ATTACHMENT A

DRILLING LOGS FOR WELLS REFERENCED DURING THIS TESTING

1065PZ4A

1065PZ4B

231GW06

231GW11

231GW21

231GW22

DNB-R7-PZ-D

ENB-R1-PZ-D

ENB-R1A-PZ-D

ENB-R1A-PZ-S

ESB-R2-PZ-D

HGB-1(17)

HGB-1(43)

PW-1A

RW18-A1-PZ-D

INTERNATIONAL TECHNOLOGY CORPORATION

SOIL BORING AND WELL INSTALLATION AND VISUAL CLASSIFICATION LOG

WAD 21 E1
Building 1065
Project Name: SAC TERC Presidio
Project Number: 782491

Well 1065PZ4A

Boring Number: 1065PZ4A	GWF:	Date: 4.18.97
Location:	Depth Date/Time	Date Started: 4.18.97
Engineer/Geologist:	Depth Date/Time	Date Completed: 4.18.97
Drilling Method: Geoprobe or Hollow Stem Auger		
Boring to 12 ft? total depth: _____		Shallow well to 10 ft: Y ~~N~~
Intermediate Well to _____ ft: Y ~~N~~ (including 10 ft of conductor casing)		Additional shallow well footage beyond ~~10 ft~~
Time spent installing 8.5inch augers to 30ft for conductor casing: ~~—~~		Total development time: ~~—~~
	Standby time: ~~—~~	Level C: Y ~~N~~

E1

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description (Boring or well number: 1065PZ4A)	USCS soil symbol	Measured consistency (TSF)	Well construction	Remarks	PID (ppm)
	0			0' ASPHALT CONCRE 0-5' BASE ROCK				NO PETR. ODORS	0
			20/35/36		FILL				
	1		15"	SILTY, GRAVELLY, SAND FILL LOOSE BRICK FRAGS, DUSKY BROWN					
	2		15/25/20	CL.F SAND, MOD YLLW BROWN, SLT MOIST, MD DENSE, TRACE F. GRAVEL			LOG		
1100	3	1065PZ 4A (3.0)	18"	TRACE BRICK FRAGS			WELL CONSTRUCTION		
	4		10/20/35	SAND, DUSKY BROWN/OLIVE GREEN, SLT MOIST, MD DENSE, TRACE F. GRAVEL	SP FILL				
			15"	- SERP. ROCK FRAGS - TRACE BRICK FRAGS					
	5		8/8/9	SILTY SAND, DARK OLIVE GRAY, SLT WET, MD DENSE/DENSE			SEE		
			18"	WOOD DEBRIS					
	6			TRACE BRICK FRAGS					
			6/9/9						
	7		15"						

Building 1065, WAD 21

Well 1065PZ4A

Boring or well number: 1065PZ4A

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description	USCS soil symbol	Measured consistency (TSF)	Well construction	Remarks	PID (ppm)
1110	7	1065PZ4A (7.5)		@ 7.5 SANDY, SILT, MOD OLIVE BROWN, SLT WET, MD DENSE	SM/ML		SEE WELL CONSTRUCTION LOG	NO PETR. ODORS	
	8		4/3/3	SATURATED @ 8.0'				▼ APPROX 8.0'	2
1115	9	1065PZ4A (8.5)	18"	@ 9.0 SILT, DUSKY BROWN, SLT WET, MD STIFF	ML				
	10		3/4/10 18"					NO PETR. ODORS	
	11		4/5 12"	@ 10.7 POORLY GRADED SAND, OLIVE GRAY, MOD WET, MD STIFF, F-M GRAIN SAND ↓ SATURATED @ 11.0'	SP				
	12			TD = 12.0'					

TECHNOLOGY CORPORATION

SOIL BORING AND WELL INSTALLATION AND VISUAL CLASSIFICATION LOG

Building 1065
Project Name: SAC TERC Presidio
Project Number: 782491

Well 1065PZ4B

Boring Number: 1065PZ4B	GWF:	Date: 4·18·97
Elevation:	Depth Date/Time	Date Started: 4·18·97
Geologist: S I	Depth Date/Time	Date Completed: 4·18·97
Drilling Method: Geoprobe or Hollow Stem Auger		
Boring to 22 ft? total depth:		Shallow well to 10 ft: Y ~~N~~
Intermediate Well to ____ ft: Y N (including 10 ft of conductor ~~casing~~)		Additional shallow well footage beyond ~~10 ft~~:
Time spent installing 8.5inch augers to 30ft for conductor ~~casing~~:		Total development ~~time~~:
	Standby ~~time~~:	Level C: Y ~~N~~

E1

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description (Boring or well number: 1065 PZ 4B)	USCS soil symbol	Measured consistency (TSF)	Well construction	Remarks	PID (ppm)
1245	0			0 ASPHALT					
	1	V. CORE BARREL - 60" LONG	56"/60"		SW FILL		SEE WELL CONSTRUCTION DIAGRAM	NO PETR. ODORS	
	2			FILL - SILTY GRAVELLY SAND, DRK YLLW BROWN/GRAYISH OLIVE, SLT WET, MD DENSE					
	3			TRACE BRICK FRAGS					
	4								
1307	5								
	6	2.5" DIAM	48"/60"	CL.O SILT W/SAND, OLIVE GRAY, SLT WET, MD STIFF, TRACE GRAVEL (BRICK FRAGS)	ML FILL			NO PETR. ODORS	
	7								

Building 1065, WAD 21

Well 1065PZ4B

Boring or well number: 1065PZ4B

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description	USCS soil symbol	Measured consistency (TSF)	Well construction	Remarks	PID (ppm)
				SILT W/ SAND	ML FILL			NO PETR. ODORS	0
	8								
	9			@ 9.2 SILTY SAND, MOD OLIVE BROWN, MOD WET, MD DENSE	SP				
	10			@ 10.4 SILT, DUSKY BROWN, SLT WET, MD STIFF					
			60"/60"		ML				
	11								
	12			@ 11.8 – 12.4 SILTY SAND, GRAYISH BROWN, MOD WET/WET, MD DENSE, VERTICAL ROOTLETS	SP				
	13			@ 12.4 SILT, LIGHT OLIVE BROWN, MOD WET, STIFF, VERTICAL ROOTLETS	ML			NO PETR ODORS - 0 ppm	
	14								
	15			@ 14.5 CLAY, LIGHT OLIVE GRAY, SLT WET, MD STIFF	CL				

INTERNATIONAL TECHNOLOGY CORPORATION

SOIL BORING AND WELL INSTALLATION AND VISUAL CLASSIFICATION LOG

WAD 21 E
Building 1065

Project Name: SAC TERC Presidio
Project Number: 782491

Well 1065PZ4B

Boring Number:	GWF:	Date:
tion:	Depth Date/Time	Date Started:
Engineer/Geologist:	Depth Date/Time	Date Completed:
Drilling Method: Geoprobe or Hollow Stem Auger		
Boring to____ ft? total depth: _____		Shallow well to 10 ft: Y N
Intermediate Well to _____ ft: Y N (including 10 ft of conductor casing)		Additional shallow well footage beyond 10 ft:
Time spent installing 8.5inch augers to 30ft for conductor casing:		Total development time:
	Standby time:	Level C: Y N

E1

Boring or well number: 1065PZ4B

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description	USCS soil symbol	Measured consistency (TSF)	Well construction	Remarks	PID (ppm)
	15		48"/60"		CL				
	?								
	16			-16.5 @16.0 CLAY, LT OLIVE, MOD WET, MD STIFF					
				@16.5 SILTY SAND, LT OLIVE, SATURATED, MD STIFF, 20% SILT, F-M GRAIN	SP				
	17								
	18							NO PETR. ODORS	0. PPM
				SAND BECOMING CLEANER & MORE OF A MOD YLLW BROWN					
	19				SP				
				P. GRADED @19.5 SAND, MOD YLLW BROWN, SATURATED, MD STIFF, F-M GRAIN					
	20		24"/24"						
	21								
	22								
				TD=23'					

Well 231GW06

R. L. STOLLAR & ASSOCIATES, INC.
WELL LOG

Project No. 90330-3
Well/Boring No. 231-06
Combo/Key No.

Project Name and Location: TEPS - Presidio (West of 231-05) 40'	Elevation	Coordinates	Township / Range / Section
Drilling Company: PC Exploration	Driller: Matt Williams	Date and Time Started: 90287 - 0910 etc; Date and Time Completed: 20287 - 1400	
Drilling Equipment: Mobile B-61		Total Drilled Depth: 25'	Completion Depth: 23'10"
Drilling Method: Hollow Stem Auger	Boring Diameter: 11"	Sampler: Split Spoon / No of Samples: Continuous	Cal / SS
Size and Type of Casing: 4" ID Flush-Threaded SCH40 PVC Blank		Water Elevation: 7.5' @ 1025 / First	Completion / 24 Hrs
Type of Perforation: 4" ID 0.010" Slotted Stainless Steel	From 23'4" To 13'4" (Ft-BGS)	Pack Size and Type: #2/12 Lonestar Sand	From 23'10" To 12' (Ft-BGS)
Type of Seal: 3/8" Volclay Bentonite Pellet	From 12' To 8' (Ft-BGS)	Hydrogeologist: Gary Clerdenin	Checked By/Date: [illegible] 90323

Depth (feet)	Description	USCS Symbol	Lithology	Piezometer Installation	Water Content	Estimate % of GR	SA	FI	Blow Count/6"	Remarks (Drill Rate, Odor, Sample No, etc.)
0	Asphalt road surface		Christy Box							
1				-8'						
2	14" Recovery; Fill - crushed serpentinite, glass, gravel & sand. (1'6" - 2'8")				Damp	40	50	10	4 10 12	0925; 20 ppm
3	12" Recovery; SAND - silty, greenish gray (10YR/3/1) qtz & serpentine grains, mod. sorted, sub-rounded. very plastic. (3'-4')	SM			Moist		70	30	4 8 10	0930: 50 ppm in lower 6" PID Headspace @ 4'. strong hydrocarbon odor.
4										
5	18" Recovery; SAND - same as above	SM			moist		70	30	4 8 8	0955: 150 ppm. 1350 PID Headspace @ 5' also possible free product @ 5' strong hydrocarbon odor
6	18" Recovery; SAND - clayey, brown-gray (10YR/3/1) (6'-6'6")	SC	GROUT		Moist		60	40	2 3	1000: Top 5' 20 ppm bottom 8" no hits
7	SAND - silty, greenish gray (10YR/5/1) qtz and serpentine grains, mod. sorted, sub-rounded (6'6" - 7'6")	SM					70	30	6	
8	18" Recovery; SAND - silty, as above (7'6"-8'6")	SM			SAT		70	30	3	1025; no hits
	SILT - very fine-grained, organic-rich, approaching peat in composition (8'9" - 9') SAMPLE IS SATURATED	OH		-8'			60	40	3 4	
9	18" Recovery; BAY MUD - greenish gray (9' - 9'4")	CH					50	50	2	1040; no hits
	SILTY SAND - same as above (9'4" - 10'2")	SM							3	
10	SAND - clean, well-sorted, sub-rounded mod. sized grains of qtz and serpentine	SP							3	
11	18" Recovery; SAND - silty, as above (10'6"-11'6")	SM	4" ID Flush-Threaded SCHEDULE 40 PVC Blank	SEAL			80	20	1	1055: no hits. Slight hydrocarbon odor
	SILT - dark brown, organic rich (11'6"-12')	OH					70	30	2 2	
12	18" Recovery; SAND - silty, as above (12'-13')	SM		-12'			90	10	1	1100, no hits, entire sample "soupy" wet
	SAND - clean, well-sorted, sub-rounded med.-sized grains of qtz and serpentine (13'-13'6")	SP					95	5	1 3	
13				-13'6"						

FOPM47/2

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Well 231GW06

R. L. STOLLAR & ASSOCIATES, INC.

WELL LOG (Continued)

