to Silty and Clayey Sand.

# EXPLORATION LOG

SHEET 3 OF 6



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1547.03	21									
1546.03	22								More competent rock (slightly hard) in large zones.	
1545.03	23									
1544.03	24							24.08	Moderately hard to hard, weathered to highly weathered, highly fractured, reddish grey <b>Andesite Bedrock</b> .	
1543.03	25									
1542.03	26								Completely weathered and shattered in zones.	
1541.03	27									
1540.03	28									
1539.03	29									
										29.87

## EXPLORATION LOG

SHEET 4 OF 6



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1537.03	31								Soft to slightly hard, weathered, fractured, grey <b>Volcanic Mudflows</b> .	
								31.24	Moderately hard, weathered, fractured, grayish red <b>Rhyolite Bedrock</b> .	
1536.03	32									
								32.40	Soft to slightly hard, whitish green to pink and grey, weathered, altered <b>Volcanic Mudflows</b> .	
1535.03	33									
1534.03	34									
1533.03	35									
1532.03	36									
1531.03	37									
1530.03	38								Hard <b>Rhyolite Flow</b> .	
								37.95		
1529.03	39									

## EXPLORATION LOG

SHEET 5 OF 6



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.03	41									
1526.03	42									
1525.03	43									
1524.03	44									
1523.03	45									
1522.03	46							46.18	Slightly hard, fractured, brown <b>Claystone</b> .	
1521.03	47							46.63	Soft to slightly hard, fractured, grey <b>Volcaniclastic Sandstone</b> . Unlithified in zones.	
1520.03	48									
1519.03	49							49.38	Slightly hard, fractured, slightly weathered, grey to tan <b>Volcanic Mudflows</b> .	

# EXPLORATION LOG



START DATE 10/24/98  
 END DATE 10/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 085+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1568.03 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 85+53 "P"  
 OFFSET 8.91 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1517.03	51									
1516.03	52									
1515.03	53								Small hard cobbles - no recovery on matrix.	
1514.03	54									
1513.03	55								Few cobbles in flows.	
1512.03	56									
1511.03	57									
1510.03	58								Large cobbles and small boulders in mud flows.	
1509.03	59								58.83	
									58.98 Clay seam.	

# EXPLORATION LOG



START DATE 11/6/98  
 END DATE 11/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 087+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1566.76 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 87+03 "P"  
 OFFSET 24.56 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00							<b>CL</b>	Moist, hard, reddish brown <b>Sandy Clay</b> with gravel and cobbles. Large surface boulders common.	
1565.76	1	A					w, Pl, Sv			
	1.52							<b>SC</b>	Moist, dense to very dense, reddish brown <b>Clayey Sand</b> with abundant hard volcanic cobbles.	
1564.76	2	B					w, Pl, Sv			
	2.90									
1563.76	3	C					w, Pl, Sv			
1562.76	4									
	4.42							Abundant cobbles and boulders to 0.6 meters.		
1561.76	5	D					w, Pl, Sv			5.03
	5.64							<b>Andesite Bedrock</b> . Hard, highly fractured, slightly weathered, grey. Heavier weathering in fractures.		
1560.76	6	E					w, Pl, Sv, Sh			
	6.71									Zone of shattered rock 0.3 meters thick.
1559.76	7	F						Zone of shattered rock 0.3 meters thick.		
	8.23									
1558.76	8	G						Zone of shattered rock 0.3 meters thick.		
	8.99									
1557.76	9	H						Shattered from 9.7-13.4 meters.		
	9.75									



# EXPLORATION LOG



START DATE 11/6/98  
 END DATE 11/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 087+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1566.76 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 87+03 "P"  
 OFFSET 24.56 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.36	I								
1555.76	11.13	J					w, PI, Sv		Clayey Gravel seam.	
1554.76	11.89	K								
	12	L							Clay seam.	
1553.76	12.95									
	13	M								
1552.76	13.96									
	14	N							Highly shattered with clay infilling from 13.4-16.8 meters.	
	14.63									
1551.76	15	O								
	15.39									
1550.76	16	P					w, PI, Sv			
	16.92									
1549.76	17								Moderately fractured - highly weathered and softer.	
	18	Q								
1548.76	18.44									18.44
1547.76	19									

# EXPLORATION LOG



START DATE 11/8/98  
 END DATE 11/8/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 088+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.58 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 88+49 "P"  
 OFFSET 0.42 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/8/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/8/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1540.58	0.00	A					w, Pl, Sv	CL	Moist, very stiff to hard, red brown <b>Sandy Gravelly Clay</b> with estimated 50% medium plastic fines, 40% very fine to coarse sand, 10% gravel. Large surface boulders present.	
	1									
1539.58	1.52	B					w, Pl, Sv		Harder with less clay infilling.	
	2									
1538.58	2.44	C								
	3									
1537.58										
1536.58										
1535.58										
1534.58										
1533.58										
1532.58										

# EXPLORATION LOG

SHEET 1 OF 7



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A							Moist, dense to very dense, dark brown <b>Clayey Gravelly Sand</b> with variable 20-30% medium plastic fines, 60-70% fine to coarse sand, 10% fine to coarse gravel. Cobbles comprise less than 5% of soil mass. Zones of low plastic fines.	Placed casing to 12.8 meters after coring to 11.6 meters.
1540.66	1									
	1.68	B				w, Pl, Sv				
1539.66	2						<b>SC</b>			
1538.66	3									
1537.66	4						4.27			
1536.66	5						<b>SM</b>			
1535.66	6									
1534.66	7						6.86			
								Moist, very dense, slightly cemented, brown grey <b>Silty Gravelly Sand</b> with estimated 20% slightly plastic fines, 70% fine to coarse sand, 10% gravel. Few hard cobbles.		
1534.66	7							Hard, slightly weathered, fractured, grey to dark grey <b>Volcanic Bedrock</b> .		
1533.66	8									
1532.66	9							Highly fractured with increased weathering in fractures and zones of clayey gravelly sand infilling.		

# EXPLORATION LOG



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1530.66	11								Highly fractured to shattered with minor clay infilling.	
1529.66	12								Highly fractured with thin clay infilling.	Lost sample from 11.6-12.8 meters due to casing over drill.
1528.66	13									
1527.66	14								Soft, grey Sandy Clay seam 0.25 meters thick.	
1526.66	15								Highly fractured with little or no clay infilling.	
1525.66	16								Thin clay seam.	
1524.66	17							17.53		
1523.66	18								Soft, completely weathered, altered, orange tan <b>Volcanic Bedrock</b> . Bedrock is altered to medium to high plastic clay. Contact at top of unit is well defined at 50 degrees.	
1522.66	19							18.44	Hard, slightly weathered, highly fractured, grey <b>Volcanic Bedrock</b> .	
									Fractures at 50 degrees. with thin clay infilling.	

## EXPLORATION LOG

SHEET 3 OF 7



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1520.66	21								Fracture at 70 degrees. with 1.3 cm clay infilling.	
1519.66	22								Moderately fractured with minor clay infilling. Thin shattered zones at 20.5 and 21.2 meters.	
1518.66	23								Shattered and highly weathered 0.15 meters thick. Clay seam 8 cm thick.	
1517.66	24									
1516.66	25								Highly fractured with 1 cm clay infilling.	
1515.66	26								Clay seam 0.15 meters thick.	
1514.66	27								27.13	
1513.66	28								Moderately to highly fractured <b>Volcanic Bedrock</b> . Fractures occur on 8-20 cm centers at 20-30 degrees. - single direction preferred. Minor clay infilling in few fractures.	
1512.66	29								28.65	
									Thin clay seam.	
									Clay seam 8 cm thick.	
									Moderately fractured at 35 degrees. with single preferred orientation.	

## EXPLORATION LOG

SHEET 4 OF 7



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1510.66	31								Clay seam 8 cm. thick.	
1509.66	32								Clay seam 10 cm thick. Highly fractured with moderate weathering 0.3 meters thick.	
1508.66	33								32.77 Clay seam 6 cm thick.	
1507.66	34								Hard, weathered, highly fractured to shattered <b>Volcanic Bedrock</b> with thin clay fracture infilling.	
1506.66	35								35.66	
1505.66	36								Hard, slightly weathered, highly fractured, dark grey <b>Volcanic Bedrock</b> . Fracture spacing at 3-15 cm at 35 degrees. with single preferred orientation. No clay infilling.	
1504.66	37									
1503.66	38									
1502.66	39								39.01	
									Hard, weathered, shattered <b>Volcanic bedrock</b> . Variable fracture orientations with clay infilling. Zones occur where clay is dominant.	

# EXPLORATION LOG



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1500.66	41									
1499.66	42							41.91	Hard, slightly weathered, slightly to moderately fractured <b>Volcanic Bedrock</b> .	
1498.66	43								Clay fracture infilling with intense weathering around fracture.	
1497.66	44									
1496.66	45							45.57	Soft, highly weathered, hydrothermally altered, highly fractured to shattered, light green grey <b>Volcanic Bedrock</b> . Orange clay fracture infilling.	
1495.66	46									
1494.66	47									
1493.66	48									
1492.66	49								Formation becomes slightly hard with very	

## EXPLORATION LOG

SHEET 6 OF 7



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1490.66	51								minor fracturing to 52.7 meters.	
1489.66	52								52.73	
1488.66	53								Soft, highly weathered, slightly fractured brownish red <b>Volcanic Mudflow</b> .	
1487.66	54								53.95	
1486.66	55								Hard, slightly weathered, fractured, dark grey <b>Volcanic Bedrock</b> .	
1485.66	56								56.08	
1484.66	57								Soft and highly weathered with reddish brown color.	
1483.66	58								Soft, highly weathered, altered, fractured, variable colored <b>Volcanic Mudflows</b> .	
1482.66	59								Slickensides on fractures - definite shear zone.	
									Slightly fractured to bottom of hole.	



# EXPLORATION LOG



START DATE 1/13/99  
 END DATE 1/19/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1541.66 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+13 "P"  
 OFFSET 0.47 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 1/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
1/19/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1480.66	61									
1479.66	62									
1478.66	63									
1477.66	64									
1476.66	65									
1475.66	66									
1474.66	67									
1473.66	68									
1472.66	69									

# EXPLORATION LOG



START DATE 3/28/00  
 END DATE 3/28/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 089+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1540.64 (m)  
 HAMMER DROP SYSTEM NA

STATION 89+49 "P"  
 OFFSET 11.15 LT  
 ENGINEER DC  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/28/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/28/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1539.64	0.91							SC	Moist, medium dense to dense, dark brown, <b>Clayey Sand</b> with approximately 42% low plastic fines, 43% fine to coarse sand, 15% fine to coarse gravel.	
	1.22	A	GRAB				MC, SA, PI			
1538.64	1.83							CL	Moist, very stiff to hard, dark brown, <b>Sandy Lean Clay</b> with approximately 57% medium plastic fines, 40% fine to coarse sand, and trace fine gravel.	
	2.13	B	GRAB				MC, SA, PI			
1537.64	3.35							SC	Moist, very dense, dark brown, <b>Clayey Sand with Gravel</b> with approximately 35% medium plastic fines, 35% fine to coarse sand, 30% fine to coarse gravel with approximately 5% small cobbles.	
	3.66	C	GRAB				MC, SA, PI			
1536.64	4									
1535.64	5									
1534.64	6									
1533.64	7									
1532.64	8									
1531.64	9									

# EXPLORATION LOG



START DATE 10/23/98  
 END DATE 10/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 090+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1533.50 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+92 "P"  
 OFFSET 9.76 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1532.50	0.00							SC	Moist, very dense, brown <b>Clayey Sand</b> with estimated 25% low to medium plastic fines, 75% fine sand. Few cobbles. Surface boulders to 3.5 meters.	
	0.61	B A					w, Pl, Sv w, Pl, Sv			
1531.50	1.52							SC	30-35% medium plastic fines in zones with up to 10% gravel.	
	3.05	C					w, Pl, Sv			
1530.50	4.57							SC	Small cobbles occur 0.3 - 0.5 meters apart.	
	4.72	E		32	32					
1529.50	6.19							SC	Large boulder 0.9 meters in diameter.	
	7.71	F								
1528.50	8.02							SC	Soft to slightly hard, highly weathered, grey <b>Volcaniclastic Sandstone</b> .	
	9.14	G		22 50/127	50/127					
1527.50	9.24									

# EXPLORATION LOG



START DATE 10/23/98  
 END DATE 10/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 090+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1533.50 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 89+92 "P"  
 OFFSET 9.76 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
		H								
	10.76									
1522.50	11									
		I								
1521.50	12								12.19	
	12.19									
1520.50	13									
1519.50	14									
1518.50	15									
1517.50	16									
1516.50	17									
1515.50	18									
1514.50	19									

# EXPLORATION LOG



START DATE 8/11/00  
 END DATE 8/11/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 091+15 (WQB-4)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1460.17 (m)  
 HAMMER DROP SYSTEM NA

STATION 91+15 "P"  
 OFFSET 324.59 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/11/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
	1.37	1458.8

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1459.17	1							<b>SC</b>	Moist to wet, medium dense, dark brown <b>Clayey Sand</b> with 28% medium plasticity fines, 69% fine to coarse sand, and 3% fine gravel. Rootmass to 152mm. Unit contains interbedded Silty, Clayey Sand. Moderate to high water entry during excavation.	
	1.52									
	1.83	4A	GRAB				PI, Sv			
1458.17	2									
1457.17	3									
	3.35									
	3.66	4B	GRAB				PI, Sv		3.66	
1456.17	4									
1455.17	5									
1454.17	6									
1453.17	7									
1452.17	8									
1451.17	9									

# EXPLORATION LOG



START DATE 10/23/98  
 END DATE 10/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 091+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1557.11 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 91+44 "P"  
 OFFSET 23.04 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1556.11	0.00	A					w, PI, Sv		Soft to slightly hard, highly weathered, fractured, reddish brown <b>Volcanic Bedrock</b> .	
	1									
1555.11	2	B								
	2.59									
1554.11	2.90	C							High plastic clay seam 0.3 meters thick.	
	3									
1553.11	4	D					w, PI, Sv			
	4.11									
1552.11	5	E							Very soft and completely weathered <b>Volcanic Bedrock</b> . Consistency of Clayey and Silty Sand.	
	5.64									
1551.11	5.79	F								
	6									
1550.11	7	G					w, PI, Sv		Minor harder zones.	
	7.25									
1549.11	8	H								
	8.78									
1548.11	9	I							Clay seam.	

## EXPLORATION LOG

SHEET 2 OF 2



START DATE 10/23/98  
 END DATE 10/23/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 091+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1557.11 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 91+44 "P"  
 OFFSET 23.04 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/23/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/23/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.30									
1546.11	11	J								
	11.83									
1545.11	12									
	12.19	L					w, Pl, Sv			
		K								
1544.11	13								Slightly harder with less weathering.	
	13.35									
		M								
1543.11	14								14.17	
	14.17									
1542.11	15									
1541.11	16									
1540.11	17									
1539.11	18									
1538.11	19									

# EXPLORATION LOG



START DATE 11/8/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 093+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1558.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 92+90 "P"  
 OFFSET 5.55 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A							Hard, highly fractured to slightly fractured, slightly weathered to weathered, grey <b>Andesite Bedrock</b> .  Placed casing to 1 meter - no sample recovered.  Slightly cemented, pinkish red Clay seam 0.24 meters thick. Highly fractured to shattered rock around seam.  Moderately fractured.  Highly fractured to shattered with thin Clay seam at 6.4 meters.  Slightly to moderately fractured from 7 - 9.7 meters.  Highly fractured with zones of shattered rock	Placed casing to 1 meter - no sample recovered.
1557.21	0.91	B								
1556.21	2.44	C								
1555.21	3.96	D								
1554.21	4.42	E				w, Pl, Sv, Sh				
1553.21	4.94	F								
1552.21	5.70	G				w, Pl, Sv				
1551.21	6.46	H								
1550.21	7.99	I								
1549.21	9.45	J				w, Pl, Sv				
	9.75	K								



# EXPLORATION LOG



START DATE 11/8/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 093+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1558.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 92+90 "P"  
 OFFSET 5.55 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1547.21	10.67	L					w, Pl, Sv		with clay infilling from 9.7 - 12.9 meters.	
1546.21	12									
1545.21	13								Highly fractured - no clay infilling. Fractures occur on 6 - 15 cm. intervals at 15-30 degrees.	
1544.21	14									
1543.21	15									
1542.21	16								Clay infilling 1cm. in 45 degrees fracture.	
1541.21	17								Moderately fractured.	
1540.21	18								Shattered zone with clay dominant 0.15 meters thick.	
1539.21	19								Moderately to highly fractured - no clay infilling.	

# EXPLORATION LOG



START DATE 11/8/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 093+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1558.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 92+90 "P"  
 OFFSET 5.55 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1537.21	21								Highly fractured with clay infilling. Moderately fractured with minor clay infilling to 22.5 meters.  Shattered from 22.5 to 32.5 meters with clay seam at 22.8 meters.	
1536.21	22									
1535.21	23									
1534.21	24									
1533.21	25									
1532.21	26									
1531.21	27									
1530.21	28									
1529.21	29									Highly fractured zone with 0.5 cm. clay infilling.

