ADDENDUM 2.7-A

SURFACE WATER RESOURCES

List of Tables

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Table 2.7A-1: Storm Values

Return Interval	Duration	SCS Type	Depth (in)	Source
2	1	Type II	1.0	NOAA ATLAS 2, Volume II, Table 11
5	1	Type II	1.4	NOAA ATLAS 2, Volume II, Figure 6 Nomogram
10	1	Type II	1.7	NOAA ATLAS 2, Volume II, Figure 6 Nomogram
25	1	Type II	2	NOAA ATLAS 2, Volume II, Figure 6 Nomogram
50	1	Type II	2.3	NOAA ATLAS 2, Volume II, Figure 6 Nomogram
100	1	Type II	2.6	NOAA ATLAS 2, Volume II, Table 11
2	6	Type II	1.4	NOAA ATLAS 2, Volume II, Figure 20
5	6	Type II	1.8	NOAA ATLAS 2, Volume II, Figure 21
10	6	Type II	2.2	NOAA ATLAS 2, Volume II, Figure 22
25	6	Type II	2.6	NOAA ATLAS 2, Volume II, Figure 23
50	6	Type II	3.0	NOAA ATLAS 2, Volume II, Figure 24
100	6	Type II	3.4	NOAA ATLAS 2, Volume II, Figure 25
2	24	Type II	1.8	NOAA ATLAS 2, Volume II, Figure 26
5	24	Type II	2.4	NOAA ATLAS 2, Volume II, Figure 27
10	24	Type II	2.8	NOAA ATLAS 2, Volume II, Figure 28
25	24	Type II	3.4	NOAA ATLAS 2, Volume II, Figure 29
50	24	Type II	3.8	NOAA ATLAS 2, Volume II, Figure 30
100	24	Type II	4.2	NOAA ATLAS 2, Volume II, Figure 31

Table 2.7A-2: Type II Data Storm Frequency

Original Distribution (dimensionless)		Varied hour and precip distribution	
Time (Fraction)	Preciptation (Fraction)	Time (hr)	Precipitation (hr)
		6	1.4
0.0000	0.000	0	0.000
0.0104	0.002	0.0625	0.003
0.0208	0.005	0.125	0.007
0.0313	0.008	0.1875	0.011
0.0417	0.010	0.25	0.014
0.0521	0.014	0.3125	0.020
0.0625	0.017	0.375	0.024
0.0729	0.020	0.4375	0.028
0.0833	0.023	0.5	0.032
0.0938	0.026	0.5625	0.036
0.1042	0.029	0.625	0.041
0.1146	0.032	0.6875	0.045
0.1250	0.035	0.75	0.049
0.1354	0.038	0.8125	0.053
0.1458	0.041	0.875	0.057
0.1563	0.044	0.9375	0.062
0.1667	0.048	1	0.067
0.1771	0.052	1.0625	0.073
0.1875	0.056	1.125	0.078
0.1979	0.060	1.1875	0.084
0.2083	0.064	1.25	0.090
0.2188	0.068	1.3125	0.095
0.2292	0.072	1.375	0.101
0.2396	0.077	1.4375	0.108
0.2500	0.080	1.5	0.112
0.2604	0.085	1.5625	0.119
0.2708	0.090	1.625	0.126
0.2813	0.095	1.6875	0.133
0.2917	0.100	1.75	0.140
0.3021	0.105	1.8125	0.147
0.3125	0.110	1.875	0.154
0.3229	0.115	1.9375	0.161
0.3333	0.120	2	0.168
0.3438	0.126	2.0625	0.176
0.3542	0.133	2.125	0.186
0.3646	0.140	2.1875	0.196
0.3750	0.147	2.25	0.206
0.3854	0.155	2.3125	0.217
0.3958	0.163	2.375	0.228
0.4063	0.172	2.4375	0.241
0.4167	0.181	2.5	0.253
0.4271	0.191	2.5625	0.267
0.4375	0.203	2.625	0.284
0.4479	0.218	2.6875	0.305
0.4583	0.236	2.75	0.330
0.4688	0.257	2.8125	0.360
0.4792	0.283	2.875	0.396
0.4896	0.387	2.9375	0.542

Table 2.7A-2: Type II Data Storm Frequency (Continued)

Original Distribution (dimensionless)		Varied hour and precip distribution	
Time (Fraction)	Preciptation (Fraction)	Time (hr)	Precipitation (hr)
0.5000	0.663	3	0.928
0.5104	0.707	3.0625	0.990
0.5208	0.735	3.125	1.029
0.5313	0.758	3.1875	1.061
0.5417	0.776	3.25	1.086
0.5521	0.791	3.3125	1.107
0.5625	0.804	3.375	1.126
0.5729	0.815	3.4375	1.141
0.5833	0.825	3.5	1.155
0.5938	0.834	3.5625	1.168
0.6042	0.842	3.625	1.179
0.6146	0.849	3.6875	1.189
0.6250	0.856	3.75	1.198
0.6354	0.863	3.8125	1.208
0.6458	0.869	3.875	1.217
0.6563	0.875	3.9375	1.225
0.6667	0.881	4	1.233
0.6771	0.887	4.0625	1.242
0.6875	0.893	4.125	1.250
0.6979	0.898	4.1875	1.257
0.7083	0.903	4.25	1.264
0.7188	0.908	4.3125	1.271
0.7292	0.913	4.375	1.278
0.7396	0.918	4.4375	1.285
0.7500	0.922	4.5	1.291
0.7604	0.926	4.5625	1.296
0.7708	0.930	4.625	1.302
0.7813	0.934	4.6875	1.308
0.7917	0.938	4.75	1.313
0.8021	0.942	4.8125	1.319
0.8125	0.946	4.875	1.324
0.8229	0.950	4.9375	1.330
0.8333	0.953	5	1.334
0.8438	0.956	5.0625	1.338
0.8542	0.959	5.125	1.343
0.8646	0.962	5.1875	1.347
0.8750	0.965	5.25	1.351
0.8854	0.968	5.3125	1.355
0.8958	0.971	5.375	1.359
0.9063	0.974	5.4375	1.364
0.9167	0.977	5.5	1.368
0.9271	0.980	5.5625	1.372
0.9375	0.983	5.625	1.376
0.9479	0.986	5.6875	1.380
0.9583	0.989	5.75	1.385
0.9688	0.992	5.8125	1.389
0.9792	0.995	5.875	1.393
0.9896	0.998	5.9375	1.397
1.0000	1.000	6	1.400

Table 2.7A-3: Time-to-Concentration Calculations

ArcGIS Data					Overland Flow Information				Channel Flow Information									Results	
									Channel Shape (Trapezoidal)										
Basin Name	Reach Length	Reach Slope	Hydraulic Length (L)	Hydraulic Slope	CN	Overland Flow Length[1]	Slope (hydraulic slope)	T_c (overland)	Manning's n	Bottom width	Height	Side Slope	Hydraulic Radius	Channel Slope (reach slope)	Flow Velocity	Reach Length	$T_{c(chan)}$	Total T_c	LagTime
	ft	(ft/ft)	ft	(ft/ft)		(ft)		min		ft	ft	Z:1	ft	(ft/ft)	(ft/sec)	ft	min	min	min
B1	8337.76	0.0159	3343.175	0.036	72	1114	0.036428	22.9	0.05	3	0.5	3	0.37	0.0159	1.91	2229.17	19.41	42.3	25.40
B2	9774.4	0.0140	551.04		72		0	N/A					N/A	0.014	N/A		N/A	N/A	N/A
B3	15514.4	0.0100	3818	0.019	72	1272	0.01863	35.6	0.05	4	1	3	0.68	0.01	2.29	2545	18.49	54.1	32.48
B4	24993.6	0.0085	5864.64	0.0156	72	1952	0.015619	54.8	0.05	4	1	3	0.68	0.0085	2.11	3904.2	30.77	85.6	51.36
B5	8416.48	0.0130	314.88		72		0	N/A					N/A	0.013	N/A		N/A	N/A	N/A
B6	10177.84	0.0063	5971	0.0222	72		0.022248	0.0	0.04	7	1.5	1	1.13	0.0063	3.21	5971	31.03	31.0	18.62
B7	4910.16	0.0025	6587.926	0.0171	72	1677.766	0.017057	46.5	0.03	14	2	0	1.56	0.0025	3.32	4910.16	24.61	71.1	42.66
B8	5664.56	0.0144	7681.76	0.1440	72	2017.2	0.144	18.5	0.05	4	0.5	3	0.38	0.0144	1.88	5664.56	50.11	68.6	41.19
B9	12857.6	0.0119	15153.6	0.0119	72	2296	0.0119	71.5	0.05	4	0.5	3	0.38	0.0119	1.71	12857.6	125.12	196.6	117.99
B10	1987.68	0.0188	2810.96	0.0188	72		0.0188	0.0	0.05	5	1.5	2	1.02	0.0188	4.14	1987.68	8.00	8.0	4.80
B11	6140.16	0.0015	2755.905	0.0353	72	2755.905	0.035322	48.0	0.05				N/A	0.0015		N/A	0.00	48.0	28.83
B12	5188.96	0.0303	6045.04	0.0303	72	856.08	0.0303	20.4	0.05	4	1	3	0.68	0.0303	3.99	5188.96	21.66	42.0	25.21
B13	7357.04	0.0253	8841.26	0.025	72	1484.22	0.025	34.8	0.05	4	0.75	3	0.54	0.0253	3.12	7357.04	39.30	74.1	44.47
B14	18085.92	0.0033	25026.4	0.0033	72	6940.48	0.0033	329.1	0.05	6	1	2	0.76	0.0033	1.43	18085.92	211.27	540.3	324.21
B15	9210.24	0.0149	11496.4	0.0149	72	2286.16	0.0149	63.7	0.05	4	0.5	3	0.38	0.0149	1.92	9210.24	80.10	143.8	86.28
B16	337.84	0.0086	911.84	0.0086	72		0.0086	0.0	0.03	6	0.5	2	0.42	0.0086	2.60	337.84	2.17	2.2	1.30
B17	7898.24	0.0201	9669.44	0.0201	72	1771.2	0.0201	44.7	0.05	4	0.5	3	0.38	0.0201	2.23	7898.24	59.14	103.9	62.31
B18	728.16	0.0001	1102.08	0.001	72		0.001	0.0	0.03	12	1	1	0.88	0.0001	0.45	728.16	26.75	26.7	16.05
B19	4782.24	0.0037	3243.92	0.0037	72		0.0037	0.0	0.03	10	1.5	1	1.21	0.0037	3.42	4782.24	23.28	23.3	13.97
B20	4073.76	0.0065	4860.96	0.0065	72		0.0065	0.0	0.04	8	1	2	0.80	0.0065	2.58	4073.76	26.27	26.3	15.76
B21	11109.36	0.0044	12752.64	0.0044	72		0.0044	0.0	0.05	7	1	2	0.78	0.0044	1.68	11109.36	110.42	110.4	66.25
B22	7757.2	0.0165	10158.16	0.0165	72	2400.96	0.0165	63.0	0.05	4	0.5	3	0.38	0.0165	2.02	7757.2	64.11	127.1	76.23
B23	2378	0.0092	3398.08	0.0092	72		0.0092	0.0	0.05	6	0.75	2	0.60	0.0092	2.03	2378	19.52	19.5	11.71
B24	3690	0.0075	5618.64	0.0075	72	1928.64	0.0075	78.4	0.04	7	1.5	1	1.13	0.0075	3.50	3690	17.58	95.9	57.56
B25	7711.28	0.0165	3673.6	0.0165	72		0.0165	0.0	0.05	5	0.5	2	0.41	0.0165	2.12	3673.6	28.85	28.8	17.31
B26	7875.28	0.0189	9072.48	0.0189	72	1197.2	0.0189	33.7	0.05	4	0.5	2	0.40	0.0189	2.22	7875.28	59.09	92.8	55.68
B27	2456.72	0.0212	2814.24	0.0212	72	357.52	0.0212	12.1	0.05	3	0.5	3	0.37	0.0212	2.21	2456.72	18.52	30.6	18.38
B28	7708	0.0150	8327.92	0.015	72	619.92	0.015	22.3	0.05	4	0.5	3	0.38	0.015	1.92	7708	66.81	89.2	53.50
B29	1987.68	0.0074	1987.68	0.0074	72		0.0074	0.0	0.05	3	0.5	3	0.37	0.0074	1.31	1987.68	25.37	25.4	15.22
B30	7832.64	0.0143	8833.04	0.0143	72	1000.4	0.0143	33.6	0.05	3	0.5	3	0.37	0.0143	1.82	7832.64	71.90	105.5	63.28
B31	7038	0.0046	8839.6	0.0046	72	1801.6	0.0046	94.8	0.05	3	0.5	3	0.37	0.0046	1.03	7038	114.20	208.9	125.37
B32	7940.88	0.0116	8921.6	0.0116	72	980.72	0.0116	36.7	0.05	3	0.5	2	0.38	0.0116	1.69	7940.88	78.54	115.2	69.13
B33	11624.32	0.0104	12792	0.0104	72	1167.68	0.0104	44.5	0.05	3	0.5	3	0.37	0.0104	1.55	11624.32	125.13	169.7	101.80
B34	7566.96	0.0126	9479.2	0.0126	72	1912.24	0.0126	60.0	0.05	3	0.5	3	0.37	0.0126	1.70	7566.96	74.00	134.0	80.43
B35	10184.4	0.0039	15025.68	0.0039	72	4841.28	0.0039	226.9	0.05	4	0.5	3	0.38	0.0039	0.98	10184.4	173.12	400.0	240.02
B36	13953.12	0.0062	18328.64	0.0062	72		0.0062	0.0	0.05	3	0.5	3	0.37	0.0062	1.20	13953.12	194.53	194.5	116.72
B37	25905.44	0.0065	28001.36	0.0065	72	2095.92	0.0065	90.0	0.05	4	0.5	3	0.38	0.0065	1.27	25905.44	341.10	431.1	258.64

1. Overland flow length = hydraulic length - reach length

Table 2.7A-4: Stream Reach Characteristics

Reach	Shape	Bottom Width	Side Slopes	Manning's n	Comments
1	Trapezoidal	3	3	0.05	Reach length & slope from B36
2	Trapezoidal	3	3	0.05	Reach length & slope from B31
3	Trapezoidal	4	3	0.05	Reach length & slope from B35
4	Trapezoidal	6	2	0.05	Reach length & slope from B14
5	Trapezoidal	7	2	0.05	Reach length & slope from B21
6	Trapezoidal	8	2	0.04	Reach length & slope from B20
7	Trapezoidal	10	1	0.03	Reach length & slope from B19
8	Trapezoidal	12	1	0.03	Reach length & slope from B18
9	Trapezoidal	12	1	0.03	Reach length & slope from B16
10	Rectangular	14	NA	0.03	Reach length & slope from B7
11	Trapezoidal	3	3	0.05	Reach length & slope from B29
12	Trapezoidal	3	3	0.05	slope from B27
13	Trapezoidal	5	2	0.04	Reach length & slope from B24
14	Trapezoidal	5	2	0.05	Reach length & slope from B10
15	Trapezoidal	7	1	0.04	Reach length & slope from B6
16	Trapezoidal	6	2	0.04	Outside Project Boundary
17	Rectangular	15	NA	0.03	Outside Project Boundary
18	Trapezoidal	6	2	0.05	Reach length & slope from B23

Table 2.7A-5: Precipitation Frequency

Storm Event	Precipitation (in)	Storm Event	Precipitation (in)	Storm Event	Precipitation (in)
2yr - 24hr	1.8	2yr - 6hr	1.4	2yr - 1hr	1.0
10yr - 24hr	2.8	10yr - 6hr	2.2		
25yr - 24hr	3.4	25yr - 6hr	2.6		
50yr - 24hr	3.8	50yr - 6hr	3.0		
100yr - 24hr	4.2	100yr - 6hr	3.4	100yr - 1hr	2.6

Source: NOAA Atlas 2 - Volume II - Wyoming

Table 2.7A-6: 100-Year, 24-Hour Storm Discharge Designations

Discharge Designation	Pre-Construction		Post-Construction		Difference	
	Discharge (cfs)	Volume (acre-ft)	Discharge (cfs)	Volume (acre-ft)	Discharge (cfs)	Volume (acre-ft)
Junction 9	835.0	215.2	840.2	216.9	5.2	1.7
Junction 14	2720.9	2061.9	2721.8	2063.8	0.9	1.9
Sink 2	2742.1	2114.1	2748.4	2116.6	6.3	2.5

Table 2.7A-7: HEC-HMS Volume Discharge Designations

Discharge Designation	Precipitation Distribution	Parameter	Recurrence Interval (yr)				
			2	10	25	50	100
Junction 5 - primary confluence prior to entrance into Western Project Boundary	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	224	853.7	1356.7	1728	2122.1
		Vol. (acre-ft.)	177.4	577.9	882.4	1104.5	1339
Junction 9	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	68.4	295.2	506.1	663.6	835
		Vol. (acre-ft.)	28.5	92.8	141.8	177.5	215.2
Junction 10	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	253.4	949.4	1504.3	1915.6	2351.4
		Vol. (acre-ft.)	219.3	714.3	1090.9	1365.4	1655.4
Junction 11	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	267.8	998.9	1583.7	2020.2	2480.8
		Vol. (acre-ft.)	239.4	779.7	1190.9	1490.6	1807.1
Junction 14	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	288.9	1081.6	1725	2204.1	2720.9
		Vol. (acre-ft.)	272.7	888.9	1358.4	1700.5	2061.9
Sink 1 - outlet from Southeastern Project Boundary of Basin 4	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	24.2	109.6	180.3	232.3	287.1
		Vol. (acre-ft.)	8.1	26.4	40.3	50.4	61.1
Sink 2 - major confluence outlet from Northern Project Boundary	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	284.1	1072.5	1716.4	2205.8	2742.1
		Vol. (acre-ft.)	277.2	904.8	1387.6	1740.8	2114.1
Sink 3 - outlet from Southeastern Project Boundary of Basin 3	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	17.1	81.5	133.9	172.1	212.4
		Vol. (acre-ft.)	4.4	14.5	22.1	27.6	33.5
Sink 5 - outlet from Eastern Project Boundary of Basin 1	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	23.5	113.4	187.4	241.3	298.1
		Vol. (acre-ft.)	5.3	17.4	26.5	33.2	40.2
Sink 6 - outlet from Northeastern Project Boundary	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	63.7	308.7	523.8	682.1	849.3
		Vol. (acre-ft.)	19	61.9	94.5	118.4	143.5
Sink 7 - outlet from Northern Project Boundary of portion of Basin 11	SCS Type II, 24-hr Storm Distribution	Peak (cfs)	6.8	32	52.6	68.1	84.5
		Vol. (acre-ft.)	1.7	5.4	8.2	10.3	12.5

Table 2.7A-8: Drainage Basin Designation

Drainage Basin Designation (Sub-watersheds)	Drainage Area (mi^2)	Basin Length (mi)	Basin Slope (%)	Channel Length (ft)	Channel Slope (%)
B1 (partial)	0.47	3343	3.64	2229.17	1.59
B3 (partial)	0.39	3818	1.86	2545	1.00
B4 (partial)	0.716	5865	1.56	3904.2	0.85
B6 (partial)	0.669	5971	2.22	5971	0.63
B7	0.413	6588	1.71	4910.16	0.25
B8	0.530	7682	1.40	5664.56	1.44
B9	1.200	15154	1.19	12857.6	1.19
B10	0.102	2811	1.88	1987.68	1.88
B11 (partial)	0.146	2756	3.53	2755.9	0.15
B12	0.380	6045	3.03	5188.96	3.03
B13	0.670	8841	2.50	7357.04	2.53
B14	2.673	25026	0.33	18085.9	0.33
B15	0.889	11496	1.49	9210.24	1.49
B16	0.008	912	0.86	337.84	0.86
B17	0.756	9669	2.01	7898.24	2.01
B18	0.015	1102	0.10	728.16	0.01
B19	0.183	3244	0.37	4782.24	0.37
B20	0.197	4861	0.65	4073.76	0.65
B21	1.020	12753	0.44	11109.4	0.44
B22	1.578	10158	1.65	7757.2	1.65
B23	0.166	3398	0.92	2378	0.92
B24	0.346	5619	0.75	3690	0.75
B25	0.805	3674	1.65	3673.6	1.65
B26	1.099	9072	1.89	7875.28	1.89
B27	0.107	2814	2.12	2456.72	2.12
B28	1.203	8328	1.50	7708	1.50
B29	0.059	1988	0.74	1987.68	0.74
B30	0.523	8833	1.43	7832.64	1.43
B31	0.631	8840	0.24	7002.8	0.24
B32	1.019	8922	1.16	7940.88	1.16
B33	1.056	12792	1.04	11624.3	1.04
B34	1.173	9479	1.26	7566.96	1.26
B35	1.571	15026	0.24	10184.4	0.24
B36	2.381	18329	0.62	13953.1	0.62
B37	3.569	28001	0.65	25905.4	0.65

Table 2.7A-9: Watershed Characteristics

Basin Name	Shape	COMID	Grid Code	Grid Count	Prod Unit	Basin Area (mi^2)	Project Area (mi^2)	Reach Length (ft)	Reach Slope	Reach Name	Hydraulic Length (L) (ft)	Avg. Watershed Slope (%)	CN
B1	Polygon	5400161	1013335	3800	10e	1.320462	0.47111729	8337.76	0.0159	Porcupine Creek	2889.68	1.59	62
B2	Polygon	5400163	1013336	3705	10e	1.2872574	0.012515432	9774.4	0.0140	NA	551.04	1.4	62
B3	Polygon	5400183	1013346	5317	10e	1.8474885	0.392430496	15514.4	0.0100	NA	3742.48	1	62
B4	Polygon	5400217	1013363	7413	10e	2.5760592	0.716172257	24993.6	0.0085	Spring Creek	5864.64	0.85	62
B5	Polygon	5400193	1013351	2439	10e	0.8474895	0.001048262	8416.48	0.0130	NA	314.88	1.3	62
B6	Polygon	10908013	1112415	5079	10e	1.7648631	0.669608983	10177.84	0.0063	K Bar Draw	7357.04	0.63	62
B7	Polygon	10908025	1112421	1189	10e	0.413127	0.106943909	4910.16	0.0025	NA	3329.2	0.25	62
B9	Polygon	10908031	1112424	3453	10e	1.1999988	0.021646697	12857.6	0.0119	NA	15153.6	1.19	62
B13	Polygon	10908029	1112423	1997	10e	0.6938217	0.669778867	7357.04	0.0253	NA	8911.76	2.53	62
B14	Polygon	10908057	1112437	7693	10e	2.6733564	0.095652414	18085.92	0.0033	Belle Fourche River	25026.4	0.33	62
B15	Polygon	10908037	1112427	2559	10e	0.8891883	0.562356581	9210.24	0.0149	NA	11496.4	1.49	62
B16	Polygon	10908027	1112422	22	10e	0.007722	0.007646711	337.84	0.0086	Belle Fourche River	911.84	0.86	62
B17	Polygon	10908043	1112430	2175	10e	0.7559838	0.755247121	7898.24	0.0201	NA	9669.44	2.01	62
B18	Polygon	10908033	1112425	42	10e	0.0146718	0.014598827	728.16	0.0001	Belle Fourche River	1102.08	0.01	62
B19	Polygon	10908041	1112429	526	10e	0.1826253	0.180159665	4782.24	0.0037	Belle Fourche River	3243.92	0.37	62
B20	Polygon	10908045	1112431	568	10e	0.1972971	0.197214475	4073.76	0.0065	Belle Fourche River	4860.96	0.65	62
B21	Polygon	10908055	1112436	2935	10e	1.0196901	0.885699887	11109.36	0.0044	Belle Fourche River	12752.64	0.44	62
B22	Polygon	10908049	1112433	4542	10e	1.5783768	0.939505624	7757.2	0.0165	NA	10158.16	1.65	62
B23	Polygon	10908047	1112432	479	10e	0.1664091	0.166302536	2378	0.0092	NA	3398.08	0.92	62
B24	Polygon	10908061	1112439	997	10e	0.3463317	0.34618421	3690	0.0075	NA	5618.64	0.75	62
B25	Polygon	10908069	1112443	2318	10e	0.8054046	0.247275428	7711.28	0.0165	NA	3673.6	1.65	62
B26	Polygon	10908073	1112445	3163	10e	1.0992267	0.298903948	7875.28	0.0189	NA	9072.48	1.89	62
B27	Polygon	10908379	1112576	307	10e	0.1065636	0.106620357	2456.72	0.0212	NA	2814.24	2.12	62
B28	Polygon	10908457	1112615	3462	10e	1.2030876	0.38375174	7708	0.0150	NA	8327.92	1.5	62
B29	Polygon	10908065	1112441	171	10e	0.0594594	0.059389516	1987.68	0.0074	NA	1987.68	0.74	62
B30	Polygon	10908051	1112434	1506	10e	0.5231655	0	7832.64	0.0143	NA	8833.04	1.43	62
B31	Polygon	10908227	1112500	1815	10e	0.6308874	0	7002.8	0.0024	Belle Fourche River	8839.6	0.24	62
B32	Polygon	10908059	1112438	2931	10e	1.0185318	0	7940.88	0.0116	NA	8921.6	1.16	62
B33	Polygon	10908071	1112444	3039	10e	1.0559835	0	11624.32	0.0104	NA	12792	1.04	62
B34	Polygon	10908053	1112435	3376	10e	1.1729718	0	7566.96	0.0126	NA	9479.2	1.26	62
B35	Polygon	10908067	1112442	4520	10e	1.5706548	0	10184.4	0.0024	Belle Fourche River	15025.68	0.24	62
B36	Polygon	10908063	1112440	6852	10e	2.3810787	0	13953.12	0.0062	Belle Fourche River	18328.64	0.62	62
B37	Polygon	10908229	1112501	10270	10e	3.5687223	0	25905.44	0.0065	NA	28001.36	0.65	62
						Total	**8.993530003**						

Table 2.7A-10: Belle Fourche Floodplain Cross-section Results

River Station	Q Total (cfs)	Minimum Channel Elevation (ft)	Water Surface Elevation (ft)	Water Surface Depth (ft)	Elevation Gradient Slope (ft/ft)	Channel Velocity (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #
96.42	2742	5038.38	5040.84	2.46	0.005004	4.47	614.09	338.62	0.58
500	2742	5038.38	5042.06	3.68	0.001881	3.45	795.89	310.8	0.38
1000	2742	5039.44	5043.28	3.84	0.003064	4.25	645.78	265.74	0.48
1500	2742	5039.69	5044.19	4.5	0.000597	2.28	1204.32	370.12	0.22
2000	2742	5043.28	5045.54	2.26	0.005894	4.74	578.32	329.54	0.63
2355.63	2742	5047.37	5049.46	2.09	0.01183	5.76	476.31	342.12	0.86
3000	2742	5047.89	5051.86	3.97	0.0017	3.13	876.87	367.1	0.36
3500	2742	5047.89	5052.29	4.4	0.000214	1.16	2372.97	934.59	0.13
3898.01	2742	5047.89	5052.43	4.54	0.000945	2.12	1294.86	626.03	0.26
4500	2742	5047.89	5052.73	4.84	0.000261	1.34	2039.14	741.77	0.14
4967.8	2742	5047.89	5052.83	4.94	0.000164	1.23	2234.72	659.25	0.12
5575.56	2742	5047.89	5052.99	5.1	0.000237	1.65	1660.18	412.74	0.15
6250.54	2742	5048.43	5053.49	5.06	0.000229	1.63	1680.44	415.02	0.14
6613.77	2742	5049	5054.26	5.26	0.00201	4.24	647.41	194.53	0.41
7041.12	2742	5052.16	5056.38	4.22	0.004898	6.21	441.4	145.57	0.63
7500	2742	5055.89	5060.07	4.18	0.00801	6.9	397.51	162.23	0.78
8300.05	2742	5057.73	5062.65	4.92	0.000385	1.9	1443.94	418.31	0.18
8971.46	2742	5059.1	5063.46	4.36	0.001901	3.69	743.09	263.81	0.39
9456.33	2742	5059.7	5064.01	4.31	0.000329	1.77	1549.8	444.59	0.17
9901.24	2742	5059.85	5064.27	4.42	0.000865	2.68	1023.17	324.82	0.27
10500	2742	5061.58	5065.73	4.15	0.0032	4.5	609.93	237.98	0.49
11075.74	2742	5063.71	5068.16	4.45	0.004256	5.25	522.19	199.79	0.57
11500	2742	5065.61	5070.06	4.45	0.005161	5.96	459.73	167.72	0.63
12000	2742	5066.92	5071.73	4.81	0.00071	2.45	1119.17	351.08	0.24
12500	2742	5068.89	5072.66	3.77	0.002772	3.77	727.36	331.81	0.45
12900	2742	5070.37	5074.43	4.06	0.008049	7.22	379.79	145.23	0.79
13418.28	2742	5071.6	5076.28	4.68	0.000979	3.14	872.6	239.42	0.29
14000	2742	5073.81	5077.65	3.84	0.003047	4.17	657.57	276.87	0.48
14372.2	2742	5074.86	5078.75	3.89	0.002494	3.82	716.89	295.68	0.43
14639.71	2742	5076.04	5079.76	3.72	0.00444	5.03	545.46	230.1	0.58
15596.9	2742	5077.75	5081.39	3.64	0.001066	2.47	1111.37	467.07	0.28
16000	2742	5077.75	5081.93	4.18	0.000659	2.14	1279.34	463.66	0.23
18000	2742	5079.71	5084.33	4.62	0.001839	3.88	707.3	224.03	0.38

Table 2.7A-10: Belle Fourche Floodplain Cross-section Results (continued)