Project No. 90330-30

Well/Boring No. 231-Ø6

Depth (feet)	Description	USCS Symbol	Lithology	Piezometer Installation	Water Content	Estimate % of GR	SA	FI	Blow Counts/6"	Remarks (Drill Rate, Odor, Sample No, etc.)
13										
	13" Recovery; BAY MUD - greenish-gray (2.5Y/3/0) organic-rich (13'6"-14'4")	CL		13'4"	SAT		70	30	2	1135; no odor
14	SAND - silty, greenish-gray (2.5Y/3/0) mod. sorted sub-rounded, mod. sized grains of qtz & serpentine (14'4"-14'8")	SM					90	10 GA 70	3	
							95	<5	<5	
15	SAND - clean, well-sorted, sub-rounded grains of qtz and serpentine (14'8"-15')	SP								
	GTC ~~12" Recovery, SAND - clean AS ABOVE~~ No Recovery ~~(15'-16')~~ GTC	~~SP~~ GTC					~~95~~	~~5~~	~~1~~ ~~8~~ GTC ~~10~~ GTC	~~1325, no hit~~ GTC
16										
	12" Recovery; SAND - AS ABOVE - (clean)	SP					95	5	1	1325 ~~1340~~ GTC, no hit
17									8	
									10	
18	13" Recovery; SAND - clean, AS ABOVE	SP					95	5		1340; no hit
19										
	12" Recovery; SAND - clean, AS ABOVE	SP					95	5	1	1350, no hit
20									2	
									3	
21	12" Recovery; SAND - clean, AS ABOVE	SP					95	5	1	1400; no hits
									1	
22									2	
	14" Recovery; SAND - clean, AS ABOVE	SP					95	5	1	1410; no hits
23									1	
									2	
24	TD = 25'									
	Water level = 7.5' @ 1025									
25										
26										

Lithology: 4" ID - 0.010" ~~SLOT~~ GTC STAINLESS STEEL; #2/12 Lonestar Sand; 4" ID, SCH. 40 PVC BLANK; END CAP; SLUFF

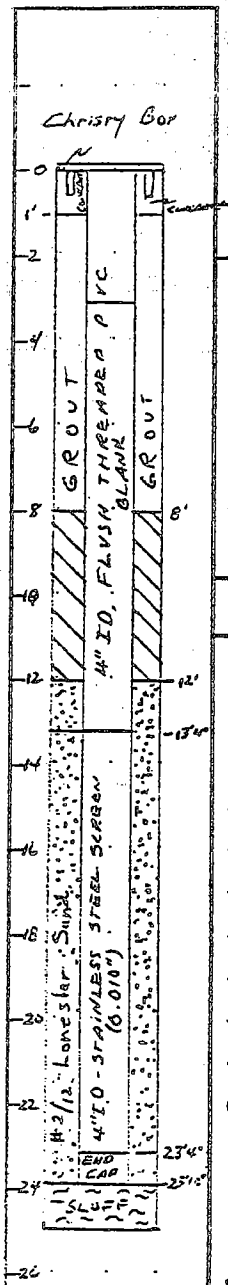
Depth scale: 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26

FOPM47/3

Well 231GW06

R. L. STOLLAR & ASSOCIATES, INC.
WELL CONSTRUCTION SUMMARY

SITE TYPE: WELL 231-Ø6



PROJECT: TEPS - Presidio

PERSONNEL: Stollar: Gary Chandonia — PC Exploration: Driller - Matt Williams, Helper - Curtis Stigg, Urie: Dave Forler

LOCATION OR COORDS.: ≈25'E of Existing Well #8, ≈25'W of Well 231-Ø5 & ≈10'S of support post #25 for the 101 overpass

ELEVATION: GROUND LEVEL _____

TOP OF CASING _____

DRILLING SUMMARY

TOTAL DEPTH: 25'

BOREHOLE DIAMETER: 11"

DRILLER: Matt Williams

RIG: Mobile B-61

BIT(S): 11" Clay

DRILLING FLUID: None

SURFACE CASING: Christy Box

WELL DESIGN

BASIS: GEOLOGIC LOG
GEOPHYSICAL LOG None

CASING STRING (S): C = CASING S = SCREEN

C_1 - END CAP	23'10" - 23'4"
S_1 - Screen	23'4" - 13'4"
C_2 - Blank	13'4" - 3'4"
C_3 - Blank	3'4" - Surface

CASING C1: 4" ID Flush-threaded PVC END CAP

C2 - C_3 - 4" ID Flush-threaded SCH. 40 PVC Blank

~~C3~~

~~C4~~

SCREEN S1: 4" ID Stainless Steel Screen (0.010")

~~S2~~

~~S3~~

~~S4~~

FILTER MATERIAL: #2/12 Lonestar Sand

SEAL: 3/8" Volclay Bentonite Pellets

GROUT: Type I-II Portland Cement

OTHER:

CONSTRUCTION TIME LOG

TASK	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING:	9/20/97	0910	9/20/97	1410
Reaming	9/20/97	1430	9/20/97	1515
GEOPHYSICAL LOGGING:				
None				
SCREEN PLACEMENT:	9/20/97	1530	9/20/97	1600
FILTER:		1600		1635
SEAL:	9/20/97	1635	9/20/97	1650
GROUT:	9/20/98	0700	9/20/98	0720
DEVELOPMENT:	90305	1047	90305	1238
OTHER:				

WELL DEVELOPMENT

Purged 344 gallons. Parameters stabilized @ pH = 7.18, EC = 676 and T = 19.6 Water Clear

COMMENTS

- Added 3 1/2 bags (100 lb. ea.) of #2/12 Lonestar Sand for filter pack
- Added 1.1 buckets (5 gal ea.) of 3/8" Volclay Bentonite Pellets for seal.
- Added ≈10 gal of approved H_2O to inside of Auger
- PVC END CAP used w/ stainless steel screen

FOPM23 / JAN 88

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Well 231GW06

R. L. STOLLAR & ASSOCIATES, INC.
WELL DEVELOPMENT DATA

RECEIVED NOV 29 1990

SITE TYPE	SITE ID
WELL	231-Ø6

DEPTH TO BOTTOM (INITIAL) 22.92' GR
(FINAL) 22.85'
STATIC WATER LEVEL (INITIAL) 5.68'
(FINAL) 6.52'
MEASURING POINT Black mark TOC
CASING I.D. ~~Black mark~~ GR 4" PVC
HYDROGEOLOGIST Gary Clendenin
DRILLER Matt William

PROJECT NO. 90330-30
DATE(S) INSTALLED 10/24/90 (90297)
DATE(S) DEVELOPED 11/1/90 (90305)
PUMP (TYPE) STANDARD 3½ Sub
CAPACITY 10 GPM
BAILER (TYPE) Steel
CAPACITY 4 gal

TIME	VOLUME OF WATER REMOVED (gallons)	pH	SPECIFIC CONDUCTANCE	TEMP (°C)	SAND CONTENT	OTHER PHYSICAL CHARACTERISTICS (CLARITY, ODOR, PARTICULATES, COLOR)
1047	Begin bailing - soft bottom					
1057	25	6.97	681 uS/cm	20.7	<5%	Translucent, light brown, no odor, very minor silt, 13ppm PID in drum
1107	Surging after removing 25 gals. Started bailing again @ 1117					
1123	30	7.09	727 uS/cm	18.9	10%	Opaque, brownish-gray, no odor, very silty, 8ppm PID
1126	Surging after removing 45 gals. Started bailing again @ 1135					
1139	55	7.11	705 uS/cm	18.5	5%	Opaque, brownish-gray, no odor, silty, 1.4ppm PID
1143	Surging after removing 57 gals. Started bailing again @ 1153					
1158	70	7.10	705 uS/cm	18.8	5%	Opaque, brownish-gray, no odor, very silty
1206	Pump on 75 gals bailed out					
1211	116	7.10	677 uS/cm	20.8	<5%	Translucent, light gray, no odor, very minor silt
1217	173	7.12	677 uS/cm	20.5	<5%	Translucent, light gray, no odor
1225	230	7.11	674 uS/cm	20.1	Ø	Slightly milky, no odor
1230	287	7.09	671 uS/cm	19.3	Ø	Clear
1238	344	7.18	676 uS/cm	19.6	Ø	Clear

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Well 231GW06

ENVIRONMENTAL PROGRAM AT PRESIDIO OF SAN FRANCISCO
GROUND-WATER SAMPLING FIELD DATA SHEET

Log Book # D8
Page 1 of 1

Well ID. No.	Purge Equipment	Analytical Equipment	Samplers Initials	Time	Date
231-06	☐ Bennett Pump (Teflon Tubing) ☐ Isco Pump (Teflon Tubing) ☐ Standard Pump (PVC Tubing) ☒ Grundfos Pump (Neoprene Tubing) ☐ Stainless Bailer: O.D. / Length 1.65" ☐ ☐ 2 ft. 1.85" ☐ ☐ 3 ft. 3.75" ☐ ☐ 4 ft. ___ ☐ ☐ ___ ft. Serial No. ___	pH Meter: ☐ Beckman phi 21 ☐ Omega pH-65A ☐ Orion SA250 ☒ Other Orion SA230 Serial No. 4938 Conductivity Meter: ☐ YSI Model 33 ☒ Other Orion 122 @ 1999 us/cm Serial No. 9811077 Dissolved Oxygen Meter: ☐ YSI Model 51B Serial No. ___ Temperature Meter: ☐ Beckman ☒ Other Orion SA230 Serial No. 4938 Filtration Equipment: ☐ Geotech Peristaltic Pump ☐ Geotech 0.45 micron filter Water Level Meter: Solinst RLSA # ___ HLA # ___	JMT/RJD	0859	90344

Casing Diameter: 4 in.
Casing Stickup: ___ ft.
Total Well Depth: 22.78 ft.
Static Water Level: 5.69 ft.
Saturated Thickness: 17.09 ft.
Casing Volume: ___ gal.
Screened Interval: ___ ft.

Sample Equipment:
☐ Same as Purge
☐ Bennett Pump (Teflon Tubing)
☐ Isco Pump (Teflon Tubing)
☐ Standard Pump (PVC Tubing)
☒ Stainless Bailer:
O.D. / Length
1.65" ☒ ☐ 2 ft.
1.85" ☐ ☒ 3 ft.
3.75" ☐ ☐ 4 ft.
___ ☐ ☐ ___ ft.
Serial No. ___

Meter Calibration

pH 7.00 = 7.00 at 10.6 °C Time 0910
pH 10.00 = 10.00 at 10.7 °C Time 0912
Conductance Standard: 1370 umhos/cm at 25°C
Measured Value: 1473 umhos/cm at 13.0 °C Time 0909
Calculated Conductivity = Measured Conductance ÷ (0.02) (measured conductance) (25°C - Actual Temp)):
___ umhos/cm at 25°C ___
Dissolved Oxygen ___ mg/l at ___ °C ___

Titration Results (Acid Concentration: ☐ 0.16, ☐ 1.6)

pH	7.0	5.1	4.8	4.5
#Clicks				
Color				

Time	Number of Casing Volumes	Gallons Removed	°C	E.C. umhos/cm	pH	Dissolved O_2 mg/Liter	Pump Rate GPM	Approx Pump Depth ft.	Visual Description
0931	initial parameters		17.8	698	7.48		15	16	Clear
0933		40	17.8	693	7.35		15	16	Clear
0935		80	17.7	690	7.37		"	"	Clear
0937		100	16.3	682	7.44		"	"	Clear
0940		150	17.8	683	7.48		"	"	Clear

ANALYSIS REQUESTED

VOC	SVOC	ICP Metals	Hg	GFAA	CN	TPH
2	2	1	1	1	1	1

HS Comments:

HSO Signature:

Sample Depth: (cm) 14 ft

Protective Level: D C B

Condition of Well, Remarks: good condition

Sampler Signature: Juhanne Turko

OPM41

F121

Well 231GW11

R. L. STOLLAR & ASSOCIATES, INC.

WELL LOG

Project No. 0330.220
Well/Boring No. 231-11
Combo/Key No.