# EXPLORATION LOG



START DATE 11/8/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 093+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1558.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 92+90 "P"  
 OFFSET 5.55 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.21	31								Thin clay seam.	
1526.21	32							32.31		
1525.21	33									
1524.21	34									
1523.21	35									
1522.21	36									
1521.21	37									
1520.21	38									
1519.21	39									

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 10/22/98  
 END DATE 10/22/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 094+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 94+15 "P"  
 OFFSET 3.53 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/22/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/22/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1552.05	0.00	A					w, Pl, Sv		Slightly moist to moist, dense to very dense, grey brown <b>Silty Gravelly Sand</b> with moderately hard cobbles and small boulders comprising 50% of the soil mass.	
	1.37									
1551.05	1.83	B								
	2.74									
1550.05	3.96	C					w, Pl, Sv			
	4.88									
1549.05	6.40	D					w, Pl, Sv			
	7.62									
1548.05	8.69	E					w, Pl, Sv			
1547.05		F								
1546.05		G					w, Pl, Sv	<b>SM</b>		
1545.05		H								
1544.05		I					w, Pl, Sv			

## EXPLORATION LOG



START DATE 10/22/98  
 END DATE 10/22/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 094+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1553.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 94+15 "P"  
 OFFSET 3.53 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/22/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/22/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.15									
1542.05	11	J							Very few large cobbles.	
	11.64									
1541.05	12	K								
1540.05	13								13.41	
	13.17									
1539.05	14	L						<b>SM</b>	Moist, medium dense to dense, grey to brown <b>Silty Gravelly Sand</b> with estimated 10% non-plastic fines, 70% fine to coarse sand, 20% gravel. Interbedded poorly graded sand and siltier sand. Few volcanic cobbles.	
	14.69									
1538.05	15	M								
	15.30									
1537.05	16	N								
	16.82									
1536.05	17									
		O								
1535.05	18									
	18.29									
	18.44	P					w, Pl, Sv		18.44	
1534.05	19									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 10/22/98  
 END DATE 10/22/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 096+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1540.81 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 95+93 "P"  
 OFFSET 7.10 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/22/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/22/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	<b>CL</b>	Slightly moist, hard, brown <b>Sandy Gravelly Clay</b> colluvium.	
	0.61	B					w, Pl, Sv		0.76	
1539.81	1								Moderately hard, weathered, fractured, grey <<B>Hornblende Andesite Bedrock.	
1538.81	2									
1537.81	3									
1536.81	4								3.96	Very soft to soft, completely weathered, shattered <b>Andesite Bedrock</b> . Consistency of Clayey Sand and Gravel.
1535.81	5									
1534.81	6								6.10	High plastic clay seam.
1533.81	7									Soft to very soft, completely weathered, brown <b>Volcaniclastic Sandstone</b> with estimated 30-40% medium plastic fines, 50-60% fine to coarse sand, 10% gravel.
1532.81	8									Harder with fewer clay fines.
1531.81	9								9.14	

# EXPLORATION LOG



START DATE 10/21/98  
 END DATE 10/21/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 097+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1542.39 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 97+42 "P"  
 OFFSET 22.65 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/21/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/21/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1541.39	0.00	A					w, Pl, Sv		Slightly hard to moderately hard, weathered, fractured to shattered, brown to grey <b>Volcanic Breccia</b> .	
	1									
1540.39	1.52	C					w, Pl, Sv		Soft to slightly hard, light grey and highly weathered.	
	2									
1539.39	3.20	D						3.96	Very soft, completely weathered, reddish brown <b>Volcanic Bedrock</b> . Consistency of silty to clayey gravelly sand.	
	3									
1538.39	4	F						6.10	Slightly hard to moderately hard <b>Volcanic Breccia</b> .	
	5									
1537.39	5.94	G						6.55	Soft, completely weathered <b>Volcanic Bedrock</b> .	
	6									
1536.39	6.83	I						7.13	Very soft clay zone 0.3 meters in thickness. Clay consists of 90-100% high plastic fines - ppm = 0.5	
	7									
1535.39	7.74	K						7.74		
	8									
1534.39	8	L						9.27		
	9									

# EXPLORATION LOG



START DATE 3/23/00  
 END DATE 3/23/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1540.39 (m)  
 HAMMER DROP SYSTEM NA

STATION 97+98 "P"  
 OFFSET 20.01 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/23/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1539.39	0.91							SC	Moist, medium dense to very dense, dark brown, <b>Clayey Sand with Gravel</b> with estimated 30-40% medium plastic fines, 40-45% fine to coarse sand, 20-25% fine to coarse gravel with approximately 5-10% small cobbles. Moist, very dense, brown, <b>Clayey Gravel with Sand</b> with 17% medium plastic fines, 30% fine to coarse sand, 53% fine to coarse gravel with <5% small cobbles. Moist, very dense, brown, <b>Poorly Graded Gravel with Clay and Sand</b> with 12% medium plastic fines, 30% fine to coarse sand, 58% fine to coarse gravel with approximately 10% small to large cobbles.	Material becomes difficult to excavate below 1.2 meters.
	1.22	A	GRAB					GC		
	1.83							GP GC		
1538.39	2.13	B	GRAB				MC, SA, PI, R-VAL.			
1537.39	3								Excavator Refusal at 2.1 meters (Very hard, fresh, unfractured, volcanic bedrock)	
1536.39	4									
1535.39	5									
1534.39	6									
1533.39	7									
1532.39	8									
1531.39	9									



# EXPLORATION LOG

SHEET 1 OF 2



START DATE 9/14/99  
 END DATE 9/14/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1543.09 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+27 "P"  
 OFFSET 1.10 LT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1542.09	1								Grey, hard to very hard, close to very close fractured, <b>Pyroclastic Rock</b> with minor Sandy Clay fracture filling. Fracture direction is predominately horizontal to shallow dipping.  Steeply dipping to vertical fractures.	
	1.52									
	1.83	A	SPT	15 50/76	50/76	50				
1541.09	2								Steeply dipping to vertical fractures to 13 feet.	Loss of circulation occurred; Circulation not regained throughout remaining length of hole.
	2.44									
	2.74	B	SPT	27 50/76	50/76	50				
1540.09	3									
1539.09	4									
1538.09	5									
1537.09	6									
1536.09	7									Drill string advanced quickly to 23.5 feet.
1535.09	8									
1534.09	9									

# EXPLORATION LOG

SHEET 2 OF 2



START DATE 9/14/99  
 END DATE 9/14/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1543.09 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+27 "P"  
 OFFSET 1.10 LT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1532.09	11								10.97	
1531.09	12									
1530.09	13									
1529.09	14									
1528.09	15									
1527.09	16									
1526.09	17									
1525.09	18									
1524.09	19									



# EXPLORATION LOG



START DATE 9/13/99  
 END DATE 9/14/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+52  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.27 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+52 "P"  
 OFFSET 4.95 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1523.27	10.06	G	SPT	32	50/76	75			Color change to brown to olive grey (mottled).	
	10.36			50/76						
1522.27	11.58	H	SPT	22	50/76	75			Abundant small fractures filled with very soft, red Sandy Clay to 48 feet.	
	11.89			50/76						
1521.27	12									
	13									
1520.27	14									
	15									
1519.27	16								Abundant FeOx in fractures; Material has the properties of a Sandy Clay.	
	17									
1518.27	18	I	SPT	50	50	100			Highly fractured to shattered to 60 feet.	
	18.14			50						
1517.27	18.29								Soft with shallow to moderately dipping fractures to 71 feet.	
	19									
1516.27	19.81									
	24									

# EXPLORATION LOG



START DATE 9/13/99  
 END DATE 9/14/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+52  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.27 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+52 "P"  
 OFFSET 4.95 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	20.12	J	SPT	50/102	50/102	75				
1513.27	21									
	21.64									
	21.79	K	SPT	50/140	50/140	50			Soft with coloring as above with small zones of dark grey, moderately hard, severely weathered andesite. Moderate red Sandy Clay fracture filling to 80 feet.	
1512.27	22									
1511.27	23								Steeply dipping to vertical fractures to 77 feet.	
1510.27	24									
1509.27	25									
1508.27	26								Color change to light brown.	
1507.27	27									
1506.27	28									
1505.27	29								Dark grey, moderately hard to hard, severely weathered metavolcanic rock to 97 feet, then olive grey, soft.	

# EXPLORATION LOG



START DATE 9/13/99  
 END DATE 9/14/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 098+52  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.27 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+52 "P"  
 OFFSET 4.95 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/14/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1503.27	31								Grey to dark grey, moderately hard to hard, shattered metavolcanic rock. 30.72	
1502.27	32									
1501.27	33									
1500.27	34									
1499.27	35									
1498.27	36									
1497.27	37									
1496.27	38									
1495.27	39									

# EXPLORATION LOG

SHEET 1 OF 2



START DATE 10/14/98  
 END DATE 10/14/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 099+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1538.85 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+98 "P"  
 OFFSET 7.44 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/14/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	<b>SM</b>	0.15 Moist, loose, brown <b>Silty Sand</b> with low plasticity fines, topsoil.	
1537.85	1								Soft to moderately hard, highly weathered, grey-green <b>Metasedimentary Bedrock</b> . Easily crumbles to sandy silt-silty sand soil. Original rock structure not well preserved due to weathering. Moderate FeOx staining on fractures. Few basalt fragments present.	
	1.52	B					w, Pl, Sv			
1536.85	2									
1535.85	3									
1534.85	4									
1533.85	5								Highly fractured below to EOH.	
1532.85	6									
1531.85	7								Dark volcanic fragments.	
1530.85	8									
1529.85	9									
									9.60	Soft to moderately hard, highly fractured, highly weathered and altered, green-brown to

## EXPLORATION LOG

SHEET 2 OF 2



START DATE 10/14/98  
 END DATE 10/14/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 099+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1538.85 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 98+98 "P"  
 OFFSET 7.44 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/14/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/14/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.85	11								10.06 red-brown <b>Metasedimentary Bedrock</b> . Easily crumbles to silty sand with gravel. Fracture surfaces highly altered with extensive FeOx staining.	
1526.85	12									
1525.85	13									
1524.85	14									
1523.85	15									
1522.85	16									
1521.85	17									
1520.85	18									
1519.85	19									



# EXPLORATION LOG



START DATE 9/12/99  
 END DATE 9/12/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 099+05  
 E.A. # 0079-01-5  
 GROUND ELEV. 1542.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 99+06 "P"  
 OFFSET 7.5 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1541.04	0.00	A					w, Pl, Sv		Soft, completely weathered, disturbed, green grey <b>Metasedimentary Landslide Deposits.</b>	
	1.52									
1540.04	1.98	B	SPT	29	70				Slightly hard to moderately hard zone 0.5 meters thick.	
	2.44			33						
1539.04	2.90	C	SPT	14	52					
	3.05	D		27			w, Pl, Sv			
1538.04	3.96								4.88	
	4.42	E	SPT	29	50					
1537.04	5.18								Soft to slightly weathered, shattered, grey to brown grey <b>Metasedimentary Bedrock.</b>	
	5.49	F	SPT	29	50					
1536.04	6.10	G					w, Pl, Sv			
1535.04	7.01								7.01	
	7.47	H	SPT	31	63					
1534.04	8.53									
	8.84	I	SPT	29	50/140					
1533.04	9								Altered to medium plastic Sandy Clay with tan color to bottom of hole.	

# EXPLORATION LOG



START DATE 9/12/99  
 END DATE 9/12/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 099+05  
 E.A. # 0079-01-5  
 GROUND ELEV. 1542.04 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 99+06 "P"  
 OFFSET 7.5 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1531.04	11									
1530.04	12							12.04		
1529.04	13									
1528.04	14									
1527.04	15									
1526.04	16									
1525.04	17									
1524.04	18									
1523.04	19									

# EXPLORATION LOG



START DATE 9/12/99  
 END DATE 9/12/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 099+30  
 E.A. # 0079-01-5  
 GROUND ELEV. 1548.57 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 99+24 "P"  
 OFFSET 2.39 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/12/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1547.57	0.00	A					w, Pl, Sv		Soft, completely weathered, disturbed, grey brown <b>Metasedimentary Landslide Deposits</b> . Consistency of Clayey Gravelly Sand to Clayey Sandy Gravel.	
	1.52									
1546.57	1.98	B	SPT	7	43				Grades to Silty Gravelly Sand consistency.	
	2.44									
1545.57	2.90	C	SPT	17	34				Altered to medium to high plastic Sandy Clay with varying amounts of gravel.	
	3.05	D					w, Pl, Sv			
1544.57	3.96									
	4.42	E	SPT	10	32					
1543.57	5.49									
	5.94	F	SPT	9	27					
1542.57	6								Highly variable ranging from silty to clayey fines.	
	7.01									
1541.57	7.01								7.01	
	7.47	G	SPT	9	27					
1540.57	8									
	8.53									
1539.57	8.99	H	SPT	15	55				8.99	
				20						
				35						

# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1555.86	1							<b>SC</b>	Moist, brown <b>Clayey Sand with Gravel</b> . Gravel consists of volcanics and metasediments. Easily washed out on drilling.	
1554.86	2	2.44	A			w, Pl, Sv	2.59			
1553.86	3	3.05	B			w, Pl, Sv			Soft to moderately hard, highly weathered, highly fractured, greenish-gray <b>Metasedimentary Bedrock</b> . Filled fractures of red-brown to grey-green sandy clay to clay. Metasedimentary bedrock easily crumbles to soil. Moderate FeOx and manganese staining along fractures.	
1552.86	4	4.57	C			w, Pl, Sv				
1551.86	5									
1550.86	6	6.10	D			w, Pl, Sv				
1549.86	7									
1548.86	8									Hydrothermal alteration present in near-vertical fracture.
1547.86	9								8.99	Few volcanic fragments. Moderately hard to hard, highly to moderately fractured, slightly to highly weathered, black to dark grey <b>Metasediment Bedrock</b> . Sandy clay fracture filling.

# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1545.86	11							10.97	<p>Soft to slightly hard, highly fractured, highly to completely weathered, blue-gray to tan grey <b>Metasedimentary Bedrock</b>. Easily crumbles to soil. Moderate to extensive FeOx staining along fractures. Sandy clay filled fractures. Variable hydrothermal alteration along fractures. Jumbled mass of both metasediment and basalt fragments. Mica in 1cm wide seams.</p> <p>Volcanic fragments extensive.</p> <p>1.5cm wide quartz vein.</p> <p>1.5cm wide quartz vein.</p> <p>Altered fragments extensive.</p>	
1544.86	12									
1543.86	13									
1542.86	14									
1541.86	15									
1540.86	16									
1539.86	17									
1538.86	18									
1537.86	19									



# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1525.86	31								5cm volcanic fragment.	
1524.86	32								Extensive FeOx staining along fractures.	
1523.86	33									
1522.86	34								33.68 Soft to moderately hard, highly fractured, highly weathered, grayish-green <b>Metasedimentary Bedrock</b> . Easily crumbles near fractures to silty sand soil. Extensive to moderate FeOx staining with variable manganese staining.	
1521.86	35									
1520.86	36									
1519.86	37									
1518.86	38								Extensive hydrothermal alteration.	
1517.86	39									

# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1515.86	41									
1514.86	42									
1513.86	43									
1512.86	44									
1511.86	45									
1510.86	46									
1509.86	47									
1508.86	48									
1507.86	49									



# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1505.86	51									
1504.86	52									
1503.86	53									
1502.86	54								Shattered zone.	
1501.86	55								Hydrothermal alteration along fractures with clay infilling.	
1500.86	56									
1499.86	57								Hydrothermal breccia, extensive alteration for approximately 10cm.	
1498.86	58									
1497.86	59								Shattered zone, easily crumbles to gravel-sized fragments.	

# EXPLORATION LOG



START DATE 10/11/98  
 END DATE 10/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 100+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1556.86 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 100+42 "P"  
 OFFSET 11.75 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1495.86	61									
1494.86	62									
1493.86	63							62.94		
1492.86	64									
1491.86	65									
1490.86	66									
1489.86	67									
1488.86	68									
1487.86	69									

# EXPLORATION LOG



START DATE 3/23/00  
 END DATE 3/23/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 101+99  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.93 (m)  
 HAMMER DROP SYSTEM NA

STATION 101+93 "P"  
 OFFSET 4.88 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/23/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1550.93	0.91							CL	Moist, stiff to very stiff, olive brown, <b>Sandy Lean Clay</b> with estimated 60-70% low medium plastic fines, 30-35% fine to coarse sand, 0-5% fine gravel.	
	1.22	A	GRAB				MC, SA, PI			
1549.93	1.83								Slightly moist, moderately hard, olive brown/green, <b>Metasedimentary Bedrock</b> moderately weathered, close to very close fractured, with the soil index properties of a Poorly Graded Gravel with Silty Clay and Sand.	
	2.13	B	GRAB							
1548.93	3.66									
	3.96	C	GRAB				MC, SA, PI			
1547.93	4									
1546.93	5									
1545.93	6									
1544.93	7									
1543.93	8									
1542.93	9									

# EXPLORATION LOG

SHEET 1 OF 7



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	CL	Moist, brown to blue-gray <b>Sandy Clay</b> , with moderately to highly weathered and highly fractured gravels and cobbles. Slight FeOx staining on cobbles and gravel.	
1550.26	1									2.44
1549.26	2								Soft, brown with dark grey fragments, completely weathered, highly fractured, <b>Metasedimentary Bedrock</b> . Highly disturbed from landslide movement.	
1548.26	3 3.05	B					w, Pl, Sv			
1547.26	4								6.10	
1546.26	5									
1545.26	6								Soft, highly to completely weathered, green-gray <b>Metasedimentary Bedrock</b> . Highly disturbed from landslide movement.	
1544.26	7									
1543.26	8									
1542.26	9 9.14	C					w, Pl, Sv			

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1540.26	11									
1539.26	12									
1538.26	13									
1537.26	14									
1536.26	15									
1535.26	16									
1534.26	17									
1533.26	18									
1532.26	19									

# EXPLORATION LOG

SHEET 3 OF 7



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1530.26	21									
1529.26	22									
1528.26	23									
1527.26	24							23.93	Soft, highly weathered, highly fractured, blue-gray to green-gray <b>Metasedimentary Bedrock</b> . Moderately to highly FeOx oxidized along fractures.	
1526.26	25									
1525.26	26									
1524.26	27									
1523.26	28									
1522.26	29									

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1520.26	31									
1519.26	32								Rock core easily broken and crumbles.	
1518.26	33									
1517.26	34								Hydrothermal alteration moderate.	
1516.26	35									
1515.26	36									
1514.26	37								Slickensides present along fracture surface, weak material.	
1513.26	38								Easily crumbles to silty sand soil.	
1512.26	39								Calcite filling in fracture.	

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1510.26	41									
1509.26	42									
1508.26	43									
1507.26	44								Highly hydrothermally altered. Decreasing fracture spacing and density. Typically, tight and closed fractures below.	
1506.26	45									
1505.26	46								Fractures hydrothermally altered, filled veins.	
1504.26	47									
1503.26	48									
1502.26	49									



# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1500.26	51									
1499.26	52									
1498.26	53									
1497.26	54									
1496.26	55									
1495.26	56									
1494.26	57									
1493.26	58									
1492.26	59								Hydrothermally altered along fractures, fractures typically closed, increased fracture spacing.	