River Station	Q Total (cfs)	Minimum Channel Elevation (ft)	Water Surface Elevation (ft)	Water Surface Depth (ft)	Elevation Gradient Slope (ft/ft)	Channel Velocity (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #
18359.34	2742	5081.03	5085.72	4.69	0.001949	3.91	701.38	232.43	0.4
19000	2742	5083.65	5088.35	4.7	0.004007	5.59	490.53	163.15	0.57
19196.27	2742	5084.53	5089.18	4.65	0.003113	4.64	591.1	215.42	0.49
19958.5	2742	5086.6	5090.28	3.68	0.001375	2.48	1105.46	558.54	0.31
20757.77	2742	5087.98	5091.9	3.92	0.005322	4.49	610.15	348.92	0.6
21500	2742	5089.56	5093.53	3.97	0.00111	2.97	924.77	304.5	0.3
22500	2742	5091.93	5095.74	3.81	0.002873	4.49	611.04	220.38	0.47
23000	2742	5094.52	5097.76	3.24	0.004658	5.12	535.69	227.96	0.59
24000	2742	5098.09	5101.59	3.5	0.000763	1.89	1449.72	707.77	0.23
25000	2742	5099.73	5103.69	3.96	0.00103	2.94	932.24	293.61	0.29
26000	2742	5103.9	5108.2	4.3	0.004131	4.93	556.67	229.25	0.56
26500	2742	5106.62	5110.11	3.49	0.004476	4.37	626.8	327.68	0.56
27000	2742	5106.95	5111.54	4.59	0.002085	3.96	692.7	237.17	0.41
27500	2742	5108.16	5112.5	4.34	0.001866	4.07	674.1	203.65	0.39
28000	2742	5113.93	5117.02	3.09	0.008629	5.25	521.86	338.87	0.75
28500	2742	5116.13	5119.08	2.95	0.002071	3.42	801.91	340.45	0.39

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P12249.0D	12/20/1993	Cancelled	RIO ALGOM MINING CORP.	Reno Creek ISL Reservoir	IND_SW; TEM; COMBBU	43-73-29-NWSE	Reno Creek, channel of
P10021.0R	02/27/1914	Fully Adjudicated	Daisy K. Bryan	Bryan Ditch	IRR_SW	43-73-14-NESW	Draw
P12407.0D	05/08/1914	Fully Adjudicated	B.J. Reno	Reno Ditch	DOM_SW; IRR_SW; STO	42-74-3-NESE	Belle Fourche River
P14249.0S	11/06/2000	Complete		K-BAR GROVES PR-2 STOCK RESERVOIR	STO	43-73-8-NESW	Belle Fourche River
P14820.0S	08/05/2002	Complete		GROVE K-BAR STOCK RESERVOIR	STO	43-73-18-SENE	Pasley Draw
P15073.0S	07/10/2002	Complete		DRAKE STOCK RESERVOIR	STO	43-73-19-NESW	Goshawk Creek
P15205.0S	08/20/2001	Complete		IG STOCK RESERVOIR	STO	43-73-16-SESW	K Bar Draw
P15206.0S	08/20/2001	Complete		URBAN STOCK RESERVOIR	STO	43-73-16-NWSW	Grove Draw
P15296.0S	03/29/2002	Cancelled		12-1-4274 ALL NIGHT STOCK RESERVOIR	STO	42-74-1-NESW	Coil Creek
P15490.0S	02/13/2004	Cancelled		RENO 41-12-4274 STOCK RESERVOIR	STO	42-74-12-NENE	Fin Draw
P15495.0S	02/02/2004	Cancelled	F.C. RENO AND SONS INC.	RENO 32-12-4274 STOCK RESERVOIR	STO	42-74-12-SWNE	Sawbuck Draw
P15648.0S	02/11/2004	Cancelled		A5-R5 STOCK RESERVOIR	STO	42-74-14-SESE	Artist Draw
P15702.0S	02/11/2004	Complete		A5-R6 STOCK RESERVOIR	STK	42-73-19-NWNW	Foot Dragging Draw
P15708.0S	11/14/2003	Cancelled		A4-R11 STOCK RESERVOIR	STO	43-73-32-NWNE	Token Draw

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P15736.0S	05/10/2002	Unadjudicated		33-3-4274 Enl. of the Belle Fourche No. 2 Reservoir Stock Reservoir	STO	42-74-3-NWSE	Belle Fourche River
P16030.0S	06/15/2004	Complete		LEAVITT 21-6-4273 STOCK RESERVOIR	STO	42-73-6-NENW	Lettuce Draw
P16059.0S	02/27/2002	Incomplete		MEADOWLARK STOCK RESERVOIR	STO	43-73-36-NESW	Vault Draw
P16331.0S	06/15/2004	Cancelled		LEAVITT 24-31-4373 STOCK RESERVOIR	STO	43-73-31-SESW	Sawbuck Draw
P16605.0S	07/27/2004	Cancelled	F.C. RENO & SONS INC	RENO 34-6-4273 STOCK RESERVOIR	STO	42-73-6-SWSE	Dead Presidents Draw
P16606.0S	06/15/2004	Cancelled	F.C. RENO & SONS INC	RENO 22-7-4273 STOCK RESERVOIR	STO	42-73-7-SENW	Moola Draw
P16607.0S	06/15/2004	Cancelled	F.C. RENO & SONS INC	RENO 41-7-4273 STOCK RESERVOIR	STO	42-73-7-NENE	Dead Presidents Draw
P16608.0S	06/15/2004	Cancelled	F.C. RENO & SONS INC	RENO 13-6-4273 STOCK RESERVOIR	STO	42-73-6-NWSW	Sawbuck Draw
P1683.0S	11/13/1956	Complete	D. B. Moore	ALL NIGHT STOCK RESERVOIR	STO	43-74-13-NESE	All Night Creek
P16856.0S	05/26/2005	Complete		ROUSH 42-22-4374 STOCK RESERVOIR	STO	43-74-22-SENE	Party Draw
P17030.0S	05/31/2005	Unadjudicated		Enl of Reno 44-11-4274 Stock Reservoir	STO	42-74-11-SESE	Artist Draw
P17055.0S	07/22/2005	Complete		GROVES 14-23-4373 STOCK RESERVOIR	STO	43-73-23-SWSW	Porcupine Creek
P17056.0S	07/22/2005	Complete		GROVES 31-22-4373 STOCK RESERVOIR	STO	43-73-22-NWNE	Quill Draw
P17057.0S	07/22/2005	Complete		GROVES 22-33-4373 STOCK RESERVOIR	STO	43-73-33-SENW	Spring Creek

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P17059.0S	07/22/2005	Complete		ATWOOD 14-23-4374 STOCK RESERVOIR	STO	43-74-23-SWSW	Party Draw
P17192.0S	09/14/2005	Complete		GROVES 33-26-4373 STOCK RESERVOIR	STO	43-73-26-NWSE	Grove Draw
P17194.0S	09/14/2005	Cancelled		GROVES 42-32-4373 STOCK RESERVOIR	STO	43-73-32-SENE	Token Draw
P17359.0S	09/09/2005	Complete		SOFT SERVE STOCK RESERVOIR	STO	43-74-26-NESE	Dairy Draw
P17458.0S	12/02/2005	Complete		LEAVITT 13-32-4373 STOCK RESERVOIR	STO	43-73-32-NWSW	FM Draw
P17459.0S	12/02/2005	Incomplete		LEAVITT 11-03-4273 STOCK RESERVOIR	STO	42-73-3-SWNW	Spring Creek
P17461.0S	12/02/2005	Incomplete		LEAVITT 34-33-4373 STOCK RESERVOIR	STO	43-73-33-SWSE	Spring Creek
P17661.0S	01/17/2006	Incomplete		LEAVITT 31-31-4373 STOCK RESERVOIR	STO	43-73-31-NWNE	Belle Fourche River
P17700.0S	01/30/2006	Unadjudicated		Reno 14-08-4273 Stock Reservoir	STO	42-73-8-SWSW	Little Bates Creek
P17708.0S	01/30/2006	Complete		RENO 42-06-4273 STOCK RESERVOIR	STO	42-73-6-SENE	AM Draw
P17709.0S	01/30/2006	Complete		LEAVITT 11-05-4273 STOCK RESERVOIR	STO	42-73-5-NWNW	XM Draw
P17710.0S	01/30/2006	Complete		LEAVITT 44-31-4373 STOCK RESERVOIR	STO	43-73-31-SESE	Radio Draw
P17734.0S	02/11/2004	Unadjudicated	James Suchan	A5-R4 Stock Reservoir	STO	42-74-15-SESE	Ralph Draw
P17810.0S	03/03/2006	Complete		BRIDLE BIT 32-10-4273 STOCK RESERVOIR	STO	42-73-10-SWNE	Rally Draw
P1819.0R	05/28/1910	Unadjudicated	George R. Amos	Vonburg Reservoir	DOM_SW; STO; COMBBU	43-73-14-SWSW	All Night Creek

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P19020.0S	11/14/2008	Complete		MIDNIGHT STOCK RESERVOIR	STO	43-73-13-SWSW	North Porcupine Creek
P19054.0S	04/21/2008	Incomplete		CHEROKEE STOCK RESERVOIR	STO	42-73-2-NWNW	West Draw
P19055.0S	04/21/2008	Incomplete		CUSTER STOCK RESERVOIR	STO	42-73-2-NESW	Custer Draw
P19056.0S	04/21/2008	Incomplete		DAKOTA STOCK RESERVOIR	STO	43-73-35-NWSW	Dakota Ridge Draw
P19057.0S	04/21/2008	Incomplete		WRANGLER STOCK RESERVOIR	STO	42-73-2-SWSE	Custer Draw
P24842.0D	09/19/1975	Cancelled		Belle Fourche Pump Point	IND_SW; MIS_SW	43-73-18-NWNE	Belle Fourche River
P25307.0D	02/04/1977	Cancelled	Southland Royalty Co.	All Night Creek Federal #1-7 Water Haul	DRI; IND_SW; OIL; TEM	43-73-8-NESW	Belle Fourche River
P2593.0R	02/27/1914	Fully Adjudicated	Daisy K. Bryan	Bryan Reservoir	DOM_SW; IRR_SW; COMBBU	43-73-14-NESW	Draw
P2653.0R	05/08/1914	Fully Adjudicated	B. J. Reno	Reno Reservoir	DOM_SW; IRR_SW; STO; COMBBU	42-74-3-NESE	Belle Fourche River
P4160.0S	01/22/1964	Cancelled	Ruth Romaker	BARREL STOCK RESERVOIR	STO	43-73-21-SWNW	Dry Gulch (8-43-73)
P4163.0S	01/22/1964	Cancelled	Ruth Romaker	CAMP STOCK RESERVOIR	STO	43-73-17-SWSE	Dry Gulch (8-43-73)
P4164.0S	01/22/1964	Cancelled	Ruth Romaker	SOUTH FORK STOCK RESERVOIR	STO	43-73-21-NWSE	North Fork Gulch
P4165.0S	01/22/1964	Cancelled	Ruth Romaker	TOOHEY STOCK RESERVOIR	STO	43-73-20-SESE	Camp Draw
P6538.0S	11/28/1969	No Status	Clayton and Cindy McGuire	Patterson No. 1 Stock Reservoir	STO	43-73-26-NWNE	Porcupine Creek

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P6539.0S	11/28/1969	Unadjudicated	Clayton and Cindy McGuire	ELKHORNStock Reservoir	STO	43-73-25-SWNW	Porcupine Creek
P721.0R	08/12/1905	Fully Adjudicated	GEO. KEELINE & SON	Belle Fourche Reservoir	DOM_SW; STO; COMBBU	43-73-30-SWSE	Belle Fourche River
P7319.0S	08/14/1972	No Status		Mary Stock Reservoir	STO	42-73-18-SENE	MARY DRAW
P7933.0R	05/02/1978	Cancelled	ROCKY MOUNTAIN ENERGY COMPANY	Evaporation Reservoir (Reno Ranch Pilot Plant)	IND_SW	43-73-27-NWNW	North Fork Dry Gulch
P7934.0R	05/02/1978	Cancelled	Rocky Mountain Energies Co.	Contingency (Reno Ranch Pilot Plant) Reservoir	IND_SW	43-73-27-SWNW	Middle Fork Dry Gulch
P799.0R	01/17/1906	Fully Adjudicated	George A. Keeline	Belle Fourche No. 2 Reservoir	STO	42-74-3-NWSE	Belle Fourche River
P967.0R	12/18/1906	Fully Adjudicated	George A. Keeline	Archibald Reservoir	STO	43-73-21-SESW	Dry Gulch (8-43-73)
P19328.0S	11/04/2009	Complete	ATWOOD-LAUR FAMILY TRUST	BAKER 2 STOCK RESERVOIR	STO	43-73-30-NESW	Dairy Draw
P19366.0S	01/27/2010	Complete	BERNICE GROVES REVOCABLE TRUST	ENLARGEMENT OF GROVES 31-22-4373 (17056S)	STO	43-73-22-NWNE	Quill Draw
P19368.0S	08/12/2010	Complete	RICHARD W. LEAVITT TRUST	ENL. LEAVITT 13-32-4373 (17458S)	STK	43-73-32-NWSW	FM Draw
P19389.0S	03/29/2002	Complete	DRAKE FAMILY REVOCABLE LAND TRUST	DRAKE #2	STO	43-73-9-NESE	Aspen Leaf Draw
P19416.0S	11/23/2009	Complete	BERNICE GROVES REVOCABLE TRUST	ENL. GROVES 33-26-4373	STO	43-73-26-NWSE	Grove Draw
P19441.0S	10/12/2009	Complete	BERNICE GROVES REVOCABLE TRUST	GROVES 42-32-4373	STO	43-73-32-SENE	Token Draw

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P19461.0S	02/12/2010	Complete	BERNICE GROVES REVOCABLE TRUST	ENLARGEMENT OF GROVES 22-33-4373 STOCK RESERVOIR	STK	43-73-33-SENW	Spring Creek
P19470.0S	02/27/2002	Complete	RICHARD W. LEAVITT TRUST	LARIAT STOCK RESERVOIR	STO	43-73-24-SESW	North Porcupine Creek
P19489.0S	06/23/2011	Complete	Will Ramsbottom	RAMSBOTTOM 43-35-4274 STOCK RESERVOIR	STO	42-74-35-NESE	Bates Creek
P19496.0S	02/12/2010	Complete	BERNICE GROVES REVOCABLE TRUST	ENLARGEMENT OF GROVES 14-23-4373 STOCK RESERVOIR	STO	43-73-23-SWSW	Porcupine Creek
P19532.0S	11/27/2009	Complete	WY OFFICE OF STATE LANDS AND INVESTMENTS	ENLARGEMENT OF IG (P15205S)	STO	43-73-16-SESW	K Bar Draw
30/1/370S	9/17/2001	Rejected	Sunburst Ranch, Inc.	Bernice Stock Reservoir	STO	43-73-10-NWSE	
31/1/51S	2/27/2002	Unadjudicated	Richard W. Leavitt Trust	Dakota Stock Reservoir	STO	43-73-35-NWSW	
31/2/51S	2/27/2002	Unadjudicated	Richard Leavitt Trust	Lariat Stock Reservoir	STO	43-73-24-SESW	North Porcupine Creek
31/2/67S	3/29/2002	Unadjudicated	URBAN GROVES	Urban Stock Reservoir	STO	43-73-9-NESE	Belle Fourche River
31/3/51S	2/27/2002	Rejected	Richard Leavitt Trust	Midnight Stock Reservoir	STO	43-73-13-SESW	North Porcupine Creek
31/4/51S	2/27/2002	Rejected	Richard W. Leavitt Trust-Wells Fargo	Mustang Stock Reservoir	STO	43-73-14-NWSE	
31/5/50R	2/27/2002	Rejected	Richard W. Leavitt Trust-Wells Fargo	Daisy Reservoir	IRR,STO	43-73-24-0	
31/6/50S	2/27/2002	Rejected	Richard W. Leavitt Trust-Wells Fargo	Cherokee Stock Reservoir	STO	42-73-2-NWNW	

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
32/6/200S	8/24/2004	Rejected	Williams Production RMT Co. Iberlin Ranch LTD Partnership	34-4-4274 Stock Reservoir	STO	42-74-4-0	
33/1/175S	1/17/2006	Rejected	Iberlin Ranch Ltd.Partnership	Iberlin 34-04-4274 Stock Reservoir	STO	42-74-4-0	
34/1/393S	10/12/2009	Unadjudicated	Bernice Groves Revocable Trust	Groves 42-32-4373 Stock Reservoir	STO	43-73-32-SENE	Token Draw
35/1/12S	11/27/2009	Unadjudicated	Wyoming Office of State Lands and Investments; Urban Groves	Enlargement of IG Stock Reservoir	STO	43-73-16-SESW	K Bar Draw
35/1/5S	11/4/2009	Unadjudicated	Atwood-Laur Family Trust	Baker 2 Stock Reservoir	STO	43-73-30-NESW	Dairy Draw
35/2/14S	12/2/2009	Unadjudicated	Bernice Groves Revocable Trust	Groves #1 Stock Reservoir	STO	43-73-14-NESW	Groves Draw
35/5/9S	11/23/2009	Unadjudicated	Bernice Groves	Enlargement of Groves 33-26-4373 Stock Reservoir	STO	43-73-26-NWSE	Grove Draw
35/6/13S	12/2/2009	Unadjudicated	Sunburst Ranch, Inc.	Sunburst #2 Stock Reservoir	STO	43-73-10-SWSE	Twig Draw
C42/282A	5/8/1914	Adjudicated	B. J. Reno	Reno Ditch	IRR,STO,DOM	42-74-2-NWSW	Belle Fourche River
P14201D	6/28/1916	Expired	AUSTIN H. HOODENPYLE; JESSIE D. HOODENPYLE	Austin Ditch	IRR	43-73-18-SWNE	All Night Creek
P14902S	7/10/2002	Unadjudicated	James & Edra Drake	O-K Stock Reservoir	STO	43-73-17-SWSE	Dry Gulch
P15298S	3/29/2002	Unadjudicated	Robert Roush	All Night 11-27-4374 Stock Reservoir	STO	43-74-27-0	Midnight Draw

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P15299S	5/20/2002	Unadjudicated	Atwood Family LTD Partnership	All Night 22-35-4374 Stock Reservoir	STO	43-74-35-0	Forest Draw
P15306S	3/29/2002	Unadjudicated	Julian Spittler	All Night 14-24-4374 Stock Reservoir	STO	43-74-24-0	Goshawk Creek
P15307S	3/29/2002	Unadjudicated	Julian Spittler	All Night Pit 21-25-4374 Stock Reservoir	STO	43-74-25-0	Pit Draw
P15415S	1/30/2004	Unadjudicated	Floyd C. Reno & Sons, Inc.	Reno 44-11-4274 Stock Reservoir	STO	42-74-11-0	Artist Draw
P15416S	1/30/2004	Unadjudicated	F.C. Reno and Sons Inc.	Reno 41-11-4274 Stock Reservoir	STO	42-74-11-0	Charm Draw
P15493S	1/30/2004	Unadjudicated	WILLIAMS PRODUCTION RMT**Robert Roush	Roush 43-10-4274 Stock Reservoir	STO	42-74-10-0	RMT Draw
P15494S	2/11/2004	Unadjudicated	WILLIAMS PRODUCTION RMT COMPANY; Robert Roush	A5-R2 Stock Reservoir	STO	42-74-11-SWSW	R2 Draw
P15647S	2/11/2004	Unadjudicated	Karen Turner** Williams Production RMT Co.	A5-R3 Stock Reservoir	STO	42-74-13-0	Tomorrow Gulch
P15649S	2/11/2004	Unadjudicated	Williams Production RMT Co.**Karen Turner	A5-R8 Stock Reservoir	STO	42-74-24-0	Hang-up Draw
P15734S	5/10/2002	Unadjudicated		14-2-4274 Stock Reservoir	STO	42-74-2-0	RMT Draw
P15735S	5/10/2002	Unadjudicated		Allnight 14-4-4274 Stock Reservoir	STO	42-74-4-0	Pencil Draw

Table 2.7A-11: Surface Water Rights within Two Miles of the Proposed Project Area (Continued)

Permit #	Priority Date	Status	Applicant	Facility Name	Uses	Location (Tns-Rng-Sec-1/4 1/4)	SourceName
P15975S	7/27/2004	Unadjudicated	WILLIAMS PRODUCTION RMT COMPANY; F.C. Reno and Sons Inc.	Reno 44-1-4274 Stock Reservoir	STO	42-74-1-0	Sawbuck Draw
P16748S	11/5/2004	Unadjudicated	Robert Roush	42-10-4274 Stock Reservoir	STO	42-74-10-0	RMT Draw
P16794S	2/7/2003	Unadjudicated	Robert Roush	East Fordyce Stock Reservoir	STO	43-74-13-0	Night Owl Draw
P17699S	1/30/2006	Unadjudicated	F.C. Reno & Sons, Inc.	Reno 13-05-4273 Stock Reservoir	STO	42-73-5-NWSW	AM Draw
P8423D	3/7/1908	Adjudicated	ELMER RENO	Reno No. 2 Ditch	IRR,DOM	43-73-30-SWSE	Porcupine Creek

Source: Wyoming SEO Database
Class of Use Codes
ADJ: Adjudicated; DOM: Domestic;
EXP: Expired; GST: Good Standingp;
IRR: Irrigation; PU: Point of use Non-irrigation (Not actual status);
PUD: Point of Diversion (Not actual status); PUO: Point of Reservoir Outlet (Not actual status);
REJ: Rejected by the State Engineer; STO: Stock;
UNA: Unadjudicated

Table 2.7A-12: Wyoming Surface Water Classes and Use Designation

Class	Drinking	Game Fish	Non-Game Fish	Fish Consumption	Other Aquatic Life	Recreation	Wildlife	Agriculture	Industry	Scenic Value
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2AB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2A	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
2B	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3A	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
3C	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
4A	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4B	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
4C	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Source: WDEQ/WQD 2001

Table 2.7A-13: Surface Water Monitoring Results

Parameter	Units	Lab Detection Limit	SW1				SW2				SW3				SW4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			Dry	Dry	3/15/2011	6/13/2011	Dry	Dry	3/17/2011	Dry	9/21/2010	Dry	3/16/2011	Dry	Dry	Dry	3/15/2011	Dry
Field																		
Field pH	s.u.				7.28	8.36			6.59		8.82		8.34				6.89	
Field Conductivity	µmhos/cm				203	3025			66		2920		208				38	
Dissolved Oxygen	mg/L				7.69	959			9.18		6.48		11.35				7.64	
Field Turbidity	NTU				4.2	48.2			1.8		maxed out		maxed out				41.9	
Temperature	°C				8.2	25.23			5.22		21.6		4.52				11.46	
ORP	mV				373.9	109			424.4		358		387.3				357	
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5			37	352			37		1600		207				20	
Alkalinity, Bicarbonate as HCO3	mg/L	5			46	429			46		1690		244				25	
Alkalinty, Carbonate as CO3	mg/L	5			<5	<5			<5		129		<5				<5	
Chloride	mg/L	1			3	33			8		30		4				<1	
Flouride	mg/L	0.1			<0.1	0.3			<0.1		2.8		0.4				<0.1	
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1			<0.1	<0.1			<0.1		<0.1		<0.1				<0.1	
Sulfate	mg/L	1			98	1550			2		<1		6				<1	
Calcium	mg/L	1			31	349			11		17		8				5	
Magnesium	mg/L	1			8	165			2		20		3				<1	
Potassium	mg/L	1			7	16			7		22		9				8	
Sodium	mg/L	1			11	189			4		647		74				<1	
Nitrogen, Ammonia (As N)	mg/L	0.1			<0.1	<0.1			<0.1		0.3		0.3				<0.1	
Silica as SiO2	mg/L	1			4	10			7		8		15				5	
General Parameters																		
Laboratory pH	s.u.	0.1			7.6	8.3			7.4		8.9		8.5				7.3	
Electrical Conductivity	µmhos/cm	5			291	3050			102		2590		337				49	
Total Dissolved Solids (180)	mg/L	10			210	2820			100		1950		540				60	
Total Suspended Solids	mg/L	5			11	56			<5		430		720				16	
Turbidity	NTU	0.1			3.6	59.3			1.5		2990		2040				37.9	
Data Quality																		
Cation Sum	meq/L	0.01			2.87	39.66			1.01		31.17		4.12				0.51	
Anion Sum	meq/L	0.01			2.94	40.19			1.13		33.01		4.4				0.52	
Cation-Anion Balance (±5%)	%	0.01			0.97	0.66			-5.61		2.86		3.19				0.98	
Solids, Total Dissolved (Calc)	mg/L	10			180	2510			60		1700		230				30	
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01			1.17	1.12			1.67		---		2.35				2	
Metals-Dissolved																		
Aluminum	mg/L	0.1			<0.1	<0.1			<0.1		0.8		2.1				0.3	
Arsenic	mg/L	0.003			<0.001	0.003			<0.001		0.02		0.004				<0.001	
Barium	mg/L	0.1			<0.1	<0.1			<0.1		0.2		<0.1				<0.1	
Boron	mg/L	0.1			<0.1	<0.1			<0.1		<0.1		<0.1				<0.1	
Cadmium	mg/L	0.001			<0.001	<0.001			<0.001		<0.001		<0.001				<0.001	
Chromium	mg/L	0.01			<0.01	<0.01			<0.01		<0.01		<0.01				<0.01	
Copper	mg/L	0.01			<0.01	<0.01			<0.01		0.02		<0.01				<0.01	
Iron	mg/L	0.05			<0.05	<0.05			<0.05		0.46		1.52				0.21	
Lead	mg/L	0.01			<0.01	<0.01			<0.01		<0.01		<0.01				<0.01	
Manganese	mg/L	0.01			<0.01	0.17			<0.01		0.05		0.02				<0.01	
Mercury	mg/L	0.001			<0.001	<0.001			<0.001		<0.001		<0.001				<0.001	
Molybdenum	mg/L	0.01			<0.01	<0.01			<0.01		<0.01		<0.01				<0.01	
Nickel	mg/L	0.05			<0.05	<0.05			<0.05		<0.05		<0.05				<0.05	
Selenium	mg/L	0.005			<0.005	<0.005			<0.005		0.006		<0.005				<0.005	
Uranium	mg/L	0.0003			0.0014	0.0247			<0.0003		0.0092		0.0012				<0.0003	
Vanadium	mg/L	0.1			<0.1	<0.1			<0.1		<0.1		<0.1				<0.1	
Zinc	mg/L	0.01			<0.01	<0.01			<0.01		<0.01		<0.01				<0.01	
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003			<0.0003	<0.0003			<0.0003		0.0021		0.0011				<0.0003	
Metals-Total	mg/L																	
Iron	mg/L	0.05			0.06	3.99			<0.05		45.5		44				1.08	
Manganese	mg/L	0.01			0.02	0.65			<0.01		1.12		0.51				<0.01	
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4			2	18.4			2		9.8		3.3				2	
Gross Beta	pCi/L	7			5.8	19.5			6		15.5		9.9				6.1	
Lead 210	pCi/L	1			<1	1.2			1.5		<1		2.4				<1	
Polonium 210	pCi/L	1			<1	<1			<1		<1		<1				<1	
Radium 226	pCi/L	0.2			<0.2	0.3			<0.2		0.5		1.7				<0.2	
Radium 228	pCi/L	1			<1	<1			<1		<1		2.4				<1	
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2		<0.2		<0.2				<0.2	
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1			1.2	<1			1.4		6.3		4.9				1.7	
Polonium 210	pCi/L	1			<1	<1			<1		<1		<1				<1	
Radium 226	pCi/L	0.2			<0.2	<0.2			<0.2		2.8		2.4				<0.2	
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2		0.3		0.9				<0.2	
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50			<50	65			<50		---		<50				<50	

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Table 2.7A-13: Surface Water Monitoring Results (Continued)

Parameter	Units	Lab Detection Limit	SW5				SW6				SW7				SW8			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	3/16/2011	6/22/2011	Dry	Dry	3/16/2011	Dry
Field																		
Field pH	s.u.												7.73	8.76			7.82	
Field Conductivity	µmhos/cm												157	334			742	
Dissolved Oxygen	mg/L												11.61	8.49			12.46	
Field Turbidity	NTU												33	4.4			7.3	
Temperature	°C												5.88	22.83			6.33	
ORP	mV												384.2	72.5			391	
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5											35	126			110	
Alkalinity, Bicarbonate as HCO3	mg/L	5											43	148			134	
Alkalinty, Carbonate as CO3	mg/L	5											<5	<5			<5	
Chloride	mg/L	1											2	<1			3	
Flouride	mg/L	0.1											<0.1	<0.1			<0.1	
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1											<0.1	<0.1			<0.1	
Sulfate	mg/L	1											79	44			473	
Calcium	mg/L	1											27	38			110	
Magnesium	mg/L	1											6	10			18	
Potassium	mg/L	1											12	10			7	
Sodium	mg/L	1											7	9			120	
Nitrogen, Ammonia (As N)	mg/L	0.1											<0.1	<0.1			<0.1	
Silica as SiO2	mg/L	1											5	8			6	
General Parameters																		
Laboratory pH	s.u.	0.1											7.5	8.4			8.1	
Electrical Conductivity	µmhos/cm	5											234	359			1090	
Total Dissolved Solids (180)	mg/L	10											180	220			870	
Total Suspended Solids	mg/L	5											26	<5			<5	
Turbidity	NTU	0.1											22	2.6			3.9	
Data Quality																		
Cation Sum	meq/L	0.01											2.41	3.31			12.41	
Anion Sum	meq/L	0.01											2.41	3.44			12.12	
Cation-Anion Balance (±5%)	%	0.01											---	1.89			1.18	
Solids, Total Dissolved (Calc)	mg/L	10											150	190			800	
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01											1.2	1.16			1.09	
Metals-Dissolved																		
Aluminum	mg/L	0.1											<0.1	<0.1			0.4	
Arsenic	mg/L	0.001											<0.001	0.005			<0.001	
Barium	mg/L	0.1											<0.1	<0.1			<0.1	
Boron	mg/L	0.1											<0.1	<0.1			<0.1	
Cadmium	mg/L	0.001											<0.001	<0.001			<0.001	
Chromium	mg/L	0.01											<0.01	<0.01			<0.01	
Copper	mg/L	0.01											<0.01	<0.01			<0.01	
Iron	mg/L	0.05											0.1	0.22			0.28	
Lead	mg/L	0.01											<0.01	<0.01			<0.01	
Manganese	mg/L	0.01											0.05	0.04			<0.01	
Mercury	mg/L	0.001											<0.001	<0.001			<0.001	
Molybdenum	mg/L	0.01											<0.01	<0.01			<0.01	
Nickel	mg/L	0.05											<0.05	<0.05			<0.05	
Selenium	mg/L	0.005											<0.005	<0.005			<0.005	
Uranium	mg/L	0.0003											0.0014	0.0037			0.0266	
Vanadium	mg/L	0.1											<0.1	<0.1			<0.1	
Zinc	mg/L	0.01											<0.01	<0.01			<0.01	
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003											0.0005	<0.0003			<0.0003	
Metals-Total	mg/L																	
Iron	mg/L	0.05											0.86	0.46			0.25	
Manganese	mg/L	0.01											0.07	0.06			0.12	
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4											2	3.2			15.9	
Gross Beta	pCi/L	7											9.4	9.4			8.9	
Lead 210	pCi/L	1											<1	<1			<1	
Polonium 210	pCi/L	1											<1	<1			<1	
Radium 226	pCi/L	0.2											<0.2	<0.2			0.5	
Radium 228	pCi/L	1											<1	<1			<1	
Thorium 230	pCi/L	0.2											<0.2	<0.2			<0.2	
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1											<1	<1			<1	
Polonium 210	pCi/L	1											<1	<1			<1	
Radium 226	pCi/L	0.2											<0.2	<0.2			<0.2	
Thorium 230	pCi/L	0.2											<0.2	<0.2			<0.2	
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50											<50	<50			258	

Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry

Table 2.7A-13: Surface Water Monitoring Results (Continued)

Parameter	Units	Lab Detection Limit	SW9				SW10				SW11				SW12			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			Dry	Dry	3/16/2011	6/22/2011	Dry	Dry	3/15/2011	6/22/2011	9/21/2010	12/29/2010	3/15/2011	6/22/2011	Dry	Dry	3/16/2011	Dry
Field																		
Field pH	s.u.				7.76	9.33			6.88	9.35	9.23	9.58	7.22	8.86			8.09	
Field Conductivity	µmhos/cm				59	250			73	869	1620	928	54	289			271	
Dissolved Oxygen	mg/L				11.06	8.3			8.69	11.06	6.96	14.69	8.33	7.68			11.24	
Field Turbidity	NTU				11.2	35.4			11.5	maxed out	412	234	17.7	36.8			3.7	
Temperature	°C				7.19	26.06			5.59	24.64	16.2	0.49	3.68	24.36			9.49	
ORP	mV				379.2	60.9			384.5	77.9	341	358.7	397.7	73.7			380.7	
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5			38	124			34	456	856	1030	46	81			50	
Alkalinity, Bicarbonate as HCO3	mg/L	5			46	130			41	414	672	917	56	99			61	
Alkalinty, Carbonate as CO3	mg/L	5			<5	11			<5	70	183	170	<5	<5			<5	
Chloride	mg/L	1			2	<1			<1	6	10	13	<1	7			4	
Flouride	mg/L	0.1			<0.1	0.2			<0.1	0.6	0.9	1.1	<0.1	<0.1			<0.1	
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1			<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	
Sulfate	mg/L	1			4	5			16	3	3	6	2	52			135	
Calcium	mg/L	1			6	18			13	8	6	8	5	36			52	
Magnesium	mg/L	1			2	4			3	4	6	7	<1	6			11	
Potassium	mg/L	1			6	7			7	8	10	11	4	10			10	
Sodium	mg/L	1			6	25			2	194	369	417	12	4			5	
Nitrogen, Ammonia (As N)	mg/L	0.1			<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	2			<0.1	
Silica as SiO2	mg/L	1			9	5			4	10	8	9	7	8			6	
General Parameters																		
Laboratory pH	s.u.	0.1			7.7	9			7.5	9.3	9.5	9.4	7.5	8.3			7.9	
Electrical Conductivity	µmhos/cm	5			83	260			112	914	1460	1690	91	310			373	
Total Dissolved Solids (180)	mg/L	10			80	160			90	530	1010	1180	80	190			300	
Total Suspended Solids	mg/L	5			12	8			<5	40	156	58	<5	<5			<5	
Turbidity	NTU	0.1			8.5	33			6.4	157	329	255	17.8	31.3			2.9	
Data Quality																		
Cation Sum	meq/L	0.01			0.89	2.5			1.11	9.36	17.04	19.4	0.97	2.73			3.95	
Anion Sum	meq/L	0.01			0.89	2.6			1.12	9.39	17.51	21.23	1.05	2.91			3.9	
Cation-Anion Balance (±5%)	%	0.01			---	-1.96			0.4	0.2	1.36	4.52	-3.96	-3.19			0.67	
Solids, Total Dissolved (Calc)	mg/L	10			50	130			60	500	920	1080	50	160			250	
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01			1.6	1.23			1.5	1.06	---	---	1.6	1.19			1.22	
Metals-Dissolved																		
Aluminum	mg/L	0.1			<0.1	0.3			<0.1	1.8	1.3	1.1	0.9	0.4			<0.1	
Arsenic	mg/L	0.001			<0.001	0.006			<0.001	0.008	0.014	0.014	<0.001	0.003			<0.001	
Barium	mg/L	0.1			<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	
Boron	mg/L	0.1			<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	
Cadmium	mg/L	0.001			<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001	
Chromium	mg/L	0.01			<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	
Copper	mg/L	0.01			<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	
Iron	mg/L	0.05			<0.05	0.23			0.09	0.87	0.69	0.55	0.51	0.25			<0.05	
Lead	mg/L	0.01			<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	
Manganese	mg/L	0.01			0.12	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	0.03			0.02	
Mercury	mg/L	0.001			<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001	
Molybdenum	mg/L	0.01			<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	
Nickel	mg/L	0.05			<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	
Selenium	mg/L	0.005			<0.005	<0.005			<0.005	<0.005	0.006	<0.005	<0.005	<0.005			<0.005	
Uranium	mg/L	0.0003			0.0006	0.0017			<0.0003	0.0026	0.0057	0.01	<0.0003	0.0009			0.0019	
Vanadium	mg/L	0.1			<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	
Zinc	mg/L	0.01			<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003			<0.0003	<0.0003			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003			<0.0003	
Metals-Total	mg/L																	
Iron	mg/L	0.05			0.4	2.19			0.15	4.5	6.1	7.22	0.9	2.05			0.1	
Manganese	mg/L	0.01			<0.01	0.03			<0.01	0.12	0.18	0.15	<0.01	0.06			0.02	
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4			2	2.1			2	5	12	8.9	2	2			2	
Gross Beta	pCi/L	7			4.3	6.9			5.7	8.1	5.3	8.6	3	8.6			8.5	
Lead 210	pCi/L	1			9.5	<1			<1	<1	<1	<1	1.2	<1			1.2	
Polonium 210	pCi/L	1			<1	<1			<1	<1	<1	<1	<1	<1			<1	
Radium 226	pCi/L	0.2			<0.2	<0.2			<0.2	0.3	0.4	0.544	<0.2	<0.2			<0.2	
Radium 228	pCi/L	1			<1	<1			<1	1.6	1.2	<1	<1	1.2			<1	
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1			<1	<1			<1	1.1	1.2	<1	<1	1.2			<1	
Polonium 210	pCi/L	1			<1	<1			<1	<1	<1	<1	<1	<1			<1	
Radium 226	pCi/L	0.2			<0.2	<0.2			<0.2	<0.2	0.4	0.342	<0.2	<0.2			<0.2	
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2	<0.2	<0.2	0.6	<0.2	<0.2			<0.2	
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50			<50	<50			<50	<50	0	<50	<50	<50			<50	

Table 2.7A-13: Surface Water Monitoring Results (Continued)

Parameter	Units	Lab Detection Limit	SW13				SW14				SW15				SW16			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			Dry	Dry	3/17/2011	6/23/2011	Dry	Dry	3/17/2011	6/23/2011	Dry	Dry	3/17/2011	Dry	9/21/2010	12/29/2010	3/17/2011	6/28/2011
Field																		
Field pH	s.u.				6.38	9.22			6.53	9.68			6.35		8.94	8.25	6.64	9.2
Field Conductivity	µmhos/cm				54	286			210	1635			24		3500	1568	641	1841
Dissolved Oxygen	mg/L				10.42	8.82			9.18	10.90			4.45		8.51	8.84	13.07	8.45
Field Turbidity	NTU				16.4	5.9			4.34	14.9			3.3		7	283	2.5	4.9
Temperature	°C				4.59	22.64			7.2	25.14			4.27		18	0.29	2.69	21.48
ORP	mV				455.6	64.8			217.25	-128.9			432.7		350	350.3	451.9	158.3
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5			39	121			41	65			17		75	79	71	43
Alkalinity, Bicarbonate as HCO3	mg/L	5			47	141			50	60			21		91	97	87	48
Alkalinty, Carbonate as CO3	mg/L	5			<5	<5			<5	9			<5		<5	<5	<5	<5
Chloride	mg/L	1			<1	4			3	5			<1		6	5	2	11
Flouride	mg/L	0.1			<0.1	0.2			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1			4	23			114	711			<1		1680	1560	549	846
Calcium	mg/L	1			11	40			24	102			5		252	221	98	114
Magnesium	mg/L	1			2	10			5	20			<1		44	35	12	23
Potassium	mg/L	1			7	7			10	13			5		25	14	7	15
Sodium	mg/L	1			<1	3			35	247			<1		500	423	134	264
Nitrogen, Ammonia (As N)	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	0.4	<0.1	<0.1
Silica as SiO2	mg/L	1			4	3			4	2			2		2	8	4	4
General Parameters																		
Laboratory pH	s.u.	0.1			7.6	8.4			7.5	9.0			7		8.1	7.8	7	8.7
Electrical Conductivity	µmhos/cm	5			88	301			337	1760			41		3110	2680	1080	1940
Total Dissolved Solids (180)	mg/L	10			90	170			260	1180			30		2780	2420	870	1430
Total Suspended Solids	mg/L	5			16	<5			6	5			<5		16	438	<5	6
Turbidity	NTU	0.1			14.7	5.2			6.1	13.6			1.9		4.3	274	2	3.7
Data Quality																		
Cation Sum	meq/L	0.01			0.9	3.1			3.32	17.76			0.35		38.57	32.69	11.8	19.46
Anion Sum	meq/L	0.01			0.91	3.03			3.35	16.26			0.38		36.57	34.29	12.97	18.78
Cation-Anion Balance (±5%)	%	0.01			-0.55	1.15			0.35	4.41			-4.11		2.65	2.38	4.7	1.77
Solids, Total Dissolved (Calc)	mg/L	10			50	160			220	1140			20		2550	2310	840	1300
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01			1.8	1.06			1.18	1.04			1.5		---	---	1.04	1.1
Metals-Dissolved																		
Aluminum	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	Sampling location dry		0.002	0.002	Sampling location dry		0.002	0.004	Sampling location dry		<0.001	Sampling location dry	<0.001	0.002	<0.001	0.004
Barium	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001			<0.001	<0.001			<0.001	0.001			<0.001		<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01			<0.01	<0.01			<0.01	0.01			<0.01		<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01			<0.01	<0.01			<0.01	0.01			<0.01		<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05			0.1	0.06			0.13	0.06			<0.05		<0.05	<0.05	<0.05	<0.05
Lead	mg/L	0.01			<0.01	<0.01			<0.01	0.01			<0.01		<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01			<0.01	<0.01			0.11	0.02			0.02		<0.01	0.07	0.07	0.03
Mercury	mg/L	0.001			<0.001	<0.001			<0.001	0.001			<0.001		<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01			<0.01	<0.01			<0.01	0.01			<0.01		<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05			<0.05	<0.05			<0.05	0.05			<0.05		<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005			<0.005	<0.005			<0.005	0.005			<0.005		<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003			0.0004	0.0015			0.002	0.0053			<0.0003		0.0011	0.0005	<0.0003	0.0004
Vanadium	mg/L	0.1			<0.1	<0.1			<0.1	0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01			<0.01	<0.01			<0.01	0.01			0.04		<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003			<0.0003	<0.0003			0.0005	0.0003			<0.0003		<0.0003	0.0004	<0.0003	<0.0003
Metals-Total	mg/L																	
Iron	mg/L	0.05			0.5	0.26			0.25	0.81			0.06		0.19	8.25	0.17	0.2
Manganese	mg/L	0.01			0.02	0.05			0.13	0.06			0.03		0.04	0.26	0.13	0.03
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4			2	2			2	5.3			2		6	2	2	2
Gross Beta	pCi/L	7			5.4	6			8.3	10.9			3.8		12.6	3	4.3	14.1
Lead 210	pCi/L	1			<1	<1			<1	1			1		<1	<1	1.1	<1
Polonium 210	pCi/L	1			<1	<1			<1	1			1		<1	<1	<1	<1
Radium 226	pCi/L	0.2			<0.2	<0.2			<0.2	0.2			0.2		<0.2	0.3	<0.2	<0.2
Radium 228	pCi/L	1			<1	<1			<1	1			1		<1	<1	<1	<1
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2	0.2			0.2		<0.2	0.4	<0.2	<0.2
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1			<1	<1			<1	1			1		<1	<1	1.6	<1
Polonium 210	pCi/L	1			<1	<1			<1	1			1		<1	<1	<1	<1
Radium 226	pCi/L	0.2			<0.2	<0.2			<0.2	0.2			0.2		<0.2	0.386	<0.2	<0.2
Thorium 230	pCi/L	0.2			<0.2	<0.2			<0.2	0.2			0.2		<0.2	0.8	<0.2	<0.2
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50			<50	<50			<50				<50		---	<50	<50	<50

Table 2.7A-13: Surface Water Monitoring Results (Continued)

Parameter	Units	Lab Detection Limit	SW17				SW18				SW19				SW21			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			Dry	Dry	3/17/2011	6/28/2011	9/21/2010	12/29/2010	3/16/2011	6/22/2011	6/23/2011	8/18/2011	10/6/2011	Dry	6/23/2011	Dry	Dry	Dry
Field																		
Field pH	s.u.				7.1	8.21	9.2	9.44	9.07	8.87	8.77	8.4	6.95		8.66			
Field Conductivity	µmhos/cm				56	204	1130	781	438	685	1954	2571	3835		226			
Dissolved Oxygen	mg/L				10.32	5.35	6.42	9.9	12.52	9.6	7.96	8.49	9.15		6.68			
Field Turbidity	NTU				52.1	63.3	119	70.6	78.5	8.9	1.1	1.5	29.3		6.7			
Temperature	°C				7.25	19.03	17.6	0.78	4.72	20.05	19	20.62	11.89		21.43			
ORP	mV				421.6	208.7	381	402	379.2	47.4	71.9	192.1	136.8		79			
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5			38	99	315	469	219	203	162	88	168		104			
Alkalinity, Bicarbonate as HCO3	mg/L	5			47	121	279	478	237	230	198	106	205		127			
Alkalinty, Carbonate as CO3	mg/L	5			<5	<5	52	46	15	9	<5	<5	<5		<5			
Chloride	mg/L	1			<1	5	11	16	38	5	8	11	28		9			
Flouride	mg/L	0.1			<0.1	<0.1	0.9	1.3	0.5	0.5	<0.1	0.2	0.2		<0.1			
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1			
Sulfate	mg/L	1			<1	<1	175	253	122	117	977	1480	2590		<1			
Calcium	mg/L	1			9	26	21	30	23	28	227	248	453		31			
Magnesium	mg/L	1			2	6	10	15	9	11	114	175	250		4			
Potassium	mg/L	1			10	13	16	20	13	12	11	26	42		15			
Sodium	mg/L	1			<1	4	206	292	130	93	93	141	221		2			
Nitrogen, Ammonia (As N)	mg/L	0.1			<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.2		<0.1			
Silica as SiO2	mg/L	1			11	35	3	6	5	5	15	<1	15		25			
General Parameters																		
Laboratory pH	s.u.	0.1			7.6	7.8	9.3	8.9	8.9	8.6	7.9	8.3	7.9		8.1			
Electrical Conductivity	µmhos/cm	5			86	204	1010	1360	683	731	2080	2570	3930		229			
Total Dissolved Solids (180)	mg/L	10			130	240	770	1040	640	460	1730	2350	4000		190			
Total Suspended Solids	mg/L	5			28	24	40	16	104	<5	<5	10	23		12			
Turbidity	NTU	0.1			54.3	73.6	97.2	71.9	51.3	5.9	1.5	1.3	23.5		6.2			
Data Quality																		
Cation Sum	meq/L	0.01			0.93	2.26	11.21	15.87	7.84	6.66	24.99	33.57	53.85		2.29			
Anion Sum	meq/L	0.01			1	2.1	10.28	15.16	8	6.68	23.83	32.8	58.14		2.34			
Cation-Anion Balance (±5%)	%	0.01			-3.63	3.67	4.33	2.27	1	0.1	2.38	1.15	3.82		-1.08			
Solids, Total Dissolved (Calc)	mg/L	10			50	110	630	910	470	390	1530	2130	3700		120			
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01			2.6	2.18	---	---	1.36	1.18	1.13	1.1	1.08		1.58			
Metals-Dissolved																		
Aluminum	mg/L	0.1			0.9	1.2	0.2	0.2	<0.1	0.3	<0.1	<0.1	<0.1		<0.1			
Arsenic	mg/L	0.001			0.003	0.008	0.016	0.015	0.005	0.003	0.002	0.003	0.004		0.008			
Barium	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1			
Boron	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.4	0.5		<0.1			
Cadmium	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			
Chromium	mg/L	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			
Copper	mg/L	0.01			<0.01	<0.01	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			
Iron	mg/L	0.05			0.52	1.62	0.21	0.13	0.08	0.2	<0.05	<0.05	<0.05		1.42			
Lead	mg/L	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			
Manganese	mg/L	0.01			<0.01	0.21	<0.01	<0.01	<0.01	<0.01	0.03	0.04	1.48		0.18			
Mercury	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			
Molybdenum	mg/L	0.01			<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			
Nickel	mg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			
Selenium	mg/L	0.005			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005			
Uranium	mg/L	0.0003			<0.0003	<0.0003	0.0137	0.0131	0.0067	0.0068	0.0059	0.0023	0.0031		<0.0003			
Vanadium	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1			
Zinc	mg/L	0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0004		<0.0003			
Metals-Total	mg/L																	
Iron	mg/L	0.05			2.28	7.03	2.52	2.31	2.13	0.52	0.14	0.06	1.62		2.12			
Manganese	mg/L	0.01			0.04	0.27	0.07	0.11	0.07	0.03	0.05	0.09	1.67		0.23			
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4			2	2	15.6	12.9	2.7	5.9	5	5.4	2		2			
Gross Beta	pCi/L	7			9.6	10.2	18.3	16.9	9.5	12.6	7.5	18.8	44.3		14.6			
Lead 210	pCi/L	1			1.8	<1	1.3	1.4	<1	<1	1.1	<1	<1		<1			
Polonium 210	pCi/L	1			<1	<1	<1	1.6	<1	<1	<1	<1	<1		<1			
Radium 226	pCi/L	0.2			<0.2	<0.2	0.3	0.314	<0.2	<0.2	<0.2	<0.2	0.3		<0.2			
Radium 228	pCi/L	1			<1	<1	2.1	<1	<1	<1	<1	<1	5.5		<1			
Thorium 230	pCi/L	0.2			<0.2	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2			
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1			<1	1.4	<1	<1	<1	<1	<1	<1	1.2		<1			
Polonium 210	pCi/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1		<1			
Radium 226	pCi/L	0.2			<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2			
Thorium 230	pCi/L	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2			
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50			<50	<50	---	<50	<50	40	<50	<50	<50		<50			

Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry Sampling location dry

Table 2.7A-13: Surface Water Monitoring Results (Continued)

Parameter	Units	Lab Detection Limit	SW22			
			Q1	Q2	Q3	Q4
Collection Date			6/23/2011	8/18/2011	11/6/2011	1/12/2012
Field						
Field pH	s.u.		9.66	9.83	9.25	9.16
Field Conductivity	µmhos/cm		606	744	840	907
Dissolved Oxygen	mg/L		9.07	15.03	8.82	19.05
Field Turbidity	NTU		28.8	16.2	48.8	24.2
Temperature	°C		22.21	22.24	13.32	1.78
ORP	mV		68.8	158.9	37.7	88.6
Anions/Cations						
Alkalinity, Total (As CaCO3)	mg/L	5	268	322	377	471
Alkalinity, Bicarbonate as HCO3	mg/L	5	248	188	289	453
Alkalinty, Carbonate as CO3	mg/L	5	39	101	84	60
Chloride	mg/L	1	5	7	9	12
Flouride	mg/L	0.1	0.7	0.9	1.1	1.2
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	36	29	23	22
Calcium	mg/L	1	14	5	7	15
Magnesium	mg/L	1	5	3	3	5
Potassium	mg/L	1	7	7	7	8
Sodium	mg/L	1	117	163	178	216
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	4	3	6	5
General Parameters						
Laboratory pH	s.u.	0.1	9.2	10	9.6	9.3
Electrical Conductivity	µmhos/cm	5	637	762	805	982
Total Dissolved Solids (180)	mg/L	10	390	460	510	580
Total Suspended Solids	mg/L	5	6	20	11	8
Turbidity	NTU	0.1	28.8	16.5	46.9	21
Data Quality						
Cation Sum	meq/L	0.01	6.39	7.77	8.55	10.74
Anion Sum	meq/L	0.01	6.3	7.34	8.33	10.28
Cation-Anion Balance (±5%)	%	0.01	0.69	2.8	1.26	2.17
Solids, Total Dissolved (Calc)	mg/L	10	350	410	460	570
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.11	1.12	1.11	1.02
Metals-Dissolved						
Aluminum	mg/L	0.1	0.4	0.5	0.9	0.3
Arsenic	mg/L	0.001	0.005	0.01	0.011	0.027
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	0.33	0.43	0.67	0.31
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	<0.01	<0.01	0.02	<0.01
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0012	0.0015	0.0018	0.0017
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L					
Uranium	mg/L	0.0003	<0.0003	<0.0003	0.0005	<0.0003
Metals-Total	mg/L					
Iron	mg/L	0.05	1.5	0.67	1.89	0.94
Manganese	mg/L	0.01	0.04	0.03	0.05	0.03
Radionuclides-Dissolved						
Gross Alpha	pCi/L	4	2	3.1	3	3
Gross Beta	pCi/L	7	5.1	6.9	42.5	4
Lead 210	pCi/L	1	<1	1.1	<1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.3	<0.2	<0.2	<0.2
Radium 228	pCi/L	1	<1	<1	<1	<1
Thorium 230	pCi/L	0.2	<0.2	0.4	<0.2	<0.2
Radionuclides-Suspended	pCi/L					
Lead 210	pCi/L	1	<1	<1	1.5	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L					
Radon 222	pCi/L	50	<50	<50	<50	<50

Table 2.7A-14: Surface Water Samples within the Proposed Project Area

ID	Q1	Q2	Q3	Q4
SW1	Dry	Dry	3/15/2011	6/13/2011
SW2	Dry	Dry	3/17/2011	Dry
SW3	9/21/2010	Dry	3/16/2011	Dry
SW4	Dry	Dry	3/15/2011	Dry
SW5	Dry	Dry	Dry	Dry
SW6	Dry	Dry	Dry	Dry
SW7	Dry	Dry	3/16/2011	6/22/2011
SW8	Dry	Dry	3/16/2011	Dry
SW9	Dry	Dry	3/16/2011	6/22/2011
SW10	Dry	Dry	3/15/2011	6/22/2011
SW11	9/21/2010	12/29/2010	3/15/2011	6/22/2011
SW12	Dry	Dry	3/16/2011	Dry
SW13	Dry	Dry	3/17/2011	6/23/2011
SW14	Dry	Dry	3/17/2011	6/23/2011
SW15	Dry	Dry	3/17/2011	Dry
SW16	9/21/2010	12/29/2010	3/17/2011	6/28/2011
SW17	Dry	Dry	3/17/2011	6/28/2011
SW18	9/21/2010	12/29/2010	3/16/2011	6/22/2011
SW19	6/23/2011	8/18/2011	10/6/2011	Dry
SW20	6/23/2011	n/a	n/a	n/a
SW21	6/23/2011	Dry	Dry	Dry
SW22	6/23/2011	8/18/2011	10/6/2011	1/12/2012

Table 2.7A-14a: Surface Water Sample Source

ID	Active CBM Outfall	Surface Water Source		
		CBM	LiveStock	Domestic
SW1	No	No	No	No
SW2	No	No	No	No
SW3	No	WY0048526,006	No	No
SW4	No	WY0048526	No	No
SW5	No	WY0042340	No	No
SW6	No	WY0042340	No	No
SW7	No	WY0048542	No	No
SW8	No	No	GW9	No
SW9	No	WY0048542,001	No	No
SW10	No	WY0050679	GW5	No
SW11	No	WY0048526,005	No	No
SW12	No	WY0048526,002	No	No
SW13	No	No	No	No
SW14	No	No	GW4	No
SW15	No	No	GW4	No
SW16	No	WY0056251	GW2 GW3	No
SW17	No	WY0056251	No	No
SW18	No	WY0042340,010	No	No
SW19	No	WY0048526,002	No	No
SW21	No	No	GW15	No
SW22	No	WY0048526,003	No	No

** References data in Figure 2.7A-9*

Table 2.7A-15: Baseline Surface Water Monitoring Constituents

Constituents (reported in mg/l unless noted)	Recommended Analytical Method (methods may be substituted using Best Available Technology (BAT) and current approved agency methods)
General Parameters	
Conductivity	SM 2510B
pH	SM 4500H+ B
Total Dissolved Solids (TDS) @ 180ºF	EPA 160.1/SM2540C
Major Anions	
Ammonia Nitrogen as N	EPA 350.1
Bicarbonate as HCO_3	SM 2320B
Carbonate as CO_3	SM 2320B
Chloride	EPA 300.0/SM 4500CL B
Fluoride	SM 4500F C/EPA 300.0
Nitrate + Nitrite as N	EPA 353.2/300.0
Sulfate	EPA 375.1/375.2/300.0
Total Alkalinity	SM 2320B
Major Cations	
Calcium	EPA 200.7/215.1/215.2
Magnesium	EPA 200.7/242.1
Potassium	EPA 200.7/258.1
Sodium	EPA 200.7/273.1
Metals	
Arsenic	EPA 206.3/200.9/200.8
Barium	EPA 200.7/200.8
Boron	EPA 212.3/200.7
Cadmium	EPA 200.9/200.7/200.8
Chromium	EPA 200.9/200.7/200.8
Copper	EPA 200.7/200.8
Total and Dissolved Iron	EPA 236.1/200.9/200.7/200.8
Lead	EPA 200.7/200.8
Mercury	EPA 245.1
Molybdenum	EPA 200.7/200.8
Nickel	EPA 200.7/200.8
Selenium	EPA 270.3/200.9/200.8
Total Manganese	EPA 200.9/200.7/200.8/243.1/243.2
Uranium	DOE MM 800/EPA 200.8
Vanadium	EPA 286.1/286.2/200.7/200.8
Zinc	EPA 200.7/200.8
Radionuclides	
Gross Alpha (pCi/l)	EPA 900.0/EPA 900.1/SM 7110B
Gross Beta (pCi/l)	EPA 900.0/EPA 900.1/SM 7110B
^{226}Radium (pCi/l)	DOE RP450/EPA 903.0/SM 7500-R-AC
^{228}Radium (pCi/l)	SM 7500-R-AD/EPA RA-05

Source: NRC (2003), WDEQ (2005)

Table 2.7A-16: Nearby WYPDES Permits

Permit	Facility Name	Operator
WY0042340	All Night Creek CBM Project	Williams Production RMT Company
WY0048364	All Night Creek Unit #2	Williams Production RMT Company
WY0048551	All Night Creek Unit #7	Williams Production RMT Company
WY0048755	ANCU-Bates Creek #2	Williams Production RMT Company
WY0048542	All Night Creek Unit #6	Williams Production RMT Company
WY0048526	All Night Creek Unit #4 (K-Bar Draw)	Williams Production RMT Company
WY0046221	Groves Ickes & Edra CS Fee Leases	Yates Petroleum Corporation
WY0043958	K-Bar Field	Bill Barrett Corporation
WY0049115	Jeanne and Thelma CS Fee Leases	Yates Petroleum Corporation
WY0050679	West Cripple Creek #5-BF	Lance Oil and Gas Company, Inc.
WY0052931	Antelope II Federal	Lance Oil and Gas Company, Inc.
WY0048763	ANCU-Bates Creek #3	Williams Production RMT Company
WY0056251	Verde POD	Yates Petroleum Corporation
WY0037974	Mustang CS State #1, 2, 3, 4 CBM Wells	Yates Petroleum Corporation

Source: WDEQ/WQD (2011)

Table 2.7A-17: WYPDES Effluent Limits

Permit #WY0042340		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	6-20
Dissolved Manganese, µg/l	820	11-73
pH, standard units	6.5-8.5	6.85-8.73
Sodium Adsorption Ratio	10	**5-12.7**
Specific Conductance, micromhos/cm	2000	635-1570
Sulfates, mg/l	3000	1-13
Total Arsenic, µg/l	3.1	0.1-2.2
Total Barium, µg/l	1800	340-1000
Total Dissolved Solids, mg/l	5000	n/a
Total Petroleum Hydrocarbons (TPH), mg/l	10	1
Permit #WY0048763		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	6-10
pH, standard units	6.5-9.0	7.18-9.56
Sodium Adsorption Ratio	10	**7.5-12.4**
Specific Conductance, micromhos/cm	2000	653-1350
Total Recoverable Arsenic, µg/l	3	0.2-0.9
Total Recoverable Barium, µg/l	1800	142-932
Total Flow, MGD	0.5	0.0002-0.0085

Source: WDEQ/WQD (2010)