Project Name and Location: Presidio - IRA	Elevation	Coordinates	Township / Range / Section
Drilling Company: HEW Drilling	Driller: Jasper Booker	Date and Time Started: 10/03/91 0930	Date and Time Completed: 10/03/91 1045
Drilling Equipment: CME 55		Total Drilled Depth: 13.0	Completion Depth: 9.5 FT BGS. Screen
Drilling Method: 3 3/4 HSA / 6 1/4 HSA	Boring Diameter: 10" ±	Sampler: 5' core	No of Samples: 3 / Cal / SS
Size and Type of Casing: 4" PVC		Water Elevation: First 5.5'	Completion: 4.5 / 24 Hrs
Type of Perforation: 4" 0.010 slot PVC	From ~~9.5~~ 4.0 To 9.0 (Ft-BGS)	Pack Size and Type: #2/12 Silica Sand	From 3.5 To 10.0 (Ft-BGS)
Type of Seal: Bentonite Pellets	From 1.5 To 3.5 (Ft-BGS)	Hydrogeologist: Ed Young	Checked By/Date: DLA 11-8-91

Depth (feet)	Description	USCS Symbol	Lithology	Piezometer Installation	Water Content	Estimate % of GR	SA	FI	Blow Count/6"	Remarks (Drill Rate, Odor, Sample No, etc.)
0.3	Pavement									
1.0	very dark green to black (5Y2.5/1) silty fine SAND little coarse sand and gravel, trace brick fragments, glass medium dense		FILL		Dry	10	50	40		headspace reading w/ PID: 44.6ppm C1 Recovery = 39"
2.0	1.8 Becomes silty medium to fine SAND, little clay, stiff, trace gravel				moist	10	60	30		
3.0	- FILL -									3.2
4.0	4.3 (5Y3.5/2) Olive green fine sandy SILT little clay occasional organics moderately stiff	ML					30	70		headspace reading w/ PID = 56.3 ppm C2 Recovery = 52"
5.0					5.5'					
6.0	6.0-6.2 Black sandy Organics grades to dark gray (5y 2.5/2) medium to fine SAND little organics loose rounded to subrounded, 60% quartz, 40% mafics	SP					40	60		
		SP					100			
7.0	6.8-6.9 Organic Silt, little clay trace sand soft	OL						100		
	medium to fine SAND as above	SP								8.0
8.0	6.9 to 8.1 ft. Gray (5y3.5/1) SILT, little clay, trace organics, occasional trace fine sand soft.				wet		<5	100		8.0 headspace reading w/ PID = 10.0 ppm C3 Recovery: 48"
9.0	- Bay mud -	ML								
10.0	10.5 to 11.5 gradual change to gray (5y3/1) medium to fine SAND						50	50		
11.0	11.5									
12.0	Gray medium to fine SAND, trace organics, subrounded to rounded. 70% felsic 30% mafic Loose	SP					100			
13.0	TD = 13.0 ft.									13.0
14.0										

FOPM47/2

little 5 - 20%
trace < 5%

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R. L. STOLLAR & ASSOCIATES, INC.

WELL CONSTRUCTION SUMMARY

Well 231GW11

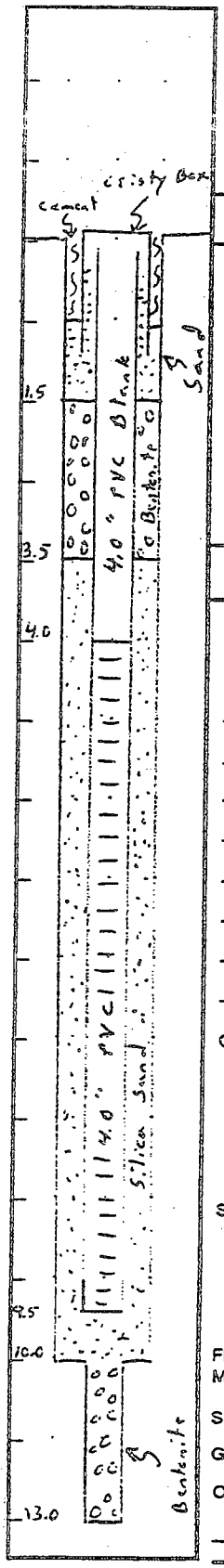
WELL	231-11

PROJECT: Presidio - IRA

PERSONNEL: Ed Young

LOCATION OR COORDS.: _____ ELEVATION: GROUND LEVEL _____

TOP OF CASING _____



DRILLING SUMMARY

TOTAL DEPTH: 13.0'

BOREHOLE DIAMETER: 10"

DRILLER: Jasper Becker

RIG: CME 55, truck mounted

BIT(S): 3¾" HSA / 6¼" HSA

DRILLING FLUID: None

SURFACE CASING: Cristy Box

WELL DESIGN

BASIS: (GEOLOGIC LOG) / GEOPHYSICAL LOG

CASING STRING (S): C = CASING S = SCREEN

C 1 - 4.6'	0.0' - 4.0'
S 1 - 9.5'	4.0' - 9.5'

CASING C1: 4.6" Blank PVC

C2: _____

C3: _____

C4: _____

SCREEN S1: 4.0", .010 slot PVC

S2: _____

S3: _____

S4: _____

FILTER MATERIAL: #2/12 Silica Sand

SEAL: Bentonite Pellets ¼"

GROUT: None

OTHER: Back Fill material: ¼" Bentonite Pellets

CONSTRUCTION TIME LOG

TASK	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING:	10/3/91	0930	10/3/91	1045
Reaming	10/3/91	1120	10/3/91	1140
GEOPHYSICAL LOGGING:	Not Applicable			
SCREEN PLACEMENT:	10/3/91	1140		10/3/91
FILTER:	10/3/91			10/3/91
SEAL:	10/3/91		1210	10/3/91
GROUT:				
DEVELOPMENT:				
OTHER:				

WELL DEVELOPMENT

See Well Development Form

COMMENTS

Screen and blank steam cleaned prior to installation

FOPM23 / JAN 88

F149

Well 231GW11

5.0 GAL.

R. L. STOLLAR & ASSOCIATES, INC.

WELL DEVELOPMENT DATA

SITE TYPE	SITE ID
WELL	231-11

DEPTH TO BOTTOM (INITIAL) 9.2

(FINAL)

STATIC WATER LEVEL (INITIAL) 3.17 (6.03 HW FT)

(FINAL)

MEASURING POINT MARK TOC

CASING I.D. 4"

HYDROGEOLOGIST PA DAVENPORT

DRILLER JIM SIMMS

PROJECT NO. 0330-220

DATE(S) INSTALLED 10/3/91

DATE(S) DEVELOPED 10/8/91 - 10/9/91

PUMP (TYPE)

CAPACITY

BAILER (TYPE) 2.5" OD STAINLESS/GALVANIZED BAILER

CAPACITY

1 WELL VOLUME = 9.7 GAL. 5 VOL = 48.5

TIME	VOLUME OF WATER REMOVED (gallons)	pH	SPECIFIC CONDUCTANCE	TEMP (°C)	SAND CONTENT	OTHER PHYSICAL CHARACTERISTICS (CLARITY, ODOR, PARTICULATES, COLOR)
13:09	5	7.08	1300	19.0		VERY CLOUDY, GRAY
14:08	18 GALS	7.38	1060	19.5		VERY CLOUDY, GRAY
15:38	28	7.04	1060	19.7		VERY CLOUDY, GRAY
16:55	35	6.92	1030	18.4		VERY CLOUDY GRAY
16:30	(10/21) 39	6.60	1060	18.9	7200	VERY CLOUDY GRAY

FOPM14 / JAN 88

F150

Well 231GW21

Watkins-Johnson Environmental, Inc.
LITHOLOGY LOG

Page 1 of 1

Site ID: 231GW21

Project Name: Presidio follow on	Project No.: 28891r-003-144	Coordinates:	
Drilling Company: Gregg Drilling	Driller: Butch Hooven	Ground Elevation:	Total Drilled Depth: 9.0 ft
Drilling Equipment: Marle M11	Drilling Method: HSA	Boring Diameter: 10.5 Inch	Date/Time Drilling Started: 3/1/95 1533
			Date/Time Total Depth Reached: 3/1/95 1630
Type of Sampling Device: 2 In. x 18 In split spoon		Water Level (BGS): First ~6 ft	Final
Sample Hammer: Type Slide	Driving Wt. 140	Drop 30"	Hydrogeologist: R. Donovan
			Checked by/Date: PK Davenport

Location Description (include sketch in field logbook): Rt Land (North) of Gorges ≈ 100 ft from Halleck St

Depth (ft)	Interval	% Recovery	Blow Counts	USCS Symbol	Lithology	Description (Sands & Gravels: name, color, density, roundness, gradation, grain size, minerology, minor constitutents structure, notable char., moisture, odor, geo. unit. Silts & Clays: name, color, consistency, toughness, plasticity, minor constituents, notable char., moisture, odor, geo. unit.)	Water Content	Estimate % of Gr	Sa	Fi	Remarks (Include all sample types & depth, tag number, odor, organic vapor measurements, etc.)
						6" Asphalt					
1				Gm	F.11	Silty Sandy gravel gray green 5G 5/2 Angular to 2" Brick fragments, moist F.11	M	50	20	30	F.11 to 4.0 ft Qaf
2		↓									
3											
4		↓		Cl		Sandy clay Dark olive gray 5Y 3/2 mod tough, sand is fine grained sub angular, Hydrocarbon odor	M	0	20	80	– Qm Saturated at ≈ 6 ft
5			12 14								
6		↓	17			Sandy clay grading to clay with sand Saturated at ≈ 6 ft	W	0	30	70	
7		↓		Cl		Sandy clay as above	W	0	15	85	
8						Sandy clay as above, black					
9		↓		SP		Clayey Sand Dark olive gray 5Y 3/2 Loose, sub rnd, fine grained, poorly graded wet.	W	0	80	20	– Qb, Qob
10						TD = 9.0 ft					
11											

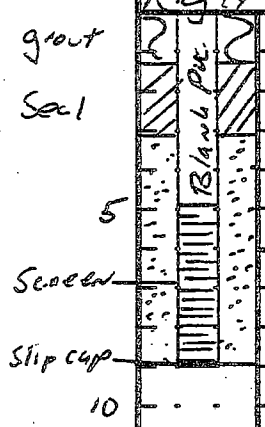
FORM002

F193

Well 231GW21

Watkins-Johnson Environmental, Inc.
WELL CONSTRUCTION SUMMARY

Well No.	231GW21
Combo/Key #	
Project Name	Presidio followon
Project No.	28894-003-144
Coordinates	
Drilling Company	Gregg Drilling
Driller	Butch Hoover
Elevation	Ground Level / Top of Casing
Drilling Equipment	Marle n11
Drilling Method	HSA
Total Drilled Depth	9.0 ft
Borehole Diameter	10.5 Inch
Drilling Fluid	NA
Drill Bit(s)	Mud Bit
Hydrogeologist	B. Donovan
Checked by/Date	3/30/95 PA Dawenport
Location Description (include sketch in field logbook)	Right Lane (North) on Gorgas ≈ 100 ft from Hallech st



ANNULAR CONSTRUCTION

Description	Type	Interval From (ft BGS)	Interval To (ft BGS)	Quantity
Filter Pack	#2/12 100 lb bags	9.0	3.2	3 Bags
Filter Pack Blotter (if applicable)				
Seal	Bentonite chips Baroid 3/8	3.2	1.3	0.5 Bag
Grout				

CONSTRUCTION TIME LOG

Activity	Start Date	Start Time	Finish Date	Finish Time
Drilling	3/1	1533	3/1	1630
Reaming	N/A			
Geophysical Logging	N/A			
Casing/Screen Placement	3/1	1640	3/1	1645
Filter Pack	3/1	1648	3/1	1652
Seal	3/1	1653	3/1	1655
Grout				
Preliminary Surge/ Development				
Other:				

WATER ADDED DURING DRILLING/CONSTRUCTION

Total Amount (gals): 10 + 5 = 15

WELL STRING DESIGN

Surface Casing [length, diameter (OD), thickness]:

Casing [type, diameter (ID), thread type]: PVC, 4 In., flush Thread

Screen [type, slot-size, diameter (ID), thread type]: PVC, 010, 4 In., flush thread

Casing/Screen Sequence & Interval (starting at bottom):

	BLANK CASING From (ft BGS)	BLANK CASING To (ft BGS)		SCREEN From (ft BGS)	SCREEN To (ft BGS)
C1	4.8	0.0	S1	8.8	4.8
C2			S2		
C3			S3		
C4			S4		
C5			S5		
C6					
C7					
C8					
C9					
C10					
C11					

BD 3/1/95

BD 3/1/95

COMMENTS:

0330-002/JUN1992

F194

Well 231GW21

Watkins-Johnson Environmental, Inc.
WELL DEVELOPMENT DATA

SITE ID: 231GW21

PROJECT: PSF

PROJECT NO.:

HYDROGEOLOGIST: B. Bam

~~DRILLER~~ Developer: Mac, Gregg Drilling

DATE(S) INSTALLED: 3/1/95

DATE(S) DEVELOPED: 3/6/95

Casing Diameter	4 in.
Borehole Diameter	10 in.
Total Well Depth	9.06 ft.
Static Water Level	4.81 ft.
Saturated Thickness	4.25 ft.
Casing volume	2.78 gal.
Annulus Volume (Assume 30% porosity)	1.28 gal.
Total Well Volume	4.06 gal.

DEVELOPMENT EQUIPMENT: Smead rig, surge block, 10' bailer

DEVELOPMENT METHODS/NOTES: Surged 4' screened interval in 1' sections from bottom to top, ~15 min. 5 WR's + 15 added during drilling = 35 gal. After ~10 gal bailed well is dry + recovering very slowly. W.L. may be high due to H_2O added during drilling.