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 102+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.26 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 101+94 "P"  
 OFFSET 20.00 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1490.26	61								Easily crumbles to soil.	
1489.26	62									
1488.26	63									
								63.40		
1487.26	64									
1486.26	65									
1485.26	66									
1484.26	67									
1483.26	68									
1482.26	69									

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 103+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1540.11 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 103+54 "P3"  
 OFFSET 3.86 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Moist, medium dense, brown <b>Silty Sand with Gravel</b> with estimated 30% low to non-plastic fines, 40% fine to medium sand, 30% fine to coarse subangular to angular gravel. Colluvial deposits.	
1539.11	1									
	1.83	B					w, Pl, Sv			
1538.11	2									
1537.11	3							<b>SM</b>		
1536.11	4									
1535.11	5									
1534.11	6							6.10		
1533.11	7									
1532.11	8									
1531.11	9									

# EXPLORATION LOG



START DATE 8/20/99  
 END DATE 8/20/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 103+58 (DB-07)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1551.62 (m)  
 HAMMER DROP SYSTEM NA

STATION 103+58 "P3"  
 OFFSET 40.55 LT  
 ENGINEER SDB  
 EQUIPMENT Komatsu FC220  
 OPERATOR Dan  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/19/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/20/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.30							<b>SC SM</b>	Dry, medium dense, dark brown <b>Silty, Clayey Sand with Gravel</b> , with 30% low to non-plastic fines, 40% fine to coarse sand, and 30% fine to coarse subrounded to subangular gravel.	
	0.61	7A	GRAB				PI, Sv			
1550.62	1							<b>GC</b>	Dry, medium dense, light brown <b>Clayey Gravel with Sand</b> , with 21% medium plasticity fines, 35% fine to coarse sand, and 44% fine to coarse subrounded gravel. Contains moderately weathered, subrounded andesite and vesicular volcanic cobbles and boulders. Contains large boulders to 1.21m in diameter.	
	1.37									
	1.68	7B	GRAB				PI, Sv			
1549.62	2							<b>CH</b>	Moist, medium dense, brown <b>Fat Clay with Sand</b> , with 77% high plasticity fines, 21% fine to coarse sand, and 2% fine to coarse gravel.	
	2.74									
1548.62	3	3.05	7C	GRAB			PI, Sv		Difficult excavation due to large boulders present.	
1547.62	4									
1546.62	5									
1545.62	6									
1544.62	7									
1543.62	8									
1542.62	9									

# EXPLORATION LOG



START DATE 10/7/98  
 END DATE 10/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 105+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1567.84 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 105+05 "P3"  
 OFFSET 3.22 RT  
 ENGINEER SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
	0.00	A					w, Pl, Sv	<b>SC SM</b>	Moist, medium dense, dark brown <b>Silty, Clayey Sand with Gravel</b> with estimated 35% medium plasticity fines, 45% fine to coarse sand, 20% fine to coarse gravel. Gravel contains volcanic and metasediment fragments. Soft to slightly hard, highly fractured and weathered blue-gray <b>Metasedimentary Bedrock</b> . Clay to sandy clay filled fractures with slight calcite filling.		
1566.84	1									0.46	
	1.52	B					w, Pl, Sv				
1565.84	2										
1564.84	3								3.05		
1563.84	4										
1562.84	5										
1561.84	6										
1560.84	7										
1559.84	8										
1558.84	9										

# EXPLORATION LOG



START DATE 10/5/98  
 END DATE 10/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 106+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.73 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 106+53 "P3"  
 OFFSET 8.55 RT  
 ENGINEER MG/SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1551.73	0.00							SC	Moist, dense, brown <b>Clayey Gravelly Sand</b> with estimated 30-35% medium plastic fines, 60-65% fine to coarse sand, 0-10% gravel. Minor cobbles.	
	1	A					w, Pl, Sv			
1550.73	1.52							SC	High plastic clay zone 0.3 meters thick.  Thin sand lense.	
	2	C					w, Pl, Sv			
	2.44	B					w, Pl, Sv			
	2.74	D					w, Pl, Sv, Sh			
1549.73	3.05							SC	3.35	
	3	F					w, Pl, Sv			
1548.73	3.51							SC	Soft to moderately hard, highly weathered, extremely shattered, light to dark grey <b>Metasedimentary Bedrock</b> . Few clay fines in fractures.	
	4	E								
1547.73	3.81							SC	Highly fractured with clay infilling and alteration.	
	5	G								
1546.73	4.72							SC	Zones of moderate fracturing.	
	6	H					w, Pl, Sv			
1545.73	5.33							SC	Clay fracture infilling.	
	7	I								
1544.73	5.79							SC		
	8	J								
1543.73	7.32							SC		
	9	K								
1542.73	8.08							SC		
	10	L								
1541.73	8.69							SC		
	11	M								
1540.73	9.30							SC		
	12	N					w, Pl, Sv			
1539.73	9.91							SC		

# EXPLORATION LOG



START DATE 10/5/98  
 END DATE 10/7/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 106+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1552.73 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 106+53 "P3"  
 OFFSET 8.55 RT  
 ENGINEER MG/SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/7/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/7/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1541.73	10.21	O								
		P								
	10.82									
	11	Q								
	11.43									
1540.73	11.73	R								
	12	S						Brown, medium to high plastic clay seam 0.12 meters thick.		
	1539.73	13						Highly fractured.		
1538.73	13.26	T						Moderately fractured.		
	13.72									
	14	U								
1537.73	15.09							15.09		
1536.73	16									
1535.73	17									
1534.73	18									
1533.73	19									

# EXPLORATION LOG



START DATE 10/2/98  
 END DATE 10/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 108+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1554.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 108+07 "P3"  
 OFFSET 6.23 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/2/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1553.88	0.00	A					w, Pl, Sv	GC	Moist, medium dense, brown <b>Clayey Sandy Gravel</b> colluvium.	
	1									
1552.88	1.52	B					w, Pl, Sv		Soft to moderately hard, highly weathered, shattered, grey to dark grey <b>Metasedimentary Bedrock</b> .	
	2									
1551.88	3.47	C								
	3									
1550.88	3.96	D							Hard, slightly weathered, fractured, dark grey <b>Metasedimentary Bedrock</b> .	
	4									
1549.88	5.49	E							Fractures at 5 degrees angles. 4 fractures per 1.5 meters.	
	5									
1548.88	6.43	F							Fractures at 60 degrees angles.	
	6									
1547.88	7.25	G							Shattered zone to 10.5 meters.	
	7									
1546.88	7.68	H								
	8									
1545.88	8.63	I							Minor clay in fractures and slightly more weathered.	
	9									
	9.24	J								
	9.85									



# EXPLORATION LOG



START DATE 10/2/98  
 END DATE 10/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 108+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1554.88 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 108+07 "P3"  
 OFFSET 6.23 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/2/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.45	L								
1543.88	111.06	M							Fractures at 50 to 60 degrees. angles.	
1542.88	12 12.19	N						12.19		
1541.88	13									
1540.88	14									
1539.88	15									
1538.88	16									
1537.88	17									
1536.88	18									
1535.88	19									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 10/5/98  
 END DATE 10/5/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 109+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1537.36 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 109+42 "P2"  
 OFFSET 13.80 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/5/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/5/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd					
	0.00							<b>GC</b>	Moist, dense, brown, highly variable <b>Clayey Sandy Gravel</b> colluvium.		
	0.61	A					w, Pl, Sv			0.61	
	0.61	B					w, Pl, Sv		Moderately hard, moderately weathered, shattered, dark grey <b>Metasedimentary Bedrock</b> .		
1536.36	1.07										
	1.52	D					w, Pl, Sv				
	1.52	C									
1535.36	2.13										
	2.80	E									
	2.80	F									
1534.36	3.08									Thin clay seam.	
	3.99	G									
1533.36	4.27	H									
	4.72	I									
1532.36	5.18	J									
	5.70	K							Highly shattered.		
	5.70	L									
1531.36	6.10								6.10		
1530.36	7										
1529.36	8										
1528.36	9										

# EXPLORATION LOG



START DATE 10/1/98  
 END DATE 10/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 111+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1525.53 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 110+85 "P2"  
 OFFSET 10.66 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1524.53	0.00 1	A					w, Pl, Sv		Slightly hard to moderately hard, weathered, highly fractured to shattered, grey to dark grey <b>Metasedimentary Bedrock.</b>           Shattered to 8.5 meters.	
1523.53	1.52 2	B					w, Pl, Sv			
1522.53	3.05 3									
	3.66	C								
1521.53	4.57 4	D								
1520.53	5.39 5	E								
1519.53	6.31 6	F								
1518.53	7.62 7	G								
1517.53	8.53 8	H						8.53		
1516.53	9									

# EXPLORATION LOG



START DATE 8/11/00  
 END DATE 8/11/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 112+13 (WQB-5)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1580.28 (m)  
 HAMMER DROP SYSTEM NA

STATION 112+13 "P3"  
 OFFSET 31.36 LT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/11/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.15							SC	Dry, medium dense, dark brown <b>Clayey Sand with Gravel</b> with 38% medium plasticity fines, 46% fine to coarse sand, and 16% fine to coarse gravel. Rootmass to 0.5m.	
	0.46	5A	GRAB							
	0.61							GC	Dry, medium dense to dense, brown, <b>Clayey Gravel with Sand</b> with 29% low plasticity fines, 34% fine to coarse sand, and 37% fine to coarse gravel. Unit contains interbedded, scattered caliche veinlets and cobbles to 15% of unit. Difficult excavation below 3.0m.	
	0.91	5B	GRAB				PI, Sv			
1579.28	1									
1578.28	2									
1577.28	3									
	3.66							GC	Dry, medium dense to dense, brown, <b>Clayey Gravel with Sand</b> with 29% low plasticity fines, 34% fine to coarse sand, and 37% fine to coarse gravel. Unit contains interbedded, scattered caliche veinlets and cobbles to 15% of unit. Difficult excavation below 3.0m.	
	3.96	5C	GRAB				PI, Sv			
1576.28	4									
1575.28	5									
1574.28	6									
1573.28	7									
1572.28	8									
1571.28	9									

# EXPLORATION LOG



START DATE 10/1/98  
 END DATE 10/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 112+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1520.72 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 112+42 "P2"  
 OFFSET 7.09 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1519.72	0.00 — 1	A					w, Pl, Sv	<b>SC</b>	Moist, dense, brown grey <b>Clayey Gravelly Sand</b> colluvium with estimated 30-50% medium plastic fines, 30-40% fine to coarse sand, 10-20% gravel.	
1518.72	1.52 — 2									
1517.72	3.05 — 3									
1516.72	3.66 — 4	B							Soft to hard, highly weathered, shattered, dark grey <b>Metasedimentary Bedrock</b> .	
1515.72	4.57 — 5	C					w, Pl, Sv			
1514.72	5.58 — 6	D								
1513.72	6.64 — 7	E								
1512.72	7.19 — 8	F								
1511.72	8.53 8.90 — 9 9.14	G								
									9.14	

# EXPLORATION LOG



START DATE 10/1/98  
 END DATE 10/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 114+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1585.80 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 113+97 "P2"  
 OFFSET 2.69 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv		Soft, completely weathered, shattered, grey <b>Metasedimentary Bedrock</b> . Highly degraded to clay with gravel.	
1584.80	1									
	1.52	B					w, Pl, Sv			
1583.80	2									
1582.80	3 3.05	C					w, Pl, Sv, Sh		3.05	
1581.80	4									
1580.80	5									
1579.80	6									
1578.80	7									
1577.80	8									
1576.80	9									

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 114+82  
 E.A. # 0079-01-5  
 GROUND ELEV. 1538.18 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 114+82 "P3"  
 OFFSET 14.58 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1537.18	1							CL	Moist, very stiff to hard, dark brown to brown, <b>Lean to Fat Clay</b> with estimated 70-80% medium to high plastic fines, 10-20% fine to coarse sand, 10% fine gravel.	Unit logged from cuttings.
									0.91	
1536.18	2							CL	Slightly moist, very dense to hard, brown, <b>Lean Clay with Sand</b> with estimated 80% medium plastic fines, 10-20% fine to coarse sand, 0-10% fine to coarse gravel.	Unit logged from cuttings to 3.0 meters.
1535.18	3	3.05								
		3.51	4A	MC	10 27 42	69	100			
1534.18	4	4.57						SC	Slightly moist to moist, medium dense, orange brown, <b>Clayey Sand with Gravel</b> with estimated 30-40% medium plastic fines, 50% fine to coarse sand, 10-20% fine gravel.	
		4.98	4B	MC	9 11 10	21	89			
1533.18	5	4.98							Dry, medium dense to very dense, cream white to peach, <b>Hydrothermal Deposits</b>	Temp. = 16.6 deg. Cel.
		6.10								
1532.18	6	6.10								
		6.55	4C	MC	13 11 9	20	100			Temp. = 17.9 deg. Cel.
1531.18	7									
1530.18	8									
1529.18	9	9.14								
		9.55	4D	MC	5 9 10	19	89			Temp. = 19.1 deg. Cel.

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 114+82  
 E.A. # 0079-01-5  
 GROUND ELEV. 1538.18 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 114+82 "P3"  
 OFFSET 14.58 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1527.18	11									
1526.18	12									
	12.19									
	12.65	4E	MC	10 26 36	62	100				Temp. = 20.6 Deg. Cel.
1525.18	13									
1524.18	14							14.02	Moist, very dense, pale green, <b>Metasedimentary Bedrock</b> moderately to highly altered with abundant iron oxide staining.	
1523.18	15									
	15.24									
	15.47	4F	SPT	23 50/75	50/75	89		15.54		
1522.18	16									Hole abandoned at 15.5 meters - very slow auger advance.
1521.18	17									
1520.18	18									
1519.18	19									



# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+12  
 E.A. # 0079-01-5  
 GROUND ELEV. 1537.04 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+12 "P3"  
 OFFSET 10.02 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1536.04	1							CL	Very moist to moist, very stiff, dark brown, <b>Lean Clay to Fat Clay</b> with estimated 95% medium to high plastic fines, 5% fine to coarse sand.	
									1.52 Unit contains light grey to white calcite whorls.	
1535.04	2							CL	Moist, very stiff to hard, brown to orange brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 80% medium to high plastic fines, 15% fine to coarse sand, 5% fine to coarse gravel.	
1534.04	3									
1533.04	4								3.96 Slightly moist, medium dense, cream white to peach, <b>Hydrothermal Deposits</b> moderately to well laminated with very low density.	
	4.27									
		1A	GRAB							
	4.88									
1532.04	5								5.33	Temp. = 10.0 deg. Cel.
1531.04	6									
1530.04	7									
1529.04	8									
1528.04	9									

# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+18  
 E.A. # 0079-01-5  
 GROUND ELEV. 1537.69 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+18 "P3"  
 OFFSET 31.19 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1536.69	1.07	10A	GRAB				MC, SA, PI.	CL	0.61 Moist, brown to dark brown, stiff to hard, <b>Sandy Lean Clay/Fat Clay</b> with estimated 60-70% medium to high plastic fines, 25-30% fine to coarse sand, 0-10% fine to coarse gravel. Base of unit varies from 0.3 to 0.9 meters. Dry, hard, light grey to pale white, <b>Hydrothermal Sinter</b> well laminated, slightly porous.	Temp. = 10.0 deg. Cel.
1535.69	2							1.68	Dry, medium dense, pale white to cream, <b>Hydrothermal Deposits</b> moderately laminated, with low specific gravity.	
1534.69	3							2.59		
1533.69	4									
1532.69	5									
1531.69	6									
1530.69	7									
1529.69	8									
1528.69	9									

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+26  
 E.A. # 0079-01-5  
 GROUND ELEV. 1537.80 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+26 "P3"  
 OFFSET 46.18 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1536.80	0.61							CL	Moist, stiff to hard, dark brown, <b>Lean Clay with Sand</b> with estimated 70% low to medium plastic fines, 20% fine to coarse sand, 10% fine to coarse gravel. Slightly moist, moderately hard, pale brown, <b>Hydrothermal Deposits</b> (Unit only occurred in the eastern most end of the test pit.) Slightly moist, moderately hard, pale brown to olive, <b>Metasedimentary Bedrock</b> moderately to highly altered, very close fractured to brecciated (?).	
	0.76	11A	GRAB							
1535.80	2									
1534.80	3									
1533.80	4									
1532.80	5									
1531.80	6									
1530.80	7									
1529.80	8									
1528.80	9									

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+27  
 E.A. # 0079-01-5  
 GROUND ELEV. 1536.02 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+26 "P2"  
 OFFSET 3.61 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1535.02	1							CL	Moist, brown, hard, <b>Lean Clay with Sand</b> with estimated 80% medium plastic fines, 15% fine to coarse sand, 5% fine to coarse gravel.  Higher gravel content to 1.8 meters.	
1534.02	2								2.44	
1533.02	3	3.05								
		3.49	2A	MC	24 43 50/138	50/138	100		CL	Slightly moist, very stiff to hard, brown to light brown, <b>Lean Clay with Sand</b> with estimated 60-70% low to medium plastic fines, 20-30% fine to coarse sand, 10% fine to coarse gravel. Calcite whorls.
1532.02	4	4.57								
		4.98	2B	MC	30 43 50/100	50/100	100		CL	4.66
1531.02	5									Dry, very dense, cream to peach, <b>Hydrothermal Sinter</b>
1530.02	6	6.10								Temp. = 21.2 deg. Cel.
		6.55	2C	MC	18 27 48	75	100			Temp. = 19.5 deg. Cel.
1529.02	7									
		7.62								
1528.02	8									
		9.14								
1527.02	9									
		9.60	2D	MC	5 7 5	12	100			Dry, medium dense, cream to peach, <b>Hydrothermal Deposits</b> with low specific gravity. (Material has the soil index properties of a Silty Sand with Gravel, with approximately 35% non-plastic fines, 45% fine to coarse sand, 20% fine to coarse gravel.)
										Temp. = 21.3 deg. Cel.