Note: Items in bold signify an exceedance of effluent limit

Table 2.7A-17: WYPDES Effluent Limits (Continued)

Permit #WY0048542		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	7-12
Dissolved Manganese, µg/l	820	1.8-61
pH, standard units	6.5-9.0	7.01-8.62
Sodium Adsorption Ratio	10	**7.1-16.9**
Specific Conductance, micromhos/cm	2000	756-1280
Sulfates, mg/l	3000	1-17
Total Arsenic, µg/l	3.1	**0.4-4.5**
Total Barium, µg/l	1800	100-862
Total Dissolved Solids, mg/l	5000	n/a
Total Flow, MGD	0.5	0-0.135
Permit #WY0048526		
Effluent Characteristic A3	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	8-19
pH, standard units	6.5-9.0	7.17-8.06
Sodium Adsorption Ratio	14	8.3-11.4
Specific Conductance, micromhos/cm	2000	794-1300
Total Arsenic, µg/l	3.3	0.2-1.4
Total Barium, µg/l	1800	468-698
Total Flow, MGD	5.02	0-0.0353
Permit #WY0048551		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	7-9
pH, su	6.5-9.0	7.57-8.06
Sodium Adsorption Ratio	14	8.4-12.2
Specific Conductance, micromhos/cm	2000	914-1050
Total Arsenic, µg/l	3.3	0.5-0.8
Total Barium, µg/l	1800	511-631
Total Flow, MGD	1	0.0001-0.0241

Source: WDEQ/WQD (2010)

Note: Items in bold signify an exceedance of effluent limit

Table 2.7-A-17: WYPDES Effluent Limits (Continued)

Permit #WY0048364		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	6-15
Dissolved Iron, µg/l	1000	**32-3830**
pH, su	6.5-9.0	6.94-8.38
Sodium Adsorption Ratio	10	**8.1-13**
Specific Conductance, micromhos/cm	2000	**885-9889**
Total Arsenic, µg/l	3	**0.1-5.7**
Total Barium, µg/l	1800	340-880
Total Flow, MGD	1.69	0-0.1505
Permit #WY0048755		
Effluent Characteristic	**Daily Maximum**	**Concentration Levels***
Chlorides, mg/l	46	3-12
Dissolved Iron, µg/l	1000	40-623
pH, su	6.5-9.0	6.75-7.4
Sodium Adsorption Ratio	10	7-8.3
Specific Conductance, micromhos/cm	2000	676-1160
Total Arsenic, µg/l	3	0.2-0.6
Total Barium, µg/l	1800	311-861
Total Flow, MGD	1.69	0-0.08
Permit #WY0046221		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	7-22
Dissolved Copper, µg/l	3	**1-10**
pH, su	6.5-9.0	6.51-8.31
Sodium Adsorption Ratio	14	7.5-9.5
Specific Conductance, micromhos/cm	2000	1030-1470
Total Arsenic, µg/l	3.3	**0.3-6.2**
Total Barium, µg/l	1800	572-1200
Total Flow, MGD	2.77	0-0.084

Source: WDEQ/WQD (2010)

Note: Items in bold signify an exceedance of effluent limit

Table 2.7A-17: WYPDES Effluent Limits (Continued)

Permit #WY0049115		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	9-14
Dissolved Iron, µg/l	1000	84-318
pH, su	6.5-9.0	7.1-7.99
Sodium Adsorption Ratio	14	8-12.6
Specific Conductance, micromhos/cm	2000	966-1170
Total Arsenic, µg/l	3.4	0.4-1.1
Total Barium, µg/l	1800	450-656
Total Flow, MGD	0.5	0.0001-0.0147
Permit #WY0043958		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	0.21-12
Dissolved Manganese, µg/l	820	49-70
pH, standard units	6.5-9.0	7.1-8.3
Sodium Adsorption Ratio	10	**8-10.8**
Specific Conductance, micromhos/cm	2000	800-1380
Sulfates, mg/l	3000	1-10
Total Arsenic, µg/l	3.1	1
Total Barium, µg/l	1800	100-900
Total Dissolved Solids, mg/l	5000	n/a
Total Flow, MGD	0.5	**0.00107-7.71**

Source: WDEQ/WQD (2010)

Note: Items in bold signify an exceedance of effluent limit

Table 2.7A-17: WYPDES Effluent Limits (Continued)

Permit #WY0037074		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	7-15
Dissolved Iron, µg/l	1000	**47-1890**
pH, su	6.5-9.0	6.51-8.06
Sodium Adsorption Ratio	14	8.1-10.0
Specific Conductance, micromhos/cm	2000	545-1060
Total Arsenic, µg/l	3.4	0.1-0.9
Total Barium, µg/l	1800	151-449
Total Flow, MGD	0.5	0.0008-0.0342
Permit #WY0050679		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	8-11
Dissolved Iron, µg/l	1000	122-437
Dissolved Manganese, µg/l	820	37-50
pH, standard units	6.5-9.0	7.74-7.75
Sodium Adsorption Ratio	10	8.4-9.7
Specific Conductance, micromhos/cm	2000	1100-1410
Total Arsenic, µg/l	3.1	0.1
Total Barium, µg/l	1800	650-775
Total Flow, MGD	0.5	0.0001-0.0252

Source: WDEQ/WQD (2012)

Note: Items in bold signify an exceedance of effluent limit

Table 2.7A-17: WYPDES Effluent Limits (Continued)

Permit #WY0037974		
Effluent Characteristic	**Daily Maximum**	**Concentration Limit***
Chlorides, mg/l	46	9
Dissolved Iron, µg/l	1000	30
pH, su	6.5-9.0	7.51
Sodium Adsorption Ratio	14	8.9
Specific Conductance, micromhos/cm	2000	927
Total Arsenic, µg/l	3.4	0.1
Total Barium, µg/l	1800	390
Total Flow, MGD	0.5	0.76

Source: WDEQ/WQD (2012)

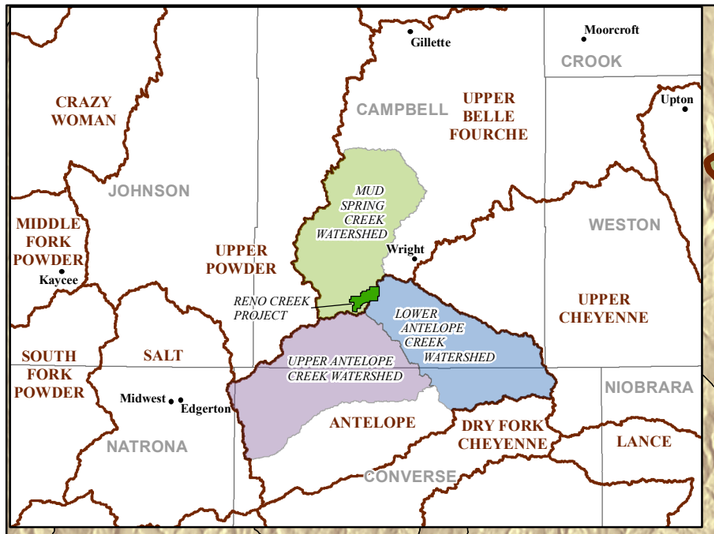
Note: Items in bold signify an exceedance of effluent limit

Note: Permit # WY0056251 has not been constructed at the time of this application thus no effluent results

Table 2.7A-18: Estimated Lixiviant Compositions

Parameter	pH	Calcium	Magnesium	Sodium	Potassium
PZM Mixture	9.37	88.2	14.1	202	12
Lixiviant A	8.53	88.2	14.1	460.6	12
Lixiviant B	8.41	88.2	14.1	585.9	12
Parameter	**Bicarbonate as HCO^{3}**	**Carbonate as $CO3^{-2}$**	**Sulfate**	**Choride**	**Nitrate as N**
PZM Mixture	88	28.16	531.3	5	0.4
Lixiviant A	762	33.75	531.3	5	0.4
Lixiviant B	1087	36.18	531.3	5	0.4
Parameter	**Silica (SiO_2)**	**Iron**	**Flouride**	**Barium**	**Uranium**
PZM Mixture	9.5	0.22	0.13	0.1	0.137
Lixiviant A	9.5	0.22	0.13	0.1	0.137
Lixiviant B	9.5	0.22	0.13	0.1	0.137

Units are mg/L except for pH



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AUC LLC
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CAMPBELL COUNTY, WY

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Legend
- Proposed Reno Creek Project Boundary
- Drainage Basin (HUC 8)
- Minor Basins (HUC 12)
- Mud Spring Creek Watershed
- Lower Antelope Creek Watershed
- Upper Antelope Creek Watershed

1:125,000
0 0.5 1 2 3 4 Miles

N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Drainages

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	RHK	09/24/11	2.7A-1
1	Final	RHK	10/21/11	
2				

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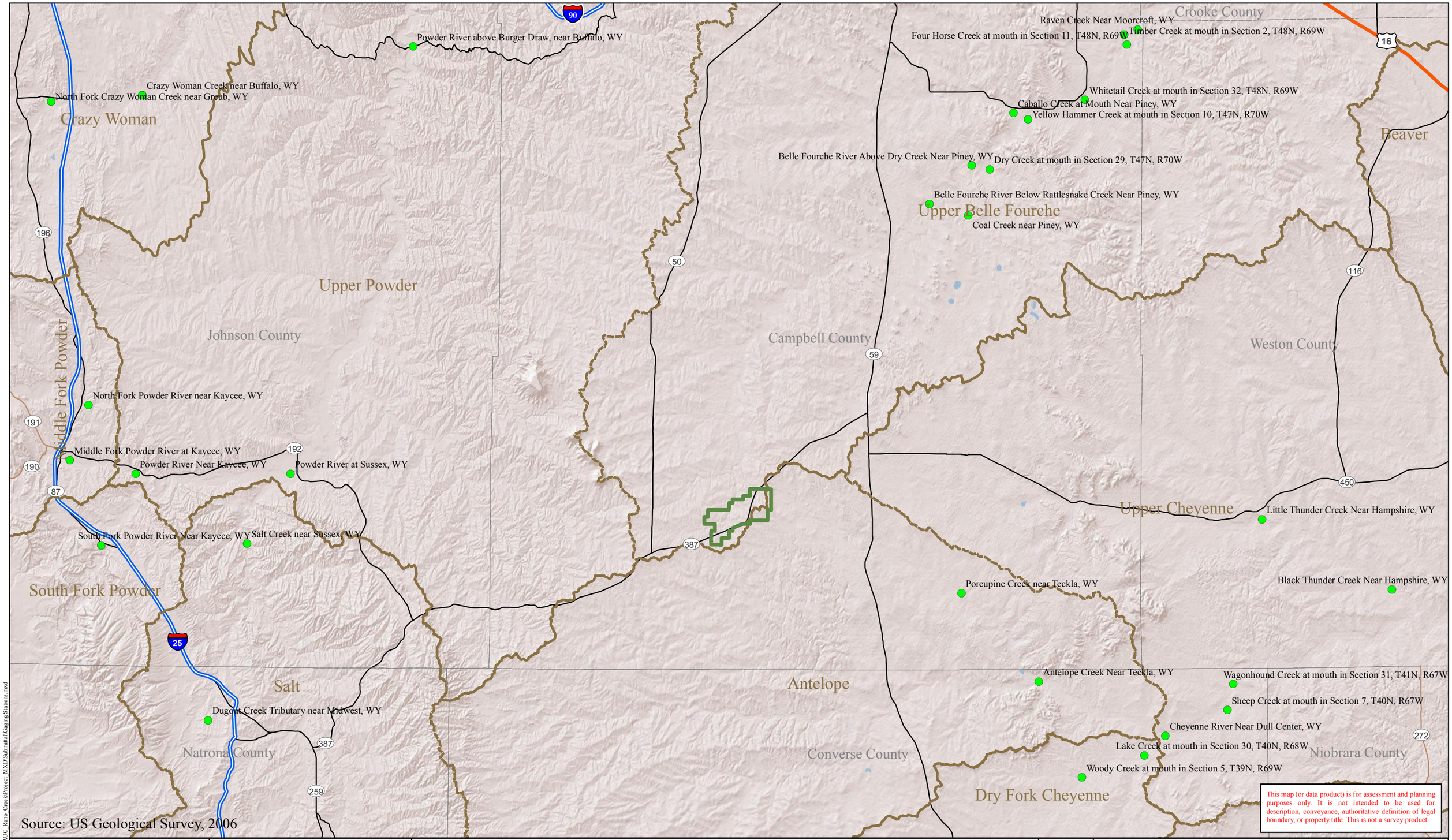

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PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR AUC LLC
LAKEWOOD, CO

Legend

- Gaging Station
- Proposed Reno Creek Project Boundary
- Drainage Basin
- Wyoming County Line
- Interstate
- Highway
- Major Road
- Local Road

0 2 4 8 12 Miles

1:400,000

N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Gaging Station Locations

REV #	DESCRIPTION	BY	DATE	FIGURE
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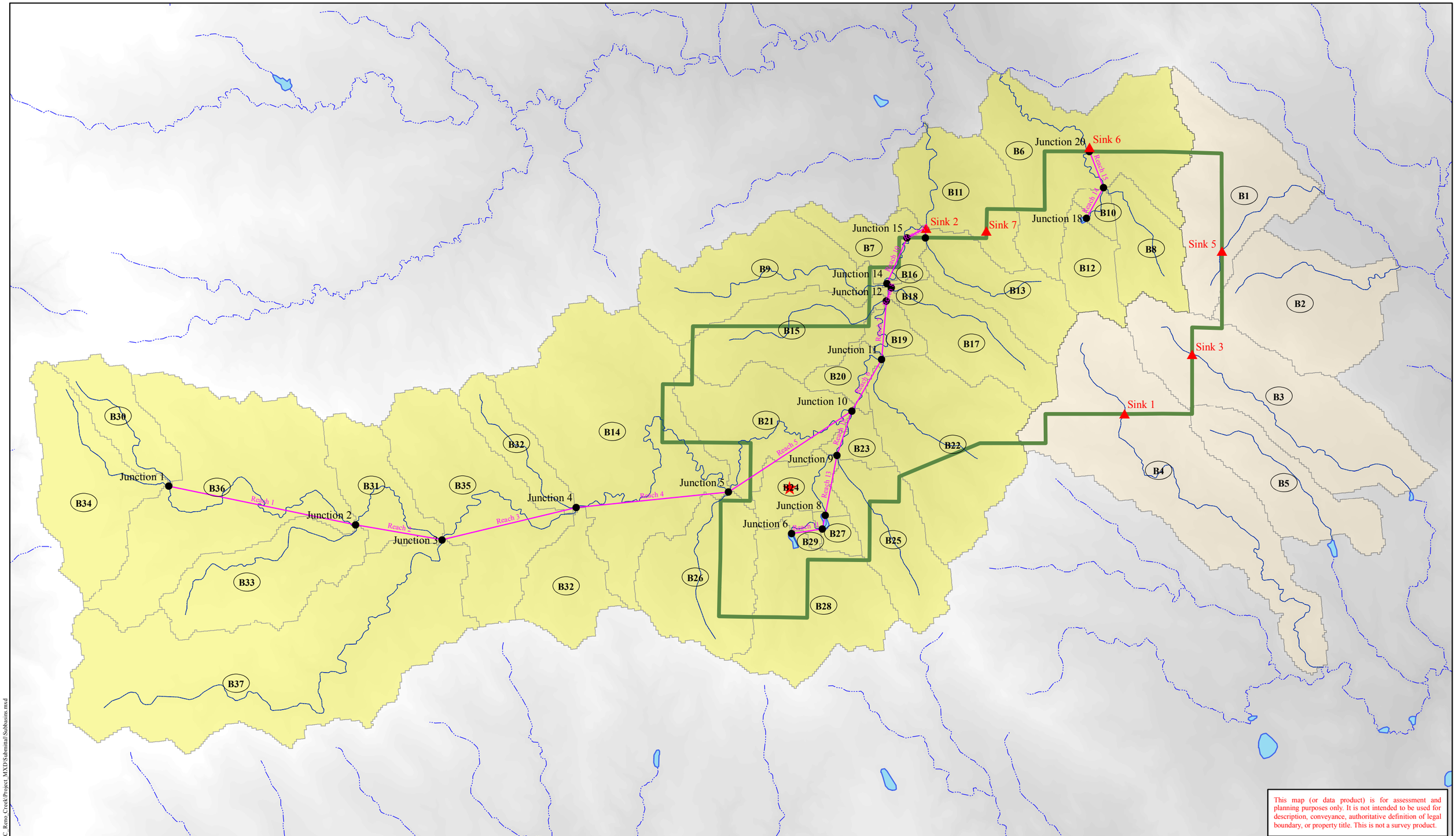
1	Final	RHK	10/21/11	
2				



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PROPOSED RENO CREEK PROJECT

CAMPBELL COUNTY, WY

PREPARED FOR AUC LLC
LAKEWOOD, CO

Legend

- Proposed Reno Creek Project Boundary
- Central Processing Plant
- Sink
- Junction
- Upper Belle Fourche Basin
- Antelope Creek Basin
- Reach
- Subbasin Flowline
- Ephemeral Streams Not Modeled

0 0.25 0.5 1 Miles

1:48,000

N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Subbasin Characteristics

REV #	DESCRIPTION	BY	DATE	FIGURE
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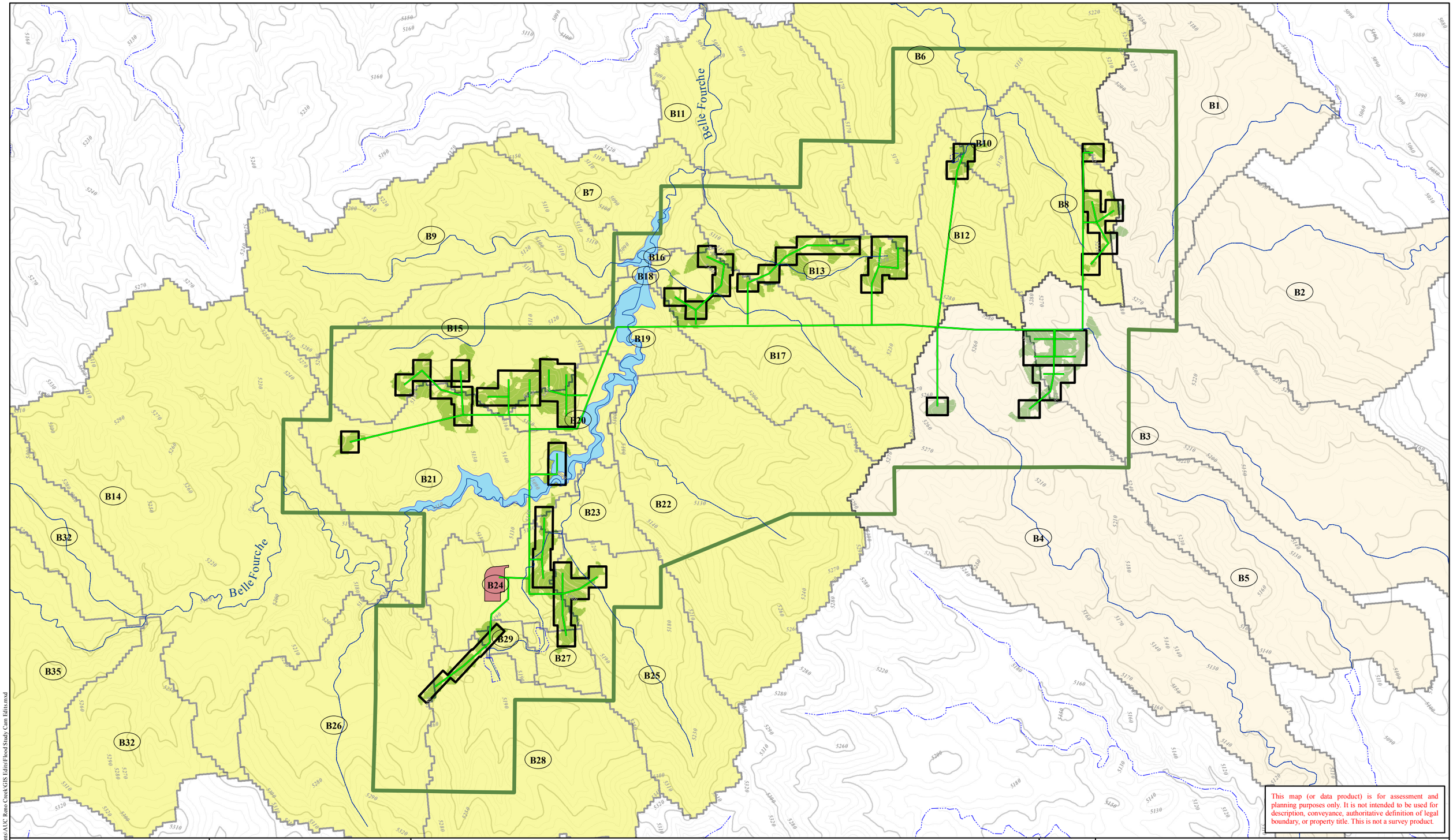
1	Revised Draft for Review	RHK	10/18/2011	
2	Final	RHK	10/21/2011	



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PROPOSED RENO CREEK PROJECT

CAMPBELL COUNTY, WY

PREPARED FOR AUC LLC
LAKEWOOD, CO

Legend

- Central Processing Plant Area
- Production Unit Boundary
- Proposed Reno Creek Project Boundary
- Upper Belle Fourche Basin
- Antelope Creek Basin
- Ore Body
- Trunkline
- Subbasin Flowline
- Ephemeral Streams Not Modeled
- 100 Year Flood Plain

0 0.25 0.5 1 Miles

Contour Interval = 10 feet

1:30,000

N W E S

DRAWN BY: RHK
CHECKED BY: MAM
APPROVED BY: RMD

Flood Study

REV #	DESCRIPTION	BY	DATE	FIGURE
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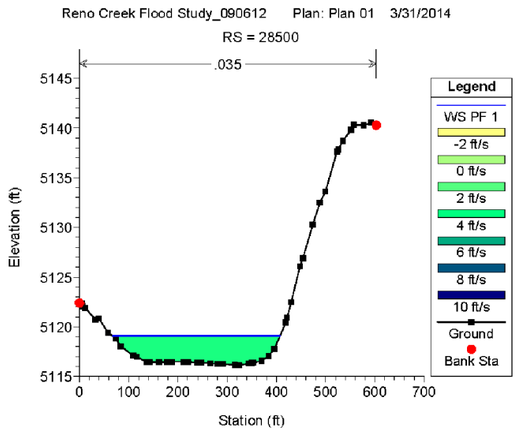
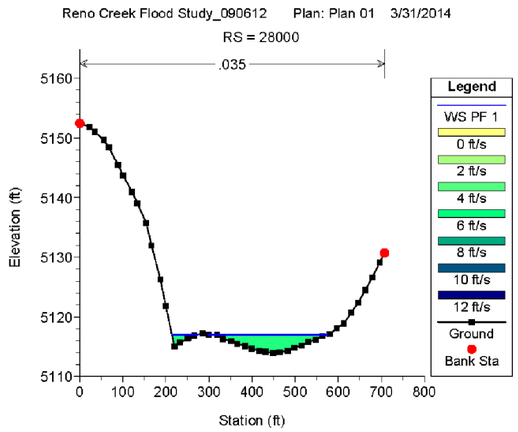
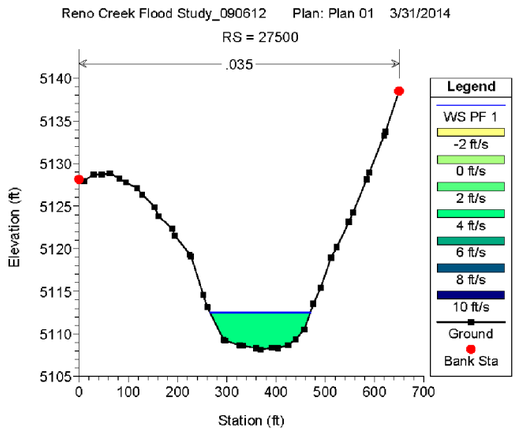
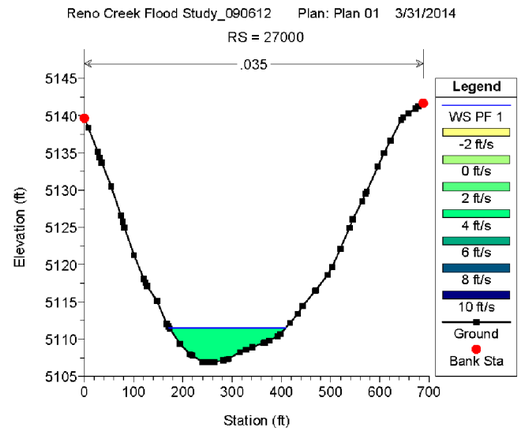
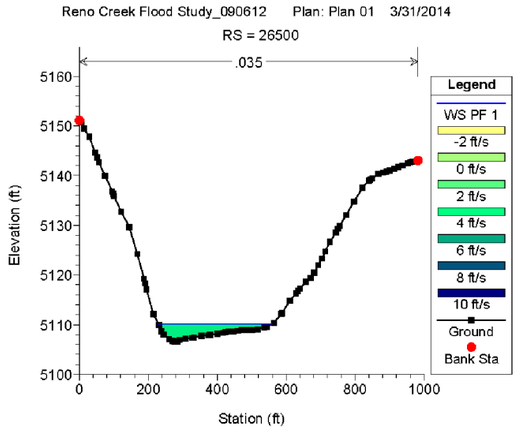
1	Revised per Client Updates	RHK	12/09/2011	
2	Revised Infrastructure and Project Boundary	RHK	07/23/2012	

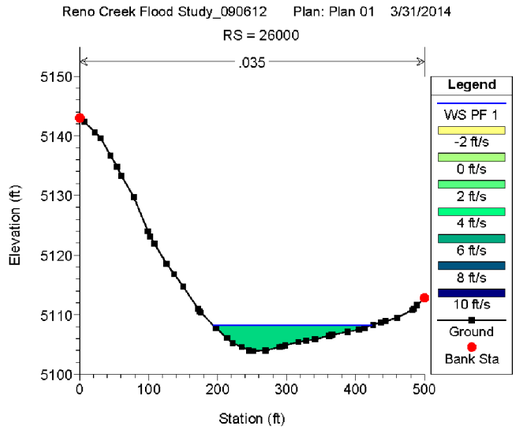


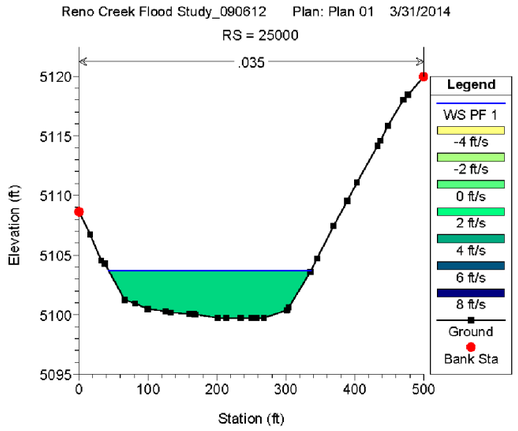


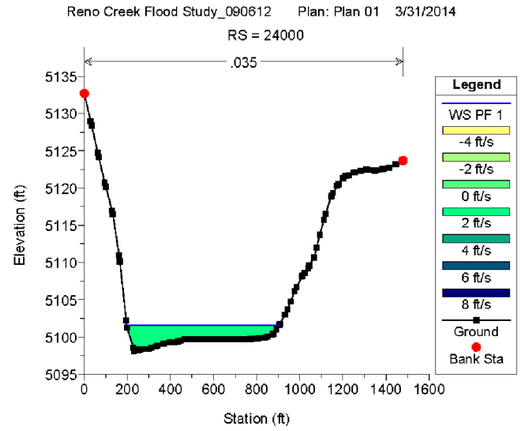


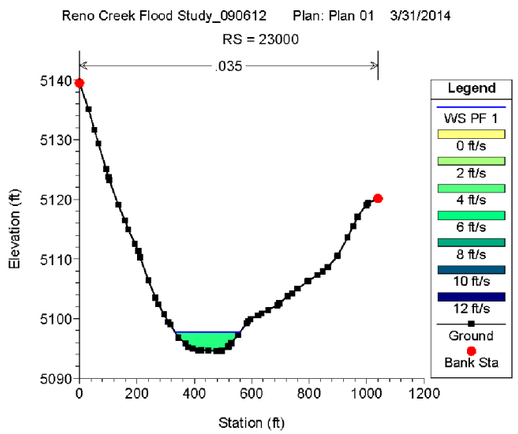


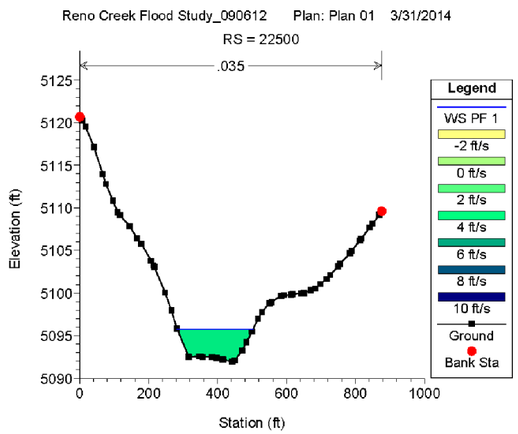


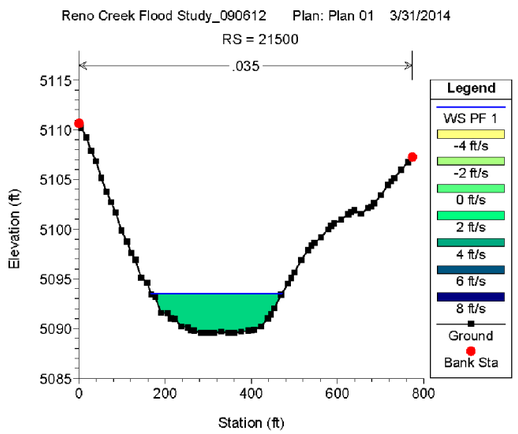


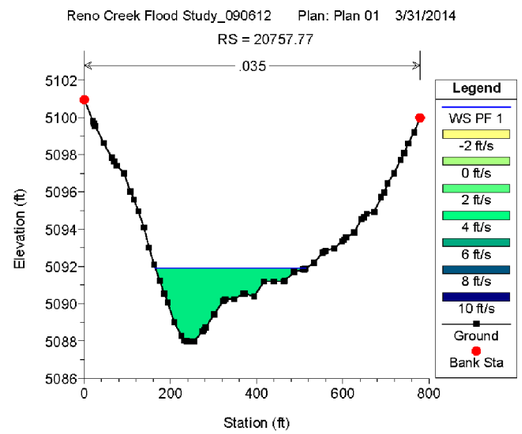












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HEC-RAS Cross Sections

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	MAM	12/14/2011	
1	Final	MAM	01/24/2012	2.7A-5a
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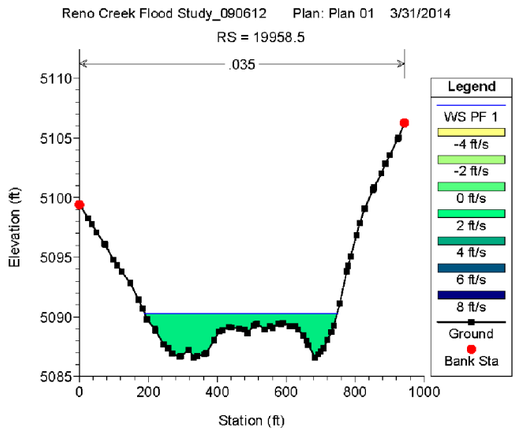