TURBIDITY METER: ☑ HF Scientific DRT15C Serial No. 05861

pH/TEMP METER: Type: Orion SA250 Serial Number: 7167

Calibration: pH 7.00 = 7 at 13.1 °C Time 0810; pH 10.00 = 10 at 13.1 °C Time 0810

CONDUCTIVITY METER: Type: YSI Serial Number: DM5F0

Conductance Standard: _____ _____/cm at _____°C Time

Measured Value: _____ _____/cm at _____ °C _____

Calibrated Conductivity = Measured Conductance ÷ (0.02) (measured conductance) (25°C - Actual Temp): Time _____ _____/cm at 25°C _____

Time	Number of Well Casings	Gallons Removed	°C	E.C. _____/cm	Turbidity NTU	~~Pump Rate GPM~~ pH	Approx. Pump Depth ft.	Visual Description
1005	1	4	17.3	1000	reads 14.2, looks >200 to the eye	7.05	NA	gray brown, opaque
1010	2	8+	16.9	1000	>200	7.02	NA	"

F195

Well 231GW21

GROUND-WATER SAMPLING FIELD DATA SHEET
Environmental Program at Presidio of San Francisco

Log Book # FO-12
Page 1 of 1

Well ID No. 231GW21	Date 4/10/95	Purge Equipment: Type 3" PVC bailer; Serial No.	pH Meter: Type Hydac; Serial No. 9311	Conductivity Meter: Type Hydac; Serial No. 9311
Samplers' Initials TAM / JPS	Time 1110			
Casing Diameter 4 in.	Casing Stickup ft.	Sample Equipment: ☒ Same as purge ☐ Other Type ___ Serial No. ___	Turbidity Meter: Type NA; Serial No. ___ ___ NTU of Standard	Temperature Meter: Type Hydac; Serial No. 9311
Total Well Depth 9.04 ft-btoc	Screened Interval ft-bgs			
Initial Water Level 4.73 ft-btoc	Top of Filter Pack ft-bgs		Meter Calibration/Check (circle one) See 231GW17	
Saturated Thickness [H]= 4.31 ft.	Filter Pack Thickness [F]= ft.	Filtration Equipment: ☐ Peristaltic Pump with 0.45 micron filter		
Wellbore Volume gal.	Casing Volume 2.9 gal.	☐ Other Type NA		
Final Water Level 6.91 ft-btoc	Sample Depth TAM 4/11/95 7.5 ft-bgs	Serial No. ___	Water-Level Meter Type Solinst; Serial No. 00511	

Standard	Reading	Temperature °C/F (circle one)	Time
___ uS/cm at ___ °C			
pH 4.0			
pH 7.0			
pH 10.0			

Time	Number of Casing Volumes	Gallons Removed	Temp C/F	EC uS/cm	pH	Turbidity NTU	Pump Rate GPM	Approx. Pump Depth ft.	Visual Description
1115	0	1	67.5	1270	6.85	cloudy	bail	8	gray - hydrocarbon odor
1118	2	6	66.0	1315	6.66	opaque	bail	9	gray - low water level
1122	2	6.5	—	—	—	—	bail	9	dewatered.
	Resume purge 4/11/95								
0859	0	1	63.7	876	6.94	translucent	bail	8	yellowish gray
0903	1.5	4.5	—	—	—	—	bail	9	dewatered.
	3.5 C.V. Total.								
Post-Sample Water: 4/12/95 @ 1030			64.0	1164	7.88		bail	9	

HS Comments: Hydrocarbon odor at wellhead.

HS Signature:

☒ Full Sample Suite Obtained
☐ Partial Sample Suite Obtained
☐ No Sample Obtained
☐ QC Samples D, R, TB, MS, MSD (circle)

See chain-of-custody for analyses requested.

Condition of Well, Remarks: good. Slow recharge. WL, 4/12/95 @ 1017 = 4.01

Samplers Signature: Todd A Miller

Protective Level Dermal: (D) C B
Respiratory: (D) C B

☐ Metal sample(s) filtered in accordance with chain-of-custody

Checked by/Date: RET 4/19/95

ft-btoc = feet-below top of casing
ft-bgs = feet-below ground surface

FORM014/AUG 1992

F196

231GW22

3/18/97

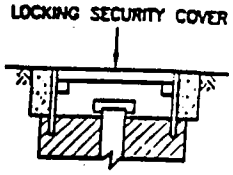
Well 231GW22

WELL COMPLETION FORM

SURFACE COMPLETION
ABOVE GROUND ___
FLUSHMOUNT X

TRAFFIC BOLLARDS [(3) 3'x6"] ___ YES ___ NO

LOCKING SECURITY COVER



TYPICAL FLUSH MOUNT FINISH

TOP OF CASING ___

GROUND LEVEL ___

AMOUNT OF MATERIALS :

CEMENT: 1 PORTLAND (BAGS)

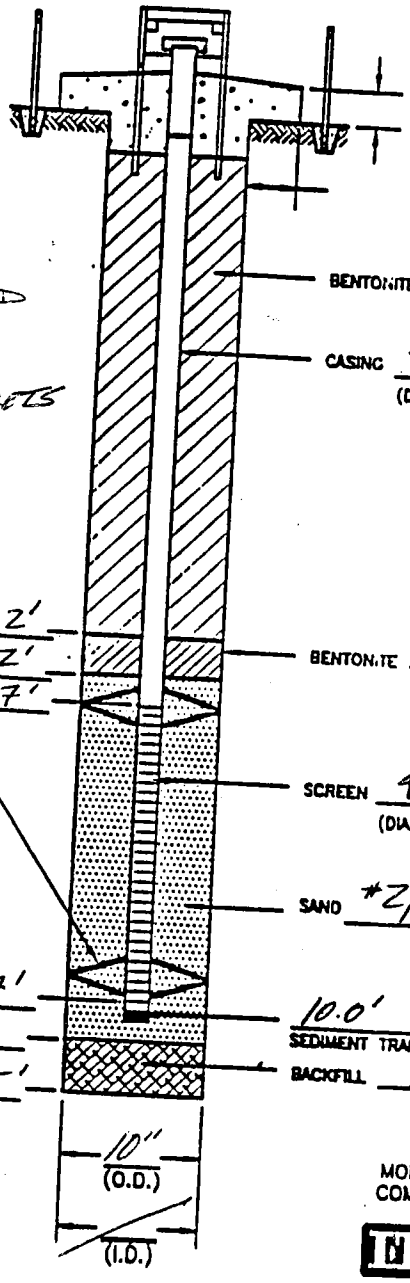
GEL: ___ (BAGS)

BENTONITE: .5 1/4 PELLETS (BUCKETS/BAGS)

SAND PACK: 1 (BAGS)

BACKFILL: 1 1/4 (BUCKETS/BAGS)

BENT. SEAL



BENTONITE/CEMENT GROUT TO 0.5'

CASING 4" SCH 40 (DIA., TYPE, SCH.)

2.2'

3.2'

BENTONITE SEAL

TOP OF SCREEN 3.7'

CENTRALIZER(S) DEPTH(S)

SCREEN 4", 10, PVC 40 (DIA., SLOT, TYPE, SCH.)

SAND #2/12 (TYPE)

BOTTOM OF SCREEN 9.7'

TOP OF BACKFILL N/A

TOTAL DEPTH 10.5'

10.0' (FEET) SEDIMENT TRAP WITH BOTTOM CAP

BACKFILL SAND (TYPE)

10" (O.D.)

(I.D.)

NOT TO SCALE

MONITORING WELL COMPLETION FORM

INTERNATIONAL TECHNOLOGY CORPORATION

Well 231GW22

INTERNATIONAL TECHNOLOGY CORPORATION

ARCHIVE S1

WAD 32
Bldg 207/231

Project Name: SAC TERC Presidio

Project Number: 762491

SOIL BORING AND WELL INSTALLATION AND VISUAL CLASSIFICATION LOG

1 of 2

B. g Number: 231GW22	GWF:	Date: 3·18·97
Elevation:	Depth Date/Time	Date Started: 3·18·97
Engineer/Geologist: S. IVERY	Depth Date/Time	Date Completed: 3·18·97
Drilling Method: **HSA Continuous Core**		
Boring to ~~15~~ ft? Y 10 Additional borehole footage beyond 15 ft: N		**Shallow well to 10 ft:** Y N
Intermediate Well to 15 ~~ft: Y N~~ (including 10 ft of conductor casing)		Additional shallow well footage beyond 10 ft: N
Well footage beyond ~~15 ft:~~		
Time spent installing 8.5inch augers to 30ft for conductor casing:		Total development time:
Standby time:		**Level C:** Y N

Time	Depth (ft)	Sample type and No.	Recovery (inches)	Description	USCS soil symbol	BLOWS/.5' ~~Measured consistency (TSF)~~	Well construction	Remarks	PID (ppm)
0945				@ SURFACE, ASPHALT	AS				
			HAND AUGER	@ 8" AB, CLAYEY SANDY GRAVEL	GP			HAND AUGERED	
	1.0			@ 1.2 SILTY CLAY, drk gray Firm	CL				
	2.0			@ 2.0 CLAYEY SILT, brown damp, loose	ML				
	3.0				ML				
	4.0								

Drilling Contractor: Gregg Drilling

Drilling Equipment: HSA

Well 231GW22

Time	Depth (ft)	Sample type and	Recovery (inche	Description	USCS soil symb	Blows/.5' Measured consi (TSF)	Well construction	Remar	PID (pp
				231GW22 2 of 2					
				CLAYEY SILT, BROWN, SLT MOIST, LOOSE					
	5.0		18"/18"	@5.25 SILTY CLAY, DRK OLIVE GRAY MD STIFF SLT MOIST	CL	2			
						2			
	6.0								
1005			18"/18"	@6.75-7.25 POORLY GRADED SAND, DRK OLIVE GRAY, MOIST, LOOSE	SP	3			
	7.0					3			
				@7.25-7.75 SILTY CLAY W/GRAVEL DRK OLIVE SLT MOIST MD STIFF 20% FA GRAV.	CL	3			
1007	8.0		18"/18"	↓ LESS GRAVEL, STIFFER		4		ODOR	
						3			
	9.0			@ 9.0' CLAYEY SANDY SILT W/ COSE GRAVEL, BROWN, 20% CLAY 15% GRAVEL	MH	5		PETR.	
1009			10"/18"			5			
	10.0					3			
				TD=10.5'		3		STRONG	
1011	11.0					4			

Well 231GW22

2.44 CASED WELL VOLUME

INTERNATIONAL TECHNOLOGY CORPORATION

WELL DEVELOPMENT RECORD

Location: 2071231 231GW22

Well/Piez. No.: 231GW22

Personnel: SI

Date Installed: 3·18·97

Date: 4·11·97

Csg. Diameter (I.D.): 4"

Method of Development:

Total Depth (ft. ~~BGL~~ TOC): 10.04

☑ Swabbing ☑ Bailing ☐ Pumping

Weather: SUNNY, WARM

Screened Interval (ft. ~~BGL~~ TOC): 3.74-9.74

WATER CHECKER U10

Equipment Nos.: pH Meter _____ EC Meter _____ Turbidity Meter _____ LAMOTTE 2008

Equipment decontaminated prior to development Y X N ____

Describe PRESSURE WASH/STEAM CLEAN

Collected sample of water added to well Y ____ N NA

Describe NA

Date	Time	Water Level (ft. BGL)	Volume Removed (gal.)	Volume Added (gal.)	Temp (°C)	pH	mS/cm EC	Turbidity	Comments
4.11.97	0945	6.35	SWABBING						
	1005		END SWABT		BEGIN		BAIL		
	1005		3 gal		19.5	7.0	2.18	>200	BRN SILTY STRONG PETR. ODOR
	1007	8.80	6 gal						
	1010	8.70							
	1030	8.55							
	1037	8.52							

3.5 MINUTES FOR 0.10' OF RECHARGE

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units
- Electrical conductivity – Reported to the nearest 10% mhos/cm of instrument set range
- Water temperature – Reported to nearest 0.1°C

Well 231GW22

INTERNATIONAL TECHNOLOGY CORPORATION

WELL/PIEZ. NO. 231GW22

PAGE 2 of 2 NO. _____

WELL DEVELOPMENT RECORD CONTINUATION SHEET

Date	Time	Water Level (ft. BGL)	Volume Removed (gal.)	Volume Added (gal.)	Temp (°C)	pH	EC	Turbidity	Comments	
4-11-97	1041	9.25	7 gal		19.4	7.0	2.27	7200	PETR. ODOR	SILTY BROWN
	1047	9.10								
	1058	9.05								
	1104	9.03								
	1111	9.00	7.5		19.7	7.0	2.28	7200	PETR. ODOR	SILTY BROWN
	ATTAINED 3 WELL VOLUMES AND BROKE									
	DOWN OFF WELL → DUE TO SLOW RECHARGE									

WD-WDRCS(WD4)

DNB-R7

Caltrans EXPLORATION BORING FIELD LOG

Date 1-09-08 | Boring No.