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+27  
 E.A. # 0079-01-5  
 GROUND ELEV. 1536.02 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+26 "P2"  
 OFFSET 3.61 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1525.02	11									
1524.02	12									
	12.19									
	12.65	2E	MC	5 6 8	14	100	MC, SA, Pl.			Temp. = 21.5 deg. Cel.
1523.02	13									
1522.02	14									
1521.02	15									
	15.24									
	15.70	2F	MC	6 12 12	24	100				Temp. = 23.5 deg. Cel.
1520.02	16									
1519.02	17									
1518.02	18									
	18.29									
	18.75	2G	MC	11 12 15	27	100			18.75	Temp. = 24.7 deg. Cel.
1517.02	19									

# EXPLORATION LOG



START DATE 3/23/00  
 END DATE 3/23/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+41  
 E.A. # 0079-01-5  
 GROUND ELEV. 1537.44 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+41 "P3"  
 OFFSET 37.42 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/23/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1536.44	0.91 1 1.22	15A	GRAB				Chemical	CL 0.15 Moist, brown, very stiff, <b>Lean Clay to Fat Clay with Sand</b> with estimated 70% medium to high plastic fines, 20% fine to coarse sand, 10% fine to coarse gravel. Dry, hard, pale white to pale blue-green, <b>Hydrothermal Sinter</b> dense, porous, well laminated.		
1535.44	2									
1534.44	3									
1533.44	4									
1532.44	5									
1531.44	6									
1530.44	7									
1529.44	8									
1528.44	9									

# EXPLORATION LOG



START DATE 10/1/98  
 END DATE 10/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1535.08 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 115+45 "P2"  
 OFFSET 5.30 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1534.08	0.00 1	A					w, Pl, Sv	CL CH	Moist, very stiff to hard, brown <b>Sandy Gravelly Clay</b> with estimated 50-70% medium to high plastic fines, 40-50% fine to coarse sand, 0-10% gravel.  4.11 Dry, soft to slightly hard, cream to peach, laminated, porous <b>Hydrothermal Sinter</b> .  7.32 Soft and clayey at 7 meters.  White, very soft to slightly stiff, leached <b>Hydrothermal Deposits</b> . Contains clayey material with very low specific gravity.  Zones of soft Silty Clay with 90-100% fines.	
1533.08	1.52 2	B					w, Pl, Sv			
1532.08	3.05 3									
1531.08	4 4	C					w, Pl, Sv			
1530.08	4.57 5									
1529.08	6.10 6	D					w, Pl, Sv			
1528.08	7 7	E					w, Pl, Sv, Sh			
1527.08	7.62 8									
1526.08	9.14 9	F					w, Pl, Sv			
		G								

# EXPLORATION LOG



START DATE 10/1/98  
 END DATE 10/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1535.08 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 115+45 "P2"  
 OFFSET 5.30 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 10/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1524.08	10.67 11		H						Red bands of coloration.	
1523.08	12 12.19									
1522.08	13 13.72		I				w, Pl, Sv		Possible Mercury and Arsenic deposits.	
1521.08	14									
1520.08	15 15.24		J						Very soft zones.	
1519.08	16									
1518.08	17									
1517.08	18									
1516.08	19									



# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+54  
 E.A. # 0079-01-5  
 GROUND ELEV. 1535.35 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+54 "P2"  
 OFFSET 7.24 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1534.35	1							CH	Moist, very stiff to hard, dark brown, <b>Fat Clay with Sand</b> with estimated 80% high plastic fines, 15-20% fine to coarse sand, trace fine to coarse gravel.	
									0.85	
1533.35	2							CL	Moist to slightly moist, hard, olive brown, <b>Lean Clay to Fat Clay</b> with estimated 75-85% medium to high plastic fines, 5-10% fine to coarse sand, 10-15% fine to coarse gravel. Calcite whorls at 0.9 to 1.8 meters.	
		2.44								
		2.59	12A	GRAB						
1532.35	3									
1531.35	4								3.96	
		4.27								
		4.42	12B	GRAB			Chemical			
									4.57	
1530.35	5									
1529.35	6									
1528.35	7									
1527.35	8									
1526.35	9									

Temp. = 10.0 deg. Cel.

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+56  
 E.A. # 0079-01-5  
 GROUND ELEV. 1536.49 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+56 "P3"  
 OFFSET 13.40 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1535.49	1							<b>CL</b>	Moist, hard, brown, <b>Sandy Lean Clay</b> with estimated 60% medium plastic fines, 30% fine to coarse sand, 10% fine to coarse gravel.	
1534.49	2									
1533.49	3	3.05							2.29 Dry, loose to dense, pale white to peach, <b>Hydrothermal Deposits</b> with very low specific gravity. (Material has the soil index properties of a Silty Sand with Gravel, with approximately 15% non-plastic fines, 80% fine to coarse sand, 5% fine to coarse gravel.)	Temp. = 13.0 deg. Cel.
		3.51	1A	MC	6 6 5	11	100			
1532.49	4	4.57							Temp. = 16.0 deg. Cel.	
1531.49	5	5.03	1B	MC	4 4 5	9	100			
1530.49	6	6.10							Temp. = 17.8 deg. Cel.	
		6.55	1C	MC	4 6 5	11	100			
1529.49	7								Dense	
1528.49	8									
1527.49	9	9.14								
		9.60	1D	MC	12 19 31	50	100	MC, SA, PI	Temp. = 21.1 deg. Cel.	

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+56  
 E.A. # 0079-01-5  
 GROUND ELEV. 1536.49 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+56 "P3"  
 OFFSET 13.40 LT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1525.49	11								Medium dense	Temp. = 21.4 deg. Cel.
1524.49	12 12.19									
	12.65	1E	MC	8 11 17	28	100	Chemical			
1523.49	13									
1522.49	14									
1521.49	15 15.24								16.46	Temp. = 23.0 deg. Cel.
	15.70	1F	MC	11 17 35	52	100				
1520.49	16									
1519.49	17								Slightly moist, very dense, pale green, <b>Metasedimentary Bedrock</b> moderately to strongly altered.	Temp. = 24.2 deg. Cel.
1518.49	18 18.29									
	18.75	1G	MC	13 25 36	61	100			18.75	
1517.49	19									

# EXPLORATION LOG



START DATE 3/23/00  
 END DATE 3/23/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.64 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+60 "P2"  
 OFFSET 39.95 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/23/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1533.64	1							CH	Very moist, very stiff to hard, dark brown to brown, <b>Fat Clay</b> with estimated 90% high plastic fines, 10% fine to coarse sand.	
	1.52							CL	Moist, very stiff to hard, brown, <b>Lean Clay with Sand and Gravel</b> with estimated 60-70% medium plastic fines, 20% fine to coarse sand, 10-20% fine gravel.	
1532.64	1.83	13A	GRAB				MC, SA, PI		Moist, hard, brown, <b>Lean Clay with Gravel</b> with estimated 70% medium plastic fines, 10% fine to coarse sand, 20% fine to coarse gravel.	
	2							CL		
1531.64	3									
	3.05							CL	Slightly moist, hard/very dense, brown, <b>Sandy Lean Clay with Gravel/Clayey Sand with Gravel</b> with estimated 40% low plastic fines, 40% fine to coarse sand, 20% fine gravel.	
1530.64	4									
	4.42									
1529.64	4.57	13B	GRAB				Chemical			
	5								No Hydrothermal Deposits Encountered.	
1528.64	6									
1527.64	7									
1526.64	8									
1525.64	9									

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+65  
 E.A. # 0079-01-5  
 GROUND ELEV. 1535.37 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+65 "P3"  
 OFFSET 54.45 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1534.37	1							CL	0.30	Moist, stiff to hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 70% medium to high plastic fines, 20% fine to medium sand, 10% fine gravel. Slightly moist, moderately hard to hard, olive brown, <b>Metasedimentary Bedrock</b> unaltered to slightly altered, close to very close fractured.
1533.37	2									
1532.37	3									
1531.37	4									
1530.37	5								4.88	Minor oxide staining.
1529.37	6									No Hydrothermal Deposits Encountered.
1528.37	7									
1527.37	8									
1526.37	9									

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+68  
 E.A. # 0079-01-5  
 GROUND ELEV. 1535.90 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+68 "P3"  
 OFFSET 40.40 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1534.90	1							CL	Moist, stiff to hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 60-80% medium to high plastic fines, 20-25% fine to coarse sand, 10-20% fine to coarse gravel. Moist, moderately hard to hard, pale olive green and brown, <b>Metasedimentary Bedrock</b> unaltered to slightly altered, very close fractured with minor oxide staining throughout.	
								0.46		
1533.90	2									
1532.90	3									
									3.20	
1531.90	4								No Hydrothermal Deposits Encountered.	
1530.90	5									
1529.90	6									
1528.90	7									
1527.90	8									
1526.90	9									

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+71  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.02 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+71 "P2"  
 OFFSET 34.98 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1533.02	1							CL	Moist to slightly moist, very stiff to hard, brown, <b>Lean Clay with Sand</b> with estimated 80% medium plastic fines, 15-20% fine to coarse sand, trace fine gravel. Higher gravel content to 1.2 meters.  Thin gravel lense (<0.2 meters thick).  Thin gravel lense (<0.2 meters thick).	
1532.02	2									
1531.02	3	3A	MC	15 43 50/100	50/100	100		CL	3.66 Slightly moist, hard, brown, <b>Lean Clay with Sand and Gravel</b> with estimated 70% medium plastic fines, 15% fine to coarse sand, 15% fine to coarse gravel.	
1530.02	4									
1529.02	5	3B	MC	19 38 50/125	50/125	100		CL	Thin gravel lense (<0.2 meters thick).	
1528.02	6									
1527.02	7	3C	MC	11 12 11	23	100		CL	6.13 Dry, medium dense, cream white to peach, <b>Hydrothermal Deposits</b> with low specific gravity. (Material has the soil index properties of a Silty Sand with Gravel, with approximately 40% non-plastic fines, 35% fine to coarse sand, 25% fine to coarse gravel.)	Temp. = 17.1 deg. Cel.
1526.02	8									
1525.02	9	3D	MC	4 7 7	14	100		CL	Temp. = 18.3 deg. Cel.	

# EXPLORATION LOG



START DATE 3/27/00  
 END DATE 3/27/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+71  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.02 (m)  
 HAMMER DROP SYSTEM Automatic

STATION 115+71 "P2"  
 OFFSET 34.98 RT  
 ENGINEER JRO  
 EQUIPMENT CME 850  
 OPERATOR S. Larson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 3/27/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/27/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1523.02	11									
1522.02	12 12.19									
	12.65	3E	MC	4 5 6	11	100				Temp. = 19.9 deg. Cel.
1521.02	13									
1520.02	14									
1519.02	15 15.24									
	15.70	3F	MC	6 7 7	14	100	MC, SA, PI.			Temp. = 21.6 deg. Cel.
1518.02	16									
1517.02	17									
1516.02	18 18.29									
	18.75	3G	MC	7 8 11	19	100	Chemical		18.75	Temp. = 23.1 deg. Cel.
1515.02	19									





## EXPLORATION LOG

SHEET 1 OF 1

START DATE 3/22/00

END DATE 3/22/00

JOB DESCRIPTION I-580 Freeway Extension Project

LOCATION Washoe County, Nevada

BORING 115+72

E.A. # 0079-01-5

GROUND ELEV. 1534.06 (m)

HAMMER DROP SYSTEM NA

STATION 115+74 "P2"

OFFSET 5.742 RT

ENGINEER JRO

EQUIPMENT JD 792

OPERATOR Tim

DRILLING METHOD Trackhoe

BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1533.06	0.30							CH	Moist, very stiff to hard, dark brown, <b>Fat Clay</b> with estimated 80-90% high plastic fines, 10% fine to coarse sand, 0-10% fine gravel.	
	0.46	4A	GRAB							
1532.06	1.22							CL	Light grey to white calcite whorls at 1.2 to 1.8 meters.  1.83	
	1.37	4B	GRAB							
1531.06	2.59							CL	Slightly moist, hard/very dense, brown, <b>Sandy Lean Clay with Gravel/Clayey Sand with Gravel</b> with estimated 40% low to medium plastic fines, 40% fine to coarse sand, 20% fine to coarse gravel.  2.59	Temp. = 10.0 deg. Cel.
	2.74	4C	GRAB							
1530.06									Dry, medium dense, cream white to peach, <b>Hydrothermal Deposits</b> moderately to well laminated, very low density.	Temp. = 11.5 deg. Cel.
1529.06										
1528.06										
1527.06										
1526.06										
1525.06										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+74  
 E.A. # 0079-01-5  
 GROUND ELEV. 1536.81 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+59 "P3"  
 OFFSET 26.95 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1535.81	1							CL	0.30 Moist, stiff to very stiff, dark brown, <b>Lean Clay to Fat Clay</b> with estimated 80% medium to high plastic fines, 15% fine to coarse sand, 5% fine gravel. 0.61 Dry, hard, pale white, <b>Hydrothermal Sinter</b> dense, well laminated, porous. Excavator could not dig below 0.6 meters.	
1534.81	2									
1533.81	3									
1532.81	4									
1531.81	5									
1530.81	6									
1529.81	7									
1528.81	8									
1527.81	9									

# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+88  
 E.A. # 0079-01-5  
 GROUND ELEV. 1534.63 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+88 "P3"  
 OFFSET 19.64 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1533.63	1							CL	0.46 Moist, hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 80% medium to high plastic fines, 15-20% fine to coarse sand, and trace fine gravel. Moist to slightly moist, moderately hard to hard, red brown to pale olive green, <b>Metasedimentary Bedrock</b> moderately altered, close fractured, with moderate to minor oxide staining. Moderately to severely weathered zone to 0.55 meters.	
1532.63	2									
1531.63	3									
1530.63	4									
1529.63	5									
1528.63	6									
1527.63	7									
1526.63	8									
1525.63	9									
									No Hydrothermal Deposits Encountered.	

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 3/23/00  
 END DATE 3/23/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 115+96  
 E.A. # 0079-01-5  
 GROUND ELEV. 1532.82 (m)  
 HAMMER DROP SYSTEM NA

STATION 115+96 "P2"  
 OFFSET 25.78 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/23/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1531.82	1							CH 0.46	Very moist, very stiff to hard, dark brown, <b>Fat Clay</b> with estimated 90% high plastic fines, 10% fine to coarse sand.	
1530.82	2							CL 1.83	Moist, very stiff to hard, brown, <b>Lean Clay with Sand</b> with estimated 70% medium plastic fines, 20% fine to coarse sand, 10% fine gravel.	
1529.82	3							CL 3.35	Moist to slightly moist, hard, <b>Lean Clay with Gravel</b> with estimated 70% medium plastic fines, 10% fine to coarse sand, 20% fine to coarse gravel.	
	3.66	14A	GRAB				MC, SA, PI	3.66	Dry, medium dense, pale white to peach, <b>Hydrothermal Deposits</b> slightly laminated, low specific gravity. (Material has the soil index properties of a Well Graded Gravel with Silt and Sand, with approximately 5% non-plastic fines, 30% fine to coarse sand, 65% fine to coarse gravel.)	
1528.82	4									
1527.82	5									
1526.82	6									
1525.82	7									
1524.82	8									
1523.82	9									

# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 116+06  
 E.A. # 0079-01-5  
 GROUND ELEV. 1531.73 (m)  
 HAMMER DROP SYSTEM NA

STATION 116+06 "P2"  
 OFFSET 4.00 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1530.73	1							CL 0.61	Moist, hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 80% medium to high plastic fines, 15-20% fine to coarse sand, and trace fine to coarse gravel.	Temp. = 10.6 deg. Cel.
	1.22									
	1.37	3A	GRAB				Chemical			
1529.73	2								Dry, medium dense to dense, cream white to olive brown, <b>Hydrothermal Deposits</b> weakly to moderately laminated with low density.	
		1.83								
	1.98	3B	GRAB							
1528.73	3									
	3.66									
1527.73	4	3C	GRAB				MC, SA, Pl.	3.96		
1526.73	5									
1525.73	6									
1524.73	7									
1523.73	8									
1522.73	9									

# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 116+07  
 E.A. # 0079-01-5  
 GROUND ELEV. 1533.03 (m)  
 HAMMER DROP SYSTEM NA

STATION 116+07 "P3"  
 OFFSET 7.69 LT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.81							CL	Moist, hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 80% medium to high plastic fines, 15-20% fine to coarse sand, trace fine to coarse gravel. Slightly moist, moderately hard to hard, pale white and red to pale to dark olive green, <b>Metasedimentary Bedrock</b> moderately to slightly altered, close fractured. Moderately to severely weathered to 1.0 meters. Moderate to abundant oxide staining at 1.2 to 1.8 meters.	
1532.03	0.98	9A	GRAB				0.55			
	1.52									
	1.68	9B	GRAB							
1531.03	2									
	2.44									
	2.59	9C	GRAB							
1530.03	3							2.90		
1529.03	4								No Hydrothermal Deposits Encountered.	
1528.03	5									
1527.03	6									
1526.03	7									
1525.03	8									
1524.03	9									

# EXPLORATION LOG



START DATE 3/22/00  
 END DATE 3/22/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 116+43  
 E.A. # 0079-01-5  
 GROUND ELEV. 1527.10 (m)  
 HAMMER DROP SYSTEM NA

STATION 116+43 "P2"  
 OFFSET 1.44 RT  
 ENGINEER JRO  
 EQUIPMENT JD 792  
 OPERATOR Tim  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 3/23/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/22/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1526.10	1							CL	Moist, very stiff to hard, dark brown, <b>Lean Clay to Fat Clay with Sand</b> with estimated 80% medium to high plastic fines, 20% fine to medium sand.	
1525.10	2							0.46	Moist to slightly moist, moderately hard to hard, pale to dark olive brown and green, <b>Metasedimentary Bedrock</b> moderately altered, close to very close fractured with abundant iron oxide staining.	
1524.10	3									
1523.10	4									
1522.10	5									
1521.10	6							5.49		No Hydrothermal Sinter Encountered.
1520.10	7									
1519.10	8									
1518.10	9									

# EXPLORATION LOG



START DATE 9/30/98  
 END DATE 9/30/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 117+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1523.11 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 117+00 "P"  
 OFFSET 27.08 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/30/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/30/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1522.11	0.00	A					w, Pl, Sv		Very soft, highly weathered, highly fractured, light grey <b>Metasedimentary Bedrock</b> . Some alteration to clay mineralogy.	
	1									
1521.11	1.52	B					w, Pl, Sv			
	2									
1520.11	3.05	C					w, Pl, Sv	3.35	Moderately hard, slightly weathered, highly fractured <b>Metasedimentary Bedrock</b> with mudstone interbedded.	
	3									
1519.11	3.66	D								
	4									
1518.11	3.96	E								
	5									
1517.11	5.06	F						5.49	Hard, slightly weathered, highly fractured, dark grey <b>Metasedimentary Bedrock</b> .	
	6									
1516.11	5.49	G							Brick red clay seam 8 cm. thick.	
	7									
1515.11	6.86	H								
	8									
1514.11	7.53	I							Extremely fractured with brick red clay infilling.	
	9									
	8.69	J								
	9.27	K								
		L					w, Pl, Sv			



# EXPLORATION LOG



START DATE 9/30/98  
 END DATE 9/30/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 117+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1523.11 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 117+00 "P"  
 OFFSET 27.08 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/30/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/30/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.18									
	10.36	M								
1512.11	11	N								
	11.77								11.58	
1511.11	12	O							Soft, highly weathered, shattered, light grey <b>Metasedimentary Bedrock.</b>	
	12.13									
1510.11	13	P								
	13.38									Soft highly plastic fault gouge 0.5 meters thick.
1509.11	14	Q								
	14.11									Extremely shattered.
1508.11	15	R								
	15.54								15.54	
1507.11	16									
1506.11	17									
1505.11	18									
1504.11	19									

