

Appendix A

Monitoring Well and Piezometer Construction Data

(Provided electronically on disc)

Table A-1 Well Construction Data

Table A-2(A, B) Construction Details of Piezometer Monitoring System

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TABLE A-1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
SHALLOW WELLS										
RS-11	IV	17.5	16	0 - 17.5	4	0 - 17.5	0 - 9	10 - 17.5	1790.39	06/10/85
RS-16	IV	20.5	16	0 - 20.5	4	0 - 20.5	0 - 14.5	16.5 - 20.5	1811.05	06/11/85
RS-18	IV	13	16	0 - 13	4	0 - 13	0 - 6	7.5 - 13	1802.86	06/12/85
RS-19	I	15	16	0 - 15	4	0 - 15	0 - 4.8	4.8 - 15	1812.42	09/12/85
RS-20	I	20.5	16	0 - 20.5	4	0 - 20.5	0 - 8.5	10.5 - 20.5	1823.77	09/12/85
RS-21	II	29	16	0 - 29	4	0 - 24.6	0 - 3.5	14.5 - 24.6	1767.36	10/23/85
RS-22	II	31	16	0 - 31	4	0 - 31	0 - 4	21 - 31	1771.23	10/23/85
RS-23	IV	13	12	0 - 13	4	0 - 13	0 - 6.8	8 - 13	1887.25	08/23/88
RS-24	IV	8.5	12	0 - 8.5	4	0 - 8.5	0 - 3	4 - 8.5	1809.24	08/25/88
RS-25	IV	13.5	Trenched	0 - 13.5	4	0 - 13.5	0 - 2	8.5 - 13.5	1862.71	08/25/88
RS-27	IV	9	8	0 - 9	4	0 - 9	0 - 3	5 - 9	1804.78	08/02/88
RS-28	IV	19	8	0 - 19	4	0 - 19	0 - 9	14 - 19	1768.59	08/17/89
RS-36	IV	19.5	9-5/8	0 - 19.5	12 9-5/8	0 - 15 ---	0 - 15 ---	Open Hole	1817.73	11/21/11
RS-54	IV	38	11-1/4 5-7/8	0 - 7 7 - 38	6-1/4 ---	0 - 7 ---	0 - 7	Open Hole	1846.66	08/09/93
ES-31	IV	25	12	0 - 25	6	0 - 25	0 - 9.7	11.6 - 25	1787.01	01/29/87

**TABLE A-1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA**

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
CHATSWORTH FORMATION										
RD-07	IV	300	15 8-5/8	0 - 25 25 - 300	10-1/8 ---	0 - 25 ---	0 - 25	Open Hole	1812.82	01/08/86
RD-13	IV	160	12 6-1/2	0 - 30 30 - 160	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1840.01	07/25/89
RD-14	IV	125	12 6-1/2	0 - 30 30 - 125	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1824.18	07/27/89
RD-15	IV	152	12 6-1/2	0 - 30 30 - 152	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1817.70	07/27/89
RD-16	IV	220	12 6-1/2	0 - 30 30 - 220	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1808.99	08/15/89
RD-17	IV	125	12 6-1/2	0 - 30 30 - 125	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1836.30	08/10/89
RD-18	IV	240	12 6-1/2	0 - 30 30 - 240	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1839.51	07/28/89
RD-19	IV	135	12 6-1/2	0 - 30 30 - 135	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1853.16	07/31/89
RD-20	IV	127	12 6-1/2	0 - 30 30 - 127	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1819.52	07/27/89
RD-21	IV	175	12 6-1/2	0 - 30 30 - 175	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1866.96	08/11/89
RD-22	IV	440	12 6-1/2	0 - 30 30 - 440	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1853.41	08/15/89
RD-23	IV	440	12 6-1/2	0 - 30 30 - 440	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1838.19	08/16/89
RD-24	IV	150	12 6-1/2	0 - 30 30 - 150	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1809.93	08/09/89
RD-25	IV	Well abandoned April 2004 as part of Building 4059 demolition.								
RD-27	IV	150	12 6-1/2	0 - 30 30 - 150	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1841.67	08/10/89
RD-28	IV	Well abandoned April 2004 as part of Building 4059 demolition.								
RD-29	IV	100	12 6-1/2	0 - 30 30 - 100	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1806.29	08/10/89