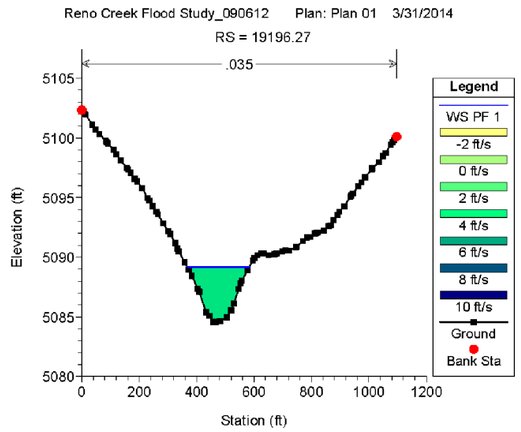

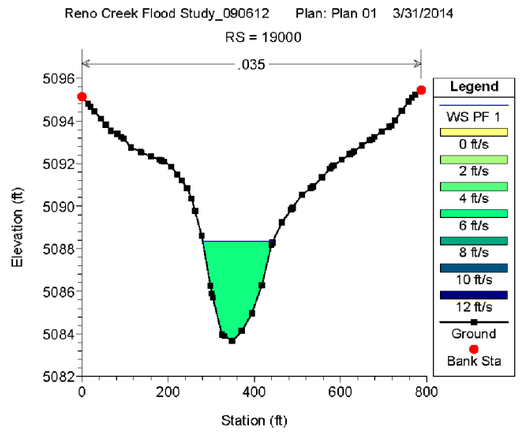

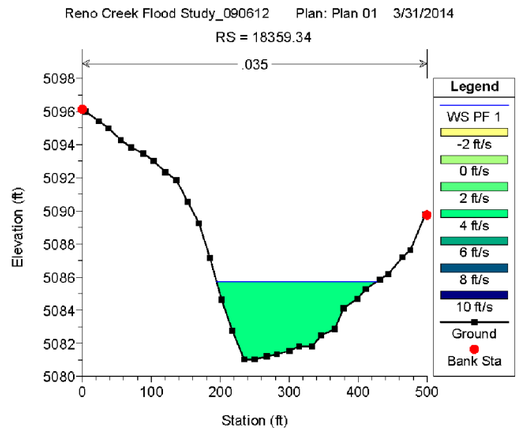

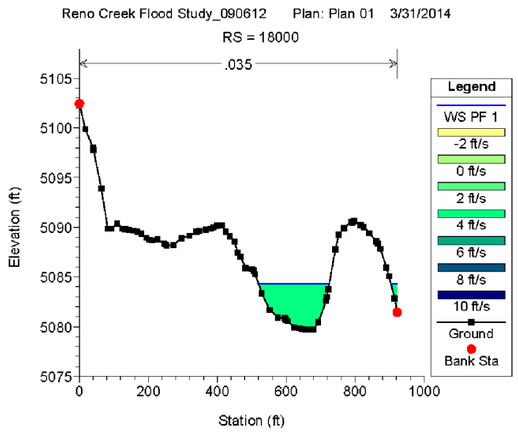

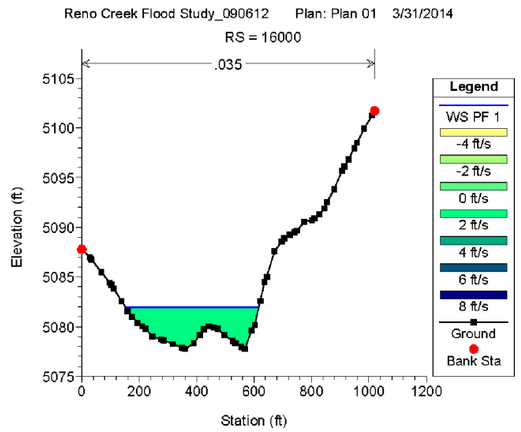

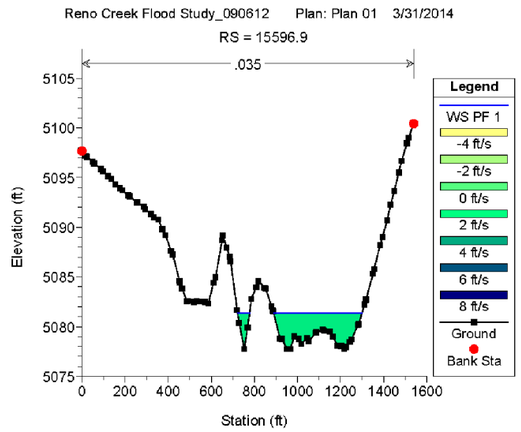

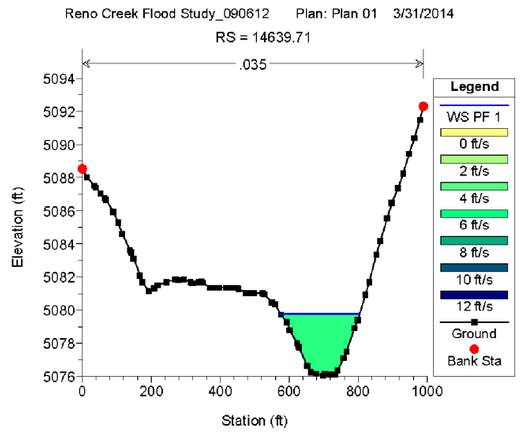

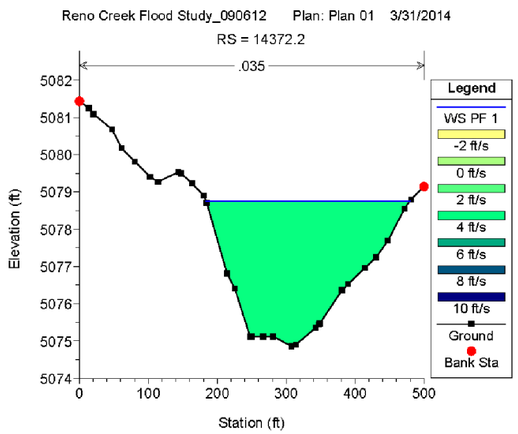

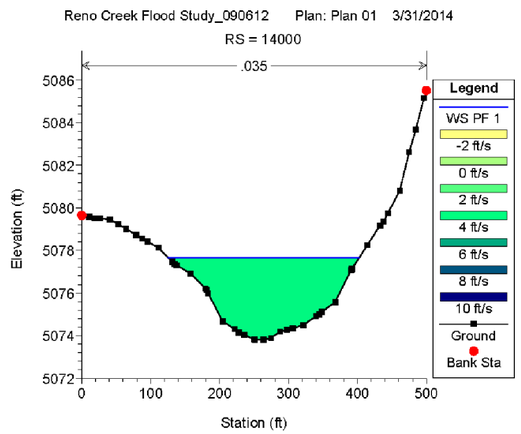

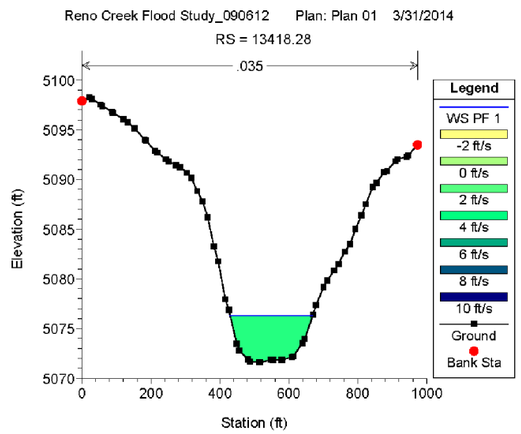

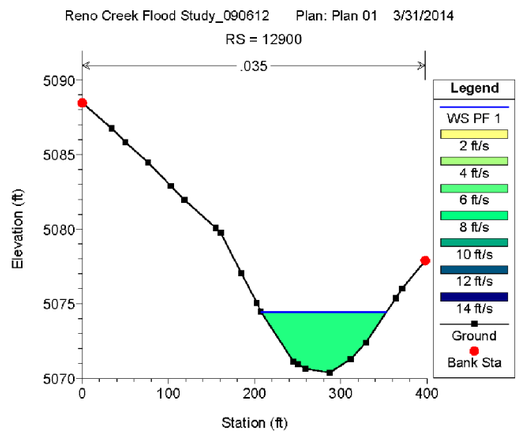

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APPROVED BY: JEY

HEC-RAS Cross Sections

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	MAM	12/14/2011	2.7A-5b
1	Final	MAM	01/24/2012	
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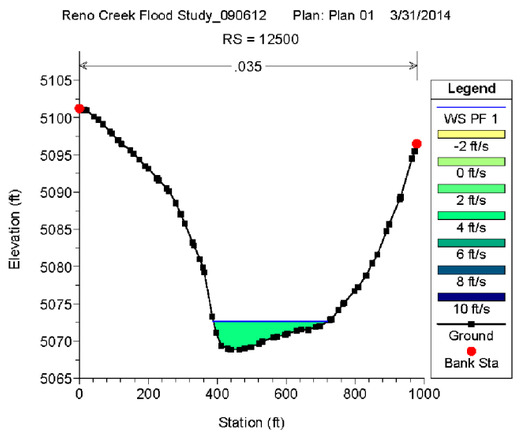

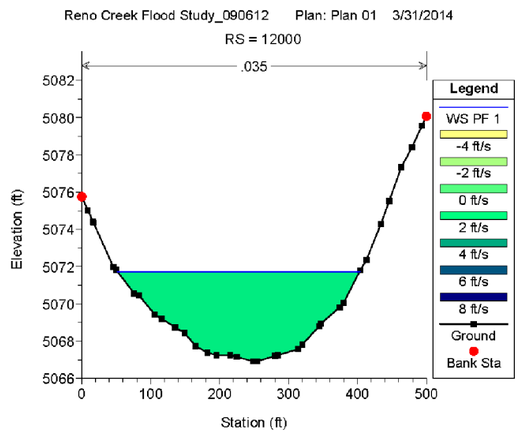

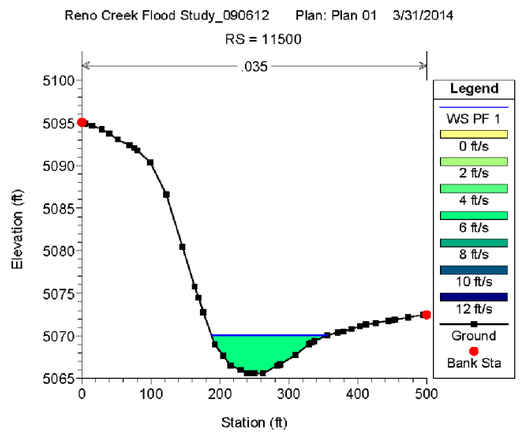

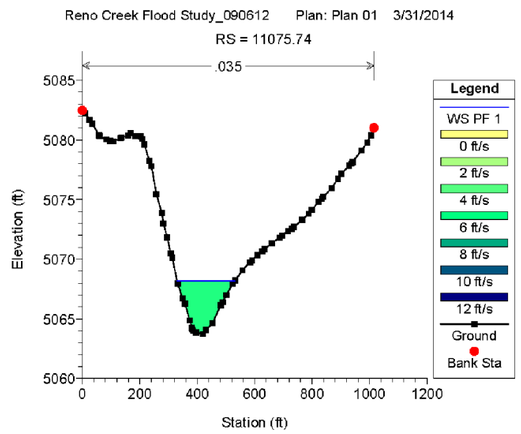

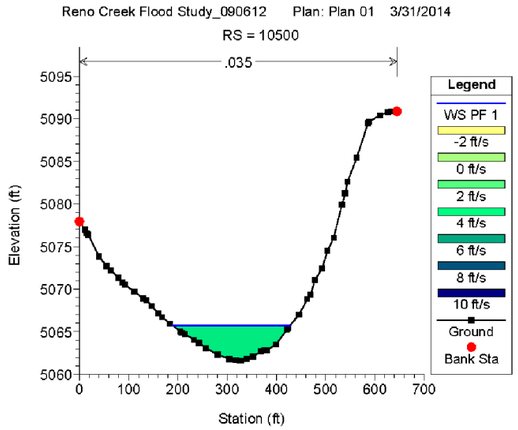

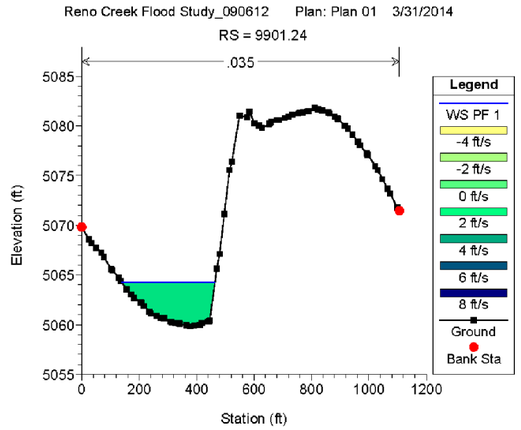

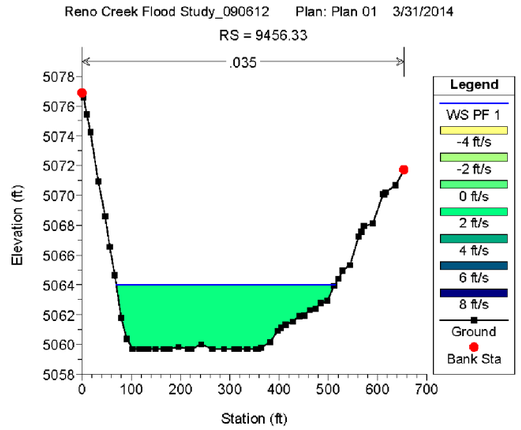

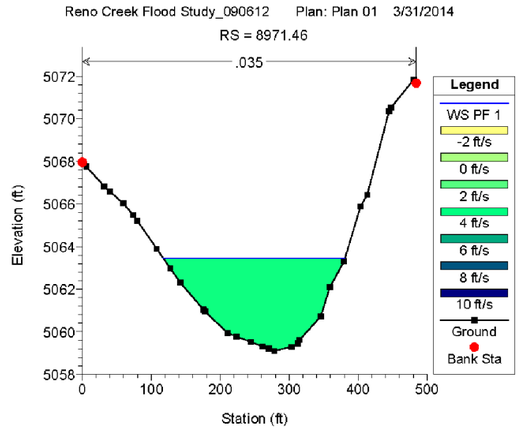

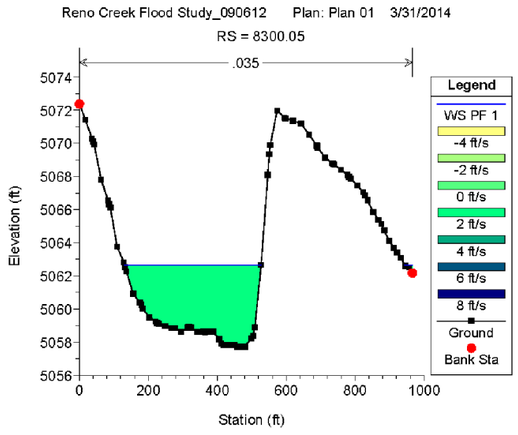

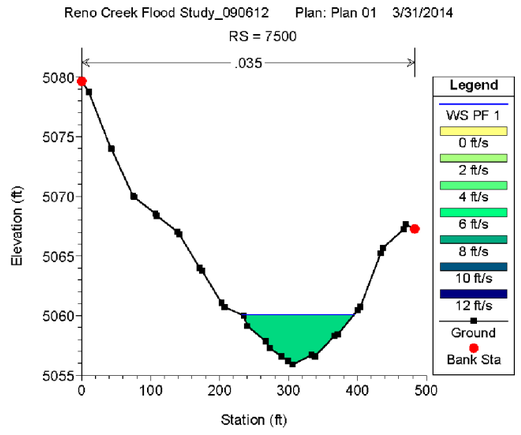

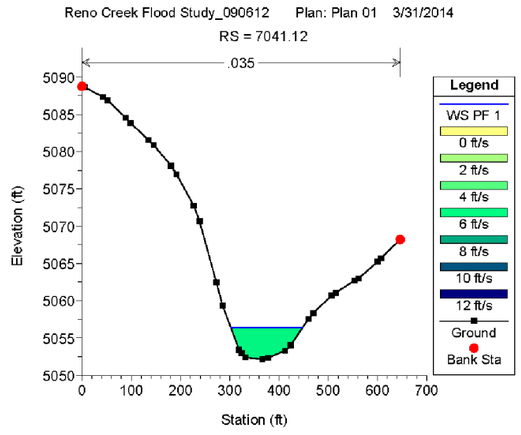

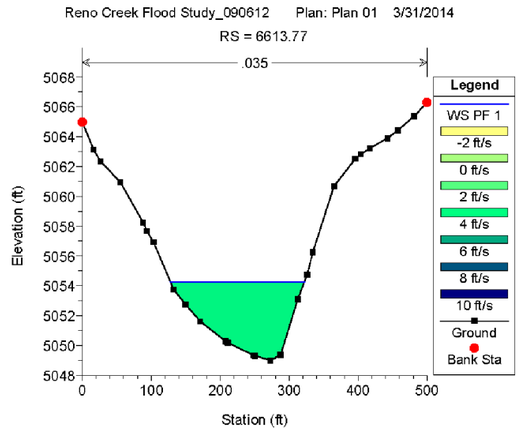

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CHECKED BY: RHK

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HEC-RAS Cross Sections

REV #	DESCRIPTION	BY	DATE	FIGURE
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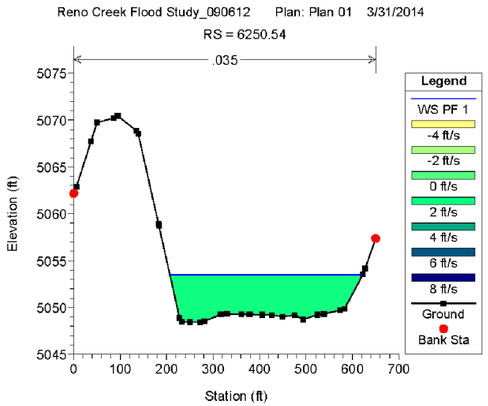
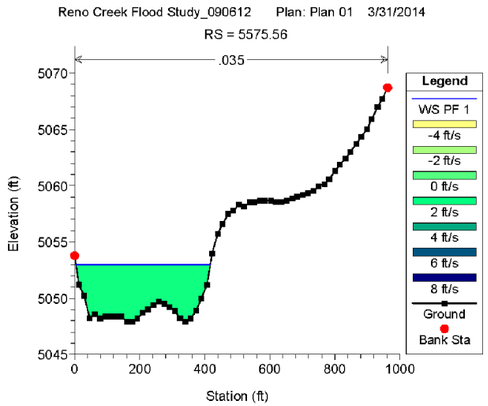
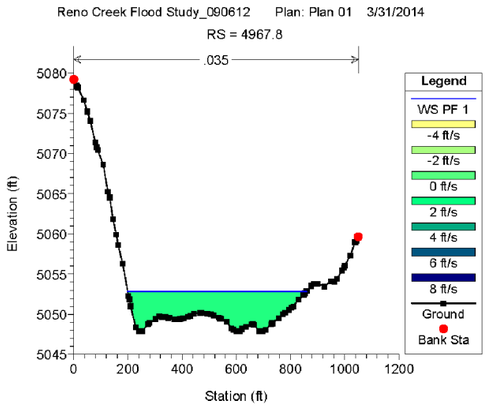
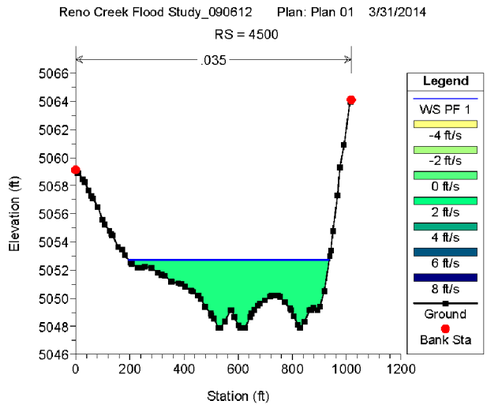
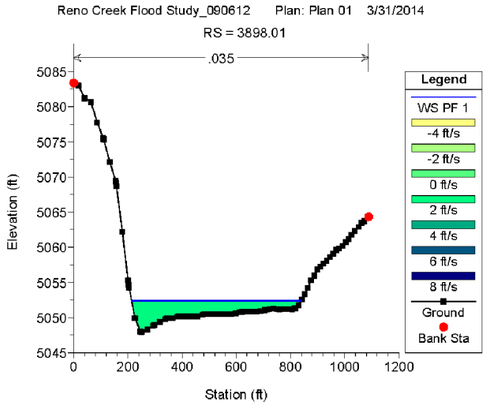
1	Final	MAM	01/24/2012	2.7A-5c
2				

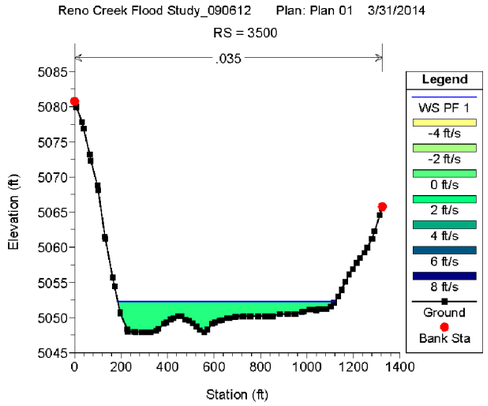


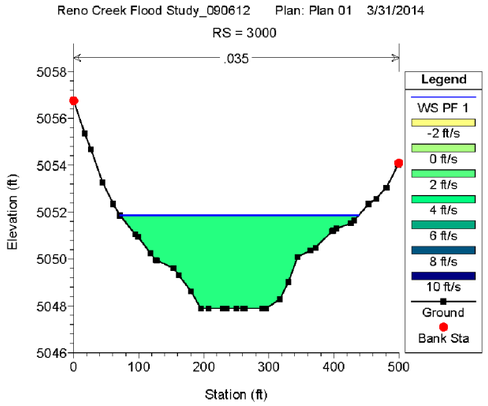


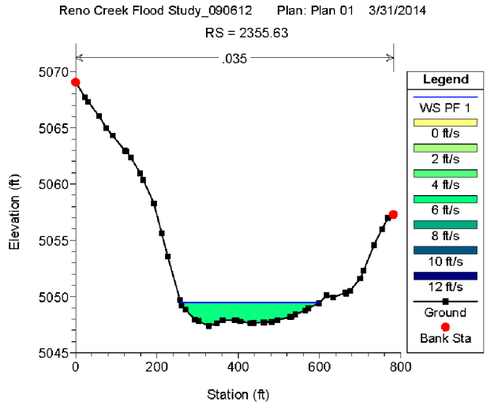


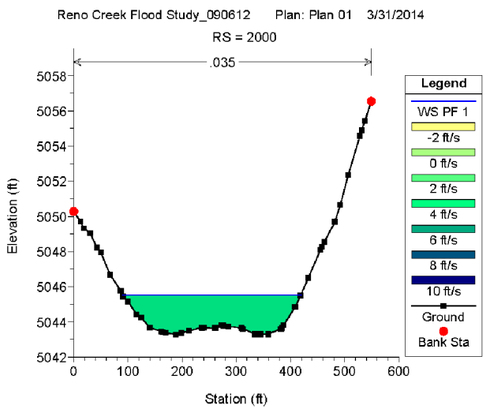


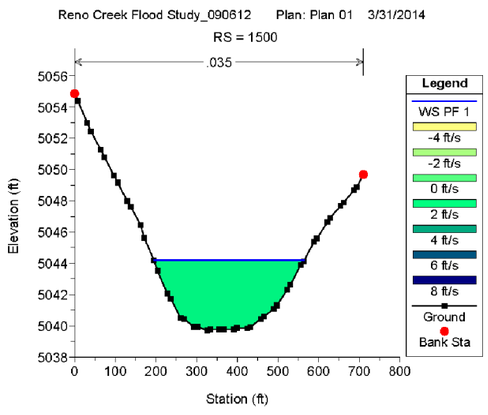


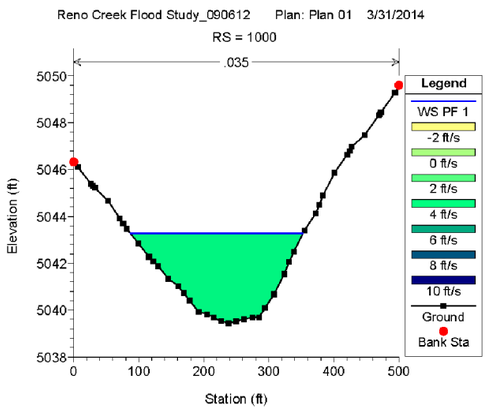


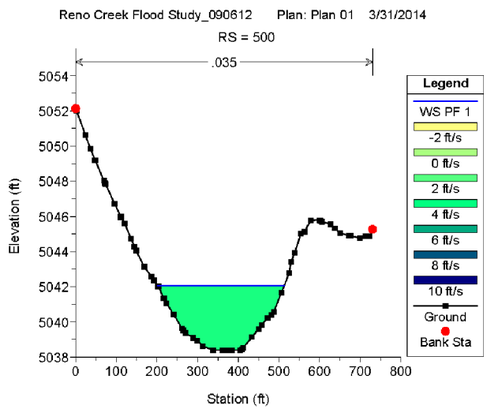


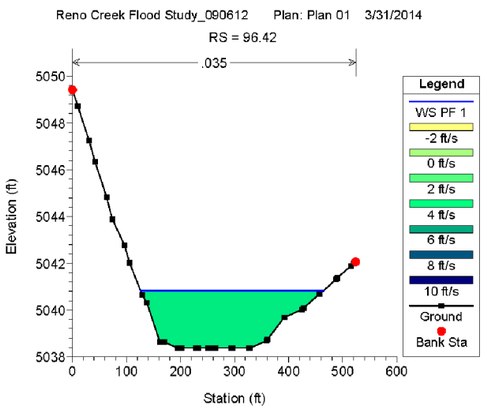












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APPROVED BY: JEY

HEC-RAS Cross Sections

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	MAM	12/14/2011	
1	Final	MAM	01/24/2012	2.7A-5d
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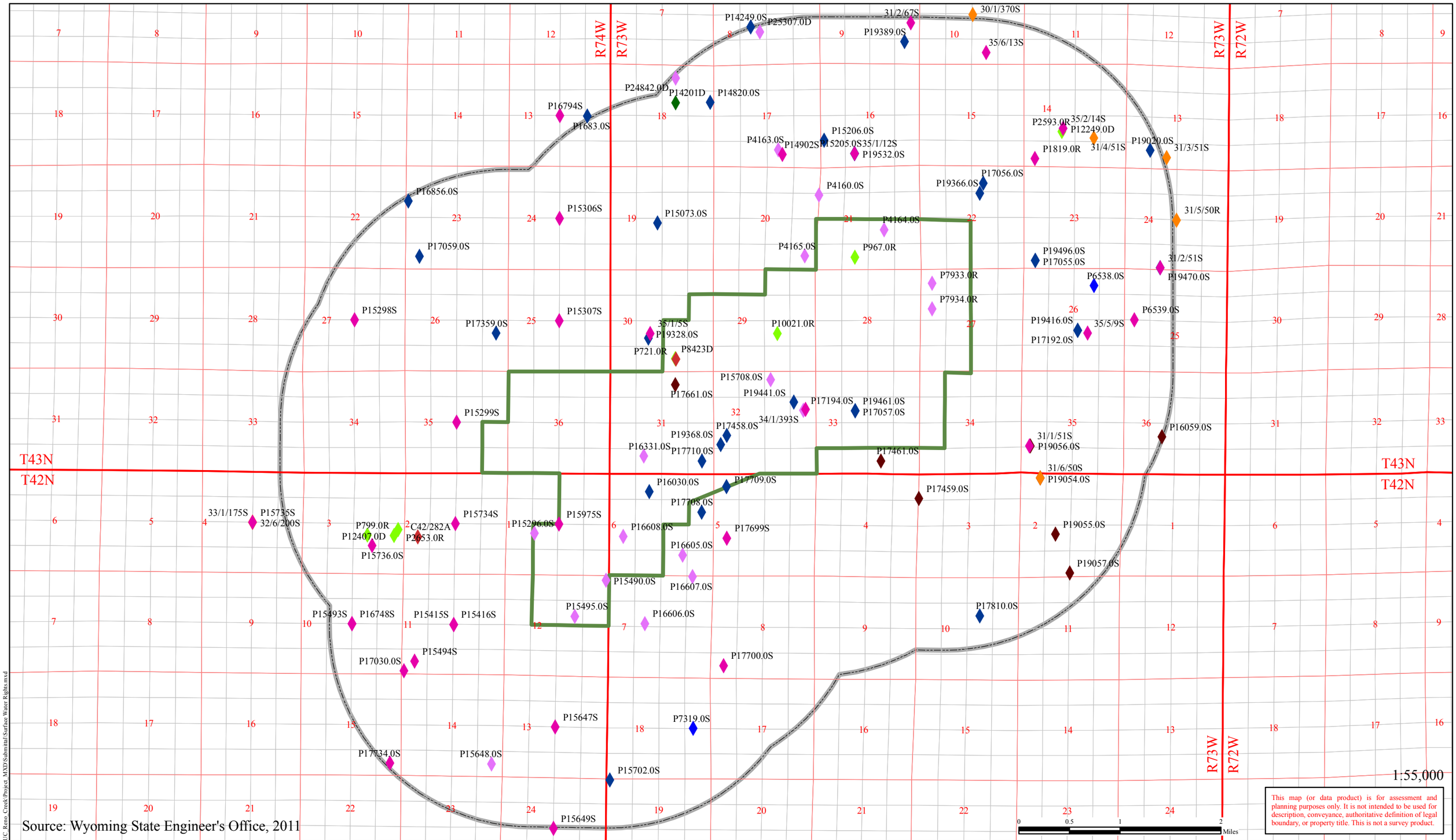