# EXPLORATION LOG



START DATE 9/30/98  
 END DATE 9/30/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 118+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1504.58 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 118+51 "P"  
 OFFSET 14.66 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/30/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/30/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1503.58	0.00	A					w, Pl, Sv		Soft to hard, highly weathered, shattered, grey to dark grey <b>Metasedimentary Bedrock</b> .	
	1.07									
1502.58	1.52	B							Extremely shattered.	
	2.19									
1501.58	2.53	C							Slightly less fractured.	
	3.41									
1500.58	4.21	D							Minor clay in fractures.	
	4.66									
1499.58	5.58	E							6.10	
	6.10									
1498.58		F								
1497.58		G								
1496.58		H								
1495.58		I								

# EXPLORATION LOG



START DATE 9/11/99  
 END DATE 9/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 118+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1501.49 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 118+66 "P"  
 OFFSET 4.21 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1500.49	0.00	A					w, Pl, Sv		Soft, completely to highly weathered, olive grey brown <b>Metasedimentary Bedrock</b> .	
	1.52									
1499.49	1.83	B	SPT	20 50/76	50/76				2.44	
1498.49									Slightly hard, highly fractured, grey <b>Metasedimentary Bedrock</b> . Hydrothermally weathered fractures.	
1497.49	3.96									
	4.27	C	SPT	20 50/114	50/114					
1496.49	5.49									
	5.64	D	SPT	50	50					
1495.49										
1494.49	7.01									
	7.16	E	SPT	50/127	50/127					
1493.49									7.77	
1492.49										

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 9/10/99  
 END DATE 9/10/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 119+32  
 E.A. # 0079-01-5  
 GROUND ELEV. 1476.73 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 119+37 "P"  
 OFFSET 21.68 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1475.73	0.00	A					w, Pl, Sv	<b>SM</b>	Moist, dense to very dense, olive brown <b>Silty Sand</b> residual soil with estimated 30-40% low plastic fines, 60-70% fine sand. Minor coarser sand and gravel.	
	1.52	B					w, Pl, Sv			
1474.73	1.83								Soft, completely weathered, highly fractured, dark grey <b>Metasedimentary Bedrock</b> .	
	2.44									
1473.73	2.74	C	SPT	27 50/114	50/114				Soft and completely weathered.	
	3.96									
1472.73	4.27	D	SPT	31 50/25	50/25				Slightly hard, highly weathered, highly fractured, dark grey <b>Metasedimentary Bedrock</b> .	
	5.49									
1471.73	5.64	E	SPT	50	50				Highly shattered.	
	6.86									
1470.73	7.16	F	SPT	32 50/76	50/76				Highly shattered.	
	8.08									
1469.73	8.23	G	SPT	50/76	50/76				Highly shattered.	
	8.23									
1468.73										
1467.73										



# EXPLORATION LOG



START DATE 9/28/98  
 END DATE 9/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 120+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1469.91 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 119+97 "P"  
 OFFSET 11.20 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1468.91	0.00	A					w, Pl, Sv	<b>SC</b>	Moist, dense, brown to grey, highly variable <b>Clayey Gravelly Sand</b> colluvium with up to 30-40% high plastic fines.	
	1.22	B					w, Pl, Sv			
	1.52	C					w, Pl, Sv			
1467.91	2							2.13	Soft to moderately hard, highly weathered, shattered, dark grey <b>Metasedimentary Bedrock</b> . Very thin clay fracture infilling.  Completely weathered zone to gravelly clay 0.3 meters thick.  High plastic clay seam 5 cm. thick.  Soft clay seam 8 cm. thick. ppm = 1.0  Clay seam 8 cm. thick.  Highly shattered with high clay content in fractures.  Possible fault gouge.	9-28-98/9-29-98
1466.91	3 3.05	D								
1465.91	4 4.27	E								
1464.91	5 4.88	F								
1463.91	6 6.40	G								
1462.91	6.71	H								
	7.47	I								
1461.91	7.86	J								
	8.50	K								
1460.91	9 9.14	L				w, Pl, Sv				
	9.75	M					9.75			
								Moderately hard to hard, weathered, highly		



# EXPLORATION LOG



START DATE 9/8/99  
 END DATE 9/9/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 120+08  
 E.A. # 0079-01-5  
 GROUND ELEV. 1473.93 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 120+08 "P"  
 OFFSET 2.15 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/9/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1472.93	1								Soft to moderately hard, weathered, highly fractured to shattered, olive grey to grey <b>Metasedimentary Bedrock.</b>          Thin, light grey to white, high plastic clay fracture infilling.	
	2.29									
1471.93	2									
	2.59	A	SPT	22 50/51	50/51		w, PI, Sv			
1470.93	3									
	4.11									
1469.93	4									
	4.42	B	SPT	21 50/76	50/76		w, PI, Sv			
1468.93	5									
	5.64									
	5.94	C	SPT	29 50/51	50/51					
1467.93	6									
	7.32									
1466.93	7									
	7.47	D	SPT	50/76	50/76					
1465.93	8									
	8.69									
1464.93	9									
	8.99	E	SPT	31 50/76	50/76					



# EXPLORATION LOG



START DATE 9/8/99  
 END DATE 9/9/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 120+08  
 E.A. # 0079-01-5  
 GROUND ELEV. 1473.93 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 120+08 "P"  
 OFFSET 2.15 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/14/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/9/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1462.93	11									
1461.93	12									
1460.93	13									
1459.93	14									
1458.93	15									
1457.93	16									
	16.31									
	16.46	F	SPT	50/76	50/76				Highly shattered.	
1456.93	17									
1455.93	18								Turns to hard and highly fractured with minor clay infilling.	
1454.93	19								Soft and shattered with clay infilling.	



# EXPLORATION LOG



START DATE 9/2/99  
 END DATE 9/2/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 120+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1489.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 120+70 "P"  
 OFFSET 10.12 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/3/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/2/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1488.21	1								Soft to slightly hard, highly to completely weathered, shattered, olive to grey brown <b>Metasedimentary Bedrock</b> . High plastic clay in fractures.	
	1.52 1.68	A	SPT	50/76	50/76					
1487.21	2								Minor clay in fractures to bottom of hole.	
	2.44 2.59	B	SPT	50/102	50/102					
1486.21	3									
1485.21	4									
	3.96 4.11	C	SPT	50/127	50/127					
1484.21	5									
	5.49 5.64	D	SPT	50/127	50/127					
1483.21	6									
	6.25 6.40	E	SPT	50/76	50/76					
1482.21	7									
1481.21	8									
	7.92 8.08	F	SPT	50/51	50/51					
1480.21	9								8.69	
	8.69 8.84	G	SPT	50/0	50/0					

# EXPLORATION LOG



START DATE 9/11/98  
 END DATE 9/11/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 121+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1495.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 121+58 "P"  
 OFFSET 7.67 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/11/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/11/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1494.28	0.00	A					w, Pl, Sv		Soft to slightly hard, shattered, weathered, grey <b>Metasedimentary Bedrock</b> . Zones of weathering to clay from Mica.	
	0.91	B								
1493.28	1.52	C					w, Pl, Sv		Hard, shattered, weathered fractures, dark grey Marble.	
	3.05	D								
1491.28	4.57	E							Void at 3.96 meters.	
	6.10	F								
1489.28							w, Pl, Sv	6.10		
1488.28										
1487.28										
1486.28										

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 9/11/98  
 END DATE 9/11/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 123+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1499.74 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 123+09 "P"  
 OFFSET 0.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/11/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/11/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1498.74	0.00	A					w, Pl, Sv		Soft to hard, shattered to extremely shattered, weathered, dark green grey <b>Metasedimentary Bedrock</b> . Weathered to zones of high plastic clay from 0 - 1.3 meters.	
	0.91									
	1.52									
1497.74	1.83	B C					w, Pl, Sv			
	2.74									
	3.65									
1496.74	3.35	D							Possible shear plane of landslide. Highly shattered with variable color and highly weathered with thin clay infilling in larger fractures.	
	4.26									
	5.17									
1495.74	4.42	E							Hard, slightly fractured, slightly weathered, light grey with thin clay infilling from 3.8 - 4.3 meters.	
	4.57									
	5.04									
1494.74	5.94	G F					w, Pl, Sv Sh		Shattered with clay infilling in fractures.	
	6.85									
	7.76									
1493.74	5.94	6						5.94		
1492.74		7								
1491.74		8								
1490.74		9								

# EXPLORATION LOG



START DATE 9/10/98  
 END DATE 9/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 124+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1512.71 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 124+57 "P"  
 OFFSET 17.41 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1511.71	0.00	A					w, Pl, Sv	CH	Moist, stiff, grey brown <b>Sandy Clay</b> with estimated 70% high plastic fines, 30% fine to coarse sand.	
	0.61									
1510.71	1	B							Soft, extremely weathered, brown <b>Basalt</b> .	
	1.52									
1509.71	2	C							Hard, slightly weathered to highly weathered, fractured to shattered <b>Vesicular Basalt</b> .	
	2.13									
1508.71	3	D					w, Pl, Sv		Extremely fractured and highly weathered from 2.4 - 3.5 meters.	
	3.05									
1507.71	4	E							Soft and highly weathered.	
	4.57									
1506.71	5	F							Very soft, fractured, greenish tan, highly weathered, slightly altered, decomposed <b>Metasedimentary Bedrock</b> .	
	4.94									
1505.71	6	G					w, Pl, Sv		Soft, mottled grey, fractured to shattered, highly weathered <b>Metasedimentary Bedrock</b> .	
	6.10									
1504.71	7	H							Thin high plastic clay fracture infilling.	
	7.62									
1503.71	8									
	9									
	9.14									

# EXPLORATION LOG



START DATE 9/10/98  
 END DATE 9/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 124+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1512.71 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 124+57 "P"  
 OFFSET 17.41 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1501.71	10.67 11	I								
1500.71	12 12.19									
1499.71	13 13.72	J					w, Pl, Sv		Soft, highly fractured, dark grey to grey Phyllite degraded to high plastic clay.	
1498.71	14	K							Slightly more competent formation with less clay alteration.	
1497.71	15 15.24									
1496.71	16 16.76	L								
1495.71	17	M							Very little clay in fractures - possible zone of igneous intrusion.	
1494.71	18 18.29									
1493.71	19 19.81	N								

# EXPLORATION LOG



START DATE 9/10/98  
 END DATE 9/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 124+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1512.71 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 124+57 "P"  
 OFFSET 17.41 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1491.71	21 21.34	O							21.34	
1490.71	22									
1489.71	23									
1488.71	24									
1487.71	25									
1486.71	26									
1485.71	27									
1484.71	28									
1483.71	29									



# EXPLORATION LOG



START DATE 9/10/98  
 END DATE 9/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 126+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1512.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 126+10 "P"  
 OFFSET 4.70 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1511.21	0.00	A						SC CH	Argillic horizon with gravel and cobbles.	Casing placed to 1.2 meters.
	1.22									
1510.21	1.52	C					w, Pl, Sv, Sh	1.68	Soft, slightly fractured, brown <b>Clayey Sandstone</b> with fragments of basalt. Unit has the properties of a slightly cemented clayey sand.	
	1.83	D B					w, Pl, Sv			
1509.21	2.74							3.66	Slightly hard, fractured, brown <b>Basalt Breccia</b> . Fragmented basalt with cemented Clayey Sand matrix.	
	3.05	F					w, Pl, Sv			
1508.21	3.35	G E					w, Pl, Sv	4.27		
	4.27									
1507.21	5.79	H								
1506.21									Softer with more matrix of Silty and Clayey Sand.	
1505.21		I							Very loose Sand layer 0.15 meters thick.	
1504.21									Highly fractured.	
1503.21	8.84							8.53	Hard, weathered, dark grey, highly fractured <b>Vesicular Basalt</b> .	
	9.14	L					w, Pl, Sv			
		K								

# EXPLORATION LOG



START DATE 9/10/98  
 END DATE 9/10/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 126+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1512.21 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 126+10 "P"  
 OFFSET 4.70 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/10/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/10/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.36									
1501.21	11		M							
	11.89								11.89	
1500.21	12									
1499.21	13									
1498.21	14									
1497.21	15									
1496.21	16									
1495.21	17									
1494.21	18									
1493.21	19									

# EXPLORATION LOG



START DATE 9/2/98  
 END DATE 9/3/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 127+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1513.84 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 127+00 "P"  
 OFFSET 27.79 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/3/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/3/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A							Hard, highly fractured, grey, weathered <b>Basalt Bedrock</b> .	Casing placed to 0.6 meters.
	0.61									
1512.84	1	B							2.01 Soft, tan to rust orange, completely decomposed <b>Granitic Bedrock</b> .  Very soft formation from 3 to 10.7 meters.	Losing circulation to formation.
	1.89									
1511.84	2	C				w, Pl, Sv				
	2.90									
1510.84	3	D				w, Pl, Sv				
	4.42									
1509.84	4									
	5.94	E								
1508.84	5									
	7.47	F				w, Pl, Sv				
1507.84	6									
	8.99	G				w, Pl, Sv				
1506.84	7									
		H								
1505.84	8									
1504.84	9									

# EXPLORATION LOG



START DATE 9/2/98  
 END DATE 9/3/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 127+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1513.84 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 127+00 "P"  
 OFFSET 27.79 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/3/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/3/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.52									
1502.84	11	I							Zone of white, stiff, high plastic, hydrothermally altered <b>Clay</b> 0.3 meters thick.	
1501.84	12.04									
1500.84	13	J							Slightly more competent formation with fractures at 30-50 degrees.	
	13.56									
1499.84	14	K								
1498.84	15.09									
1497.84	16	L					w, PI, Sv			9-2-98 / 9-3-98
	16.61									
1496.84	17	M								Lost all circulation in large void. No recovery from 16.7 to 21 meters.
1495.84	18.14									
1494.84	19	N								
	19.66									

# EXPLORATION LOG



START DATE 9/2/98  
 END DATE 9/3/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 127+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1513.84 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 127+00 "P"  
 OFFSET 27.79 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/3/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/3/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1492.84	21		O						21.34	
	21.34									
1491.84	22									
1490.84	23									
1489.84	24									
1488.84	25									
1487.84	26									
1486.84	27									
1485.84	28									
1484.84	29									

# EXPLORATION LOG



START DATE 9/2/98  
 END DATE 9/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 129+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1506.20 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 129+01 "P"  
 OFFSET 12.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/2/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A					w, Pl, Sv	CH	Slightly moist, very stiff, reddish brown <b>Sandy Clay</b> argillic horizon.	Placed 1.2 meters of casing.
	0.61								0.61	
1505.20	1	B							Hard, fractured, dark grey, slightly weathered <b>Basalt Bedrock</b> . Fractures at 15 - 25 degrees and 65 degrees near 1.5 meters with 1 cm. clay infilling.	
	1.83									
1504.20	2	C							Highly fractured with clay infilling with main fracture at 70 degrees.	
									3.05	
1503.20	3								Moderately hard to soft, highly fractured, reddish grey <b>Basalt Bedrock</b> with zones of clay alteration.	
	3.35									
1502.20	4	D							Completely weathered to clay below 3.8 meters.	
	4.88								5.18	
1501.20	5	E							Soft, red to tan, completely decomposed <b>Granitic Bedrock</b> .	
	6.40									
1499.20	7	F								
	7.92									
1498.20	8									
		G								
1497.20	9									
	9.45									
									Remnant fractures abundant at 60-65 degrees.	

# EXPLORATION LOG



START DATE 9/2/98  
 END DATE 9/2/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 129+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1506.20 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 129+01 "P"  
 OFFSET 12.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/2/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/2/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1495.20	10.97	H								
1494.20	12.50	I								
1493.20	14.02	J								
1491.20	15.54	K						15.54		
1490.20										
1489.20										
1488.20										
1487.20										



## EXPLORATION LOG

SHEET 1 OF 1

START DATE	3/24/00		
END DATE	3/24/00		
JOB DESCRIPTION	I-580 Freeway Extension Project		STATION
LOCATION	Washoe County, Nevada		OFFSET
BORING	130+00		ENGINEER
E.A. #	0079-01-5		EQUIPMENT
GROUND ELEV.	1499.58 (m)		OPERATOR
HAMMER DROP SYSTEM	NA		DRILLING METHOD

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
3/24/00	NE	

STATION	130+01 "P"
OFFSET	0.38 RT
ENGINEER	JRO
EQUIPMENT	JD 792
OPERATOR	Tim
DRILLING METHOD	Trackhoe
BACKFILLED	Yes
DATE	3/24/2000

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1498.58	0.91							SC SM	Moist, very dense, red-brown, <b>Silty, Clayey Sand</b> with estimated 30% low plastic fines, 60% fine to coarse sand, 10% fine to coarse gravel. 0.61	
	1.22	A	GRAB				MC, SA, PI			
1497.58	2.44							SM	Moist, very dense, brown, <b>Silty Sand with Gravel</b> with 26% low plastic fines, 45% fine to coarse sand, 29% fine to coarse gravel, with approximately 30% small to medium cobbles. 2.59	
	2.59	B	GRAB				MC, SA, PI,			
1496.58	3								Excavator refusal at 2.6 meters (Very hard, fresh to slightly weathered, unfractured, volcanic bedrock).	
1495.58	4									
1494.58	5									
1493.58	6									
1492.58	7									
1491.58	8									
1490.58	9									



# EXPLORATION LOG



START DATE 9/1/98  
 END DATE 9/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 130+75  
 E.A. # 0079-01-5  
 GROUND ELEV. 1499.27 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 130+53 "P"  
 OFFSET 13.23 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00								Slightly moist, very stiff, reddish brown <b>Sandy Clay</b> .  Hard, fractured to highly fractured, red brown to grey, extremely weathered to weathered <b>Basalt Bedrock</b> . Clay infilling in fractures common throughout unit.  Harder formation with clay infilling in fractures.  Highly fractured with red brown clay infilling.	
	0.91	A					w, PI, Sv	CL		
1498.27	1	B								0.91
	1.52									
1497.27	2	C								
	3.05									
1496.27	3									
	4.27	D								
1495.27	4									
	4.57									
1494.27	5	E								
	5.79									
1493.27	6									
	7.32	F								
1492.27	7									
	8.84	G								
1491.27	8									
	9.14									
1490.27	9	H							9.14	
									Wet, soft, red, completely weathered, altered <b>Volcaniclastic Sandstone</b> . Weathered to Clayey Sand and Sandy Clay with some competent gravel and sand.	