Location Doyle Drive Replacement | Job No. | EA No. 163701 | Page 1 of 4

Dist. 04 Co. SF Rt. 101 P.M. | Br. No. | Purpose of Work Geotechnical Investigation

Ft. Rt. Lt. | Line. Sta. | Northings. | Eastings. | Elev.

Ground Water Data: Date/Time | Water Level | Bot. of Boring

Logged By: E Ortenz | Drill Crew: R Medina

Drill rig: Fraste Multidrill XL | Hammer Type and Weight:

Drilling Method: Wet Rotatory | Casing:

Hole Completion: 1-10-08

Well DNB-R7-PZ-D

Depth	Sampler Interval / Tool	Blows	RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
1								Drilled thru AC Pavement, Sand and Bay Mud	
2									
3									← Sand
4									← Bay Mud
5									
6		1						Fat Clay with sand (CH), soft dark gray, med to high pls	MC
		1							
		2	a						
7									
8									
9									Shelby
10									
11									
12		1						Poorly graded, Silty Sand (SP), med dense, dark gray, med sand, weak cementation	SPT
		4							
14		9							
15									
		9							MC
16		11							
		30	a						
17		5						Same	SPT
		12							
19		16							
20									
		13							MC
21		16							
		13	a						
22		5						Same but dense and with marine shells	SPT
		14							
23		17							
24									
25									
		1							MC
26		0							
		2	a						

DNB-R7

Caltrans EXPLORATION BORING FIELD LOG

Date 1-9-08 | Boring No.

Location Doyle Drive Replacement | Lab No. | EA No. 163701 | Page 2 of 4

Dist. 04 Co. SF Rt. 101 P.M. Br. No. | Purpose of Work Geotechnical Investigation

Rt. Ft. Lt. Line. Sta. Northings. Eastings. Elev.

Ground Water Data: Date/Time | Water Level | Bot. of Boring

Logged By: E Ortega | Drill Crew: R Medina

Drill rig: Fraste Multidrill XL | Hammer Type and Weight:

Drilling Method: Wet Rotatory | Casing:

Hole Completion:

Well DNB-R7-PZ-D

Depth	Sample Interval Tool	Blows	RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
27		3						Lean Clay with sand (CL), stiff, dark gray, low pls.			SPT
		4									
28		6									
29											
30											
		4									MC
31		4									
		4	a								
32		4						Poorly graded sand with Clay (SP-SC), med dense, dark gray, med sand with marine shells			SPT
		4									
33		7									
34											
35											
		9									MC
36		12									
		33	a								
37		7						Colma Sand, poorly graded Sand (SP), dense, reddish brown, med sand, with oxidation spots weak cementation			SPT
		13									
38		21									
39											
40											
		16									MC
41		26									
		40	a								
42		14						Same but very dense			SPT
		34									
43		40									
44											
45											
		20									MC
46		30									
		40	a								
47		12						Same			SPT
		27									
48		42									
49											
50											
		20									MC
51		29									
		33	a								

DNB-R7

Caltrans

EXPLORATION BORING FIELD LOG

Date 1-9-08 | Boring No.

Location Doyle Drive Replacement | Lab No. | EA No. 163701 | Page 3 of 4

Dist. 04 Co. SF Rt. 101 P.M. Br. No. | Purpose of Work Geotechnical Investigation

Ft. Rt. Lt. Line. Sta. Northings. Eastings. Elev.

Ground Water Data: Date / Time | Water Level | Bot. of Boring

Logged By: E Ortega | Drill Crew: R Medina

Drill rig: Fraste Multidrill XL | Hammer Type and Weight:

Drilling Method: Wet Rotatory | Casing:

Hole Completion:

Well DNB-R7-PZ-D

Depth	Sample Interval Tool	Blows RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
52		10					Same but dense			SPT
		17								
53		25								
54										
55		9					Same but dark grey			SPT
56		14								
		21								
57										
58										
59										
60		9					Sandy lean Clay (CL), very stiff, dark grey, low pls			SPT
61		12					q_u = 11.0 Ton/ft²			
		15								
62										
63										
64										
65		14					Same			SPT
66		13					q_u = 4.25 Ton/ft²			
		13								
67										
68										
69										
70										Shelby (Picture)
71										cut with rock
72										fragments to 1"
73										
74										
75		40					SEDIMENTARY Rock (Sandstone)			Rock SPT
		50	1"				pale olive, moderately to slightly			Cored 75' 7" – 78'
76							fractured, soft, slightly weathered			1-10-08
77							healed with clay			Munsell Hue 5Y 6/4
78							RQD = 22+8.5/32 = 95.3%			

DNB-R7

EXPLORATION BORING FIELD LOG

Caltrans

Date 1-10-08 | Boring No.

Location Doyle Drive Replacement | Job No. | EA No. 163701 | Page 4 of 4

Dist. 04 Co. SF Rt. 101 P.M. | Br. No. | Purpose of Work Geotechnical Investigation

Ft. Rt. Lt. | Line. Sta. | Northings. | Eastings. | Elev.

Ground Water Data: Date / Time | Water Level | Bot. of Boring

Logged By: E Ortega | Drill Crew: R Medina

Drill rig: Fraste Multidrill XL | Hammer Type and Weight:

Drilling Method: Wet Rotatory | Casing:

Hole Completion:

Well DNB-R7-PZ-D

Depth	Sample Interval (ft)	Blows	RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
70								← Same			
71								RQD = 23+13.5+12.5+4.5/58 = 92.2%			
72											
73											
74								← Same but intensely to			
75								very intensely fractured			
76								RQD = 11+9.5+10+5.5+6.5+5+4.5/62 = 83.9%			
77											
78								← Shale, bluish gray, slightly to			Munsell 2 for Gley 5/1
79								moderately fractured, moderately soft			
80								moderately weathered,			
81								healed with Clay			
82								RQD = 7.5+11.5+12.5+8+13.5+6/60 = 98.5%			
83								← Same but intensely to very intensely			
84								fractured			
85								RQD = 15.5+7+6.5+5/53 = 64.1%			
86											
87											
88								← Bottom of boring @ 97.5			
89								on 1-10-08			
90											

Well
ENB-R1-PZ-D

ENB-R1

Caltrans | EXPLORATION BORING FIELD LOG | Date 12/7/07 | Boring No.

Location Doyle Drive - Dance studio | Lab No. | EA No. 163701 | Page 1 of

Dist. 04 Co. SF Rt. 101 P.M. Br. No. Purpose of Work

Ft., Rt. Lt. Line. Sta. Northings. Eastings. Elev.

Ground Water Data	Date / Time	Water Level	Bot. of Boring

Logged By : | Drill Crew : Gregg
Drill rig : | Hammer Type and Weight :
Drilling Method : | Casing :
Hole Completion :

Depth	Sample Interval Tool	Blows RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
1										4" AC
							Concrete			7" AB
2										
		4	C				Fill (organic), sandy			
3	1	4	B							modified Cal
		4	A							
4		4	D			D	Fill (7") sand and			SPT 3½" - 5"
	2	3	C			C	13" clay Q = 2.0			
5		3	B			B	10" sand, black, (SW),			
			A				fine grained, loose			shelby Tube
6							7" Baymud			from 6½ - 8"
	3						Baymud			
7										
8										
9										
10										
							sandy Bay mud			
11	4									Shelby Tube
										Sample
12										from 10 - 12½
13										
14										
15										
		5					sand, loose, gray			modified Cal
16	5	13								
		19								SPT
17		6								
	6	9					The same as above			
18		10								
19										
20										
	7	6								Shelby Tube

Well
ENB-R1-PZ-D

Caltrans | EXPLORATION BORING FIELD LOG | Date 12/7/01 | Boring No.

Location | Lab No. | EA No. | Page 2 of

Dist. | Co. | Rt. | P.M. | Br. No. | Purpose of Work

Ft., Rt./Lt. | Line. Sta. | Northings. | Eastings. | Elev.

Ground Water Data: Date/Time | Water Level | Bot. of Boring

Logged By : | Drill Crew :

Drill rig : | Hammer Type and Weight :

Drilling Method : | Casing :

Hole Completion :

Depth	Sample Interval Tool	Blows RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
21		6					Gray sand, fine ~~med~~ wet dense			
		14								
22		4								
	B	4								
23		11								
24										
25		5		100%			Gray fine sandy, wet, loose			
	MC	2								
		2								
27		1		100%						
	SPT	5								
28		6								
29										
30		6		100%			Gray fine sand, ~~wet~~, medium dense w/ shells. Marine sands			
	MC	11								
		15								
32		3		100%						
	SPT	6								
33		8								
		~~19~~								
34		~~38~~								
		~~42~~					Gray w/ Yellowbrown fine sand, wet, very dense			
35	MC	19		100			(SP) Colma sand/formation			
		38								
36		42								
	SPT	10		100						
37		24								
38		28								
39										
37							Yellowish Brown, Reddish Brown and gray Dark ~~Brown~~ +			
40		23					~~Dark yellowish Brown~~, Sand (SP),			
	MC	35					~~fine, wet, very dense~~			
		41								
42	SPT	16								
		41								

Well
ENB-R1-PZ-D

ENB-R1

Caltrans | EXPLORATION BORING FIELD LOG | Date 12/7/07 | Boring No.

Location | Lab No. | EA No. 163701 | Page 3 of

Dist. 04 Co. SF Rt. 101 P.M. | Br. No. | Purpose of Work Geotechnical Investigation

Ft. Rt. Lt. | Line. Sta. | Northings. | Eastings. | Elev.

Ground Water Data	Date / Time	Water Level	Bot. of Boring

Logged By: D. Nesbitt | Drill Crew:
Drill rig: | Hammer Type and Weight: Automatic
Drilling Method: Rotary wash | Casing: none
Hole Completion:

Depth	Sample Interval Tool	Blows / RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
43	SPT	50								
44										
45		30		100%			Dark Yellowish Brown w/ Reddish brown bands, ~~SP~~ fine sand (SP), very dense wet.			
	MC	39								
46		45								
47	SPT	13		100%						
		44								
48		50/4½"								
49										
50	MC	40		50			Same as above			
	SPT	50								
51										
52										
53										
54										
55		8		100%			Dark Brown, sand (SP), wet, medium dense,			
	SPT	12								
51		16								
52										
53										
54										
55		~~36~~		~~75%~~			~~Brown to Gray, weathered mudstone, very dense~~			
	MC	~~50/5"~~								
56										
57										
58										

Well
ENB-R1-PZ-D

12/7/07 ENB-R1

Caltrans | EXPLORATION BORING FIELD LOG | Date | Boring No.

Location: Doyle Drive Replacement | Lab No. | EA No. 163701 | Page 4 of

Dist. 04 Co. SF Rt. 101 P.M. | Br. No. | Purpose of Work

Ft. Rt. Lt. | Line. Sta. | Northings. | Eastings. | Elev.