Source: Wyoming State Engineer's Office, 2011

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Path: O:\WY Projects\2010-100 AUC Reno Creek\Project MXD\Submittal\Surface Water Rights.mxd

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PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR AUC LLC
LAKEWOOD, CO

Legend

- Proposed Reno Creek Project Boundary
- Proposed Project Two Mile Buffer
- Township/Range
- Section
- Quarter-Quarter

Surface Water Right Status

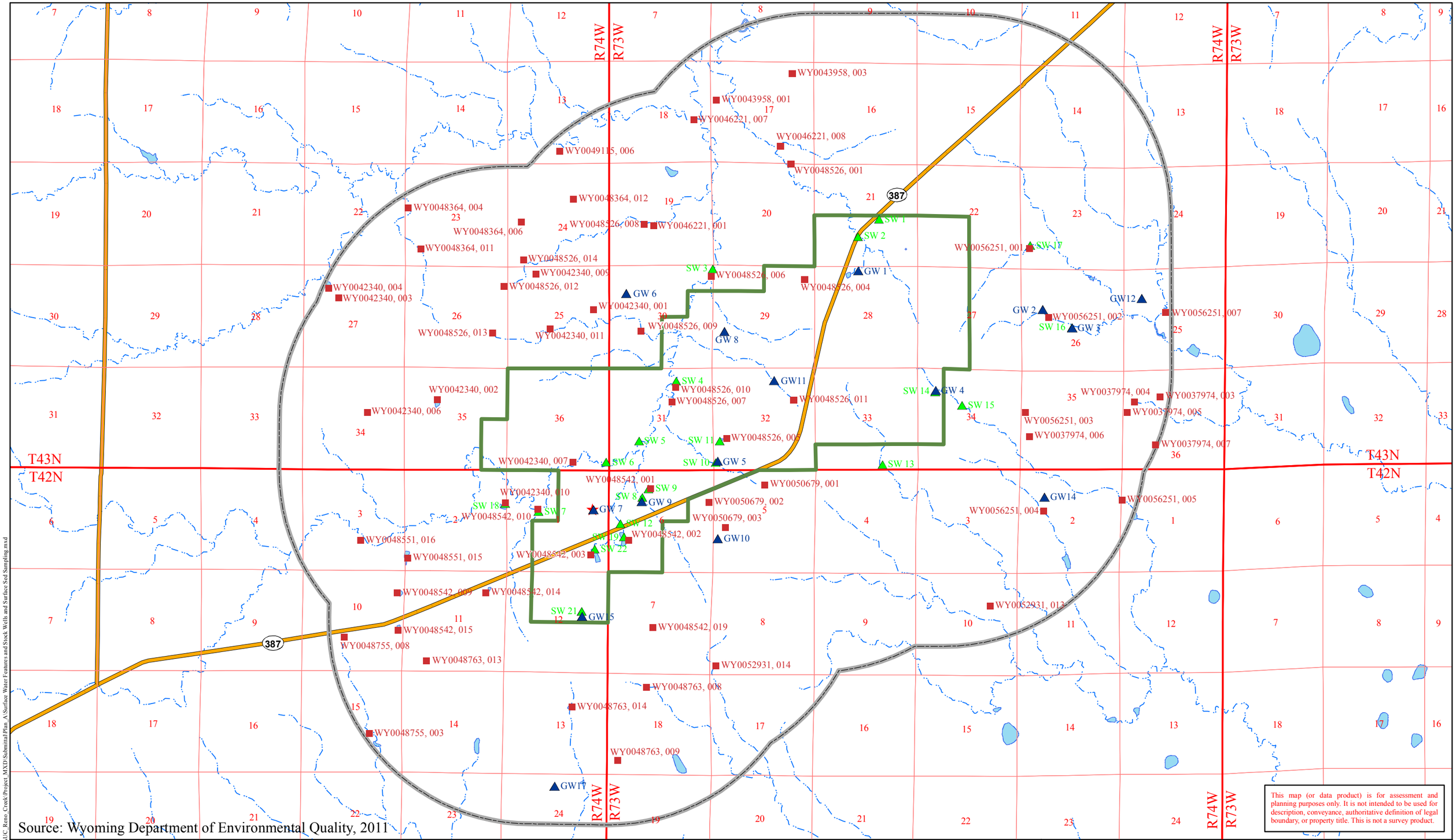
- Adjudicated
- Cancelled
- Complete
- Expired
- Fully Adjudicated
- Incomplete
- No Status
- Rejected
- Unadjudicated

N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Surface Water Rights within Two Miles of the Proposed Reno Creek Project

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	RHK	01/13/12	2.7A-6
1	Final	RHK	01/18/12	
2				



Source: Wyoming Department of Environmental Quality, 2011

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Legend

- Proposed Project Boundary
- Two Mile Buffer
- Central Processing Plant
- WYPDES Permitted CBM Outfall Location
- Surface Water & Sediment Sample Location
- Surface Water Feature
- Ephemeral Stream

0 0.25 0.5 1 Miles

1:55,000

N W E S

DRAWN BY: RHK

CHECKED BY: RMD

APPROVED BY: JEY

Surface Water Features

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	RHK	10/20/11	2.7A-7
1	Revised Project Boundary and Features within Two Mile Buffer	RHK	07/23/12	
2				

PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WYOMING

REV #	BY	DATE	DESCRIPTION
1	RHK	01/19/2012	Approved
2	RHK	06/15/2012	Revised Project Boundary
3	DCW	05/02/2014	Revised Soil Sample Locations
4	JTW	12/16/2014	Revised Air Monitor Locations

Figure 2.7A-8
Baseline Sampling Locations

Prepared For:
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LAKEWOOD, COLORADO

Prepared By:
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Contour Interval = 10 feet

0 0.2 0.4 0.8 Miles

0 1,400 2,800 5,600 Feet

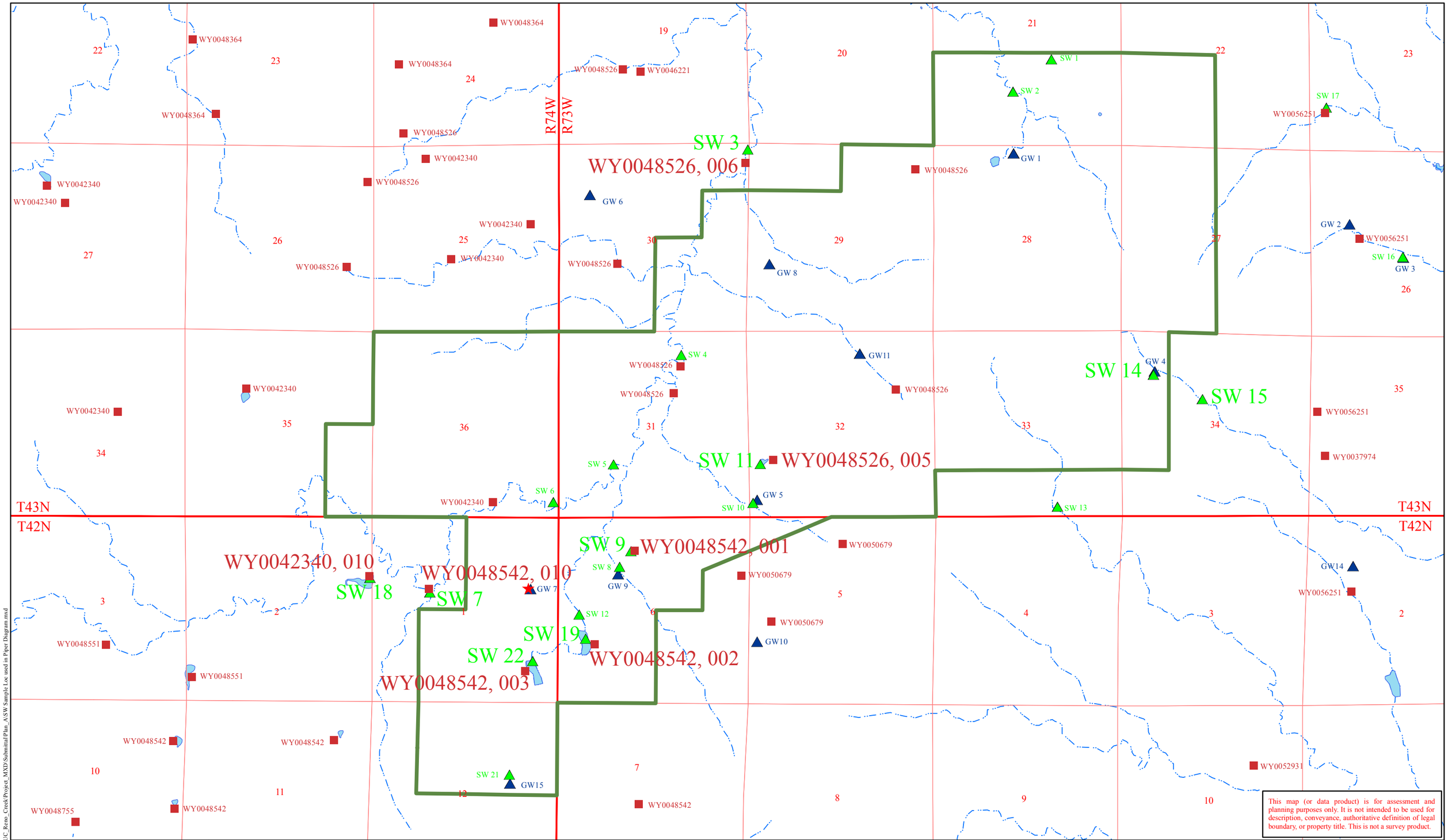
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet | 1:17,000

Legend

- Groundwater Well Sample Location
- Surface Water & Sediment Sample Location
- Stock Well Sample Location
- Soil Sample Location
- Air Particulate Monitor Location
- Vegetation Sample Location
- Meteorological Station
- Soil Correlation Plot Location
- Proposed Reno Creek Project Boundary
- Ephemeral Stream
- Ore Body

Road Classification

- Major Road (Paved)
- Minor Road (Unpaved)



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Legend

- Central Processing Plant
- Proposed Reno Creek Project Boundary
- Surface Water Feature
- Ephemeral Stream
- WYPDES Permitted CBM Outfall Location
- Surface Water & Sediment Sample Location
- Stock Well

0 0.25 0.5 0.75 1 Miles
1:30,000

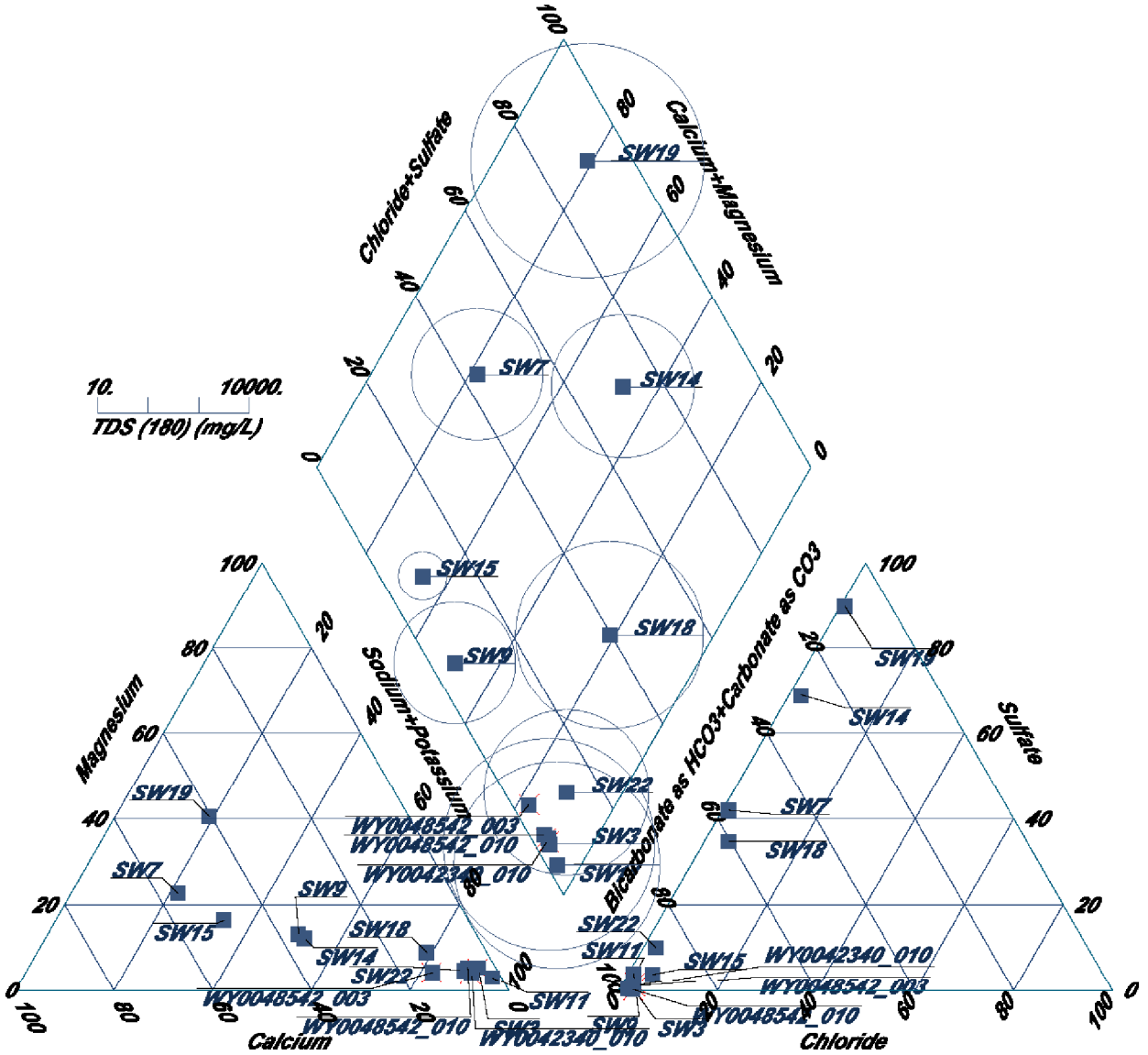
N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Surface Water Sample Locations used in Piper Diagram

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	RHK	10/20/11	2.7A-9
1	Revised Project Boundary and Features within Two Mile Buffer	RHK	07/26/12	
2				

Path: O:\WY_Projects\2010-100_AUC_Reno_Creek\Project_MXD\Submittal\Plan_ASW Sample Loc used in Piper Diagram.mxd



MGC MAHONEY GEOCHEMICAL CONSULTING	**PROPOSED RENO CREEK PROJECT** CAMPBELL COUNTY, WY PREPARED FOR: AUC LLC LAKEWOOD, CO	Piper Diagram Surface Waters and CBM Discharge Waters TDS not included for CBM waters	Drawn: JJM Checked: RHK Approved: RMD	**Figure 2.7A-10**

Rev. #	Description	Date
0	Drawing received	07/26/2012
1		
2		

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ADDENDUM 2.7-B
GROUNDWATER RESOURCES

List of Tables

List of Figures

Table 2.7B-1: Well Completion Details

Well ID	Screened Aquifer Zone	UTM Easting (m)	UTM Northing (m)	TOC Elev (ft amsl)	Ground Surf Elev (ft amsl)	Casing Material	Casing Nominal ID (in)	Casing Nominal OD (in)	Casing Depth (ft)	Annular Seal Material	Grount Weight (lbs/gal)	Top of Fiter Pack (ft)	Top of Screen (ft)	Bottom of Screen (ft)	Ream Bit Diameter (in)	Total Ream Depth (ft)	Screen O.D. (in)	Screen type	Screen Diameter (in)	Screen slot size (in)
SM3	Water Table	448983.47	4834242.53	5260.94	5258.24	SCH 40 PVC belled glue joint	4	4.5	50	Cement w/ bentonite	14.3	44	50	80	8.75	80	4.5	Factory Slot PVC	4	0.03
SM5	Water Table	444508.65	4833523.55	5115.90	5114.20	SCH 40 PVC belled glue joint	4	4.5	30	Cement w/ bentonite	14.2	24	30	50	8.75	50	4.5	Factory Slot PVC	4	0.03
SM6	Water Table	443806.22	4833944.88	5183.20	5180.40	SCH 40 PVC belled glue joint	4	4.5	60	Cement w/ bentonite	14.3	54	60	80	8.75	80	4.5	Factory Slot PVC	4	0.03
SM7	Water Table	445099.77	4832403.42	5176.73	5174.23	SCH 40 PVC belled glue joint	4	4.5	55	Cement w/ bentonite	14.2	50	55	75	8.75	78	4.5	Factory Slot PVC	4	0.03
OM1	Overlying	450012.64	4835767.75	5229.94	5227.44	SDR 17 PVC spline and groove	4.5	4.95	190.5	Cement w/ bentonite	14.5	182	191	211	9	211	4.95	Factory Slot PVC	4.5	0.03
OM2	Overlying	449474.19	4834655.12	5258.68	5256.38	SDR 17 PVC spline and groove	4.5	4.95	201	Cement w/ bentonite	14.4	na	201	221	8.75	211	3.5	Factory Slot PVC	3	0.03
OM3	Overlying	448966.40	4834246.63	5262.27	5259.97	SDR 17 PVC spline and groove	4.5	4.95	150	Cement w/ bentonite	14.2	na	150	170	8.75	160	3.5	Factory Slot PVC	3	0.03
OM4	Overlying	446885.57	4835402.26	5118.72	5116.02	SDR 17 PVC spline and groove	4.5	4.95	157	Cement w/ bentonite	14.5	151	157	177	9	180	4.95	Factory Slot PVC	4.5	0.03
OM5	Overlying	444509.29	4833511.60	5115.94	5113.34	SDR 17 PVC spline and groove	4.5	4.95	69	Cement w/ bentonite	14.5	64	69	84	9	84	4.95	Factory Slot PVC	4.5	0.03
OM6	Overlying	443799.99	4833933.40	5185.60	5182.70	SDR 17 PVC spline and groove	4.5	4.95	227	Cement w/ bentonite	14.5	219	227	237	9	238	4.95	Factory Slot PVC	4.5	0.03
OM7	Overlying	445114.05	4832384.84	5176.20	5173.50	SDR 17 PVC spline and groove	4.5	4.95	130	Cement w/ bentonite	14.5	na	130	150	8.75	140	3.5	Factory Slot PVC	3	0.03
OAM4D	Over Aquitard (L. Felix)	446891.37	4835418.40	5121.19	5118.29	SCH 40 PVC belled glue joint	4	4.5	201	Cement w/ bentonite	13.1	198	201	206	8.75	208	4.5	Factory Slot PVC	4	0.03
OAM4S	Over Aquitard (U. Felix)	446875.72	4835417.14	5119.30	5117.10	SCH 40 PVC belled glue joint	4	4.5	191	Cement w/ bentonite	13.1	na	191	194	8.75	196	4.5	Factory Slot PVC	4	0.03
PZM4	U. Production Zone	446880.12	4835407.82	5118.83	5116.03	SDR 17 PVC spline and groove	5	5.563	235	Cement w/ bentonite	14.3	na	235	255	9.875	266	3.5	Factory Slot PVC	3	0.03
PZM1	Production Zone	450020.53	4835774.59	5230.87	5228.77	SDR 17 PVC spline and groove	5	5.563	354	Cement w/ bentonite	14.4	288	354	384	9.875	384	6.078	W.O.P PVC	5	0.03
PZM10	Production Zone	449950.24	4835761.90	5228.64	5225.84	SDR 17 PVC spline and groove	4.5	4.95	300	Cement w/ bentonite	14.5	295	300	320	9	320	4.95	Factory Slot PVC	4.5	0.03
PZM11	Production Zone	448993.33	4834253.77	5257.53	5255.23	SDR 17 PVC spline and groove	4.5	4.95	365	Cement w/ bentonite	14.3	na	365	385	8.75	385	3.5	Factory Slot PVC	3	0.03
PZM12	Production Zone	448959.27	4834227.03	5257.94	5255.44	SDR 17 PVC spline and groove	4.5	4.95	370	Cement w/ bentonite	14.3	na	370	390	8.75	390	3.5	Factory Slot PVC	3	0.03
PZM13	Production Zone	448934.25	4834294.74	5260.51	5258.19	SDR 17 PVC spline and groove	4.5	4.95	357	Cement w/ bentonite	14.3	na	357	377	8.75	377	3.5	Factory Slot PVC	3	0.02
PZM14	Production Zone	448631.93	4836132.02	5146.36	5143.86	SDR 17 PVC spline and groove	4.5	4.95	327	Cement w/ bentonite	14.5	319	327	347	9	347	4.95	Factory Slot PVC	4.5	0.03
PZM15	Production Zone	447426.65	4835456.68	5189.17	5186.77	SDR 17 PVC spline and groove	4.5	4.95	420	Cement w/ bentonite	14.5	403	420	440	9	443	4.95	Factory Slot PVC	4.5	0.03
PZM16	Production Zone	446868.00	4835031.05	5112.56	5109.76	SDR 17 PVC spline and groove	4.5	4.95	295	Cement w/ bentonite	14.5	277	295	315	9	318	4.95	Factory Slot PVC	4.5	0.03
PZM17	Production Zone	446292.35	4834801.05	5104.46	5101.62	SDR 17 PVC spline and groove	4.5	4.95	296	Cement w/ bentonite	14.5	289	296	316	9	319	4.95	Factory Slot PVC	4.5	0.03
PZM18	Production Zone	444551.66	4834153.18	5142.89	5139.99	SDR 17 PVC spline and groove	4.5	4.95	250	Cement w/ bentonite	14.5	243	250	270	9	270	4.95	Factory Slot PVC	4.5	0.03
PZM19	Production Zone	444531.96	4833837.72	5140.41	5137.51	SDR 17 PVC spline and groove	4.5	4.95	312	Cement w/ bentonite	14.4	306	312	332	9	335	4.95	Factory Slot PVC	4.5	0.03
PZM20	Production Zone	444386.76	4833621.39	5138.49	5135.69	SDR 17 PVC spline and groove	5	5.563	312	Cement w/ bentonite	14.5	na	312	332	9.875	312	4.5	Factory Slot PVC	4	0.03
PZM3	Production Zone	448977.53	4834252.22	5261.99	5259.64	SDR 17 PVC spline and groove	5	5.563	372	Cement w/ bentonite	14.3	285	372	412	9.875	415	6.025	W.O.P PVC	5	0.03
PZM5	Production Zone	444500.11	4833519.92	5115.12	5113.22	SDR 17 PVC spline and groove	5	5.563	260	Cement w/ bentonite	14.6	182	260	330	9.875	331	5.75	W.O.P PVC	5	0.03
PZM6	Production Zone	443796.94	4833944.84	5184.59	5181.79	SDR 17 PVC spline and groove	4.5	4.95	335	Cement w/ bentonite	14.5	329	335	355	9.875	359	4.95	Factory Slot PVC	4.5	0.03
PZM7	Production Zone	445114.61	4832395.37	5176.66	5173.76	SDR 17 PVC spline and groove	4.5	4.95	298	Cement w/ bentonite	14.3	na	298	318	8.75	309	3.5	Factory Slot PVC	3	0.03
PZM8	Production Zone	450025.08	4835750.34	5227.18	5224.38	SDR 17 PVC spline and groove	4.5	4.95	305	Cement w/ bentonite	14.5	288	305	340	9	340	4.95	Factory Slot PVC	4.5	0.03
PZM9	Production Zone	450033.27	4835786.67	5230.71	5228.31	SDR 17 PVC spline and groove	4.5	4.95	310	Cement w/ bentonite	14.6	304	310	330	9	330	4.95	Factory Slot PVC	4.5	0.03
PZM2	L. Production Zone	449471.85	4834673.21	5257.39	5255.19	SDR 17 PVC spline and groove	4.5	4.95	350	Cement w/ bentonite	14.4	na	350	370	8.75	360	3.5	Factory Slot PVC	3	0.03
PZM4D	L. Production Zone	446888.05	4835423.13	5120.47	5118.47	SDR 17 PVC spline and groove	4.5	4.95	311	Cement w/ bentonite	14.3	na	311	371	9	325	3.5	W.O.P PVC	3	0.03
UM1	Underlying	450018.14	4835759.96	5228.51	5226.01	SDR 17 PVC spline and groove	4.5	4.95	430	Cement w/ bentonite	14.4	420	430	450	9	450	4.95	Factory Slot PVC	4.5	0.03
UM2	Underlying	449467.36	4834656.74	5259.45	5256.95	SDR 17 PVC spline and groove	4.5	4.95	423	Cement w/ bentonite	14.3	na	423	443	8.75	433	3.5	Factory Slot PVC	3	0.03
UM3R	Underlying	448972.62	4834234.57	5260.88	5258.28	SDR 17 PVC spline and groove	4.5	4.95	459	Cement w/ bentonite	14.3	na	459	479	8.75	480	3.5	Factory Slot PVC	3	0.03
UM4	Underlying	446885.23	4835413.09	5120.17	5117.67	SDR 17 PVC spline and groove	4.5	4.95	410	Cement w/ bentonite	14.5	404	410	430	9	434	4.95	Factory Slot PVC	4.5	0.03
UM5	Underlying	444499.68	4833529.21	5116.67	5113.67	SDR 17 PVC spline and groove	4.5	4.95	424	Cement w/ bentonite	14.4	418	424	444	9	445	4.95	Factory Slot PVC	4.5	0.03
UM6	Underlying	443796.29	4833954.10	5183.46	5181.06	SDR 17 PVC spline and groove	4.5	4.95	415	Cement w/ bentonite	14.5	NA	415	435	9	435	4.95	Factory Slot PVC	4.5	0.03
UM7	Underlying	445114.00	4832405.15	5176.66	5174.06	SDR 17 PVC spline and groove	4.5	4.95	385	Cement w/ bentonite	14.3	na	385	405	8.75	405	3.5	Factory Slot PVC	3	0.03

Table 2.7B-2: Production Zone Aquifer Water Level Data

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM1	11/30/2010 11:25	PZA	291.81	5,230.87	4,939.06
PZM1	12/1/2010 8:15	PZA	290.8	5,230.87	4,940.07
PZM1	12/1/2010 8:55	PZA	291.57	5,230.87	4,939.30
PZM1	12/6/2010 16:00	PZA	292.2	5,230.87	4,938.67
PZM1	3/25/2011 10:25	PZA	291.39	5,230.87	4,939.48
PZM1	4/26/2011 13:40	PZA	291.28	5,230.87	4,939.59
PZM1	5/31/2011 13:10	PZA	291.81	5,230.87	4,939.06
PZM1	6/28/2011 12:25	PZA	291.88	5,230.87	4,938.99
PZM1	8/2/2011 14:43	PZA	291.82	5,230.87	4,939.05
PZM1	9/1/2011 12:50	PZA	291.63	5,230.87	4,939.24
PZM1	9/28/2011 12:05	PZA	291.78	5,230.87	4,939.09
PZM1	11/3/2011 11:05	PZA	291.63	5,230.87	4,939.24
PZM1	11/30/2011 12:03	PZA	291.47	5,230.87	4,939.40
PZM1	12/28/2011 14:05	PZA	291.47	5,230.87	4,939.40
PZM1	1/31/2012 12:22	PZA	291.58	5,230.87	4,939.29
PZM1	3/13/2012 10:31	PZA	291.23	5,230.87	4,939.64
PZM2	8/2/2011 11:32	PZA	305.57	5,257.39	4,951.82
PZM2	9/1/2011 11:55	PZA	305.37	5,257.39	4,952.02
PZM2	9/28/2011 13:10	PZA	305.48	5,257.39	4,951.91
PZM2	11/3/2011 11:00	PZA	305.37	5,257.39	4,952.02
PZM2	11/30/2011 12:00	PZA	305.25	5,257.39	4,952.14
PZM2	12/28/2011 13:50	PZA	305.23	5,257.39	4,952.16
PZM2	1/31/2012 11:50	PZA	305.33	5,257.39	4,952.06
PZM2	3/13/2012 11:18	PZA	304.96	5,257.39	4,952.43
PZM3	8/29/2011 0:00	PZA	301.74	5,261.99	4,960.25
PZM3	9/1/2011 12:10	PZA	301.75	5,261.99	4,960.24
PZM4	8/2/2011 12:54	UPZA	147	5,118.83	4,971.83
PZM4	8/9/2011 9:30	UPZA	146.9	5,118.83	4,971.93
PZM4	8/25/2011 13:39	UPZA	147.16	5,118.83	4,971.67
PZM4	11/3/2011 9:15	UPZA	147	5,118.83	4,971.83
PZM4	11/30/2011 8:00	UPZA	146.86	5,118.83	4,971.97
PZM4	12/28/2011 9:37	UPZA	146.8	5,118.83	4,972.03
PZM4	1/31/2012 10:52	UPZA	146.77	5,118.83	4,972.06
PZM4	3/13/2012 16:11	UPZA	146.58	5,118.83	4,972.25
PZM4D	8/9/2011 8:48	LPZA	152.61	5,120.47	4,967.86
PZM4D	8/9/2011 9:30	LPZA	152.61	5,120.47	4,967.86
PZM4D	11/3/2011 9:50	LPZA	152.6	5,120.47	4,967.87
PZM4D	11/30/2011 7:40	LPZA	152.56	5,120.47	4,967.91
PZM4D	12/28/2011 9:30	LPZA	152.55	5,120.47	4,967.92