# EXPLORATION LOG



START DATE 9/1/98  
 END DATE 9/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 130+75  
 E.A. # 0079-01-5  
 GROUND ELEV. 1499.27 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 130+53 "P"  
 OFFSET 13.23 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.36								10.36	
1488.27	11	I							Soft, red to light grey, slightly fractured, completely weathered <b>Granitic Bedrock.</b>	
	11.89									
1487.27	12	J								
	13.41									
1486.27	13									
	14.94									
1485.27	14	K								
	16.46									
1484.27	15	L								
	18.29									
1483.27	16									
1482.27	17	M								
1481.27	18									
1480.27	19									

# EXPLORATION LOG



START DATE 8/31/98  
 END DATE 9/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 132+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1491.18 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 132+03 "P"  
 OFFSET 10.61 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1490.18	0.00 1	A							Hard, slightly fractured to highly fractured, dark grey to grey <b>Basalt Bedrock</b> .  Clay seam 0.3 meters thick.  Highly fractured.  Highly fractured with clay infilling to 1.5 cm.  Highly fractured with very little clay infilling.	8-31-98 / 9-1-98
1489.18	1.52 2	B								
1488.18	3.05 3									
1487.18	4.57 4	C								
1486.18	6.10 5	D								
1485.18	6.86 6	E								
1484.18	7.62 7	F								
1483.18	8 8	G								
1482.18	9.14 9									
		H								

# EXPLORATION LOG



START DATE 8/31/98  
 END DATE 9/1/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 132+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1491.18 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 132+03 "P"  
 OFFSET 10.61 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/1/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.67									
1480.18	11									
1479.18	12 12.19								12.19	
1478.18	13									
1477.18	14									
1476.18	15									
1475.18	16									
1474.18	17									
1473.18	18									
1472.18	19									

# EXPLORATION LOG



START DATE 8/31/98  
 END DATE 8/31/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 133+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1478.81 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 133+65 "P"  
 OFFSET 5.74 RT  
 ENGINEER MG/SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / HQ Core  
 BACKFILLED Yes DATE 8/31/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/31/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1477.81	1							CL	Hard, <b>Sandy Lean Clay with Gravel</b> and cobbles.	
1476.81	2									
1475.81	3									
1474.81	4							3.66	Highly weathered, highly fractured, highly altered, red to orange-brown <b>Volcanics</b> . Fractures contain sandy clay filling. Scattered silica and calcite fracture filling with sandy clay. Poor core recovery in sections.	
1473.81	5									
1472.81	6									
1471.81	7									
1470.81	8									
1469.81	9							9.75	Highly weathered, white <b>Decomposed</b>	

## EXPLORATION LOG

SHEET 2 OF 2



START DATE 8/31/98  
 END DATE 8/31/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 133+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1478.81 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 133+65 "P"  
 OFFSET 5.74 RT  
 ENGINEER MG/SDB  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger / HQ Core  
 BACKFILLED Yes DATE 8/31/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/31/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1467.81	11								<b>Granite.</b> Original rock structure intact, but feldspars very highly weathered. No jointing of original rock preserved. Moderate FeOx staining.  Slight FeOx staining.	
1466.81	12							12.50		
1465.81	13									
1464.81	14									
1463.81	15									
1462.81	16									
1461.81	17									
1460.81	18									
1459.81	19									

# EXPLORATION LOG



START DATE 8/31/99  
 END DATE 8/31/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 134+79  
 E.A. # 0079-01-5  
 GROUND ELEV. 1460.60 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 134+82 "P"  
 OFFSET 11.51 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/31/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/31/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1459.60	1							SC	Moist, very dense, brown <b>Clayey Sand</b> with 30% medium plastic fines, 55% fine to coarse sand, 15% fine to medium gravel. Surface cobbles and boulders.	
	1.52									
1458.60	2	A	SPT	17 28 25	53		w, Pl, Sv		1.98	
	1.98									
	2.44									
1457.60	3	B	SPT	12 13 20	33		w, Pl, Sv			
	2.90									
1456.60	4	C	SPT	12 20 23	43		w, Pl, Sv			
	3.96									
	4.42									
1455.60	5									
	5.49									
1454.60	6	D	SPT	11 19 22	41					
	5.94									
1453.60	7	E	SPT	50/127	50/127					
	7.01									
	7.16									
1452.60	8									
	8.53									
	8.69	F	SPT	50/102	50/102				8.69 Temp. = 22 deg. Celsius	
1451.60	9									

# EXPLORATION LOG



START DATE 8/30/98  
 END DATE 8/30/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1458.45 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 134+99 "P"  
 OFFSET 11.05 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/30/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/30/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1457.45	0.00	A	SPT	7	53		w, PI, Sv	SC	Dry to slightly moist, very dense, dark brown <b>Clayey Sand</b> with estimated 40% medium plastic fines, 60% very fine to coarse sand.	Bulk sample taken from 0-1.5 meters.
	0.46			18						
1456.45	1.52	B	SPT	7	26		w, PI, Sv	SC	Moist, dense, light yellowish brown to variable colored, completely decomposed, altered <b>Granitic Bedrock</b> . Localized zones of alteration to high plastic clayey sand.	
	1.98			14						
1455.45	3.05	C	SPT	6	42		w, PI, Sv	SC	Partially altered to clay with pinkish red color.	
	3.51			16						
1454.45	4.57	D	SPT	9	48		w, PI, Sv	SC	Whitish yellow and slightly less altered.	
	5.03			20						
1453.45	6.10	E	SPT	6	24		w, PI, Sv	SC	Whitish pink to yellow and highly altered.	
	6.55			12						
1451.45	7.62	F	SPT	18	57		w, PI, Sv	SC		
	8.08			31						
1450.45	8.08									
1449.45										



# EXPLORATION LOG



START DATE 8/30/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.90 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 135+20 "P"  
 OFFSET 8.82 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/2/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1454.90	1								Soft, completely weathered, hydrothermally altered, tan brown to whitish purple and red <b>Granitic Bedrock</b> . Highly variable with a consistency of clayey sand and sandy clay with 35-55% high plastic fines. Thin cobblely topsoil.	
	1.52	A					w, Pl, Sv	Consistency of sandy gravelly clay.		
1453.90	2								Consistency of clayey sand with sulfate precipitates. Temp. = 27 deg. Celsius	
	2.44									
	2.90	B	SPT	7 8 15	23					
1452.90	3	3.05	C				w, Pl, Sv			
	3.96								Soft to slightly hard with purple and red color. Temp. = 27 deg. Celsius	
1451.90	4	4.42	D	SPT	15 25 39	64				
	5.49								Soft to slightly hard with purple and red color. Temp. = 27 deg. Celsius	
1450.90	5	5.79	E	SPT	21 50/76	50/76	w, Pl, Sv			
1449.90	6								Soft with whitish purple color and a consistency of high plastic clayey sand/sandy clay.	
	7.01									
1448.90	7	7.47	F	SPT	10 15 23	38				
	8.53								Whitish grey with zones of red and a high plastic clayey sand consistency. Temp. = 36 deg. Celsius	
1447.90	8									
1446.90	9	8.99	G	SPT	12 10 15	25	w, Pl, Sv			

# EXPLORATION LOG



START DATE 8/30/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.90 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 135+20 "P"  
 OFFSET 8.82 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/2/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1444.90	10.06	H	SPT	12	36				Brick red color. Temp. = 27 deg. Celsius	
	10.52			14						
1443.90	11.58	I	SPT	9	27					
	12.04			12						
1442.90	13.11	J	SPT	30	50/102				White coloration. 13.41 Temp. = 35 deg. Celsius	
	13.41			50/102						
1441.90	14									
1440.90	15									
1439.90	16									
1438.90	17									
1437.90	18									
1436.90	19									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+20C  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.19 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+20  
 OFFSET 0  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1455.19	1							<b>SC</b>	0.30 Loose to medium dense, brown, <b>CLAYEY SAND</b> . Soft, orange brown to light grey, completely weathered, hydrothermally altered, <b>GRANITIC BEDROCK</b> with soil index properties of a Sandy Clay to Clayey Sand.	Temp. = 26.9 deg. Celsius
1454.19	2									
	2.74									
1453.19	3	3.05	A GRAB				Chem.	3.05		
1452.19	4									
1451.19	5									
1450.19	6									
1449.19	7									
1448.19	8									
1447.19	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+20L  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.67 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+20  
 OFFSET 10 LT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1455.67	1							<b>SC</b>	Loose to medium dense, brown, <b>CLAYEY, SILTY SAND</b> with a thin surface gravel veneer. Soft, orange brown to light brown, completely weathered, hydrothermally altered, <b>GRANITIC BEDROCK</b> with soil index properties of a Sandy Clay to Clayey Sand.	Temp. = 27.4 deg. Celsius
1454.67	2									
1453.67	3	3.20								
		3.51	A GRAB				Chem	3.51		
1452.67	4									
1451.67	5									
1450.67	6									
1449.67	7									
1448.67	8									
1447.67	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+20R  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.75 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+20  
 OFFSET 10 RT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1454.75	1							<b>SM</b>	0.30 Loose to medium dense, brown, <b>CLAYEY, SILTY SAND.</b> Soft, orange brown, completely weathered, hydrothermally altered, <b>GRANITIC BEDROCK</b> with soil index properties of a Sandy Clay to Clayey Sand.	Temp. = 27.3 deg. Celsius
1453.75	2									
	2.44									
	2.74	A	GRAB				Chem		2.74	
1452.75	3									
1451.75	4									
1450.75	5									
1449.75	6									
1448.75	7									
1447.75	8									
1446.75	9									

# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+60 (WQB-6)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.26 (m)  
 HAMMER DROP SYSTEM NA

STATION 135+60 "P"  
 OFFSET 36.88 LT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 8/20/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.15									
	0.49	9A	GRAB				PI, Sv	GM	Dry, medium dense, brown <b>Silty Gravel with Sand</b> with 18% low plasticity fines, 29% fine to coarse sand, and 53% fine gravel. Slight FeOx staining on gravels. Variable unit with horizontally layered siliceous sinter. Excavates out as Silty Gravel with Sand.  Dry, dense to very dense, white <b>Well-Graded Gravel with Silt and Sand</b> with 8% low to non-plastic fines, 26% fine to coarse sand, and 66% fine gravel. Unit is composed of siliceous sinter which excavates out as a Well-Graded Gravel with Silt and Sand. Excavated left deep bucket tooth marks in very dense siliceous sinter. Very difficult excavation due to siliceous sinter deposits.	
	0.79	9B	GRAB				PI, Sv	GW GM		
1454.26	1									
1453.26	2									
1452.26	3									
1451.26	4									
1450.26	5									
1449.26	6									
1448.26	7									
1447.26	8									
1446.26	9									

## EXPLORATION LOG

SHEET 1 OF 2



START DATE 8/11/99  
 END DATE 8/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1452.70 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 135+71 "P"  
 OFFSET 9.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1451.70	1								Soft, purple to white, completely weathered, hydrothermally altered <b>Granitic Bedrock</b> . Consistency of sandy silt to sandy clay.  Temp.= 27 deg. Celsius.  Few competent rock fragments.  Temp.= 24 deg. Celsius. Fault encountered - slickensides visible. Purple coloration.  Slightly hard and brecciated. Temp.= 39 deg. Celsius. White sandy clay alteration.  Extremely variable breccia with soft zones. Color varies from pink, tan to grey.	
1450.70	2									
	2.44									
	2.90	A	SPT	7 12 50	62					
1449.70	3									
	3.96									
1448.70	4	B	SPT	6 50	50					
	4.42									
1447.70	5									
	5.49									
	5.94	C	SPT	9 27 33	60					
1446.70	6									
	7.01									
1445.70	7	D	SPT	9 35 50	85					
	7.47									
1444.70	8									
	8.53									
1443.70	9	E	SPT	50/0	50/0					
	8.99									

# EXPLORATION LOG



START DATE 8/11/99  
 END DATE 8/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1452.70 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 135+71 "P"  
 OFFSET 9.82 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1441.70	10.06	F	SPT	15	51				Temp.= 38 deg. Celsius.	
	10.52			24						
1440.70	11.58	G	SPT	24	72				Temp.= 36 deg. Celsius.	
	12.04			34						
1439.70	13.11	H	SPT	50/127	50/127				Temp.= 22 deg. Celsius.	
	13.56									
1438.70	14									
1437.70	15									
1436.70	16									
1435.70	17									
1434.70	18									
1433.70	19									



# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+70C  
 E.A. # 0079-01-5  
 GROUND ELEV. 1451.24 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+70  
 OFFSET 0  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1450.24	1							SC	0.15 Loose to medium dense, brown, <b>CLAYEY SAND</b> Soft, brown to orange brown, completely weathered, hydrothermally altered, <b>GRANITIC BEDROCK</b> with the soil index properties of a Sandy Clay.	Temp. = 32.0 deg. Celsius
1449.24	2							1.83 Soft, orange to pale white (highly variable), hydrothermally altered, <b>VOLCANIC BRECCIA</b>		
1448.24	3							3.05 Moderately hard, pale white to light grey, hydrothermally altered, <b>VOLCANIC BEDROCK</b>		
1447.24	4							4.42 4.72 A GRAB Chem		
1446.24	5							4.88		
1445.24	6									
1444.24	7									
1443.24	8									
1442.24	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+70L  
 E.A. # 0079-01-5  
 GROUND ELEV. 1453.68 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+70  
 OFFSET 10 LT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1452.68	1							<b>SC</b>	0.30	Medium dense, brown, <b>CLAYEY SAND.</b>
									0.91	Hard, light grey to pale white, moderately weathered, <b>SINTER</b>
	1451.68	2								Moderately hard, yellow-brown to red-brown (highly variable), hydrothermally altered, <b>VOLCANIC BEDROCK.</b>
										Excavator could not reach beyond 6.1 meters.
1450.68	3								3.35	
1449.68	4									
1448.68	5									
	5.79									
1447.68	6	6.10	A	GRAB			Chem		6.10	
1446.68	7									
1445.68	8									
1444.68	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+70R  
 E.A. # 0079-01-5  
 GROUND ELEV. 1448.82 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+70  
 OFFSET 10 RT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1447.82	1							<b>SC</b>	Medium dense, brown, <b>CLAYEY SAND.</b>	Temp. = 31.5 deg. Celsius
								0.46	Soft, pale white, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK.</b>	
1446.82	2	2.13								
		2.44	A	GRAB			Chem		2.44	
1445.82	3									
1444.82	4									
1443.82	5									
1442.82	6									
1441.82	7									
1440.82	8									
1439.82	9									

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 10/6/00  
 END DATE 10/6/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 135+80  
 E.A. # 0079-01-5  
 GROUND ELEV. 1445.00 (m)  
 HAMMER DROP SYSTEM N/A

STATION 135+80  
 OFFSET 15 LT  
 ENGINEER JRO  
 EQUIPMENT Komatsu FC220  
 OPERATOR Harry  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 10/6/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/6/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1444.00	0.00	AA	GRAB				SV, PI	SM	<b>SILTY SAND with GRAVEL (FILL)</b> light brown to dark brown, dry to slightly moist, very dense, with estimated 15% non-plastic to low plastic fines, 60% fine to coarse sand, 25% fine to coarse gravel.	
	0.61									
1443.00	1.83							SP SM	<b>POORLY GRADED SAND with SILT and GRAVEL (FILL)</b> dark brown, moist, very dense, with estimated 5-10% non-plastic fines, 50-60% fine to coarse sand, 35-45% fine to coarse, subangular gravel to +75mm in diameter. Cobbles and boulders to +350mm comprise approximately 20% of soil mass.	
	2.44	A	GRAB				SV, PI			
1442.00	3.66							SP	<b>POORLY GRADED SAND with GRAVEL</b> grey, slightly moist, loose to medium dense, with estimated <5% non-plastic fines, 70% fine to coarse sand, 25-30% fine to coarse, subround to round gravel to +75mm. Completely weathered granite cobbles to +150mm comprise approximately 10% of soil mass.	
	4.27	B	GRAB				SV, PI			
1441.00	5.49							SP SM	<b>POORLY GRADED SAND with SILT and GRAVEL</b> olive brown, slightly moist, medium dense, with estimated 10% non-plastic fines, 60% fine to coarse sand, 30% fine to coarse, subangular to subround gravel to +75mm. Cobbles to +150mm comprise approximately 5% of soil mass.	
	6.10	C	GRAB							
1439.00	6.25									
1438.00										
1437.00										
1436.00										



# EXPLORATION LOG



START DATE 8/10/99  
 END DATE 8/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1444.97 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+21 "P"  
 OFFSET 9.64 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1433.97	10.67 11.13	G	SPT	13 30 50/140	50/140				Temp.= 41 deg. Celsius. Consistency of clayey gravelly sand.	
1432.97	12.19 12.65	H	SPT	11 24 40	64				Temp.= 41 deg. Celsius. Consistency of silty gravelly sand.	
1431.97	13.72									
1430.97	14.17	I	SPT	11 23 26	49				Temp.= 45 deg. Celsius	
1429.97	15.00									
1428.97	16.46	J	SPT	6 6 13	19				Temp.= 38 deg. Celsius	
1427.97	17.53								Slightly hard zones.	
1426.97	17.98	K	SPT	5 12 50/76	50/76				Temp.= 65 deg. Celsius	
1425.97	19.05 19.51	L	SPT	33 50/0	50/0					

# EXPLORATION LOG



START DATE 8/10/99  
 END DATE 8/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1444.97 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+21 "P"  
 OFFSET 9.64 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1423.97	20.57 21.03	M	SPT	23 57 50	107				Temp.= 63 deg. Celsius	
1422.97	22								Grades to slightly hard and highly altered.	
1421.97	23									
1420.97	23.62 24.08	N	SPT	50/0	50/0				Granitic structure is becoming readily visible.	
1419.97	25									
1418.97	25.60 26.67								25.60 Hard, fractured, green grey, altered <b>Granitic Bedrock.</b>	
1417.97	27 27.13	O	SPT	50/0	50/0					
1416.97	28									
1415.97	29								Temp.= 22 deg. Celsius	

**EXPLORATION LOG**



START DATE 8/10/99  
 END DATE 8/11/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1444.97 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+21 "P"  
 OFFSET 9.64 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/12/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/11/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1413.97	31								30.48	
1412.97	32									
1411.97	33									
1410.97	34									
1409.97	35									
1408.97	36									
1407.97	37									
1406.97	38									
1405.97	39									



# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20C  
 E.A. # 0079-01-5  
 GROUND ELEV. 1446.04 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+20  
 OFFSET 0  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1445.04	1							<b>SM</b> 0.30	Loose to medium dense, brown, <b>SILTY SAND with GRAVEL.</b> Moderately hard, pale white to light grey, moderately to highly weathered, <b>SINTER.</b>	Temp. = 39.7 deg. Celsius
1444.04	2									
	2.74									
1443.04	3	3.05	A GRAB				Chem	3.05		
1442.04	4									
1441.04	5									
1440.04	6									
1439.04	7									
1438.04	8									
1437.04	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20L  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.28 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+20  
 OFFSET 10 LT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1446.28	1							SC	Dense, brown, <b>CLAYEY SAND.</b>	Temp. = 40.0 deg. Celsius
1445.28	2							0.40	Soft, light grey to pale white, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK</b>	
1444.28	3									
1443.28	4	3.81	A GRAB				Chem	4.11		
1442.28	5									
1441.28	6									
1440.28	7									
1439.28	8									
1438.28	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+20R  
 E.A. # 0079-01-5  
 GROUND ELEV. 1444.95 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+20  
 OFFSET 10 RT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1443.95	1							<b>SC</b> 0.30 Medium dense, brown, <b>CLAYEY, SILTY SAND.</b> Soft, orange-brown to red-brown, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK</b>	Temp. = 37.5 deg. Celsius	
	1.52									
	1.83	A	GRAB				Chem			
1442.95	2									
1441.95	3									
1440.95	4									
1439.95	5									
1438.95	6									
1437.95	7									
1436.95	8									
1435.95	9									

# EXPLORATION LOG



START DATE 8/29/98  
 END DATE 8/30/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.51 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+71 "P"  
 OFFSET 10.78 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/30/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/30/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT		Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm					
1446.51	0.00	A	SPT	2	6		w, PI, Sv	<b>SM</b>	0.24 <b>Silty Sand</b> topsoil with high quantity of organics (pine needles). Moist, soft to slightly hard, brick red to yellow, hydrothermally altered <b>Bedrock</b> , indiscernible. Argillic alteration to clay and silt in zones.	
	0.46			3						
1445.51	1.52	B	SPT	5	10		w, PI, Sv			
	1.98			5 5						
1444.51	3.05	C	SPT	6	18		w, PI, Sv			
	3.51			8 10						
1443.51	4.57	D	SPT	3	18		w, PI, Sv		Whitish purple.	
	5.03			9 9						
1441.51	6.10	E	SPT	6	16		w, PI, Sv		White color and leached - Temp. = 48 deg. Celsius.	
	6.55			8 8						
1439.51	7.62	F	SPT	4	12		w, PI, Sv			
	8.08			6 6						
1438.51	9.14	G	SPT	2	6		w, PI, Sv		White color and leached - Temp. = 140 deg. F	
	9.60			3 3						



# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.61 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+71 "P"  
 OFFSET 10.78 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1446.61	1								Very soft to soft, completely weathered, hydrothermally altered, variable colored <b>Bedrock.</b>	
	1.52									
1445.61	2	A	SPT	8 9 14	23		w, Pl, Sv		Very soft and chalky white in color with the consistency of sandy silt. Temp. = 27 deg. Celsius	
	1.98									
	2.44									
1444.61	3	B	SPT	7 9 13	22		w, Pl, Sv		ppm = 2.0 Temp. = 37 deg. Celsius. Consistency of sandy silt.	
	2.90									
	3.96									
1443.61	4	C	SPT	19 22 39	61		w, Pl, Sv		ppm = 3.0 Temp. = 39 deg. Celsius. Consistency of sandy silt.	
	4.42									
	5.49									
1442.61	5	D	SPT	9 35 13	48		w, Pl, Sv		Temp. = 46 deg. Celsius. Consistency of silty gravelly sand.	
	5.94									
1441.61	6								Lost circulation into formation.	
	7.01									
1440.61	7	E	SPT	9 4 8	12		w, Pl, Sv		Mainly very soft with thin zones of slightly hard material - poor recovery. Temp. = 48 deg. Celsius	
	7.47									
	8.53									
1439.61	8									
	8.99	F	SPT	6 9 7	16		w, Pl, Sv		Poor recovery in soft material. Temp. = 55 deg. Celsius	
1438.61	9									

# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+70  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.61 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 136+71 "P"  
 OFFSET 10.78 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1436.61	10.06	G	SPT	1	2		w, Pl, Sv		Extremely soft formation - no recovery. Drilled 1.5 meters in less than 15 seconds. Temp. = 62 deg. Celsius	
	10.52			0						
1435.61	11.58	H	SPT	15	40				Extremely soft formation - no recovery. Drilled 1.5 meters in less than 10 seconds. Temp. = 65 deg. Celsius	Slightly hard, highly variable, dark grey <b>Sinter</b> .
	11.89			40						
1434.61	13.11	I	SPT	48	30/51				Soft zones of chalky white material. Temp. = 62 deg. Celsius	13.56
	13.56			15						
1433.61	14									
1432.61	15									
1431.61	16									
1430.61	17									
1429.61	18									
1428.61	19									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+70C  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.55 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+70  
 OFFSET 0  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1446.55	1							<b>SC</b> 0.30 Dense, brown, <b>CLAYEY SAND.</b> Soft, red-brown to orange-brown, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK.</b>	Temp. = 52.3 deg. Celsius	
1445.55	2						2.13			
	2.59									
1444.55	3	A	GRAB				Chem	2.90		
1443.55	4									
1442.55	5									
1441.55	6									
1440.55	7									
1439.55	8									
1438.55	9									



# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+70L  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.31 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+70  
 OFFSET 10 LT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1446.31	1							SC	0.21 Dense, brown, <b>CLAYEY SAND.</b> Soft, orange-brown to pale white (highly variable), completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK.</b>	Temp. = 34.3 deg. Celsius
1445.31	2	2.13								
		2.44	A	GRAB			Chem		2.44	
1444.31	3									
1443.31	4									
1442.31	5									
1441.31	6									
1440.31	7									
1439.31	8									
1438.31	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 136+70R  
 E.A. # 0079-01-5  
 GROUND ELEV. 1447.55 (m)  
 HAMMER DROP SYSTEM N/A

STATION 136+70  
 OFFSET 10 RT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1446.55	1								Moderately hard to soft, light grey to pale pink-grey, completely weathered, <b>SINTER</b>	Temp. = 68.9 deg. Celsius
1445.55	2									
	2.44									
	2.74	A	GRAB				Chem		2.74	
1444.55	3									
1443.55	4									
1442.55	5									
1441.55	6									
1440.55	7									
1439.55	8									
1438.55	9									

# EXPLORATION LOG



START DATE 10/6/00  
 END DATE 10/6/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1442.00 (m)  
 HAMMER DROP SYSTEM N/A

STATION 137+00  
 OFFSET 5 LT  
 ENGINEER JRO  
 EQUIPMENT Komatsu FC220  
 OPERATOR Harry  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 10/6/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
10/6/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1441.00	0.00	AA	GRAB				SV, PI	SM	<b>SILTY SAND with GRAVEL (FILL)</b> light brown to brown, dry to slightly moist, very dense, with 20% low plastic fines, 50% fine to coarse sand, 30% fine to coarse, subangular to subround gravel to +50mm.	
	0.61									
1440.00	1.83	A	GRAB				SV, PI	SC	<b>CLAYEY SAND with GRAVEL (FILL)</b> dark brown to dark grey, moist, dense, with estimated 30-45% medium plastic fines, 50-60% fine to coarse sand, 10-20% fine to coarse, subangular to subround gravel to +25mm.	
	2.44									
1438.00	3.66							SP SM	<b>POORLY GRADED SAND with SILT and GRAVEL</b> dark olive brown, moist, very dense, with estimated 10% non-plastic fines, 70% fine to coarse sand, 20% fine to coarse, subround gravel to +75mm. Cobbles to +200mm comprise approximately 5% of soil mass.	
	4.27	B	GRAB				SV, PI			
1436.00	6.10	C	GRAB							
1435.00										
1434.00										
1433.00										

# EXPLORATION LOG



START DATE 9/15/99  
 END DATE 9/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+22 "P"  
 OFFSET 7.94 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1455.24	1								Variably colored, very soft to soft, close to very close fractured, completely weathered, <b>Hydrothermally Altered Bedrock</b> . Unit exhibits the properties of a Silty Gravelly Sand.	
	1.52									
1454.24	2	A	SPT	22	32	90	w, Pl, Sv		Pale white, very soft to approx. 9.5 feet.	
	1.98			10						
	2.44								2.90	
	2.90	B	SPT	19	43	90	w, Pl, Sv			
1453.24	3								Pale white to red and red brown, hard, close to very close fractured, slightly weathered, <b>Hydrothermally Altered Bedrock</b> . Unit contains a transition to hydrothermally altered volcanic bedrock with a consistency of silty gravelly sand.	
	3.66	B1					w, Pl, Sv			
1452.24	4	C	SPT	25	50/76	75			3.96	Temp. ~27 degrees C.
	4.27			50/76						
1451.24	5								Highly variable color, moderately hard to hard, close to very close fractured, <b>Hydrothermally Altered Volcanic Bedrock</b> .	
	5.49	C1					w, Pl, Sv			
1450.24	6								Moderately close to close fractured at 20-23 feet.	
	7.01									
1449.24	7	D	SPT	16	50	75			Temp. ~27 degrees C.	
	7.32	D1		50			w, Pl, Sv			
1448.24	8								Very soft to moderately hard, moderately close to close fractured at 23 to 25 feet	
	8.53									
	8.84	E	SPT	21	50/127	70	w, Pl, Sv		Temp. ~27 degrees C.	
	8.84			50/127						
1447.24	9								Very soft to moderately hard with properties of a Clayey Sand.	
									Hard, close to very close fractured at 29.5 to 33 feet.	

# EXPLORATION LOG



START DATE 9/15/99  
 END DATE 9/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+22 "P"  
 OFFSET 7.94 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1445.24	11								Moderately hard to hard, close to very close fractured at 33 to 53 feet.	Temp. ~29 degrees C.
1444.24	12								Very soft to soft.	Temp. ~38 degrees C.
1443.24	13								Soft to moderately hard at 43 to 46.5 feet.	
1442.24	14									
1441.24	15							15.24	Light grey to dark red brown (highly variable), moderately hard to hard, close to very close fractured, <b>Hydrothermally Altered Metasedimentary Bedrock.</b>	Temp. ~43 degrees C.
1440.24	16									Temp. ~49 degrees C.
1439.24	17								Soft to moderately hard at 53 to 58 feet.	
1438.24	18									Temp. ~54 degrees C.
1437.24	19								Close fractured at 60 to 62 feet.	Temp. ~54 degrees C.

# EXPLORATION LOG



START DATE 9/15/99  
 END DATE 9/15/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.24 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+22 "P"  
 OFFSET 7.94 RT  
 ENGINEER JRO  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/15/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1435.24	21								Highly variable, localized hardness (soft to hard) at 63 to 67.5 feet. Very close fracturing though out this interval.  20.57	Temp. ~66 degrees C.
1434.24	22									
1433.24	23									
1432.24	24									
1431.24	25									
1430.24	26									
1429.24	27									
1428.24	28									
1427.24	29									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20C  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.87 (m)  
 HAMMER DROP SYSTEM N/A

STATION 137+20  
 OFFSET 0  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1454.87	1							SC	Medium dense, brown, <b>CLAYEY SAND.</b>	Temp. = 41.2 deg. Celsius
1453.87	2							0.30	Soft, light grey to pale white, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK</b>	
1452.87	3							3.05	Moderately hard to hard, pale pink-grey, <b>SINTER.</b>	
1451.87	4	3.66	A GRAB				Chem	3.96		
1450.87	5									
1449.87	6									
1448.87	7									
1447.87	8									
1446.87	9									

# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20L  
 E.A. # 0079-01-5  
 GROUND ELEV. 1455.28 (m)  
 HAMMER DROP SYSTEM N/A

STATION 137+20  
 OFFSET 10 LT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1454.28	1							<b>SC</b> 0.30	Medium dense, brown, <b>CLAYEY SAND</b>  Moderately hard to hard, light grey to dark red-brown, hydrothermally altered, <b>SINTER</b> .	Temp. = 51.1 deg. Celsius
1453.28	2									
	2.74									
1452.28	3	3.05	A GRAB				Chem	3.05		
1451.28	4									
1450.28	5									
1449.28	6									
1448.28	7									
1447.28	8									
1446.28	9									



# EXPLORATION LOG



START DATE 9/5/00  
 END DATE 9/5/00  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+20R  
 E.A. # 0079-01-5  
 GROUND ELEV. 1456.55 (m)  
 HAMMER DROP SYSTEM N/A

STATION 137+20  
 OFFSET 10 RT  
 ENGINEER JRO  
 EQUIPMENT John Deere 792D-LC  
 OPERATOR Tim A.  
 DRILLING METHOD N/A  
 BACKFILLED Yes DATE 9/5/2000

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/5/00	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1455.55	1							SC	Loose to medium dense, brown, <b>CLAYEY SAND.</b>	Temp. = 33.5 deg. Celsius
1454.55	2							0.46	Soft to moderately hard, orange-brown to yellow-brown, completely weathered, hydrothermally altered, <b>VOLCANIC BEDROCK</b>	
1453.55	3							3.05	Moderately hard to hard, light grey to pale pink, hydrothermally altered, <b>SINTER.</b>	
1452.55	4							4.57		
1451.55	5	4.88	A GRAB				Chem	4.88		
1450.55	6									
1449.55	7									
1448.55	8									
1447.55	9									

# EXPLORATION LOG



START DATE 8/31/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 137+60  
 E.A. # 0079-01-5  
 GROUND ELEV. 1461.05 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+60 "P"  
 OFFSET 10.72 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 9/15/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1460.05	1								Hard, brittle, grey brown <b>Sinter</b> .	
	1.52								1.52	
1459.05	2	A	SPT	10	31		w, PI, Sv		Very stiff to hard, tan brown to grey <b>Hydrothermal Clayey Sand</b> with sinter fragments and 45% high plastic fines.	
	1.98			15					Hard sinter 0.3 meters thick.	
	2.44			16					Temp. = 27 deg. Celsius	
1458.05	3	B	SPT	9	50/76		w, PI, Sv		2.90	
	2.90			35						
				50/76						
1457.05	4	C	SPT	50/51	50/51				Hard, brittle, highly fractured, tan to red <b>Sinter</b> .	
	3.96									
	4.11									
1456.05	5								Few thin soft zones.	
1455.05	6									
	6.71									
	6.86	D	SPT	50/102	50/102		w, PI, Sv		Vertically orientated zones of tan to red high plastic clay.	
1454.05	7								Whitish pink sandy clay 0.3 meters thick.	
1453.05	8								Slightly hard, purple, hydrothermally altered material.	
	8.84	E					w, PI, Sv			
1452.05	9	F	SPT	6	20				Consistency of high plastic clayey sand with 40% fines.	
	9.14			9					9.60	
	9.60			11					Temp. = 27 deg. Celsius	

# EXPLORATION LOG



START DATE 8/29/98  
 END DATE 8/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 138+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1462.59 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+85 "P"  
 OFFSET 10.80 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1461.59	0.00 1	A							Soft to moderately hard, variable colored, extremely altered, silica replaced <b>Bedrock</b> , undiscernible. Unit contains zones of Sinter deposits.	
1460.59	1.52 2	B							Clay seam.	
1459.59	3.05 3								3.05	
1458.59	4									
1457.59	5									
1456.59	6									
1455.59	7									
1454.59	8									
1453.59	9									

# EXPLORATION LOG



START DATE 8/28/98  
 END DATE 8/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 139+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1479.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 139+39 "P"  
 OFFSET 86.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1478.28	0.00 1 1.07	A							Hard, brittle, multicolored, slightly fractured <b>Sinter Deposits</b> . Infrequent soft clay zones.           Soft zone - no recovery 4.6 - 5.2 meters.           Soft zone - no recovery 5.9 - 6.6 meters.	
1477.28	2 2.59	B								
1476.28	3	C								
1475.28	4 4.11									
1474.28	5 5.64	D								
1473.28	6	E								
1472.28	7 7.16									
1471.28	8 8.69	F								
1470.28	9	G								

# EXPLORATION LOG



START DATE 8/28/98  
 END DATE 8/29/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 139+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1479.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 139+39 "P"  
 OFFSET 86.14 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD HQ Core  
 BACKFILLED Yes DATE 8/29/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/29/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	10.21									
1468.28	11	H								
	11.73									
1467.28	12	I								
	12.34									
1466.28	13	J							Shattered zone.	
	13.26									
1465.28	14	K								
	14.78									
1464.28	15								Soft clay 0.5 meters thick.	
		L					w, Pl, Sv			
1463.28	16									
	16.31									
	16.76	M							16.46	
1462.28	17									
	17.37	N					w, Pl, Sv	CH		
	17.83	O								
1461.28	18									Temp. = 86 deg. F
1460.28	19									

# EXPLORATION LOG

SHEET 1 OF 1



START DATE 8/28/98  
 END DATE 8/28/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 141+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1457.93 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 141+01 "P"  
 OFFSET 1.72 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/28/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/28/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	A	SPT	6	69				Hard, brittle, dark grey, highly fractured to shattered <b>Sinter Deposits</b> .	Bulk sample taken from 0 - 1.5 meters.
	0.46			27						
1456.93	1									
	1.52								1.52	
	1.68	B	SPT	50/0	50/0				Complete refusal with auger.	
1455.93	2									
1454.93	3									
1453.93	4									
1452.93	5									
1451.93	6									
1450.93	7									
1449.93	8									
1448.93	9									



## EXPLORATION LOG

SHEET 1 OF 1

START DATE 8/28/98  
 END DATE 8/28/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 142+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1458.28 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 142+51 "P"  
 OFFSET 7.73 LT  
 ENGINEER CD  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/28/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/28/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1457.28	0.00	A	SPT	3	10				Moist, loose, white to grey <b>Silty Sand Fill</b> composed of excavated Sinter deposits.	Bulk sample taken from 0 - 1.5 meters.
	0.46			4						
	1.52			6						
1456.28	1.83	B	MC	41	50		w, Pl, Sv		Slightly hard to moderately hard, brittle, white to grey <b>Sinter Deposits</b> .	
	3.05			50						
	3.20			50						
1455.28	3.66	C	SPT	50/25	50/25				Complete refusal with auger.	
	3.66			50/25						
	3.66			50/25						
1454.28		D								
1453.28										
1452.28										
1451.28										
1450.28										
1449.28										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/13/98  
 END DATE 11/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 143+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1448.06 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 142+93 "P"  
 OFFSET 121.84 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
	0.00	4A	SPT	2	21		w, PI, Sv		Slightly hard to moderately hard, brittle, whitish orange <b>Sinter</b> .	Bulk sample taken from 0 - 1.5 meters.
	0.46			5						
1447.06	1									
	1.52	4B	SPT	50/102	50/102		w, PI, Sv			
	1.68									
1446.06	2									
1445.06	2.90	4C	SPT	50/0	50/0		w, PI, Sv		3.05	
	3.05			D						
1444.06	4									
1443.06	5									
1442.06	6									
1441.06	7									
1440.06	8									
1439.06	9									