TABLE A-1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-30	IV	75	12 6-1/2	0 - 30 30 - 75	8-1/4 ---	0 - 30 ---	0 - 30	Open Hole	1768.69	08/11/89
RD-33A	UL-N	320	17-1/2 11 5-1/2	0 - 11 11 - 100 100 - 320	12-1/8 6-1/4 ---	0 - 11 0 - 100 ---	0 - 11 0 - 100	Open Hole	1792.97	09/27/91
RD-33B	UL-N	415	17-1/2 11 6-1/4	0 - 20 20 - 360 360 - 415	12-1/8 6-1/4 ---	0 - 20 0 - 360 ---	0 - 20 20 - 360	Open Hole	1793.72	09/27/91
RD-33C	UL-N	520	17-1/2 11 6-1/4	0 - 10 10 - 480 480 - 520	12-1/8 6-1/4 ---	0 - 10 0 - 480 ---	0 - 10 0 - 480	Open Hole	1793.61	09/21/91
RD-34A	UL-N	60	12-1/4 6-1/2	0 - 16 16 - 60	8-1/4 ---	0 - 16 ---	0 - 16	Open Hole	1761.91	07/25/91
RD-34B	UL-N	240	17-1/2 11 6-1/4	0 - 30 30 - 180 180 - 240	12-1/8 6-1/4 ---	0 - 30 0 - 180 ---	0 - 30 0 - 180	Open Hole	1762.51	08/11/91
RD-34C	UL-N	450	17-1/2 11 6-1/4	0 - 30 30 - 380 380 - 450	12-1/8 6-1/4 ---	0 - 30 0 - 380 ---	0 - 30 0 - 380	Open Hole	1762.79	08/10/91
RD-50	IV	195	12-3/4 6-1/4	0 - 18.5 18.5 - 195	8-1/4 ---	0 - 18.5 ---	0 - 18.5	Open Hole	1914.88	05/28/93
RD-54A	IV	278	17-1/2 11-1/4 5-7/8	0 - 19 19 - 119 119 - 278	12-1/8 6-1/4 ---	0 - 19 0 - 119 ---	0 - 19 0 - 119	Open Hole	1841.72	08/07/93
RD-54B	IV	437	17-1/2 11-1/4 5-7/8	0 - 19 19 - 379 379 - 437	12-1/8 6-1/4 ---	0 - 19 0 - 379 ---	0 - 19 0 - 379	Open Hole	1842.54	08/31/93
RD-54C	IV	638	17-1/2 11-1/4 6-1/4	0 - 20 20 - 558 558 - 638	12-1/8 6-1/4 ---	0 - 20 0 - 557 ---	0 - 20 0 - 557	Open Hole	1843.77	07/27/93
RD-57	UL-N	419	17-1/2 6-1/2	0 - 19.5 19.5 - 419	12-1/8 ---	0 - 19.5 ---	0 - 19.5	Open Hole	1774.15	02/23/94
RD-59A	OS	58	17-1/2 6-1/2	0 - 21 21 - 58	12-1/8 ---	0 - 21 ---	0 - 21	Open Hole	1340.59	05/19/94