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM4D	1/31/2012 10:47	LPZA	152.5	5,120.47	4,967.97
PZM4D	3/13/2012 15:59	LPZA	152.33	5,120.47	4,968.14
PZM5	12/1/2010 13:20	PZA	128.82	5,115.12	4,986.30
PZM5	2/7/2011 15:25	PZA	128.72	5,115.12	4,986.40
PZM5	3/25/2011 11:53	PZA	128.89	5,115.12	4,986.23
PZM5	4/26/2011 11:46	PZA	128.64	5,115.12	4,986.48
PZM5	5/31/2011 16:29	PZA	128.52	5,115.12	4,986.60
PZM5	6/28/2011 16:05	PZA	128.55	5,115.12	4,986.57
PZM5	8/2/2011 10:24	PZA	128.77	5,115.12	4,986.35
PZM5	9/1/2011 10:25	PZA	129.06	5,115.12	4,986.06
PZM5	9/28/2011 10:14	PZA	129.12	5,115.12	4,986.00
PZM5	11/3/2011 9:00	PZA	129.78	5,115.12	4,985.34
PZM5	11/30/2011 10:00	PZA	129.6	5,115.12	4,985.52
PZM5	12/28/2011 8:41	PZA	129.59	5,115.12	4,985.53
PZM5	1/31/2012 10:00	PZA	129.68	5,115.12	4,985.44
PZM5	3/13/2012 14:33	PZA	129.43	5,115.12	4,985.69
PZM6	2/7/2011 16:55	PZA	197.32	5,184.59	4,987.27
PZM6	2/8/2011 10:08	PZA	197.44	5,184.59	4,987.15
PZM6	2/16/2011 9:30	PZA	197.53	5,184.59	4,987.06
PZM6	3/25/2011 11:30	PZA	197.64	5,184.59	4,986.95
PZM6	4/26/2011 11:17	PZA	197.31	5,184.59	4,987.28
PZM6	5/31/2011 15:30	PZA	197.15	5,184.59	4,987.44
PZM6	6/28/2011 15:40	PZA	197.18	5,184.59	4,987.41
PZM6	8/2/2011 9:39	PZA	197.52	5,184.59	4,987.07
PZM6	9/1/2011 10:07	PZA	197.57	5,184.59	4,987.02
PZM6	9/28/2011 9:53	PZA	197.68	5,184.59	4,986.91
PZM6	11/3/2011 8:30	PZA	197.63	5,184.59	4,986.96
PZM6	11/30/2011 10:00	PZA	197.42	5,184.59	4,987.17
PZM6	12/28/2011 8:13	PZA	197.43	5,184.59	4,987.16
PZM6	1/31/2012 9:37	PZA	197.43	5,184.59	4,987.16
PZM6	3/13/2012 13:58	PZA	197.26	5,184.59	4,987.33

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM7	8/2/2011 11:01	PZA	184.11	5,176.66	4,992.55
PZM7	9/1/2011 8:00	PZA	184.87	5,176.66	4,991.79
PZM7	9/28/2011 14:05	PZA	184.61	5,176.66	4,992.05
PZM7	11/3/2011 11:24	PZA	184.44	5,176.66	4,992.22
PZM7	11/30/2011 10:35	PZA	184.22	5,176.66	4,992.44
PZM7	12/28/2011 10:20	PZA	184.25	5,176.66	4,992.41
PZM7	1/31/2012 8:53	PZA	184.85	5,176.66	4,991.81
PZM7	3/13/2012 12:20	PZA	183.91	5,176.66	4,992.75
PZM8	11/30/2010 10:25	PZA	288.01	5,227.18	4,939.17
PZM8	12/1/2010 11:17	PZA	288.68	5,227.18	4,938.50
PZM8	12/6/2010 16:00	PZA	287.9	5,227.18	4,939.28
PZM8	12/6/2010 16:30	PZA	287.67	5,227.18	4,939.51
PZM8	3/25/2011 10:10	PZA	287.6	5,227.18	4,939.58
PZM8	4/26/2011 14:00	PZA	287.65	5,227.18	4,939.53
PZM8	5/31/2011 13:20	PZA	288.02	5,227.18	4,939.16
PZM8	6/28/2011 12:30	PZA	287.87	5,227.18	4,939.31
PZM8	8/2/2011 14:26	PZA	288.04	5,227.18	4,939.14
PZM8	11/3/2011 12:15	PZA	287.84	5,227.18	4,939.34
PZM8	11/30/2011 12:10	PZA	287.7	5,227.18	4,939.48
PZM8	12/28/2011 11:00	PZA	287.65	5,227.18	4,939.53
PZM8	3/13/2012 10:44	PZA	287.47	5,227.18	4,939.71
PZM9	11/29/2010 14:30	PZA	291.66	5,230.71	4,939.05
PZM9	11/30/2010 9:40	PZA	291.8	5,230.71	4,938.91
PZM9	12/1/2010 11:08	PZA	292.03	5,230.71	4,938.68
PZM9	12/6/2010 16:00	PZA	291.67	5,230.71	4,939.04
PZM9	12/6/2010 16:30	PZA	291.57	5,230.71	4,939.14
PZM9	3/25/2011 10:30	PZA	291.33	5,230.71	4,939.38
PZM9	4/26/2011 13:55	PZA	291.25	5,230.71	4,939.46
PZM9	5/31/2011 13:00	PZA	291.76	5,230.71	4,938.95
PZM9	6/28/2011 12:10	PZA	291.59	5,230.71	4,939.12
PZM9	8/2/2011 14:48	PZA	291.78	5,230.71	4,938.93
PZM9	9/1/2011 13:05	PZA	291.61	5,230.71	4,939.10
PZM9	9/28/2011 11:50	PZA	291.71	5,230.71	4,939.00

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM9	11/3/2011 11:57	PZA	291.55	5,230.71	4,939.16
PZM9	11/30/2011 12:00	PZA	291.4	5,230.71	4,939.31
PZM9	12/28/2011 14:00	PZA	291.37	5,230.71	4,939.34
PZM9	1/31/2012 12:20	PZA	291.51	5,230.71	4,939.20
PZM9	3/13/2012 10:25	PZA	291.19	5,230.71	4,939.52
PZM10	11/30/2010 10:50	PZA	289.04	5,228.64	4,939.60
PZM10	12/1/2010 11:21	PZA	288.97	5,228.64	4,939.67
PZM10	12/6/2010 16:00	PZA	288.97	5,228.64	4,939.67
PZM10	12/6/2010 16:30	PZA	288.95	5,228.64	4,939.69
PZM10	3/25/2011 10:05	PZA	288.65	5,228.64	4,939.99
PZM10	4/26/2011 13:25	PZA	288.56	5,228.64	4,940.08
PZM10	5/31/2011 13:00	PZA	289.09	5,228.64	4,939.55
PZM10	6/28/2011 12:00	PZA	288.91	5,228.64	4,939.73
PZM10	8/2/2011 14:19	PZA	289.08	5,228.64	4,939.56
PZM10	9/1/2011 13:10	PZA	288.97	5,228.64	4,939.67
PZM10	9/28/2011 12:15	PZA	289.05	5,228.64	4,939.59
PZM10	11/3/2011 12:17	PZA	289.9	5,228.64	4,938.74
PZM10	11/30/2011 12:17	PZA	288.75	5,228.64	4,939.89
PZM10	12/28/2011 14:15	PZA	288.7	5,228.64	4,939.94
PZM10	1/31/2012 12:35	PZA	288.81	5,228.64	4,939.83
PZM10	3/13/2012 10:39	PZA	288.48	5,228.64	4,940.16
PZM11	8/29/2011 0:00	PZA	297.38	5,257.53	4,960.15
PZM11	9/1/2011 12:15	PZA	297.4	5,257.53	4,960.13
PZM11	9/28/2011 13:45	PZA	297.43	5,257.53	4,960.10
PZM11	11/3/2011 10:44	PZA	297.47	5,257.53	4,960.06
PZM11	11/30/2011 12:54	PZA	297.23	5,257.53	4,960.30
PZM11	12/28/2011 13:35	PZA	297.18	5,257.53	4,960.35
PZM11	1/31/2011 11:30	PZA	297.29	5,257.53	4,960.24
PZM11	3/13/2012 11:30	PZA	296.94	5,257.53	4,960.59

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM12	8/2/2011 12:07	PZA	296.32	5,257.94	4,961.62
PZM12	8/29/2011 0:00	PZA	297.32	5,257.94	4,960.62
PZM12	9/28/2011 13:30	PZA	297.31	5,257.94	4,960.63
PZM12	11/3/2011 10:50	PZA	297.4	5,257.94	4,960.54
PZM12	11/30/2011 13:05	PZA	297.15	5,257.94	4,960.79
PZM12	12/28/2011 13:45	PZA	297.12	5,257.94	4,960.82
PZM12	1/31/2012 11:37	PZA	297.23	5,257.94	4,960.71
PZM12	3/13/2012 11:45	PZA	296.88	5,257.94	4,961.06
PZM13	8/29/2011 0:00	PZA	300.22	5,260.51	4,960.29
PZM13	9/1/2011 12:25	PZA	300.2	5,260.51	4,960.31
PZM13	9/28/2011 13:20	PZA	300.3	5,260.51	4,960.21
PZM13	11/3/2011 10:39	PZA	300.27	5,260.51	4,960.24
PZM13	11/30/2011 13:06	PZA	300.05	5,260.51	4,960.46
PZM13	12/28/2011 13:50	PZA	300.02	5,260.51	4,960.49
PZM13	1/31/2012 11:40	PZA	300.11	5,260.51	4,960.40
PZM13	3/13/2012 11:54	PZA	299.76	5,260.51	4,960.75
PZM14	3/25/2011 10:40	PZA	198.28	5,146.36	4,948.08
PZM14	4/26/2011 13:18	PZA	198.15	5,146.36	4,948.21
PZM14	5/31/2011 13:40	PZA	198.49	5,146.36	4,947.87
PZM14	6/28/2011 13:30	PZA	198.54	5,146.36	4,947.82
PZM14	8/2/2011 14:08	PZA	198.66	5,146.36	4,947.70
PZM14	8/9/2011 9:30	PZA	198.55	5,146.36	4,947.81
PZM14	8/25/2011 9:35	PZA	198.61	5,146.36	4,947.75
PZM14	9/1/2011 12:40	PZA	198.57	5,146.36	4,947.79
PZM14	9/28/2011 11:40	PZA	198.65	5,146.36	4,947.71
PZM14	11/30/2011 12:30	PZA	198.45	5,146.36	4,947.91
PZM14	12/28/2011 10:00	PZA	198.43	5,146.36	4,947.93
PZM14	1/31/2012 11:15	PZA	198.4	5,146.36	4,947.96
PZM14	3/13/2012 16:40	PZA	198.12	5,146.36	4,948.24

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM15	3/25/2011 12:50	PZA	225.81	5,189.17	4,963.36
PZM15	4/26/2011 10:03	PZA	225.76	5,189.17	4,963.41
PZM15	5/31/2011 14:32	PZA	225.83	5,189.17	4,963.34
PZM15	6/28/2011 14:40	PZA	226.02	5,189.17	4,963.15
PZM15	8/2/2011 12:34	PZA	226.2	5,189.17	4,962.97
PZM15	8/9/2011 9:30	PZA	226.13	5,189.17	4,963.04
PZM15	8/25/2011 14:32	PZA	227.04	5,189.17	4,962.13
PZM15	9/1/2011 11:36	PZA	226.52	5,189.17	4,962.65
PZM15	9/28/2011 11:20	PZA	226.51	5,189.17	4,962.66
PZM15	11/3/2011 10:14	PZA	226.16	5,189.17	4,963.01
PZM15	11/30/2011 7:35	PZA	226.05	5,189.17	4,963.12
PZM15	12/28/2011 9:45	PZA	226.06	5,189.17	4,963.11
PZM15	1/31/2012 11:00	PZA	225.99	5,189.17	4,963.18
PZM15	3/13/2012 16:23	PZA	225.79	5,189.17	4,963.38
PZM16	3/25/2011 12:30	PZA	137.13	5,112.56	4,975.43
PZM16	4/26/2011 10:15	PZA	137.02	5,112.56	4,975.54
PZM16	5/31/2011 14:39	PZA	137.3	5,112.56	4,975.26
PZM16	6/28/2011 14:00	PZA	137.02	5,112.56	4,975.54
PZM16	8/2/2011 13:29	PZA	137.46	5,112.56	4,975.10
PZM16	8/9/2011 9:30	PZA	137.33	5,112.56	4,975.23
PZM16	8/25/2011 11:42	PZA	137.68	5,112.56	4,974.88
PZM16	9/1/2011 11:18	PZA	137.58	5,112.56	4,974.98
PZM16	9/28/2011 10:55	PZA	137.53	5,112.56	4,975.03
PZM16	11/3/2011 9:45	PZA	137.5	5,112.56	4,975.06
PZM16	11/30/2011 8:10	PZA	137.55	5,112.56	4,975.01
PZM16	12/28/2011 9:22	PZA	137.29	5,112.56	4,975.27
PZM16	1/31/2012 10:35	PZA	137.28	5,112.56	4,975.28
PZM16	3/13/2012 15:45	PZA	137.09	5,112.56	4,975.47

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM17	3/25/2011 12:25	PZA	127.16	5,104.46	4,977.30
PZM17	4/26/2011 10:20	PZA	127.04	5,104.46	4,977.42
PZM17	5/31/2011 14:49	PZA	127.31	5,104.46	4,977.15
PZM17	6/28/2011 13:50	PZA	127.37	5,104.46	4,977.09
PZM17	8/2/2011 13:45	PZA	127.83	5,104.46	4,976.63
PZM17	8/9/2011 9:30	PZA	127.76	5,104.46	4,976.70
PZM17	8/25/2011 10:48	PZA	128.03	5,104.46	4,976.43
PZM17	9/1/2011 11:10	PZA	128.11	5,104.46	4,976.35
PZM17	9/28/2011 10:45	PZA	128.15	5,104.46	4,976.31
PZM17	11/3/2011 9:35	PZA	128.17	5,104.46	4,976.29
PZM17	11/30/2011 8:16	PZA	128.02	5,104.46	4,976.44
PZM17	12/28/2011 9:12	PZA	127.98	5,104.46	4,976.48
PZM17	1/31/2012 10:36	PZA	127.94	5,104.46	4,976.52
PZM17	3/13/2012 15:31	PZA	127.94	5,104.46	4,976.52
PZM18	2/7/2011 16:37	PZA	163.19	5,142.89	4,979.70
PZM18	2/8/2011 9:55	PZA	163.43	5,142.89	4,979.46
PZM18	2/16/2011 9:30	PZA	163.16	5,142.89	4,979.73
PZM18	3/25/2011 12:05	PZA	163.31	5,142.89	4,979.58
PZM18	4/26/2011 11:38	PZA	163.04	5,142.89	4,979.85
PZM18	5/31/2011 16:53	PZA	163.24	5,142.89	4,979.65
PZM18	6/28/2011 15:45	PZA	163.25	5,142.89	4,979.64
PZM18	8/2/2011 9:54	PZA	163.43	5,142.89	4,979.46
PZM18	9/1/2011 10:40	PZA	163.56	5,142.89	4,979.33
PZM18	9/28/2011 10:25	PZA	163.6	5,142.89	4,979.29
PZM18	11/3/2011 8:46	PZA	163.61	5,142.89	4,979.28
PZM18	11/30/2011 9:45	PZA	163.37	5,142.89	4,979.52
PZM18	12/28/2011 8:30	PZA	163.38	5,142.89	4,979.51
PZM18	1/31/2012 9:45	PZA	163.4	5,142.89	4,979.49
PZM18	3/13/2012 13:05	PZA	163.15	5,142.89	4,979.74

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
PZM19	2/7/2011 16:35	PZA	157.02	5,140.41	4,983.39
PZM19	2/8/2011 9:48	PZA	157.38	5,140.41	4,983.03
PZM19	2/8/2011 15:43	PZA	157.64	5,140.41	4,982.77
PZM19	2/16/2011 9:30	PZA	157.22	5,140.41	4,983.19
PZM19	3/25/2011 11:55	PZA	157.14	5,140.41	4,983.27
PZM19	4/26/2011 12:00	PZA	156.89	5,140.41	4,983.52
PZM19	5/31/2011 16:41	PZA	156.8	5,140.41	4,983.61
PZM19	6/28/2011 15:50	PZA	156.9	5,140.41	4,983.51
PZM19	8/2/2011 22:03	PZA	157.11	5,140.41	4,983.30
PZM19	9/1/2011 10:32	PZA	157.3	5,140.41	4,983.11
PZM19	9/28/2011 10:20	PZA	157.37	5,140.41	4,983.04
PZM19	11/3/2011 9:09	PZA	157.28	5,140.41	4,983.13
PZM19	11/30/2011 10:10	PZA	157.1	5,140.41	4,983.31
PZM19	12/28/2011 8:54	PZA	157.13	5,140.41	4,983.28
PZM19	1/31/2012 10:06	PZA	155.14	5,140.41	4,985.27
PZM19	3/13/2012 14:45	PZA	156.91	5,140.41	4,983.50
PZM20	2/7/2011 16:25	PZA	151.14	5,138.49	4,987.35
PZM20	2/16/2011 9:30	PZA	151.44	5,138.49	4,987.05
PZM20	3/25/2011 11:40	PZA	151.32	5,138.49	4,987.17
PZM20	4/26/2011 11:56	PZA	151.06	5,138.49	4,987.43
PZM20	9/1/2011 10:20	PZA	151.43	5,138.49	4,987.06
PZM20	9/28/2011 10:05	PZA	151.52	5,138.49	4,986.97
PZM20	11/3/2011 9:05	PZA	151.39	5,138.49	4,987.10
PZM20	11/30/2011 10:05	PZA	151.2	5,138.49	4,987.29
PZM20	12/28/2011 8:47	PZA	151.23	5,138.49	4,987.26
PZM20	1/31/2012 10:03	PZA	151.27	5,138.49	4,987.22
PZM20	3/13/2012 14:20	PZA	151.04	5,138.49	4,987.45

Table 2.7B-2: Production Zone Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
ANCVSS	2/7/2011 17:12	PZA	199.75	5,197.51	4,997.76
ANCVSS	2/7/2011 17:18	PZA	199.75	5,197.51	4,997.76
ANCVSS	2/8/2011 10:24	PZA	199.85	5,197.51	4,997.66
ANCVSS	3/25/2011 11:10	PZA	199.95	5,197.51	4,997.56
ANCVSS	4/26/2011 12:45	PZA	199.71	5,197.51	4,997.80
ANCVSS	5/31/2011 16:11	PZA	199.6	5,197.51	4,997.91
ANCVSS	6/28/2011 16:15	PZA	199.62	5,197.51	4,997.89
ANCVSS	8/2/2011 9:06	PZA	199.91	5,197.51	4,997.60
ANCVSS	9/1/2011 9:55	PZA	199.92	5,197.51	4,997.59
ANCVSS	9/28/2011 9:40	PZA	200.07	5,197.51	4,997.44
ANCVSS	11/3/2011 8:20	PZA	200	5,197.51	4,997.51
ANCVSS	11/30/2011 8:45	PZA	199.8	5,197.51	4,997.71
ANCVSS	12/28/2011 8:00	PZA	199.85	5,197.51	4,997.66
ANCVSS	1/31/2012 9:25	PZA	199.85	5,197.51	4,997.66
ANCVSS	3/13/2012 14:37	PZA	199.67	5,197.51	4,997.84

Table 2.7B-3: Water Table (SM) Water Level Data

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
SM3	8/2/2011 12:01	SM Unit	68.68	5,260.94	5,192.26
SM3	9/1/2011 12:13	SM Unit	69.74	5,260.94	5,191.20
SM3	11/3/2011 10:40	SM Unit	71.46	5,260.94	5,189.48
SM3	11/30/2011 12:52	SM Unit	71.45	5,260.94	5,189.49
SM3	12/28/2011 13:30	SM Unit	71.43	5,260.94	5,189.51
SM3	1/31/2012 11:33	SM Unit	71.3	5,260.94	5,189.64
SM3	3/13/2012 11:34	SM Unit	71.19	5,260.94	5,189.75
SM5	2/7/2011 15:15	SM Unit	36.13	5,115.90	5,079.77
SM5	2/8/2011 9:19	SM Unit	36.02	5,115.90	5,079.88
SM5	2/8/2011 16:13	SM Unit	35.98	5,115.90	5,079.92
SM5	2/16/2011 9:30	SM Unit	36.13	5,115.90	5,079.77
SM5	3/25/2011 11:48	SM Unit	35.42	5,115.90	5,080.48
SM5	4/26/2011 11:44	SM Unit	35.31	5,115.90	5,080.59
SM5	5/31/2011 16:21	SM Unit	35.25	5,115.90	5,080.65
SM5	6/28/2011 15:55	SM Unit	35.4	5,115.90	5,080.50
SM5	8/2/2011 10:13	SM Unit	35.72	5,115.90	5,080.18
SM5	9/1/2011 10:29	SM Unit	35.94	5,115.90	5,079.96
SM5	9/28/2011 10:10	SM Unit	36.08	5,115.90	5,079.82
SM5	11/3/2011 8:57	SM Unit	36.12	5,115.90	5,079.78
SM5	11/30/2011 9:56	SM Unit	36.08	5,115.90	5,079.82
SM5	12/28/2011 8:40	SM Unit	36.25	5,115.90	5,079.65
SM5	1/31/2012 9:55	SM Unit	36.18	5,115.90	5,079.72
SM5	3/13/2012 14:27	SM Unit	35.78	5,115.90	5,080.12
SM6	3/25/2011 11:27	SM Unit	72.34	5,183.20	5,110.86
SM6	4/26/2011 11:22	SM Unit	72.37	5,183.20	5,110.83
SM6	5/31/2011 15:40	SM Unit	72.31	5,183.20	5,110.89
SM6	6/28/2011 15:30	SM Unit	72.41	5,183.20	5,110.79
SM6	8/2/2011 9:26	SM Unit	72.65	5,183.20	5,110.55
SM6	9/1/2011 10:09	SM Unit	72.57	5,183.20	5,110.63
SM6	9/28/2011 9:55	SM Unit	72.57	5,183.20	5,110.63
SM6	11/3/2011 8:32	SM Unit	72.64	5,183.20	5,110.56
SM6	11/30/2011 8:57	SM Unit	72.64	5,183.20	5,110.56

Table 2.7B-3: Water Table Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
SM6	12/28/2011 8:20	SM Unit	72.66	5,183.20	5,110.54
SM6	1/31/2012 9:40	SM Unit	72.62	5,183.20	5,110.58
SM6	3/13/2012 14:06	SM Unit	72.57	5,183.20	5,110.63
SM7	9/1/2011 7:50	SM Unit	65.5	5,176.73	5,111.23
SM7	9/28/2011 14:15	SM Unit	64.91	5,176.73	5,111.82
SM7	11/3/2011 11:28	SM Unit	65.42	5,176.73	5,111.31
SM7	11/30/2011 10:42	SM Unit	65.41	5,176.73	5,111.32
SM7	12/28/2011 10:25	SM Unit	65.35	5,176.73	5,111.38
SM7	1/31/2012 9:00	SM Unit	65.32	5,176.73	5,111.41
SM7	3/13/2012 12:28	SM Unit	65.2	5,176.73	5,111.53

Table 2.7B-4: Overlying Aquifer Water Level Data

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
OM1	11/29/2010 15:45	Overlying	179.52	5,229.94	5,050.42
OM1	11/30/2010 10:05	Overlying	179.6	5,229.94	5,050.34
OM1	12/1/2010 11:06	Overlying	179.44	5,229.94	5,050.50
OM1	12/6/2010 16:00	Overlying	179.55	5,229.94	5,050.39
OM1	12/6/2010 16:30	Overlying	179.3	5,229.94	5,050.64
OM1	3/25/2011 10:20	Overlying	179.31	5,229.94	5,050.63
OM1	4/26/2011 13:45	Overlying	179.23	5,229.94	5,050.71
OM1	5/31/2011 13:28	Overlying	179.78	5,229.94	5,050.16
OM1	6/28/2011 12:20	Overlying	179.66	5,229.94	5,050.28
OM1	8/2/2011 14:36	Overlying	179.83	5,229.94	5,050.11
OM1	9/1/2011 12:52	Overlying	178.68	5,229.94	5,051.26
OM1	9/28/2011 12:10	Overlying	179.8	5,229.94	5,050.14
OM1	11/3/2011 12:08	Overlying	179.63	5,229.94	5,050.31
OM1	11/30/2011 12:06	Overlying	179.5	5,229.94	5,050.44
OM1	12/28/2011 14:07	Overlying	179.45	5,229.94	5,050.49
OM1	1/31/2012 12:34	Overlying	179.58	5,229.94	5,050.36
OM1	3/13/2012 10:35	Overlying	179.31	5,229.94	5,050.63
OM2	8/2/2011 11:28	Overlying	139.74	5,258.68	5,118.94
OM2	9/1/2011 12:00	Overlying	137.72	5,258.68	5,120.96
OM2	9/28/2011 13:20	Overlying	137.53	5,258.68	5,121.15
OM2	11/3/2011 11:04	Overlying	137.65	5,258.68	5,121.03
OM2	11/30/2011 13:25	Overlying	137.28	5,258.68	5,121.40
OM2	12/28/2011 13:47	Overlying	137.25	5,258.68	5,121.43
OM2	1/31/2012 13:48	Overlying	137.05	5,258.68	5,121.63
OM2	3/13/2012 11:14	Overlying	136.88	5,258.68	5,121.80
OM3	8/2/2011 11:47	Overlying	136.66	5,262.27	5,125.61
OM3	8/29/2011 0:00	Overlying	136.62	5,262.27	5,125.65
OM3	9/1/2011 12:17	Overlying	136.58	5,262.27	5,125.69
OM3	9/28/2011 13:40	Overlying	140.11	5,262.27	5,122.16
OM3	11/3/2011 10:54	Overlying	136.5	5,262.27	5,125.77
OM3	11/30/2011 12:57	Overlying	136.35	5,262.27	5,125.92

Table 2.7B-4: Overlying Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
OM3	12/28/2011 13:42	Overlying	136.35	5,262.27	5,125.92
OM3	1/31/2012 11:38	Overlying	136.25	5,262.27	5,126.02
OM3	3/13/2012 11:51	Overlying	135.87	5,262.27	5,126.40
OM4	3/25/2011 12:40	Overlying	94.31	5,118.72	5,024.41
OM4	4/26/2011 9:20	Overlying	94.1	5,118.72	5,024.62
OM4	5/31/2011 14:16	Overlying	94.45	5,118.72	5,024.27
OM4	6/28/2011 14:25	Overlying	94.17	5,118.72	5,024.55
OM4	8/2/2011 12:49	Overlying	94.32	5,118.72	5,024.40
OM4	8/9/2011 9:30	Overlying	94.24	5,118.72	5,024.48
OM4	8/9/2011 9:35	Overlying	94.24	5,118.72	5,024.48
OM4	8/10/2011 13:24	Overlying	94.14	5,118.72	5,024.58
OM4	8/11/2011 10:16	Overlying	94.16	5,118.72	5,024.56
OM4	8/11/2011 15:45	Overlying	94.11	5,118.72	5,024.61
OM4	8/12/2011 16:22	Overlying	94.22	5,118.72	5,024.50
OM4	8/13/2011 10:14	Overlying	94.32	5,118.72	5,024.40
OM4	8/13/2011 16:24	Overlying	94.24	5,118.72	5,024.48
OM4	8/14/2011 9:58	Overlying	94.19	5,118.72	5,024.53
OM4	8/15/2011 11:11	Overlying	94.16	5,118.72	5,024.56
OM4	8/25/2011 12:07	Overlying	94.26	5,118.72	5,024.46
OM4	9/1/2011 11:27	Overlying	94.38	5,118.72	5,024.34
OM4	9/28/2011 11:12	Overlying	94.41	5,118.72	5,024.31
OM4	11/3/2011 9:57	Overlying	94.42	5,118.72	5,024.30
OM4	11/30/2011 7:58	Overlying	94.38	5,118.72	5,024.34
OM4	12/28/2011 9:36	Overlying	94.45	5,118.72	5,024.27
OM4	1/31/2012 10:54	Overlying	94.67	5,118.72	5,024.05
OM4	3/13/2012 16:08	Overlying	94.36	5,118.72	5,024.36
OM5	2/7/2011 15:20	Overlying	38.92	5,115.94	5,077.02
OM5	2/8/2011 9:30	Overlying	38.87	5,115.94	5,077.07
OM5	2/8/2011 16:21	Overlying	38.88	5,115.94	5,077.06
OM5	2/16/2011 9:30	Overlying	38.89	5,115.94	5,077.05
OM5	3/25/2011 11:50	Overlying	38.22	5,115.94	5,077.72
OM5	4/26/2011 11:48	Overlying	38.02	5,115.94	5,077.92
OM5	5/31/2011 16:25	Overlying	37.45	5,115.94	5,078.49