# EXPLORATION LOG



START DATE 8/27/98  
 END DATE 8/27/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 144+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1450.45 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 144+01 "P"  
 OFFSET 3.95 RT  
 ENGINEER CD  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 8/27/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
8/27/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1449.45	0.00	A	SPT	18	37				Soft to slightly hard, brittle, light brown to grey <b>Sinter Deposits.</b>	Bulk sample taken at 0 - 1.5 meters.
	0.30									
1448.45	1.52	B	SPT	41	53/51		w, Pl, Sv		3.05	
	1.83									
1447.45	3.05	C	SPT	7	24		w, Pl, Sv	<b>CL</b>	Moist, very stiff, light grey to white, hydrothermal <b>Sandy Clay</b> with estimated 70% medium plastic fines, 30% fine sand. Interbedded weathered DG sand with fine gravel.	
	3.51									
1446.45									4.57	
1445.45										
1444.45										
1443.45										
1442.45										
1441.45										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/13/98  
 END DATE 11/13/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 144+10  
 E.A. # 0079-01-5  
 GROUND ELEV. 1453.46 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 144+12 "P"  
 OFFSET 95.48 LT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/13/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/13/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1452.46	0.00	1A	SPT	5	17		w, PI, Sv	SC	Slightly moist, medium dense, brick red <b>Hydrothermal Clayey Sand</b> with estimated 30-50% medium plastic fines, 50-70% very fine to coarse sand. Highly variable.	Bulk sample taken from 0 - 1.5 meters.
	0.46			11						
1451.46	1.52	1B	SPT	7	28		w, PI, Sv	SC	Moist, medium dense, greenish grey <b>Clayey Gravelly Sand</b> consisting of Hydrothermal Deposits of clay fines with Sinter gravel.	
	1.98			11 17						
1450.46	3.05	1C	SPT	7	14		w, PI, Sv			
	3.51			6 8						
1449.46	4									
1448.46	5									
1447.46	6									
1446.46	7									
1445.46	8									
1444.46	9									

# EXPLORATION LOG



START DATE 11/12/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 144+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1442.64 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 144.38 "P"  
 OFFSET 200.48 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1441.64	0.00	3A	SPT	3	27		w, PI, Sv	SC	Moist, medium dense, light brown <b>Clayey Sand</b> with estimated 20% medium plastic fines, 55% fine to very coarse sand, 25% fine to medium gravel.	Bulk sample taken from 0 - 1.5 meters.
	0.46			8						
1440.64	1.52	3B	SPT	12	59		w, PI, Sv	SM	Moist, very dense, brown grey <b>Silty Gravelly Sand</b> with estimated 15% non-plastic fines, 65% fine to coarse sand, 20% gravel to 2.5 cm.	Cobbles below 2 meters.
	1.98			25						
1439.64	3.05	3C	SPT	50	50		w, PI, Sv		Refusal on gravels.	
	3.20			50						
1438.64										
1437.64										
1436.64										
1435.64										
1434.64										
1433.64										

# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 144+96 (WQB-7)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1444.71 (m)  
 HAMMER DROP SYSTEM NA

STATION 144+96 "P"  
 OFFSET 110.88 LT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 9/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1443.71	0.46							SM	Moist, medium dense, brown <b>Silty Sand with Gravel</b> with estimated 15% low plasticity fines, 70% fine to coarse sand, and 15% fine to coarse subrounded to rounded gravel. Unit contains scattered subrounded cobbles to 10cm and scattered wood and metal debris.	
	0.76	10A	GRAB							
	1.22									
1442.71	1.52	10B	GRAB				PI, Sv	GC	Moist, medium dense, dark brown <b>Clayey Gravel with Sand</b> with 16% low to medium plasticity fines, 38% fine to coarse sand, and 46% fine to coarse gravel. Unit contains high density of small root debris, rotten wood debris, and asphalt debris with slight smell of asphalt oil. Unit also contains subrounded cobbles and boulders to 38 cm.	
	2.74									
1441.71	3.05	10C	GRAB				PI, Sv	SC	Moist, medium dense, brown <b>Clayey Sand with Gravel</b> with 17% low to medium plasticity fines, 62% fine to coarse sand, and 21% fine to coarse subrounded gravel. Unit contains subrounded cobbles and boulders to 50cm. Moderate difficulty excavating due to several large tree stumps present, along with other wood and metal debris and large boulders to 24 inch diameter.	
1440.71	4									
1439.71	5									
1438.71	6									
1437.71	7									
1436.71	8									
1435.71	9									

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/12/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 145+50  
 E.A. # 0079-01-5  
 GROUND ELEV. 1437.52 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 135+94 "P2Am"  
 OFFSET 257.07 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1436.52	0.00	2A	SPT	3	35		w, PI, Sv	SC	Moist, dense, brown <b>Clayey Sand</b> with estimated 25% medium plastic fines, 75% fine to coarse sand. Few cobbles. Surface boulders to 1 meter with silty sand surface veneer.	Bulk sample taken from 0 - 1.5 meters.
	0.46			10						
1435.52	1.52	2B	SPT	20	48		w, PI, Sv	SM	Moist, very dense, light brown <b>Silty Gravelly Sand</b> with estimated 10% non-plastic fines, 80% fine to coarse sand, 10% gravel. Gravelly to cobbley lense at 1.2 meters.	
	1.98			25						
1434.52	3.05	2C	SPT	18	33		w, PI, Sv	SM	Moist, dense, brown <b>Silty Gravelly Sand</b> with estimated 20% slightly plastic fines, 65% fine to coarse sand, 15% gravel to 2.5 cm.	
	3.51			15						
1433.52	4									
1432.52	5									
1431.52	6									
1430.52	7									
1429.52	8									
1428.52	9									



## EXPLORATION LOG

START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 146+17 (WQB-8)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1439.02 (m)  
 HAMMER DROP SYSTEM NA

STATION 136+50 "P2Am"  
 OFFSET 132.73 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 9/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1438.02	0.00	11A	GRAB					SC SM	0.24	
	0.30									
	0.61	11B	GRAB					SC	0.55	
	0.76									
1.07	11C	GRAB				PI, Sv	SP SC	2.44		
1437.02	2									
	2.74									
1436.02	3	11D	GRAB				PI, Sv	SP SM	3.05	
1435.02	4									
1434.02	5									
1433.02	6									
1432.02	7									
1431.02	8									
1430.02	9									



## EXPLORATION LOG

START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 146+92 (WQB-10)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1432.46 (m)  
 HAMMER DROP SYSTEM NA

STATION 137+25 "P2Am"  
 OFFSET 118.31 RT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 9/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1431.46	0.00 0.30	13A	GRAB					SP SM	0.34 Moist, medium dense, brown <b>Poorly Graded Sand with Silt and Gravel</b> with estimated 10% non-plastic fines, 70% fine to coarse sand, and 20% fine to coarse subrounded to subangular gravel. Few subrounded cobbles to 15cm. 1.22 Moist, medium dense, dark brown <b>Clayey Sand</b> with 44% medium plasticity fines and 55% fine to coarse sand.	
	0.76						SC			
	1.07	13B	GRAB				PI, Sv			
1430.46	1.52							SC	1.22 Moist, medium dense to dense, brown <b>Clayey Sand with Gravel</b> with 14% medium to low plasticity fines, 44% fine to coarse sand, and 42% fine to coarse subangular to subrounded gravel. Unit also contains abundant subangular to subrounded cobbles and boulders to 20cm.	
	1.83	13C	GRAB				PI, Sv			
	2.59									
1429.46	2.90	13D	GRAB				PI, Sv	2.90	Easily excavated from 0.0m to 1.2m. Moderate difficulty excavating below 1.2m due to presence of boulders and cobbles.	
1428.46										
1427.46										
1426.46										
1425.46										
1424.46										
1423.46										

## EXPLORATION LOG

SHEET 1 OF 1



START DATE 11/12/98  
 END DATE 11/12/98  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 147+00  
 E.A. # 0079-01-5  
 GROUND ELEV. 1434.47 (m)  
 HAMMER DROP SYSTEM Rope - Cathead

STATION 137+22 "P2Am"  
 OFFSET 140.39 RT  
 ENGINEER MG  
 EQUIPMENT Acker  
 OPERATOR Peterson  
 DRILLING METHOD Auger  
 BACKFILLED Yes DATE 11/12/1998

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
11/12/98	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1433.47	0.00	1A	SPT	5	21		w, PI, Sv		Moist, medium dense, grey brown <b>Silty Gravelly Sand Fill</b> with estimated 20% slightly plastic fines, 65% fine to coarse sand, 15% gravel to 2 cm. Cobbley at 0.75 - 1.2 meters.	Bulk sample taken from 0 - 1.5 meters.
	0.46			8						
1432.47	1.52	1B	SPT	6	48		w, PI, Sv		Slightly moist, dense, light brown <b>Clayey Sand Fill</b> with estimated 20% low plastic fines, 60% fine to coarse sand, 20% fine to medium gravel.	
	1.98			21						
1431.47	3.05	1C	SPT	7	50/0		w, PI, Sv	<b>SM</b>	Slightly moist, dense, light brown <b>Silty Sand</b> with estimated 25% non-plastic fines, 75% fine sand. Slightly cemented at 3 meters.	
	3.35			16						
1430.47	4									
1429.47	5									
1428.47	6									
1427.47	7									
1426.47	8									
1425.47	9									



# EXPLORATION LOG



START DATE 9/1/99  
 END DATE 9/1/99  
 JOB DESCRIPTION I-580 Freeway Extension Project  
 LOCATION Washoe County, Nevada  
 BORING 147+27 (WQB-9)  
 E.A. # 0079-01-5  
 GROUND ELEV. 1506.59 (m)  
 HAMMER DROP SYSTEM NA

STATION 137+60 "P2Am"  
 OFFSET 174.64 LT  
 ENGINEER SDB  
 EQUIPMENT JD 200LC  
 OPERATOR -  
 DRILLING METHOD Trackhoe  
 BACKFILLED Yes DATE 9/1/1999

GROUNDWATER LEVEL		
DATE	DEPTH m	ELEV. m
9/1/99	NE	

ELEV. (m)	DEPTH (m)	SAMPLE		BLOW COUNT			LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
		NO.	TYPE	150 mm Increments	Last 300 mm	Percent Recov'd				
1505.59	0.00	12A	GRAB					SC SM	0.30 Moist, medium dense, light brown <b>Silty, Clayey Sand</b> with estimated 20% low plasticity fines, 65% fine to coarse sand, and 15% fine to coarse gravel. Rootmass to 0.3m depth.	
	0.30									
1504.59	0.91	12B	GRAB				PI, Sv	SP SC	1.98 Moist, medium dense, brown <b>Poorly Graded Sand with Clay and Gravel</b> with 10% medium to low plasticity fines, 66% fine to coarse sand, and 24% fine to coarse subrounded gravel. Abundant subrounded cobbles and boulders to 60cm.	
	1.22									
1503.59	2.44	12C	GRAB				PI, Sv	SP SM	2.74 Moist, medium dense, brown <b>Poorly Graded Sand with Silt and Gravel</b> with 8% non-plastic fines, 76% fine to coarse sand, and 16% fine to coarse subrounded to subangular gravel. Unit contains scattered subrounded cobbles and boulders to 20cm. Unit derived from decomposed granite. Moderate difficulty excavating due to large boulders present to 24 inch diameter.	
	2.74									
1502.59										
1501.59										
1500.59										
1499.59										
1498.59										
1497.59										



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: MG  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 34+50 Date Started: 12/17/98 Date Completed: 12/17/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
								Surface Elevation (m): 5190.35
0	Cement Plug							Moist to wet, soft, completely weathered, grey <b>Granitic Bedrock</b> .
2	Solid 2" PVC							
4	Bentonite Seal							Very slightly altered with iron oxidation.
6	Colorado 8x12 Silica Sand			A	SS	50/127		
8	Slotted 2" PVC							
10				B	SS	50/127		
12								
14								
16				C	SS	51		
18								
20								
22				D	SS	50/76		
	End Cap		5167.4 23.0					

MONITOR\_METRIC\_0079015M.GPJ\_LAGWNL01.GDT 5/11/01

<b>LEGEND</b>	Water found	<b>SAMPLE TYPE</b>	AC  Auger Cutting	SS  Split Spoon
	Static Water Level		CS  Continuous	ST  Shelby Tube
			RC  Rock Core	WC  Wash Cuttings



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: MG  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 34+25 Date Started: 12/18/98 Date Completed: 12/18/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
	Cement Plug							Surface Elevation (m): 5141.34
2	Solid 2" PVC Bentonite Seal							Moist to wet, loose to medium dense, dark grey <b>Silty Sand</b> with estimated 25% slight to low plastic fines, 75% fine to coarse sand.
4	Colorado 8x12 Silica Sand Slotted 2" PVC							
6			5135.3 6.0 <b>GM</b> 5133.8 7.5	A	SS	X	12	Wet, dense, grey <b>Silty Sandy Gravel</b> .
8								Wet, medium dense, grey <b>Silty Sand</b> with estimated 15% non--plastic fines, 85% fine to coarse sand.
10								
12			5129.3 12.0 <b>GM</b> 5127.8 13.5					Wet, dense, grey <b>Silty Sandy Gravel</b> .
14								Wet, dense, grey <b>Silty Gravelly Sand</b> with estimated 10% non-plastic fines, 80% fine to coarse sand, 10% gravel.
16				C	SS	X	32	
18	End Cap		5122.8 18.5 <b>SC</b> 5121.8 19.5	D	SS	X	16	Wet, medium dense, green to rust orange <b>Clayey Sand</b> with estimated 35-45% medium plastic fines, 55-65% fine to medium sand.

MONITOR METRIC 0079015M.GPJ LAGWNL01.GDT 5/11/01

<b>LEGEND</b>	Water found	<b>SAMPLE TYPE</b>	AC  Auger Cutting	SS  Split Spoon
	Static Water Level		CS  Continuous	ST  Shelby Tube
			RC  Rock Core	WC  Wash Cuttings



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: MG  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 28+00 Date Started: 12/18/98 Date Completed: 12/18/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
								Surface Elevation (m): 5125.56
2	Cement Plug Solid 2" PVC Bentonite Seal		5123.1					Very moist to wet, medium dense, dark brown <b>Clayey Sand</b> with estimated 25-30% medium plastic fines, 70-75% fine to coarse sand.
4	Colorado 8x12 Silica Sand		2.5					
6	Slotted 2" PVC		5118.6	A	SS	X	30	Moist, dense, red brown <b>Silty to Clayey Gravelly Sand</b> with estimated 20% slight to low plastic fines, 65% fine to coarse sand, 15% gravel.
8			7.0					
10				B	SS	X	45	Soft, completely weathered, grey <b>Granitic Bedrock</b> .
12								
16				C	SS	X	50/152	
20	End Cap		5104.1	D	SS	X	41	
			21.5					

MONITOR\_METRIC\_0079015M.GPJ\_LAGWNL01.GDT 5/11/01

<b>LEGEND</b>	Water found	<b>SAMPLE TYPE</b>	AC  Auger Cutting	SS  Split Spoon
	Static Water Level		CS  Continuous	ST  Shelby Tube
			RC  Rock Core	WC  Wash Cuttings



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: JO  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 22+10 Date Started: 12/20/98 Date Completed: 12/20/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
								Surface Elevation (m): 5108.14
2	Cement Plug Solid 2" PVC							Moist to wet, dense, dark brown to brown <b>Silty Gravelly Sand</b> with granitic cobbles and small to medium boulders.
4	Bentonite Seal							
6	Colorado 8x12 Silica Sand			A	SS	X	34	<b>SM</b>  Wet, medium dense to dense, light brown to brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.
8	Slotted 2" PVC							
10				B	SS	X	35	
12								
14			5094.1 14.0					<b>SM</b>  Wet, medium dense to dense, light brown to brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.
16				C	SS	X	42	
18								
20				D	SS	X	24	
22	End Cap		5085.6 22.5					

MONITOR METRIC 0079015M.GPJ LAGWNL01.GDT 5/11/01

<b>LEGEND</b>	Water found	<b>SAMPLE TYPE</b>	AC  Auger Cutting	SS  Split Spoon
	Static Water Level		CS  Continuous	ST  Shelby Tube
			RC  Rock Core	WC  Wash Cuttings



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: JO  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 14+00 Date Started: 12/20/98 Date Completed: 12/20/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
								Surface Elevation (m): 5057.87
2	Cement Plug Solid 2" PVC Bentonite Seal Colorado 8x12 Silica Sand Slotted 2" PVC			A	SS	X	5	Wet, loose, dark brown to brown <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.
4								
6								
8			SM					
10				B	SS	X	9	
12								
14								
16	End Cap		5041.9 5044 16.5	C	SS	X	23	Wet, medium dense, green grey <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand.

MONITOR\_METRIC\_0079015M.GPJ\_LAGWNL01.GDT 5/11/01

<b>LEGEND</b>	Water found	<b>SAMPLE TYPE</b>	AC  Auger Cutting	SS  Split Spoon
	Static Water Level		CS  Continuous	ST  Shelby Tube
			RC  Rock Core	WC  Wash Cuttings



# Monitoring Well Log

Client: CH2M Hill Project: I-580 Freeway Extension Monitoring Wells  
 Project No.: 0079-01-5 Location: Washoe County, Nevada Supervised by: MG  
 Drilling Co.: Haztech Drilling Method: 152 mm HS Auger  
 Borehole Location: Sta. 16+00 Date Started: 12/19/98 Date Completed: 12/19/98

Depth Scale (m)	Well Construction	Graphic Log	Elev. Depth (m)	Sample				Description
				Number	Type	Interval	N Value	
								Surface Elevation (m): 5103.41
0	Cement Plug Solid 2" PVC Bentonite Seal							Moist to wet, medium dense to very dense, brown to grey <b>Silty Sand</b> with estimated 20% non-plastic fines, 80% fine to coarse sand. Few cobbles and small boulders.
2								Granitic boulder.
4								
6				A	SS	X	40	
8								Granitic boulder.
10								
12	Colorado 8x12 Silica Sand			B	SS	X	14	
14	Slotted 2" PVC							
16				C	SS	X	19	
18								
20				D	SS	X	55	Iron oxidation on completely weathered granitic cobbles and large gravel.
22								
24								
26				E	SS	X	50/152	
28	End Cap		5075.4 28.0					

MONITOR METRIC 0079015M.GPJ LAGWNL01.GDT 5/11/01

**LEGEND**

- Water found
- Static Water Level

**SAMPLE TYPE**

- AC Auger Cutting
- CS Continuous
- RC Rock Core
- SS Split Spoon
- ST Shelby Tube
- WC Wash Cuttings