R. L. STOLLAR & ASSOCIATES, INC.

WELL LOG

Project No. 0330.220 IRA
Well/Boring No. 937-35
Combo/Key No.

Project Name and Location: Presidio IRA	Elevation: Ground 13.0, Top of PVC 14.67	Coordinates	Township / Range / Section
Drilling Company: Hew Drilling Company	Driller: Jasper Booker	Date and Time Started: 10/9/91 1045; Date and Time Completed: 10/9/91 1425	
Drilling Equipment: CME 55, truck mounted		Total Drilled Depth: 16.5 ft	Completion Depth: 15.5 ft
Drilling Method: 3 3/4" I.D. HSA / 6 1/4" I.D HSA	Boring Diameter: 10" ±	Sampler: 5' core; No of Samples: 3	Cal; SS: 3 15" 1 3/8" LD
Size and Type of Casing: 4" PVC, schedule 40		Water Elevation: First 8.2'	Completion: 10.2'; 24 Hrs: 10.32
Type of Perforation: 4" PVC 0.010 SLOT	From 5 To 15 (Ft-BGS)	Pack Size and Type: Sand #2/12 Lonestar RMC	From 4.0 To 16.5 (Ft-BGS)
Type of Seal: Bentonite Pellets, 3/8" Volclay	From 1 To 4 (Ft-BGS)	Hydrogeologist: Liz Knapp / Ed Young	Checked By/Date: 11-14-91 DLA

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.)
1.0	0.5-3.0 - Auger cuttings, FILL Concrete in silty sand matrix pale brown, dry				Grout					C1 Auger cuttings
2.0										
3.0	3.0-3.3 silty sandy GRAVEL, pale brown (10YR8/1) loose, dry	GM			Dry	60	20	20		3.0
	3.3-3.6 silty sand w/ mudstone/siltstone gravel	SM	FILL		Dry	10	60	30		3.0 C2 recovery = 1.2'
4.0	3.6-4.1 consolidated siltstone/mudstone, grey ( ) w/ 1/16" pink-orange laminae									
5.0	4.1-4.2 serpentinite, fractured, green, piece jammed in sampler shoe									headspace readily w/ PID = 0ppm
6.0	FILL									
7.0	7.0 - Driller notes change in lithology to sand: sample collected off auger, clean fine sand, olive green (10YR 5/1) well sorted	SP			Dry		100			
8.0	8.0-8.2 weathered serpentinite, grey green, moist, coherent (2.5Y5/3)	SP			Wet		100			8.0
					wet		100			8.0 C3 recovery = 1.7'
9.0	8.2-8.5 fine SAND, greenish brown (5Y4/2) subangular to subrounded wet, loose, trace shell fragments, well sorted	SP SW	fine-medium SAND		wet	20	80			
10.0	8.5-9.25 fine-medium SAND, trace shell fragments, 3/4" coarse to fine sand layer at 9.1', subangular, moderately well sorted									1st water at 8.2' 10.5
		SP			wet		100		12	10.5 C4 Driven sample 1.2' recovery 10.5-11.7'
11.0	9.25-9.7 gravelly fine-medium SAND trace coarse sand, gravel up to 2" diameter (of serpentinite), angular to subangular poorly sorted. Dark black organic layer, w/ oxidized gravel + sand, poorly sorted, (5Y4/3)								7	
12.0									10	12.0
	10.5-10.8 As above except slightly finer grained									12.0
13.0		OL			wet			100	6	13 C5 Driven sample recovery = 18"
14.0	10.8-11.7 fine-medium sand w/ trace coarse silt sand, brownish grey (5Y4/1) 80% med. sand, 20% fine, subangular, 90% felsic, med. qtz. moderately well sorted	SP SM			wet		90	10	2	
									1	14.5

Piezometer Installation: +2.6; BENTONITE; 4" PVC 0.010 SLOT SCREEN; #2/12 sand

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V = organic matter

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R. L. STOLLAR & ASSOCIATES, INC.
WELL LOG (Continued)

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Well/Boring No. 937-35

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.)
	13.0-13.6 Same as above	ESK 10/4/91								
15.0	13.6-14.2 - dark black/brown (10YR2/1) stratified organic layer.. woody fibers in ~~fines~~ ESK 10/4/91 silt	SP		CAP	wet		100		7	C6 15
									13	recovery=1.1' Driven Sample
16.0	14.2-14.5 fine-med sand w/ Little silt, grey-brown (10YR3/2) angular to subangular, 70% med sand 30% fine sand.			16.5'					13	16.5
17.0	15-16.1 ~~same as 10.8-11.7', plus gravel for last 0.2'~~ ESK 10/25/91 Fine to medium SAND w/ trace coarse sand, brownish grey (5Y4/1) 80% med. sand, 20% fine sand, ~~TD=16.5~~ ESK 10/25/91 sub angular, 90% felsics, predominately qtz, moderately well sorted. Gravel present in bottom 0.2ft.									