TABLE A-1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-59B	OS	214	17-1/2 6-1/2	0 - 19.5 19.5 - 214	12-1/8 2	0 - 19.5 0 - 209	0 - 19.5 0 - 161	178 - 209	1342.49	07/02/94
RD-59C	OS	398	17-1/2 6-1/2	0 - 19 19 - 398	12-1/8 2	0 - 19 0 - 397	0 - 19 0 - 186 250 - 328	345.5 - 397	1345.41	07/02/94
RD-63	IV	230	12-3/4 6-1/2	0 - 20 20 - 230	8-1/4 ---	0 - 20 ---	0 - 20	Open Hole	1764.83	05/10/94
RD-64	IV	398	12-1/4 6-1/2	0 - 19 19 - 398	8-1/4 ---	0 - 19 ---	0 - 19	Open Hole	1857.04	05/19/94
RD-65	IV	397	12-3/4 6-1/2	0 - 19 19 - 397	8-1/4 ---	0 - 19 ---	0 - 19	Open Hole	1819.14	08/14/94
RD-74	IV	101	17-1/2 6-1/2	0 - 30 30 - 101	12 ---	0 - 30 ---	0 - 30	Open Hole	1810.90	01/21/99
RD-85	IV	90	13-3/8 5	0 - 20 20 - 90	8 ---	0 - 20 ---	0 - 20	Open Hole	1849.36	08/04/04
RD-86	IV	80	13-3/8 5	0 - 20 20 - 80	8 ---	0 - 20 ---	0 - 20	Open Hole	1832.16	08/09/04
RD-87	IV	60	13-3/8 5	0 - 20 20 - 60	8 ---	0 - 20 ---	0 - 20	Open Hole	1789.09	08/11/04
RD-88	IV	30	13-3/8 5	0 - 20 20 - 30	8 ---	0 - 20 ---	0 - 20	Open Hole	1774.62	08/16/04
RD-89	IV	50	13 3.8	0 - 30 30 - 50	8 ---	0 - 30 ---	0 - 30	Open Hole	1814.18	05/18/05
RD-90	IV	125	12-3/4 6	0 - 20 20 - 125	8 ---	0 - 20 ---	0 - 20	Open Hole	1784.75	03/11/04
RD-91	IV	140	12-3/4 6	0 - 20 20 - 140	8 ---	0 - 20 ---	0 - 20	Open Hole	1818.04	03/12/04
RD-92	IV	105	12-3/4 6	0 - 20 20 - 105	8 ---	0 - 20 ---	0 - 20	Open Hole	1833.74	03/16/04
RD-93	IV	60	13 3.8	0 - 20 20 - 60	8 ---	0 - 20 ---	0 - 20	Open Hole	1810.48	05/19/05
RD-94	UL, NW of IV	35	13 3.8	0 - 20.5 20.5 - 35	8 ---	0 - 20.5 ---	0 - 20.5	Open Hole	1744.38	05/15/05

**TABLE A-1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA**

Well Identifier	Area No.	Effective Borehole Depth (feet)	Borehole		Casing		Sealed Interval (feet)	Perforated Interval (feet)	Measuring Point Elevation (ft MSL)	Date Drilling Completed	
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)					
RD-95	IV	80	13 3.8	0 - 50 50 - 80	8 ---	0 - 50 ---	0 - 50	Open Hole	1811.36	05/12/05	
RD-96	IV	90	13 4	0 - 20 20 - 90	8 ---	0 - 20 ---	0 - 20	Open Hole	1805.49	05/03/06	
RD-97	UL, NW of IV	74.5	13 4	0 - 20 20 - 74.5	8 ---	0 - 20 ---	0 - 20	Open Hole	1792.22	04/28/06	
RD-98	IV	65	13-3/8 5-1/2	0 - 20 20 - 65	8-1/8 ---	0 - 20 ---	0 - 20 ---	Open hole	1808.73	06/04/08	
RD-102	IV	100	10-5/8 4	0 - 30 30 - 100	6 ---	0 - 30 ---	0 - 30 ---	Open hole	1817.50	11/16/11	
WS-07	IV	700	15 10	0 - 400 400 - 700	12-1/8 ---	0 - 400 ---	Unknown	216 - 400 Open Hole	1826.19	1954	
PRIVATE OFF-SITE WELLS AND SPRINGS											
OS-02	OS	700	Unknown	Unknown	10 ---	0 - 17 ---	0 - 17	Open Hole	1237.01	03/18/59	
OS-03	OS	100	Drilled with cable tools		8-1/4 ---	0 - 59 ---	0 - 30	30 - 60 Open Hole	1298.15	06/12/50	
OS-04	OS	Well Construction Data Unresolved or Not Available								1334.00	
OS-05	OS	Well Construction Data Unresolved or Not Available									

Notes and Abbreviations:

Depth/intervals are measured in feet below land surface.