Ground Water Data: Date/Time | Water Level | Bot. of Boring

Logged By: D. Nesbitt | Drill Crew: Gregg Drilling

Drill rig: Fraste Multidrill XL | Hammer Type and Weight: 150 lb Automatic

Drilling Method: Rotary wash | Casing:

Hole Completion:

Depth	Sample Interval Tool	Blows RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description			Remarks
59										
60	ML SPT	~~50/3~~	36 50/5	25			~~Dark~~ Brown to Gray weathered shale.			
61										
62										
63										
64										
65	SPT	50/3		25 40			Dark Brown weathered shale.			At 13:00, Gregg installing 65 ft of a casing.
66	Core						Core: Dark Brown weathered shale recovered 2' of 5' run.			
67										At 13:58 coring begins at 65 ft finish core at 14:32.
68	Core						Dark Brown fractured shale healed fractures.			
69										
70										Stopped drilling 15:15 at depth of 72 ft
71	Core									
72										
73										
74										
75										
76										
77										

Well
ENB-R1-PZ-D

Caltrans EXPLORATION BORING FIELD LOG

Date 12-10-07 | Boring No. ENB-R

Location: Doyle Drive Replacement | Lab No. | EA No. 163701 | Page ___ of ___

Dist. 04 Co. SF Rt. 101 P.M. ___ Br. No. ___ Purpose of Work: Geotechnical Investigation

___ Ft., Rt. Lt. Line. Sta. ___ Northings. ___ Eastings. ___ Elev. ___

Ground Water Data: Date / Time | Water Level | Bot. of Boring

Logged By: E. Ortega | Drill Crew:

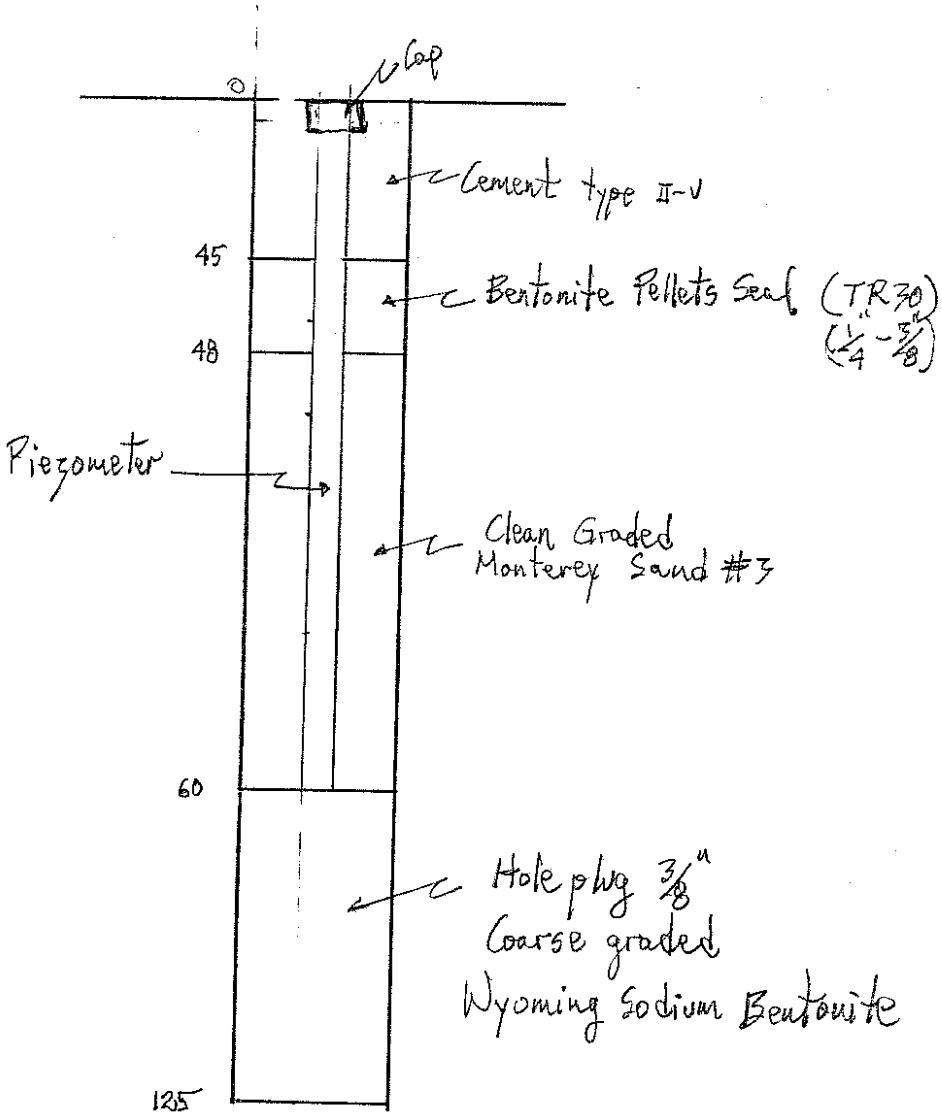
Drill rig: | Hammer Type and Weight:

Drilling Method: Wet rotatary | Casing:

Hole Completion: 12-11-07

Depth	Sample Interval	Tool	Blows	RQD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
71									SEDIMENTARY ROCK (SHALE) Dark Brown to Gray, moderatly fractured, soft, not healed RQD = 9'+7.5+5+7.5+5/36 = 94.4%	
72										
73										
74										
75									Same RQD = 7+4+7+11+11.5+6.25/60 = 77.9%	
76										
77										
78										
79										
80									Same but very intensely fractured RQD = 4/60 = 6.6%	Between 79' and 80' gravel material zone
81										
82										
83										
84										
85									Same RQD = 0	12-11-07
86										
87										
88										
89										
90										
91										
92										
93										
94										
95									Same but very intensely fracture to decomposed (Lean Clay (CL), low plasticity)	
96										
97										
98										
99										
100									Same	
101										
102										
103										
104										
105									Same	
106										
107										
108										
109										
110										
111										
112										
113										
114										
115										
116										
117										
118										
119										
120										
121										
122										
123										
124										
125										
126										
127										
128										
129										
130										
131										
132										
133										
134										
135									Bottom of Boring @ 135' on 12-11-07	Performed suspended velocity test

Well
ENB-R1-PZ-D



ENB-R1

Well
ENB-R1-PZ-D

N

ENB-R1

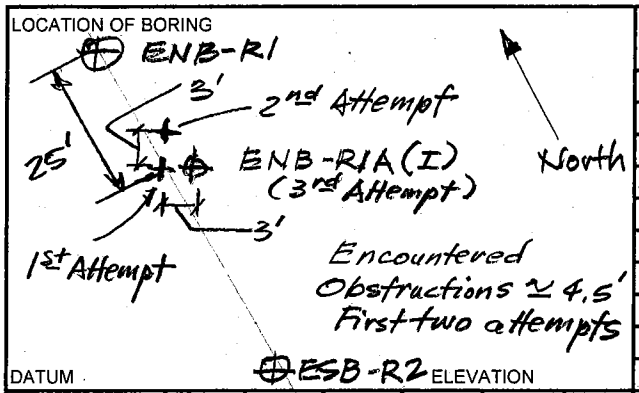
0-12 Cement	0-45 Cement	0-1 Cement
12-14 Bentonite Seal	45-48 Bentonite Seal	1-2 Bentonite Seal
14-25 (Screen) #3 Sand	48-60 (Screen) #3 Sand	2-7 (Screen) #3 Sand
	60-125 Hole plug 3/8	

Piezometers

ARUP

Well ENB-R1A-PZ-D

LOCATION OF BORING



DATUM ELEVATION

JOB NO.	CLIENT	LOCATION
131558	SFCTA	Presidio

DRILLING METHOD: Trash Barrel for Coring Started with auger, encountered loose sand & water switched to rotary drilling method

SAMPLING METHOD: No samples taken

BORING NO. ENB-R1A (I)

SHEET 1 OF 2

WATER LEVEL					DRILLING START TIME	DRILLING FINISH TIME
TIME					10:45	2:00pm
DATE					DATE	DATE
CASING DEPTH					12/26/07	12/26/07

SURFACE CONDITIONS: AC pavement

DRILLING CONTR. Gregg/Pitcher Drilling
DRILLER Roland

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
		9'				0		4" AC
		5" Drill Casing				1		Fill
						2		Hit wooden railroad tie 1.5 to 2.0'
						3		
						4		
						5		
						6		
						7		
						8		
						9		Bay Mud
						10		
						11		
						12		
						13		
						14		
						15		Marine Sand
						16		
						17		
						18		
						19		
						20		

Well Details

Well Vault w/ Surface Locking Cap at top of piezo.

Pre-Mix Concrete

Neat Cement Grout 1 to 15 feet

2" PVC Solid

1/4" Bentonite Pellets (Hydrated) 15 to 18 feet

No. 3 Sand 18 to 29.5'

2" PVC slotted slots (0.020") 19.5 to 29.5'

Continued on Next Sheet

BY F. Gregorius DATE 12/26/07 CHK'D BY

REV. 11-03

Well
ENB-R1A-PZ-D

ARUP

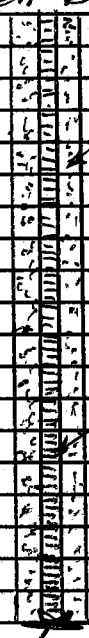
LOCATION OF BORING	JOB NO. 131558	CLIENT SFCTA	LOCATION Presidio
	DRILLING METHOD:		BORING NO. ENB-R1A (I)
	SAMPLING METHOD:		SHEET 2 OF 2
			DRILLING START TIME / FINISH TIME
	WATER LEVEL / TIME / DATE / CASING DEPTH		DRILLING START DATE / FINISH DATE

DATUM ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
						20		Marina Sand
						21		
						22		
						23		
						24		
						25		
						26		
						27		Colma Sand
						28		
						29		
						30		
						31		
						32		Bottom of Borehole @ 32'
						33		
						34		
						35		After Drill Rod and Bit Removed Hole Caved to 29.5'
						36		
						37		
						38		
						39		
						40		

Well Details



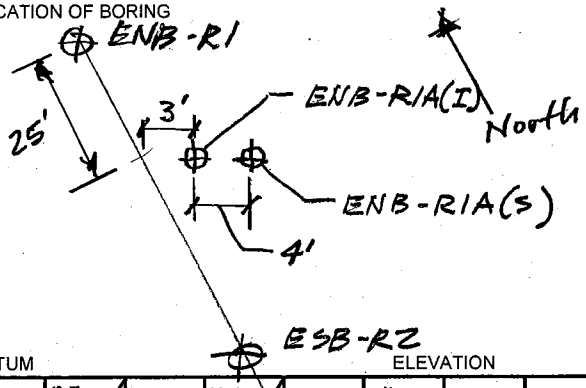
DRILLING CONTR.
DRILLER
CHK'D BY
BY
DATE

REV. 11-03

ARUP

Well ENB-R1A-PZ-S

LOCATION OF BORING



DATUM ELEVATION

JOB NO.	CLIENT	LOCATION
131558	SFCTA	Presidio

DRILLING METHOD: Trash Barrel for Cooring Set 5" Drilling Casing Used Rotary Drilling Method

SAMPLING METHOD: No samples taken

BORING NO. ENB-R1A(S)

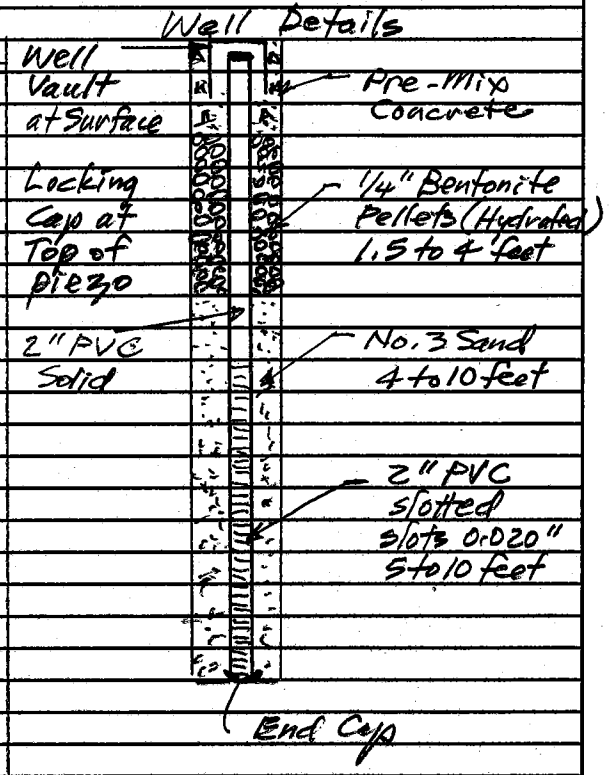
SHEET 1 OF 1

						DRILLING START	DRILLING FINISH
WATER LEVEL						TIME 2:00pm	TIME 3:00pm
TIME							
DATE						DATE 12/26/07	DATE 12/26/07
CASING DEPTH							

SURFACE CONDITIONS: AC pavement

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
		3'				0		4" AC
		5"				1		Fill
		Drill Casing				2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		Bay Mud
						10		Bottom of Borehole at 10 feet
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		