Total Depth = 16.5 ft

Definition of Terms
Trace: < 5%
Little: 5-30%

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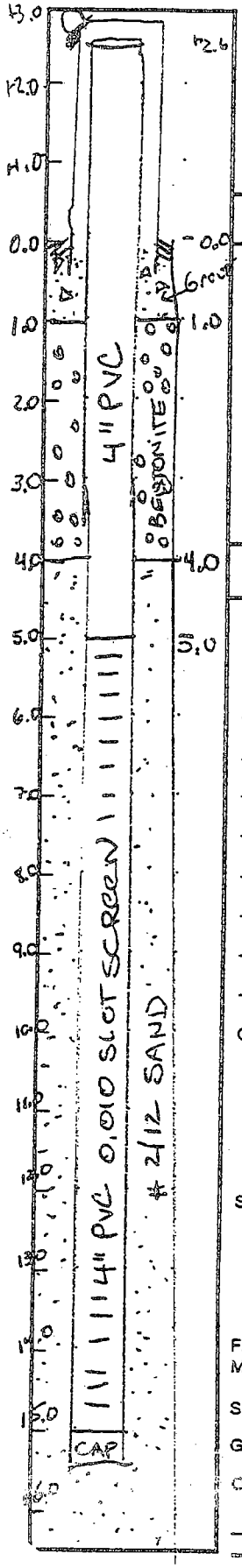
R. L. STOLLAR & ASSOCIATES, INC.

WELL CONSTRUCTION SUMMARY

SITE TYPE

WELL	937-35



PROJECT Presidio IRA, 0330.220

PERSONNEL Liz Knapp, Ed Young

LOCATION OR COORDS. Adjacent to fence east of southend of Building 974

ELEVATION: GROUND LEVEL to be surveyed

TOP OF CASING to be surveyed

DRILLING SUMMARY

TOTAL DEPTH

BOREHOLE DIAMETER 10" ±

DRILLER Hew Drilling Company: Jasper Booker

RIG CME 55, truckmounted

BIT(S) 3¾" I.D HSA / 6¼" I.D. HSA

DRILLING FLUID NONE

SURFACE CASING 3' protective casing

WELL DESIGN

BASIS: GEOLOGIC LOG
GEOPHYSICAL LOG

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

CASING C1 Schedule 40, 4" PVC; 7.6 ft

C2

C3

C4

SCREEN S1 10' schedule 40, 0.010 slot 4" PVC

S2

S3

S4

FILTER MATERIAL #2/12 Lone Star RMC sand: 4 ft³

SEAL: ⅜" Bentonite Pellets, Volclay: 8 gal.

GROUT: NOK: Shallow

OTHER: completion depth of well did not allow for placement of grout on top of bentonite seal

CONSTRUCTION TIME LOG

TASK	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING: to T.D. of 16.5'	10/9/91	1135	10/9/91	1425
Reaming	10/9/91	1515	10/9/91	1540
GEOPHYSICAL LOGGING:				
SCREEN PLACEMENT:	10/9/91		10/9/91	1559
FILTER:	10/9/91	1559	10/9/91	1642
SEAL:	10/9/91	1642	10/9/91	1645
GROUT:				
DEVELOPMENT:				
OTHER:				

WELL DEVELOPMENT

See well development form

COMMENTS

~~35~~ 25 gallons of approved water poured down bore hole to prevent flowing sands from filling in hole after reaming. 10/14/91

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R. L. STOLLAR & ASSOCIATES, INC.

WELL DEVELOPMENT DATA

SITE TYPE	SITE ID
WELL	937-35

DEPTH TO BOTTOM (INITIAL) 17.4

(FINAL) 17.5

STATIC WATER LEVEL (INITIAL) 10.33

(FINAL) 10.20

MEASURING POINT

CASING I.D. 4"

HYDROGEOLOGIST PA DAVENPORT

DRILLER ~~JIM SIMMS~~ Add 10/14/91 SIMMS

PROJECT NO. 0330-220

DATE(S) INSTALLED

DATE(S) DEVELOPED 10/14/91

PUMP (TYPE)

CAPACITY

BAILER (TYPE)

CAPACITY

NEED TO PUMP AN ADDITIONAL 125 SO AT LEAST 183 GALS

1 WELL VOLUME = 11.5 GALS 5 WELL VOLS ≈ 58 GALS.

TIME	VOLUME OF WATER REMOVED (gallons)	pH	SPECIFIC CONDUCTANCE	TEMP (°C)	TURBIDITY ~~SAND CONTENT~~	OTHER PHYSICAL CHARACTERISTICS (CLARITY, ODOR, PARTICULATES, COLOR)
13:45	0	9.01	4360	18.0	140.9	BLACK, CLOUDY
13:55	25	8.0	3430	17.3	>200	" "
13:59	35	7.77	3800	16.7	>200	SLIGHTLY CLOUDY
14:09	45	7.63	3690	16.6	55	" "
14:16	60	7.59	3500	16.6	129	" "
14:27	75	7.51	3590	16.8	32	VERY SLIGHTLY CLOUDY
14:32	85	7.47	3510	16.6	21	" " "
11:54	100 (10/15)	7.22	2700	17.0	~~38.8~~ 12.8	CLEAR W/ YELLOW HUE WATER SMELLS BRACKISH.
12:03	115	7.15	2200	17.2	4.9	" " "
12:06	130	7.09	4100	17.1	4.5	" " "
12:20	145	7.17	1950	17.4	7.1	" " "
12:26	160	7.04	3300	17.3	2.9	" " "
12:44	175	7.07	2950	17.9	17.7	SLIGHTLY CLOUDY YELLOWISH HUE
12:46	185	7.00	4200	17.2	31	AS ABOVE

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