OS Off-site
UL-N Undeveloped land in northern part of Facility
UL-S Undeveloped land in southern part of Facility

--- No casing installed over the borehole interval specified; open hole
(v) Top of well below land surface, installed inside zero-grade vault
(WB) Well completed with Westbay Multilevel System

TABLE A-2a
CONSTRUCTION DETAILS OF PIEZOMETER MONITORING SYSTEMS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PIEZOMETER ID	LOCATION					PIEZOMETER DESIGN DETAILS						
	Area	SWMU	Northing	Easting	MP Elevation	Date Drilled	Total Depth	Screened Interval	Sand Interval	Bentonite Interval	Grout Interval	Concrete Interval
			[feet]	[feet]	[feet]	[m/d/y]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]
PZ-005	IV	Central Area IV	266634.9	1784877.3	1800.97	11/7/2000	45.0	15-25	11.5-26.5	8.5-11.5	2-8.5	0-2
PZ-041	IV	PDU	267315.8	1785662.0	1809.10	1/16/2001	29.6	19-29	17-29.6	14-17	2-14	0-2
PZ-051	IV	EEL	266485.8	1785857.0	1770.87	12/14/2000	27.0	5-15	3-16	2-3	N/A	0-2
PZ-052	IV	Eastern Area IV	266742.1	1786103.7	1790.72	12/15/2000	30.0	18.9-28.9	17-30	14-17	2-14	0-2
PZ-055	IV	Eastern Area IV	267253.6	1787421.3	1818.40	1/2/2001	29.5	19-29	17-29.5	14-17	2-14	0-2
PZ-056	IV	OCY S	268068.7	1788028.0	1805.86	12/19/2000	28.0	17-27	13-28	10-13	2-10	0-2
PZ-097	UDL	FSDf	267048.9	1783400.3	1761.87	10/15/2001	44.5	33-43	31-44.5	11.5-28	2-11.5	0-2
PZ-098	IV	FSDf	266788.9	1783488.8	1797.78	10/16/2001	37.5	24-34	21.5-37.5	19-21.5	2-19	0-2
PZ-099	IV	FSDf	Abandoned in place in 2006									
PZ-100	IV	FSDf	266078.3	1782962.2	1870.11	10/17/2001	16.5	5.67-15.67	4.67-16.5	2-4.67	N/A	0-2
PZ-101	IV	FSDf	266057.5	1783090.6	1869.71	10/17/2001	27	10-20	7-27	5-7	1.75-5	0-1.75
PZ-102	IV	Central Area IV	267080.8	1784684.4	1827.78	10/18/2001	59.2	48.5-59.2	45-59.2	43-45	2-43	0-2
PZ-103	IV	Central Area IV	266281.2	1784400.9	1815.93	10/22/2001	39	28.5-38.5	26-39	23.5-26	2-23.5	0-2
PZ-104	IV	Central Area IV	266270.2	1784924.2	1797.47	10/22/2001	38.5	18-28	16-30	13-16	2-13	0-2
PZ-105	IV	Central Area IV	265935.5	1784787.9	1803.87	10/23/2001	28	17-27	15-28	12-15	2-12	0-2
PZ-106	IV	EEL	266411.9	1785469.6	1784.17	10/23/2001	35	18-28	16-30.5	12.75-16	2-12.75	0-2
PZ-107	IV	Eastern Area IV	266876.4	1785822.0	1793.62	10/24/2001	11	5-10	4-11	2-4	N/A	0-2
PZ-108	IV	HMSA	268032.6	1785076.3	1763.01	10/24/2001	30	16-26	13-28.5	10-13	2-10	0-2
PZ-109	IV	Central Area IV	267332.4	1785248.2	1809.36	10/25/2001	36.5	25-35	22-36.5	19-22	2-19	0-2
PZ-110	IV	Eastern Area IV	267204.0	1786209.6	1818.90	10/25/2001	17.5	7-17	5-17.5	2-5	N/A	0-2
PZ-111	IV	Eastern Area IV	266948.4	1786433.9	1794.90	10/26/2001	20.0	7.5-17.5	5-20	N/A	N/A	N/A
PZ-112	IV	Eastern Area IV	267435.9	1786720.8	1829.14	10/26/2001	35.0	24-34	22-35	19-22	2-19	0-2
PZ-113	IV	Eastern Area IV	267682.9	1787367.8	1823.68	10/29/2001	15.0	7-15	5-15	2-5	N/A	0-2
PZ-114	IV	Old Con Yard S	268304.0	1787913.1	1818.19	10/30/2001	48.2	37-47	35-48.2	32-35	2-32	0-2
PZ-115	IV	Eastern Area IV	268006.8	1787536.5	1817.81	10/30/2001	40	25.5-37.5	25-40	22-25	2-22	0-2
PZ-116	UDL	RMHF	266501.1	1783693.0	1827.78	10/31/2001	34	22-32	20-34	17-20	2-17	0-2
PZ-120	IV	HMSA / SCTI	267230.1	1785009.7	1810.96	3/18/2003	26	15-25	12-26	9-12	2-9	0-2
PZ-121	IV	HMSA / SCTI	267491.6	1785120.7	1808.98	3/19/2003	33	15-25	12-28	8.4-12; 28-33	1.5-8.4	0-1.5
PZ-122	IV	HMSA / SCTI	267091.9	1785176.5	1810.80	3/19/2003	27.5	15.5-25.5	12-27.5	9-12	2-9	0-2
PZ-124	IV	B056 Landfill	267166.7	1784015.9	1764.11	3/21/2003	31	14.7-24.7	11.3-31	8.3-11.3	1-8.3	0-1