Well Details



DRILLING CONTR. Gregg/Pitcher Drilling
DRILLER Roland

BY F. Gregoros
DATE 12/26/07
CHK'D BY

REV. 11-03

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
S. McLandrich	12-10-07	12-13-07	N2120793.234 / E5997915.107 (NAD83)	ESB-R2-PZ-D
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Gregg Drilling and Testing, Inc.			Offset 31ft L Sta 46+11 SB Alignment	11.094 ft (NAVD88)
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Mud Rotary			Failing 1500	5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
MC (2.4"), SPT (1.4"), Shelby (2.87"), Pitcher (2.87"), HQ Core			Automatic, 140 lbs., 30-inch drop	72.8%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING / AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
2" dia. Standpipe Piezo Screened 35.0 to 50.0 ft			6	98 ft

Well ESB-R2-PZ-D

ELEVATION (ft)	DEPTH (ft)	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0	Poorly graded SAND (SP-SC), brown, dry, with CLAY and GRAVEL, with multiple asphalt layers. [FILL]		S1										
	1													
9.09	2	1.5', grades moist.												
	3	2.5', grades olive brown with asphalt fragments, crushed white SAND-sized rock fragments.		S2	8 14 9	23	100							
7.09	4	GRAVELLY lean CLAY (CL), dark greenish gray, moist, with SAND, GRAVEL is angular to rounded and fine to coarse, with asphalt fragments.		S3	1 1 2	3	100							
	5	Fat CLAY (CL), medium stiff, dark gray, wet, with pockets of SANDY CLAY, with organic odor, trace fine SAND. [BAY MUD]												
5.09	6	Poorly graded SAND with CLAY (SP-SC), very loose, dark gray, wet, fine, with lenses of sandy CLAY. [MARINE SAND]		U4		50 psi	63							
	7													
3.09	8	Fat CLAY (CH), medium stiff, bluish gray, wet, with decayed vegetation. [BAY MUD]												
	9													
1.09	10													Install 8" diameter conductor casing to 10'
	11													
-0.91	12													
	13	Poorly graded SAND (SP), dark greenish gray, wet, fine to medium, with CLAY lenses. [MARINE SAND]		U5		50 psi	97							Install 5" casing to 12.5'
-2.91	14													
	15													
-4.91	16													
	17													
-6.91	18	Poorly graded SAND with CLAY (SP-SC), loose, dark olive gray, wet, fine to medium, with shells up to 1.5" diameter.		S6	3 4 2	11	100							
	19			S7	6 5 5	10	67							
-8.91	20													
	21													
-10.91	22	Grades dark gray, with lenses of CLAYEY SAND.		S8	3 3 11	14	100							
	23	Poorly graded SAND (SP), dense to very dense, dark yellowish brown, wet, fine to medium, with trace fines, with broken shell fragments.												
-12.91	24			S9	6 17 17	34	78							
	25													

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				ESB-R2-PZ-D
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME: Doyle Drive Replacement Project				
BRIDGE NUMBER 34-165L	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 1 of 4	

Figure

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Well ESB-R2-PZ-D

ELEVATION (ft)	DEPTH (ft)	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25	Poorly graded SAND (SP), dense to very dense, dark yellowish brown, wet, fine to medium, with trace fines, with broken shell fragments.												
-14.91	26													
	27	Grades with increased CLAY content.		S10	7 27 36	63	100							
-16.91	28	27.5', grades clean. 28.0', grades dark gray.												
	29	28.5', grades dark yellowish brown, trace fines.		S11	10 13 16	29	100							
-18.91	30	30.0', grades to dark gray.												
	31	Poorly graded SAND (SP), very dense, yellowish brown, wet, fine, with trace fines, with iron-oxide stained horizontal banding. [COLMA SAND]												
-20.91	32			S12	18 50/6"	50/6"	100							
	33			S13	18 24 35	59	100							
-22.91	34													
	35													
-24.91	36													
	37			S14	28 40 50/4"	90/ 10"	100							
-26.91	38	Grades very fine.												
	39	Grades with slight cementation, grades dark olive brown.		S15	18 25 41	66	100							
-28.91	40													
	41													
-30.91	42			S16	25 50/6"	50/6"	100							
	43	Grades with heavy iron-oxide staining.		S17	21 36 49	85	100							
-32.91	44													
	45													
-34.91	46													
	47			S18	38 50/4"	50/4"	100							
-36.91	48			S19	18 28 39	67	100							
	49													
-38.91	50													
	51													
-40.91	52			S20	46 50/6"	50/6"	100							
	53			S21	30 40 44	84	100							
-42.91	54													
	55													

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				ESB-R2-PZ-D
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-165L	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 2 of 4	

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Figure

Well ESB-R2-PZ-D

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	55		Poorly graded SAND (SP), very dense, yellowish brown, wet, fine, with trace fines, with iron-oxide stained horizontal banding. [COLMA SAND]												
-44.91	56														
	57				S22	17 31 46	77	100							
-46.91	58		57.5', grades with increased CLAY content.												
			Poorly graded SAND with CLAY (SP-SC), medium dense, dark olive gray, moist, fine.		S23	11 15 20	35	100							
	59		58.5', grades dark greenish gray.												
-48.91	60														
	61		SEDIMENTARY ROCK (Sandstone "Wacke"), light gray and yellowish brown, very intensely weathered, moderately soft, very intensely fractured, with CLAY seam infilling.												61', rig chatter
-50.91	62				U24		300 psi	100							
	63														
-52.91	64		Moderately hard, less CLAY seam infilling.		U25			100							
	65		Fine to medium-grained, massive, light yellowish brown, moderately weathered, intensely fractured, fractures range from near vertical to 45° with occasional subhorizontal fracture, grains are angular to subangular (commonly quartz and feldspar), secondary mineral deposit on some fracture surfaces.		C26			86	0						
-54.91	66				C27			100	0						
	67				C28			100	0						
-56.91	68														
	69		68.8' - 69.2', very intensely fractured.		C29			94	10						
-58.91	70														
	71		71.2' - 72.3', very intensely fractured.												
-60.91	72														
	73				C30			100	7						
-62.91	74														
	75														
-64.91	76		76.1' - 77.1', very intensely fractured.												Hole caved while coring at 75'; install 63' of 4" casing
	77				C31			100	32						
-66.91	78														
	79														
-68.91	80														
	81		80.6' - 81.1', very intensely fractured. Grades to slightly weathered.												PID= 1.6 ppm
-70.91	82		SEDIMENTARY ROCK (Shale), very thinly bedded to moderately bedded (locally laminated), dark gray, slightly weathered, moderately hard, slightly fractured/dense (non-fissile).		C32			100	0						
	83		82.0' - 82.2', joint with clay coating.												
-72.91	84		82.2' - 84.8', brecciated zone.												
	85														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				ESB-R2-PZ-D
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-165L	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 3 of 4	

Figure

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Well ESB-R2-PZ-D

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	85		SEDIMENTARY ROCK (Shale), very thinly bedded to moderately bedded (locally laminated), dark gray, slightly weathered, moderately hard, slightly fractured/dense (non-fissile).												
-74.91	86				C33			90	90						
	87		86.6' - 87.1', polished fractures.												
-76.91	88				C34			100	50						
	89														
-78.91	90		90.0', intensely fractured.												
	91		91.0', predominantly laminated (commonly inclined 70° to 90°), with fractures commonly parallel.		C35			100	0						PID= 1.6 ppm
-80.91	92		91.3' - 94.1', very intensely fractured.		C36			100	0						
	93														
-82.91	94				C37			100	0						
	95														
-84.91	96														
	97														
-86.91	98		Borehole terminated at a depth of 98 feet on 12/13/2007.												
	99		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
-88.91	100														
	101														
-90.91	102														
	103														
-92.91	104														
	105														
-94.91	106														
	107														
-96.91	108														
	109														
-98.91	110														
	111														
-100.91	112														
	113														
-102.91	114														
	115														

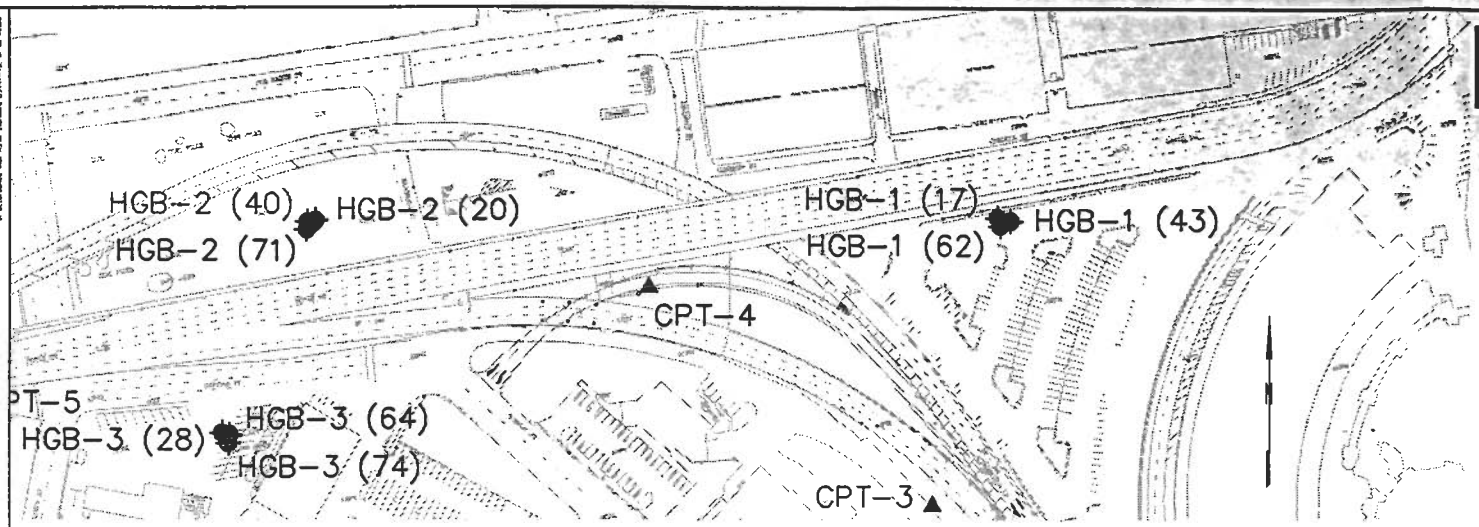
Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				ESB-R2-PZ-D
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-165L	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 4 of 4	

Figure

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Wells HGB-1(17) and HGB-1(43)



PLAN

1:1000

NOTES

Field classification of soils was in accordance with ASTM D 2488-93 "Description and Identification of Soils (Visual-Manual Procedure)".

Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pully. Drill rods were 41 mm diameter "A"-rods; sampler was driven with brass liners.

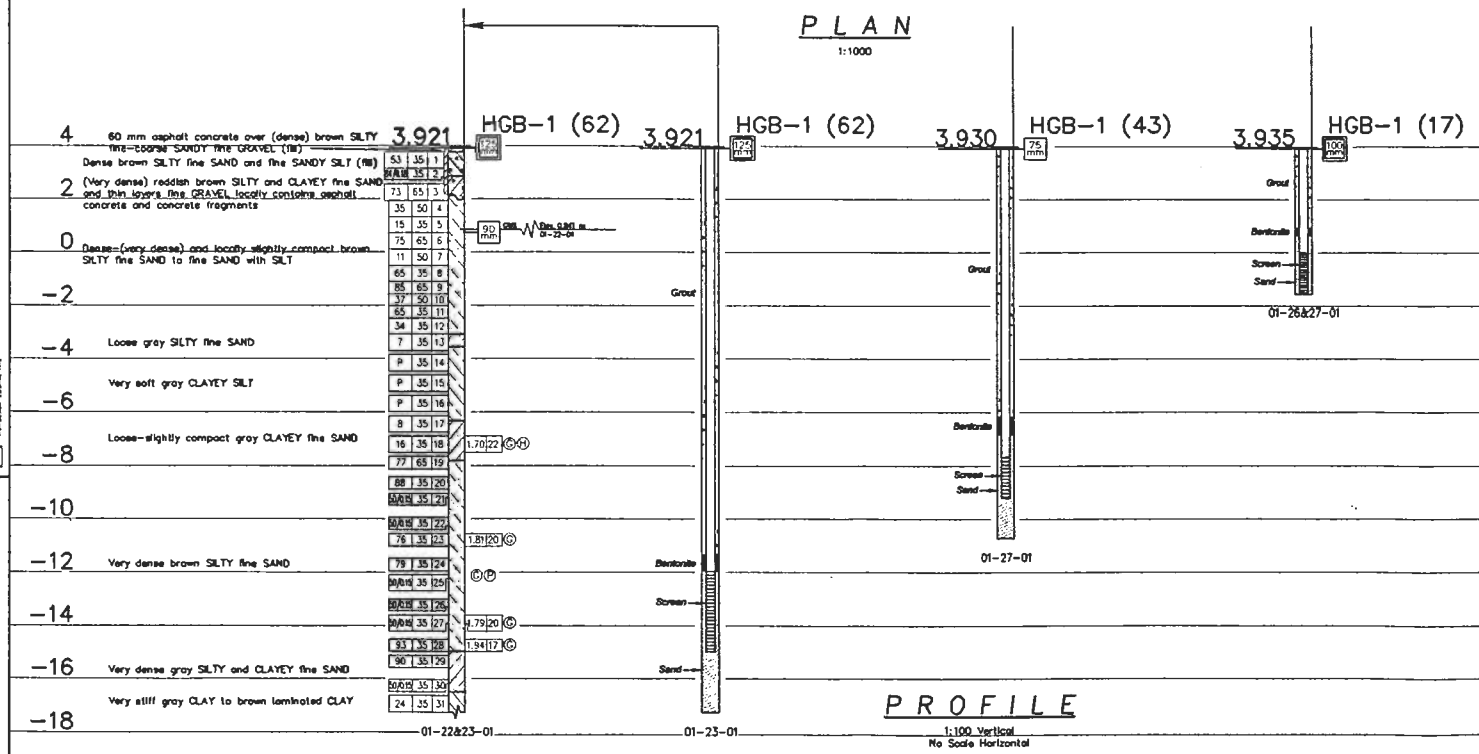
"65 mm sampler": ID=65 mm, OD=74 mm. Driven in same manner as SPT ("35 mm") sampler.

"50 mm sampler": ID=50 mm, OD=65 mm. Driven in same manner as SPT ("35 mm") sampler.

Rock Classification according to U.S. Department of Interior, Bureau of Reclamation "Engineering Geology Field Manual" (see Log of Test Borings No. 2).

Electronic media for plan view provided by Parsons Brinckerhoff, March 9, 2001. Elevations and locations (Northings and Eastings) provided by Chaudhary & Associates, Inc., May 18, 2001.

Piezometer Construction - 50.8 mm schedule 40 PVC pipe with 0.254 mm machine-slots. #2-12 sand filter, bentonite pellet seal, cement grout tremie backfill and Christie Box flush surface mount.



PROFILE

1:100 Vertical
No Scale Horizontal

DESIGN OVERSIGHT	DRAWN BY	M. D. Robertson	T. A. Krause & M. W. Heublein FIELD INVESTIGATOR	METRIC "ALL DIMENSIONS AND ELEVATIONS ARE IN METRIC (m)"	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY	K. R. Dahl & M. W. Heublein	DATE January 2001			

DOYLE DRIVE RECONSTRUCTION PROJECT

LOG OF TEST BORINGS No. 5

Job No. 202/300/133 file id: 20230013 3b1.dwg date: 05/24/01

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

CU EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
A. Srebro	9-18-08	9-18-08	N / E (NAD83)	PW-1A
DRILLING CONTRACTOR: Gregg Drilling and Testing, Inc.			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION: ft (NAVD88)
DRILLING METHOD: Mud Rotary, Punch Core			DRILL RIG: Mobile B53 with Fraste Head	BOREHOLE DIAMETER: 12 in.
SAMPLER TYPE(S) AND SIZE(S) (ID): MC (2.4"), SPT (1.4"), Grab, Punch Core (2")			SPT HAMMER TYPE: Automatic, 140 lbs., 30-inch drop	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION: 6" dia. Standpipe Piezo Screened 25.0 to 60.0 ft			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS	TOTAL DEPTH OF BORING: 61.8 ft

Well PW-1A

ELEVATION (ft)	DEPTH (ft)	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0	3.5" ASPHALT CONCRETE.												
	1	Poorly graded SAND with SILT and GRAVEL (SP-SM), brown, dry, SAND is fine to medium, GRAVEL is subangular. [AGGREGATE BASE]		S1			100							
	2	Poorly graded SAND (SP), loose, dark yellowish brown, moist to wet, SAND is fine to medium. [FILL]		S2	11 17/2"	17/2"	100							
	3	Poorly graded GRAVEL with SAND (GP), light yellowish brown, dry, GRAVEL is angular to subangular, SAND is fine to coarse.												
	4	Poorly graded SAND with SILT (SP-SM), grayish brown, wet, SAND is fine to coarse, trace fine GRAVEL, subangular, trace shell fragments. [MARINE SAND]		S3			100							
	5			S4	2 2 3	5	100							No liners in MC for S4
	6	Poorly graded SAND (SP), very loose, dark yellowish brown, wet, SAND is fine to medium, trace shell fragments, trace fines.												
	7	6.5', grades to gray with increasing fines.		S5			100							
	8	CLAYEY SAND (SC), loose to medium dense, dark bluish gray, wet, SAND is fine. 7.3', black organic layer (2") to 7.5', decayed vegetation.		S6			100							
	9	Fat CLAY (CH), soft, medium stiff, dark bluish gray, moist, black mottles, with decayed vegetation, slight organic odor. [BAY MUD/MARSH DEPOSIT]		U7		0 psi	75				PP = 0.30 TV = 0.17			
	10	8.0', grades with fine SAND lenses, with less decayed vegetation.												
	11			S8		0	100							
	12													
	13													
	14			S9			100							
	15													
	16	Poorly graded SAND (SP), very loose, greenish gray, wet, trace fines, trace shell fragments, seams of CLAYEY SAND, SAND is fine to medium. [MARINE SAND]		S10	5 6 6	12	78							
	17													
	18			S11			100							
	19	CLAYEY SAND (SC), loose, dark greenish gray, wet, SAND is fine to medium, trace shell fragments (up to 1/2" diameter).												
	20													
	21	Poorly graded SAND (SP), medium dense, dark greenish gray, wet, trace SILT, SAND is fine to medium, trace shell fragments with lenses of abundant shells.		S12	9 13 14	27	78							
	22													
	23													15" recovery from punch core from 22.5' - 26'
	24													
	25													

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				PW-1A
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME: Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY: T. Carroll	DATE 1-13-09	SHEET 1 of 3	

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 1/13/09

Well PW-1A

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25														
	26		CLAYEY SAND (SC), very loose, dark greenish gray, wet, trace shell fragments, SAND is fine, layers of cleaner SAND, seams of FAT CLAY.		S13	3 4 5	9	100							
	27														
	28														
	29														
	30														
	31		Poorly graded SAND with CLAY (SP-SC), medium dense, olive brown, wet, trace fine subangular GRAVEL.		S14	7 9 15	24	100							
	32		Grades to orangish brown.												
	33														
	34				S15			100							
	35														Sample is slough
	36		Poorly graded SAND (SP), very dense, yellowish brown, wet, SAND is fine, trace fines. [COLMA SAND]		S16	20 25 34	59	89							
	37														
	38														
	39		Grades with increased fines content.												
	40		Grades with trace fine subrounded GRAVEL.												
	41		Grades fine to very fine SAND, with less fines.		S17	15 29 31	60	100							
	42														
	43		Grades with iron-oxide staining, occasional subrounded GRAVEL.												
	44														
	45														
	46		Grades without GRAVEL.		S18	20 27 47	74	100							
	47		2" of heavy iron-oxide staining.												
	48		Poorly graded SAND withh SILT (SP-SM), very dense, olive brown, moist, fine SAND, iron-oxide mottles.												
	49														
	50														
	51				S19	15 26 40	66	100							
	52														
	53		52.5' - 56.0', several nodules of iron-oxide (3/4" - 1" diameter).												
	54														
	55														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				PW-1A
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY T. Carroll	DATE 1-13-09	SHEET 2 of 3	

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 1/13/09

Well PW-1A

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	55		Poorly graded SAND withh SILT (SP-SM), very dense, olive brown, moist, fine SAND, iron-oxide mottles.												
	56														
	57		CLAYEY SAND with GRAVEL (SC), hard, light greenish gray, dry to moist, GRAVEL is fine to coarse, angular, SAND is fine.		S20	12 18 22	40	67							
	58		SEDIMENTARY ROCK (Sandstone), fine-grained, light yellowish gray with iron-oxide staining, intensely weathered, moderately soft. [BEDROCK]												Very hard drilling at 58'
	59														
	60														
	61				S21	37 100/5"	100/5"	73							
	62		Borehole terminated at a depth of 61.8 feet on 9/18/2008.												
	63		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
	64														
	65														
	66														
	67														
	68														
	69														
	70														
	71														
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Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				PW-1A
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY T. Carroll		DATE 1-13-09	SHEET 3 of 3

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 1/13/09

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
S. McLandrich	1-3-08	1-3-08	N2120674.419 / E5997805.057 (NAD83)	RW18-A1-PZ-D
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Gregg Drilling and Testing, Inc.			Offset 173ft L Sta 47+3 SB Alignment	10.350 ft (NAVD88)
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Mud Rotary			Failing 1500	5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
MC (2.4"), SPT (1.4"), Grab, Shelby (2.87")			Automatic, 140 lbs., 30-inch drop	72.8%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING / AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
2" dia. Standpipe Piezo Screened 20.0 to 30.0 ft			6	40.4 ft

Well RW18-A1-PZ-D

ELEVATION (ft)	DEPTH (ft)	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0–1	Poorly graded SAND with SILT (SP-SM), dark brown, dry, SAND is fine with fine GRAVEL and clasts of strongly cemented SAND with SILT. [FILL]		S1										PID= 2.1 ppm
8.35	2–6.35	SANDY lean CLAY (CL), soft, dark gray, wet, pieces of decayed vegetation, slight organic odor detected. [SANDY BAY MUD]												
4.35	5–7			U2		100 psi	100							
	7–8	Fat CLAY (CH), soft, dark gray, wet, with large amount of dark brown decayed vegetation, with pockets of black organic CLAY, strong organic odor detected. [BAY MUD]									TV = 0.21			
2.35	8–10	CLAYEY SAND (SC) in cuttings. [MARINE SAND]												
0.35	11	Fat CLAY (CH) layer in cuttings. [BAY MUD]												
-1.65	12–13	CLAYEY SAND (SC), gray, wet, SAND is fine to coarse, with lenses of gray SANDY CLAY. [MARINE SAND]		U3		100 psi 400 psi	81							
-3.65	14–15	Poorly graded SAND (SP), gray, wet, fine to medium, trace fines.												
-5.65	16–17													
-7.65	18	Grades with lenses of CLAY with small shell fragments up to 1/16" diameter.		S4	6 8 10	18	78							
	19	Poorly graded SAND with CLAY (SP-SC), loose, greenish gray, wet, fine to medium, with occasional decayed vegetation.		S5	3 4 5	9	67							
-9.65	20–21													
-11.65	22													
	23	Poorly graded SAND with CLAY (SP-SC), loose, olive brown, wet, fine to medium, with pockets of iron-oxide staining up to 1/2" diameter, and occasional fine GRAVEL. [COLMA SAND]		S6	3 7 9	16	100							
-13.65	24–25			S7		49	67							

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				RW18-A1-PZ-D
DIST.	COUNTY	ROUTE	POSTMILE	EA
4	S.F.	101	8.3/9.4	163701
PROJECT OR BRIDGE NAME				
Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
N/A	T. Carroll	11-3-08	1 of 2	

Figure

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Well RW18-A1-PZ-D

ELEVATION (ft)	DEPTH (ft)	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25	Poorly graded SAND (SP), loose, yellowish brown, moist, fine to medium, trace fines, with iron-oxide staining up to 1/4" diameter. Grades dense.			14 20 29									
-15.65	26													
	27													
-17.65	28	Grades very dense, dark yellowish brown.		S8	20 50/6"	50/6"	100							
	29			S9	16 24 41	65	100							
-19.65	30													
	31													
-21.65	32													
	33			S10	30 50/6"	50/6"	100							
-23.65	34	33.5' - 35.0', heavily iron-oxidized zone, grades moist, SAND grades fine.		S11	10 30 37	67	100							
	35													
-25.65	36													
	37	Grades with increased fines content.												
-27.65	38	Grades trace fines.		S12	10 19 36	55	100							
	39			S13	15 33 50/5"	83/ 11"	100							
-29.65	40													
	41	Borehole terminated at a depth of 40.4 feet on 1/3/2008.												
-31.65	42	See Boring Record Legend for soil classification chart and key to test data and sampler type.												
	43													
-33.65	44													
	45													
-35.65	46													
	47													
-37.65	48													
	49													
-39.65	50													
	51													
-41.65	52													
	53													
-43.65	54													
	55													

Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE				HOLE ID
BORING RECORD				RW18-A1-PZ-D
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER N/A	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 2 of 2	

Figure

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08