**TABLE A-2a
CONSTRUCTION DETAILS OF PIEZOMETER MONITORING SYSTEMS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA**

PIEZOMETER ID	LOCATION					PIEZOMETER DESIGN DETAILS						
	Area	SWMU	Northing	Easting	MP Elevation	Date Drilled	Total Depth	Screened Interval	Sand Interval	Bentonite Interval	Grout Interval	Concrete Interval
			[feet]	[feet]	[feet]	[m/d/y]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]	[feet bgs]

Notes and Abbreviations:

The difference between the total depth and the bottom of the sand interval was filled with sloughed native material and/or bentonite.

^a The screen for this port is perpendicular to the well casing and covers the open bottom end; therefore, the screened section is a discrete depth.

bgs - Below ground surface

MP - Measuring point

UDL - undeveloped land

TABLE A-2b
CONSTRUCTION DETAILS OF PIEZOMETER MONITORING SYSTEMS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Northing (feet)	Easting (feet)	Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Screen Top (feet bgs)	Depth to Screen Bottom (feet bgs)	Total Depth (feet bgs)	Total Depth Drilled (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Screen Material	Screen Slot Size (inches)	Casing Material	Filter Pack Grade	Filter Pack Top (feet bgs)	Filter Pack Bottom (feet bgs)	Drilling Method	Driller	Annular Seal Material	Annular Seal Top (feet bgs)	Annular Seal Bottom (feet bgs)	Wellhead Completion
PZ-150	268281.654	1786086.776	1849.92	1852.23	17.5	27.5	27.5	27.5	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	14.5	27.5	Air Rotary	WDC	Cement-Bentonite Grout	11	14.5	Monument
PZ-151	268743.1285	1787988.758	1860.4	1862.60	69.5	79.5	80	82	8	2	SCH40 PVC	0.02	SCH40 PVC	#3	64	80	CME-85 HAS/HQ w/carbide bit	WDC	Cement-Bentonite Grout Bentonite chips # 60 Sand Bentonite chips	2 52 62 80	52 62 64 82	Monument
PZ-160	268345.039	1786286.124	1849.14	1851.41	17.0	27.0	27	27	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	14	27	Air Rotary	WDC	Cement-Bentonite Grout	1	14	Monument
PZ-161	268418.806	1786132.353	1850.00	1852.23	18	28	28	28	10 5/8	4	SCH40 PVC	0.020	SCH40 PVC	#3	15	28	Air Rotary	WDC	Cement-Bentonite Grout	1	15	Monument

Notes and Abbreviations:

Northing and Easting Coordinates are in State Plane NAD 27, US Feet.
amsl - above mean sea level
bgs - below ground surface
SCH - schedule
PVC - polyvinyl chloride
TOC - top of casing
NM - not measured