Table 2.7B-4: Overlying Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
OM5	6/28/2011 16:00	Overlying	37.58	5,115.94	5,078.36
OM5	8/2/2011 10:17	Overlying	37.82	5,115.94	5,078.12
OM5	9/1/2011 10:27	Overlying	38.04	5,115.94	5,077.90
OM5	9/28/2011 10:12	Overlying	38.24	5,115.94	5,077.70
OM5	11/3/2011 8:59	Overlying	38.36	5,115.94	5,077.58
OM5	11/30/2011 9:58	Overlying	38.35	5,115.94	5,077.59
OM5	12/28/2011 8:45	Overlying	38.35	5,115.94	5,077.59
OM5	1/31/2012 10:02	Overlying	38.43	5,115.94	5,077.51
OM5	3/13/2012 14:30	Overlying	38.03	5,115.94	5,077.91
OM6	2/7/2011 17:05	Overlying	119.96	5,185.60	5,065.64
OM6	2/8/2011 10:05	Overlying	120.14	5,185.60	5,065.46
OM6	2/9/2011 13:02	Overlying	120.14	5,185.60	5,065.46
OM6	3/25/2011 11:25	Overlying	119.94	5,185.60	5,065.66
OM6	4/26/2011 11:20	Overlying	119.95	5,185.60	5,065.65
OM6	5/31/2011 15:24	Overlying	120.03	5,185.60	5,065.57
OM6	6/28/2011 15:25	Overlying	120.15	5,185.60	5,065.45
OM6	8/2/2011 9:21	Overlying	120.21	5,185.60	5,065.39
OM6	9/1/2011 10:10	Overlying	120.12	5,185.60	5,065.48
OM6	9/28/2011 9:57	Overlying	119.72	5,185.60	5,065.88
OM6	11/3/2011 11:34	Overlying	119.5	5,185.60	5,066.10
OM6	11/30/2011 8:55	Overlying	118.96	5,185.60	5,066.64
OM6	12/28/2011 8:15	Overlying	118.36	5,185.60	5,067.24
OM6	1/31/2012 9:39	Overlying	117.84	5,185.60	5,067.76
OM6	3/13/2012 14:09	Overlying	117.08	5,185.60	5,068.52
OM7	8/2/2011 11:05	Overlying	126.89	5,176.20	5,049.31
OM7	9/1/2011 8:02	Overlying	126.72	5,176.20	5,049.48
OM7	9/28/2011 14:00	Overlying	126.99	5,176.20	5,049.21
OM7	11/3/2011 11:20	Overlying	127.14	5,176.20	5,049.06
OM7	11/30/2011 10:37	Overlying	127.1	5,176.20	5,049.10
OM7	12/28/2011 10:15	Overlying	127.15	5,176.20	5,049.05
OM7	1/31/2012 8:50	Overlying	127.35	5,176.20	5,048.85
OM7	3/13/2012 12:17	Overlying	127.26	5,176.20	5,048.94

Table 2.7B-5: Overlying Aquitard Water Level Data

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
OAM4D	4/26/2011 9:25	OAMD (L. Felix)	118.2	5,121.19	5,002.99
OAM4D	5/31/2011 14:05	OAMD (L. Felix)	119.39	5,121.19	5,001.80
OAM4D	6/28/2011 14:50	OAMD (L. Felix)	118.47	5,121.19	5,002.72
OAM4D	8/2/2011 13:07	OAMD (L. Felix)	118.58	5,121.19	5,002.61
OAM4D	8/9/2011 9:20	OAMD (L. Felix)	118.59	5,121.19	5,002.60
OAM4D	8/9/2011 9:30	OAMD (L. Felix)	118.59	5,121.19	5,002.60
OAM4D	8/10/2011 14:00	OAMD (L. Felix)	118.32	5,121.19	5,002.87
OAM4D	8/11/2011 9:31	OAMD (L. Felix)	118.3	5,121.19	5,002.89
OAM4D	8/11/2011 15:07	OAMD (L. Felix)	118.28	5,121.19	5,002.91
OAM4D	8/12/2011 15:57	OAMD (L. Felix)	118.37	5,121.19	5,002.82
OAM4D	8/13/2011 9:58	OAMD (L. Felix)	118.43	5,121.19	5,002.76
OAM4D	8/13/2011 15:48	OAMD (L. Felix)	118.43	5,121.19	5,002.76
OAM4D	8/14/2011 9:42	OAMD (L. Felix)	118.41	5,121.19	5,002.78
OAM4D	8/15/2011 10:52	OAMD (L. Felix)	118.43	5,121.19	5,002.76
OAM4D	8/25/2011 13:29	OAMD (L. Felix)	118.69	5,121.19	5,002.50
OAM4D	9/1/2011 11:29	OAMD (L. Felix)	118.68	5,121.19	5,002.51
OAM4D	9/28/2011 11:05	OAMD (L. Felix)	118.65	5,121.19	5,002.54
OAM4D	11/3/2011 9:52	OAMD (L. Felix)	118.68	5,121.19	5,002.51
OAM4D	11/30/2011 7:50	OAMD (L. Felix)	118.61	5,121.19	5,002.58
OAM4D	12/28/2011 9:32	OAMD (L. Felix)	118.65	5,121.19	5,002.54
OAM4D	1/31/2012 10:49	OAMD (L. Felix)	118.67	5,121.19	5,002.52
OAM4D	3/13/2012 16:02	OAMD (L. Felix)	118.53	5,121.19	5,002.66

Table 2.7B-5: Overlying Aquitard Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
OAM4S	4/26/2011 9:30	OAMS (U. Felix)	95.86	5,119.30	5,023.44
OAM4S	5/31/2011 13:20	OAMS (U. Felix)	96.15	5,119.30	5,023.15
OAM4S	6/28/2011 14:15	OAMS (U. Felix)	95.16	5,119.30	5,024.14
OAM4S	8/2/2011 12:59	OAMS (U. Felix)	95.51	5,119.30	5,023.79
OAM4S	8/9/2011 9:30	OAMS (U. Felix)	95.18	5,119.30	5,024.12
OAM4S	8/9/2011 9:40	OAMS (U. Felix)	95.9	5,119.30	5,023.40
OAM4S	8/10/2011 13:42	OAMS (U. Felix)	95.74	5,119.30	5,023.56
OAM4S	8/11/2011 10:00	OAMS (U. Felix)	95.73	5,119.30	5,023.57
OAM4S	8/11/2011 15:35	OAMS (U. Felix)	95.73	5,119.30	5,023.57
OAM4S	8/12/2011 16:08	OAMS (U. Felix)	95.82	5,119.30	5,023.48
OAM4S	8/13/2011 10:07	OAMS (U. Felix)	95.9	5,119.30	5,023.40
OAM4S	8/13/2011 16:17	OAMS (U. Felix)	95.9	5,119.30	5,023.40
OAM4S	8/14/2011 9:48	OAMS (U. Felix)	95.86	5,119.30	5,023.44
OAM4S	8/15/2011 11:04	OAMS (U. Felix)	95.83	5,119.30	5,023.47
OAM4S	8/25/2011 12:58	OAMS (U. Felix)	95.95	5,119.30	5,023.35
OAM4S	9/1/2011 11:30	OAMS (U. Felix)	95.91	5,119.30	5,023.39
OAM4S	9/28/2011 11:15	OAMS (U. Felix)	96.01	5,119.30	5,023.29
OAM4S	11/3/2011 9:58	OAMS (U. Felix)	96.15	5,119.30	5,023.15
OAM4S	11/30/2011 8:03	OAMS (U. Felix)	96.13	5,119.30	5,023.17
OAM4S	12/28/2011 9:38	OAMS (U. Felix)	96.13	5,119.30	5,023.17
OAM4S	1/31/2012 10:56	OAMS (U. Felix)	96.28	5,119.30	5,023.02
OAM4S	3/13/2012 16:14	OAMS (U. Felix)	96.08	5,119.30	5,023.22

Table 2.7B-6: Underlying Aquifer Water Level Data

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
UM1	11/30/2010 10:10	Underlying	298.24	5,228.51	4,930.27
UM1	12/1/2010 11:15	Underlying	298.12	5,228.51	4,930.39
UM1	12/6/2010 16:00	Underlying	297.72	5,228.51	4,930.79
UM1	12/6/2010 16:30	Underlying	297.52	5,228.51	4,930.99
UM1	3/25/2011 10:15	Underlying	296.09	5,228.51	4,932.42
UM1	4/26/2011 13:50	Underlying	295.95	5,228.51	4,932.56
UM1	5/31/2011 13:35	Underlying	295.76	5,228.51	4,932.75
UM1	8/2/2011 14:31	Underlying	296.11	5,228.51	4,932.40
UM1	9/1/2011 12:55	Underlying	296.1	5,228.51	4,932.41
UM1	9/28/2011 11:55	Underlying	296.04	5,228.51	4,932.47
UM1	11/3/2011 12:10	Underlying	297.52	5,228.51	4,930.99
UM1	11/30/2011 12:08	Underlying	296.2	5,228.51	4,932.31
UM1	12/28/2011 14:09	Underlying	296.06	5,228.51	4,932.45
UM1	1/31/2012 12:26	Underlying	296.02	5,228.51	4,932.49
UM1	3/13/2012 10:39	Underlying	295.81	5,228.51	4,932.70
UM2	8/2/2011 11:24	Underlying	316.64	5,259.45	4,942.81
UM2	9/1/2011 12:00	Underlying	315.05	5,259.45	4,944.40
UM2	9/28/2011 13:15	Underlying	315.39	5,259.45	4,944.06
UM2	11/3/2011 11:07	Underlying	315.53	5,259.45	4,943.92
UM2	11/30/2011 13:20	Underlying	315	5,259.45	4,944.45
UM2	12/28/2011 13:45	Underlying	314.97	5,259.45	4,944.48
UM2	1/31/2012 11:45	Underlying	314.83	5,259.45	4,944.62
UM2	3/13/2012 11:10	Underlying	314.63	5,259.45	4,944.82
UM3 P&A	8/2/2011 11:56	Underlying	304.54	5,262.25	4,957.71
UM3 P&A	8/29/2011 0:00	Underlying	304.44	5,262.25	4,957.81
UM3 P&A	9/1/2011 12:12	Underlying	304.5	5,262.25	4,957.75
UM3R	11/30/2011 13:10	Underlying	318.97	5,260.88	4,941.91
UM3R	12/28/2011 13:40	Underlying	318.38	5,260.88	4,942.50
UM3R	1/31/2012 11:35	Underlying	318.57	5,260.88	4,942.31
UM3R	3/13/2012 11:42	Underlying	318.53	5,260.88	4,942.36

Table 2.7B-6: Underlying Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
UM4	3/25/2011 12:35	Underlying	155.83	5,120.17	4,964.34
UM4	4/26/2011 9:15	Underlying	155.75	5,120.17	4,964.42
UM4	5/31/2011 14:10	Underlying	155.66	5,120.17	4,964.51
UM4	6/28/2011 14:20	Underlying	155.8	5,120.17	4,964.37
UM4	8/2/2011 13:04	Underlying	155.98	5,120.17	4,964.19
UM4	8/9/2011 9:25	Underlying	155.98	5,120.17	4,964.19
UM4	8/9/2011 9:30	Underlying	155.98	5,120.17	4,964.19
UM4	8/10/2011 14:05	Underlying	155.8	5,120.17	4,964.37
UM4	8/11/2011 9:36	Underlying	155.69	5,120.17	4,964.48
UM4	8/11/2011 15:29	Underlying	155.67	5,120.17	4,964.50
UM4	8/12/2011 16:02	Underlying	155.77	5,120.17	4,964.40
UM4	8/13/2011 16:11	Underlying	155.8	5,120.17	4,964.37
UM4	8/14/2011 9:41	Underlying	155.75	5,120.17	4,964.42
UM4	8/15/2011 10:59	Underlying	155.75	5,120.17	4,964.42
UM4	8/25/2011 13:14	Underlying	156.29	5,120.17	4,963.88
UM4	9/1/2011 11:25	Underlying	156.42	5,120.17	4,963.75
UM4	9/28/2011 11:07	Underlying	156.32	5,120.17	4,963.85
UM4	11/3/2011 9:59	Underlying	156.52	5,120.17	4,963.65
UM4	11/30/2011 7:55	Underlying	156.21	5,120.17	4,963.96
UM4	12/28/2011 9:34	Underlying	156.11	5,120.17	4,964.06
UM4	1/31/2012 10:50	Underlying	156.07	5,120.17	4,964.10
UM4	3/13/2012 16:05	Underlying	155.89	5,120.17	4,964.28
UM5	2/7/2011 15:10	Underlying	165.9	5,116.67	4,950.77
UM5	2/8/2011 9:36	Underlying	166	5,116.67	4,950.67
UM5	2/8/2011 16:03	Underlying	165.97	5,116.67	4,950.70
UM5	2/9/2011 11:47	Underlying	166	5,116.67	4,950.67
UM5	2/16/2011 9:30	Underlying	165.85	5,116.67	4,950.82
UM5	3/25/2011 11:45	Underlying	165.96	5,116.67	4,950.71
UM5	4/26/2011 11:52	Underlying	165.81	5,116.67	4,950.86
UM5	5/31/2011 16:34	Underlying	165.59	5,116.67	4,951.08
UM5	6/28/2011 16:10	Underlying	165.65	5,116.67	4,951.02
UM5	8/2/2011 10:27	Underlying	165.87	5,116.67	4,950.80
UM5	9/1/2011 10:22	Underlying	165.87	5,116.67	4,950.80

Table 2.7B-6: Underlying Aquifer Water Level Data (continued)

Well ID	Date/Time	Aquifer	DTW (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)
UM5	9/28/2011 10:16	Underlying	165.9	5,116.67	4,950.77
UM5	11/3/2011 9:02	Underlying	165.85	5,116.67	4,950.82
UM5	11/30/2011 10:02	Underlying	165.48	5,116.67	4,951.19
UM5	12/28/2011 8:43	Underlying	165.32	5,116.67	4,951.35
UM5	1/31/2012 9:57	Underlying	165.17	5,116.67	4,951.50
UM5	3/13/2012 14:37	Underlying	164.93	5,116.67	4,951.74
UM6	2/7/2011 16:59	Underlying	211.87	5,183.46	4,971.59
UM6	2/8/2011 10:14	Underlying	211.99	5,183.46	4,971.47
UM6	2/16/2011 9:30	Underlying	211.76	5,183.46	4,971.70
UM6	3/25/2011 11:33	Underlying	211.63	5,183.46	4,971.83
UM6	4/26/2011 11:15	Underlying	211.47	5,183.46	4,971.99
UM6	5/31/2011 15:34	Underlying	211.25	5,183.46	4,972.21
UM6	6/28/2011 15:20	Underlying	210.9	5,183.46	4,972.56
UM6	8/2/2011 9:32	Underlying	211.07	5,183.46	4,972.39
UM6	9/1/2011 10:05	Underlying	211.05	5,183.46	4,972.41
UM6	9/28/2011 9:50	Underlying	211.05	5,183.46	4,972.41
UM6	11/3/2011 8:26	Underlying	210.96	5,183.46	4,972.50
UM6	11/30/2011 8:51	Underlying	210.79	5,183.46	4,972.67
UM6	12/28/2011 8:11	Underlying	210.7	5,183.46	4,972.76
UM6	1/31/2012 9:35	Underlying	210.67	5,183.46	4,972.79
UM6	3/13/2012 14:02	Underlying	210.43	5,183.46	4,973.03
UM7	8/2/2011 10:57	Underlying	188.47	5,176.66	4,988.19
UM7	9/1/2011 7:58	Underlying	186.69	5,176.66	4,989.97
UM7	9/28/2011 14:10	Underlying	186.78	5,176.66	4,989.88
UM7	11/3/2011 11:36	Underlying	186.9	5,176.66	4,989.76
UM7	11/30/2011 10:39	Underlying	186.5	5,176.66	4,990.16
UM7	12/28/2011 11:10	Underlying	187.91	5,176.66	4,988.75
UM7	1/31/2012 8:56	Underlying	186.33	5,176.66	4,990.33
UM7	3/13/2012 12:25	Underlying	186.23	5,176.66	4,990.43

Table 2.7B-7: Overlying and Underlying Aquifers Hydrologic Data Summary

Well	Minutes Pumped	Total Drawdown	Rate (gpm) Before Shut-in	Specific Capacity (gpm/ft)	Saturated Thickness (ft)	T (ft^2/day)	K (ft/day)
Water Table Aquifer							
SM3	19	8.4	0.6	0.07	12.0	0.01	0.001
SM5	9	12.4	1.7	0.13	14.0	0.3	0.02
Overlying Aquifer							
OM1	75	19.3	3.3	0.17	38.0	39	1.03
OM3	28	23.7	4.0	0.17	10.0	0.5	0.05
OM4	188	6.0	3.8	0.63	75.0	63	0.84
OM5	135	22.7	3.3	0.14	12.0	39	3.3
RI-15U*	26	17.5	1.0	0.06	30.0	1.4	0.05
RI-24U*	77	59.0	1.5	0.06	8.0	0.2	0.03
Underlying Aquifer							
UM1	12	98.3	6.1	0.06	17.0	0.08	0.005
UM3R	27	104.2	1.9	0.02	14.0	0.07	0.005
UM4	23	187.9	6.1	0.03	17.0	0.2	0.01
UM5	27	142.7	4.3	0.03	18.0	0.4	0.02

* Historical pump test

Table 2.7B-8: Vertical Gradients at Well Clusters

Well Cluster	Well ID	Date / Time	Aquifer	Depth to Water (ft btoc)	TOC Elev (ft amsl)	GW Elev (ft amsl)	Screen Top Elev (ft amsl)	Screen Midpoint Elev (ft amsl)	Screen Bottom Elev (ft amsl)	Head Differential, Adjacent Aquifers (ft)	Vertical Gradient * (ft/ft)
PZM1	OM1	12/6/2010 16:30	Overlying	179.30	5,229.94	5,050.64	5,039.44	5,029.44	5,019.44	--	--
PZM1	PZM1	12/6/2010 16:30	PZA	288.79	5,230.87	4,942.08	4,876.87	4,861.87	4,846.87	-108.56	-0.65
PZM1	UM1	12/6/2010 16:30	Underlying	297.52	5,228.51	4,930.99	4,798.51	4,788.51	4,778.51	-11.09	-0.15
PZM3	SM3	8/21/2012 10:42	SM Unit	71.66	5,260.94	5,189.28	5,210.94	5,195.94	5,180.94	--	--
PZM3	OM3	8/21/2012 10:38	Overlying	135.87	5,262.27	5,126.40	5,112.27	5,102.27	5,092.27	-62.88	-0.67
PZM3	PZM3	8/21/2012 10:54	PZA	301.54	5,261.99	4,960.45	4,889.99	4,869.99	4,849.99	-165.95	-0.71
PZM3	UM3R	8/21/2012 10:32	Underlying	318.92	5,260.88	4,941.96	4,801.88	4,791.88	4,781.88	-18.49	-0.24
PZM4	OM4	8/9/2011 9:30	Overlying	94.24	5,118.72	5,024.48	4,961.72	4,951.72	4,941.72	--	--
PZM4	PZM4	8/9/2011 9:30	UPZA	146.90	5,118.83	4,971.93	4,883.83	4,873.83	4,863.83	-52.55	-0.67
PZM4	PZM4D	8/9/2011 9:30	LPZA	152.61	5,120.47	4,967.86	4,809.47	4,779.47	4,749.47	-4.07	-0.04
PZM4	UM4	8/9/2011 9:30	Underlying	155.98	5,120.17	4,964.19	4,710.17	4,700.17	4,690.17	-3.67	-0.05
PZM5	SM5	2/16/2011 9:30	SM Unit	36.13	5,115.90	5,079.77	5,085.90	5,075.90	5,065.90	--	--
PZM5	OM5	2/16/2011 9:30	Overlying	38.89	5,115.94	5,077.05	5,046.94	5,039.44	5,031.94	-2.72	-0.07
PZM5	PZM5	2/16/2011 9:30	PZA	128.68	5,115.12	4,986.44	4,853.22	4,818.22	4,783.22	-90.61	-0.41
PZM5	UM5	2/16/2011 9:30	Underlying	165.85	5,116.67	4,950.82	4,692.67	4,682.67	4,672.67	-35.62	-0.26
PZM6	SM6	9/28/2011 9:55	SM Unit	72.57	5,183.20	5,110.63	5,123.20	5,113.20	5,103.20	--	--
PZM6	OM6	9/28/2011 9:57	Overlying	119.72	5,185.60	5,065.88	4,958.60	4,953.60	4,948.60	-44.75	-0.28
PZM6	PZM6	9/28/2011 9:53	PZA	197.68	5,184.59	4,986.91	4,849.59	4,839.59	4,829.59	-78.98	-0.69
PZM6	UM6	9/28/2011 9:50	Underlying	211.05	5,183.46	4,972.41	4,768.46	4,758.46	4,748.46	-14.50	-0.18
PZM7	OM7	9/28/2011 14:00	Overlying	126.99	5,176.20	5,049.21	5,046.20	5,036.20	5,026.20	--	--
PZM7	PZM7	9/28/2011 14:05	PZA	184.61	5,176.66	4,992.05	4,878.66	4,868.66	4,858.66	-57.16	-0.34
PZM7	UM7	9/28/2011 14:10	Underlying	186.78	5,176.66	4,989.88	4,791.66	4,781.66	4,771.66	-2.17	-0.02

Notes:
ft btoc - feet below top of casing
ft amsl - feet above mean sea level
* Negative values indicate a downward hydraulic gradient (head decreases with depth). Gradient calculated with respect to screen midpoint elevation for respective aquifers.

Table 2.7B-9: Historical Aquifer Testing Summary

OB-1 Multi-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
OB-1	Pump Well	1979	RME	Unconfined	115	16.8	165	920	123	--	--	1.1
P-1	Obs. Well			Unconfined	115			1030	138	--	--	1.2
I-1	Obs. Well			Unconfined	115			1680	225	--	4.70E-02	2.0
M-4	Obs. Well			Unconfined	115			1680	225	--	2.40E-02	2.0

P-10 Multi-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
P-10	Pump Well	1980	RME	Unconfined	113	18.9	240	1900	254	--	--	2.2
I-12	Obs. Well			Unconfined	113			1810	242	--	6.90E-02	2.1
M-16	Obs. Well			Unconfined	113			1770	237	--	6.00E-02	2.1

RI-5 Tests

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-5	Pump Well	1982	RME	Unconfined	96	11.9	360	2230	298	--	--	3.1
RI-22	Obs. Well			Unconfined	96			1530	205	--	2.60E-03	2.1
RI-5	Pump Well	1982	RME	Unconfined	96	18.6	120	1300	174	203	--	1.8 - 2.1
RI-5	Pump Well	1993	ENFI	Unconfined	96	6.7	41	2164	289	--	--	3.0

Table 2.7B-9: Historical Aquifer Testing Summary (continued)

RI-28 Multi-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-28	Pump Well	1982	RME	Confined	164	30.3	2580	1550	207	207	--	1.3
RI-34	Obs. Well			Confined	164			1620	217	206	1.30E-04	1.3

RI-1 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-1	Pump Well	1982	RME	Confined	169	44.8	100	6490	868	813	--	4.8 - 5.1
RI-1	Pump Well	1982	RME	Confined	169	25.0	2500	6000	802	828	--	4.7 - 4.9
RI-1	Pump Well	1993	ENFI	Confined	169	3.8	51	4780	639	--	--	3.8

RI-2 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-2	Pump Well	1982	RME	Confined	121	41.2	100	1410	189	156	--	1.3 - 1.6
RI-2	Pump Well	1993	ENFI	Confined	121	3.5	46	1170	156	--	--	1.3

RI-3 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-3	Pump Well	1978	RME	Confined	154	34.7	100	3370	451	459	--	2.9 - 3.0
RI-3	Pump Well	1982	RME	Confined	154	24.8	360	3500	468	588	--	3.0 - 3.8
RI-3	Pump Well	1993	ENFI	Confined	154	7.6	52	3720	497	--	--	3.2

Table 2.7B-9: Historical Aquifer Testing Summary (continued)

RI-4 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-4	Pump Well	1982	RME	Confined	124	22.2	100	542	72	75	--	0.6
RI-4	Pump Well	1993	ENFI	Confined	124	8.0	180	1170	156	--	--	1.3

RI-6 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-6	Pump Well	1982	RME	Unconfined	67	15.9	141	785	105	110	--	1.6
RI-6	Pump Well	1993	ENFI	Unconfined	67	5.7	38	812	109	--	--	1.6

RI-7 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-7	Pump Well	1982	RME	Unconfined	56	16.6	110	1384	185	124	--	2.2 - 3.3

RI-28 Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-28	Pump Well	1982	RME	Unconfined	164	30.3	2580	1320	176	175	--	1.1

Table 2.7B-9: Historical Aquifer Testing Summary (continued)

RI-42C Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-42C	Pump Well	1993	ENFI	Unconfined	74	20.0	241	3770	504	--	--	6.8

RI-43C Single-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-43C	Pump Well	1993	ENFI	Confined	87	20.0	411	1520	203		--	2.3

MP-9 Multi-Well Test

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown, Theis) (ft^2/d)	T (Drawdown, C-J) (ft^2/d)	T (Recovery) (ft^2/d)	S (Theis)	S (C-J)	Kh (ft/d)
MP-9	Pump Well	1994	ENFI	Confined	103	15.5	1440	--	--	59	48	--		0.5 - 0.6
MP-2	Obs Well							335	45	48	48	2.2E-04	1.8E-04	0.4 - 0.5
RI-45	Obs Well							433	58	52	53	5.5E-05	6.9E-05	0.5 - 0.6
RI-46	Obs Well							386	52	52	54	1.9E-04	1.7E-04	0.5
RI-47	Obs Well							467	62	55	51	1.2E-04	1.4E-04	0.5 - 0.6

Table 2.7B-9: Historical Aquifer Testing Summary (continued)

TESTING CONDUCTED IN OVERLYING AQUIFER

Overlying Aquifer

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-15U	Pump Well	1993	ENFI	--	30	1.0	26	10.4	1.4	--	--	0.05

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-24U	Pump Well	1993	ENFI	--	8	1.5	77	1.82	0.2	--	--	0.03

LocID	Well Type	Year	Peformed by	Aquifer Type	Thickness	GPM	Minutes	gpd/ft	T (Drawdown) (ft^2/d)	T (Recovery) (ft^2/d)	S	Kh (ft/d)
RI-30U	Pump Well	1993	ENFI	--	61	4.3	20	1230	164	--	--	2.7

Table 2.7B-10: PZM1 Pump Test Drawdown Summary

Well Name	Well Type	Monitored Sand	Distance from PW (feet)	Observed Drawdown at Shut-in (feet)
PZM1	Pumping	Production Zone Aquifer	0	46.8
PZM9	Observation	Production Zone Aquifer	58	1.4
PZM8	Observation	Production Zone Aquifer	81	1.6
PZM10	Observation	Production Zone Aquifer	235	0.5
OM1	Observation	Overlying Aquifer	34	No Response
UM1	Observation	Underlying Aquifer	48	No Response

Notes:
Drawdown is calculated from BP corrected water level data.

Table 2.7B-11: PZM1 Pump Test Analytical Results Summary

Well Name	Well Type	Distance from PW (feet)	Theis Drawdown, Jacob Corrected			Theis Recovery	
			T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)
PZM1	Pump	0	--	--	--	389	4.1
PZM9	Obs.	58	427	4.5	5.0E-03	469	5.0
PZM8	Obs.	81	559	5.9	6.0E-04	586	6.2
PZM10	Obs.	235	694	7.4	3.2E-03	710	7.6
		Averages:	**560**	**6.0**	**2.9E-03**	**588**	**6.3**

Notes:
Hydraulic conductivity (K) based on 94 ft saturated PZM aquifer thickness.
Drawdown data from PZM1 could not be analyzed.
Jacob correction ($s' = s - s^2/2B$; s = drawdown, B = saturated thickness, s' = corrected drawdown) for partially saturated conditions applied to Theis drawdown data.
Theis recovery analysis conducted assuming saturated conditions. Late-time data were evaluated for recovery.

Single-well Testing

Well Name	Aquifer	Saturated Thickness (feet)	Theis Recovery	
			T (ft^2/d)	K (ft/d)
OM1	Overlying	38	39	1.0
UM1	Underlying	17	0.10	0.01

Table 2.7B-12: PZM3 Pump Test Drawdown Summary

Well Name	Well Type	Monitored Sand	Distance from PW (feet)	Observed Drawdown at Shut-in (feet)
PZM3	Pumping	Production Zone Aquifer	0	32.1
PZM11	Observation	Production Zone Aquifer	52	3.1
PZM12	Observation	Production Zone Aquifer	102	1.5
PZM13	Observation	Production Zone Aquifer	199	0.7
SM3	Observation	Water Table	37	No Response
OM3	Observation	Overlying Aquifer	41	No Response
UM3R	Observation	Underlying Aquifer	60	No Response

Notes:
Drawdown is calculated from BP corrected water level data.

Table 2.7B-13: PZM3 Pump Test Analytical Results Summary

Well Name	Well Type	Distance from PW (feet)	Theis Drawdown, Jacob Corrected			Cooper Jacob Drawdown, Jacob Corrected			Theis Recovery	
			T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)
PZM3	Pump	0	--	--	--	--	--	--	588	5.4
PZM11	Obs.	52	587	5.4	1.0E-05	535	4.9	2.7E-05	748	6.9
PZM12	Obs.	102	830	7.6	2.0E-04	841	7.7	1.9E-04	748	6.9
PZM13	Obs.	199	1327	12.2	8.3E-04	1428	13.1	6.2E-04	1131	10.4
		Averages:	**914**	**8.4**	**3.5E-04**	**934**	**8.6**	**2.8E-04**	**804**	**7.4**

Notes:
109 ft saturated PZM aquifer thickness.
Drawdown data from PZM3 could not be analyzed.
Jacob correction for partially saturated conditions applied to Theis drawdown data.
Theis recovery analysis conducted assuming confined conditions. Late-time data were evaluated for recovery.

Single-well Testing

Well Name	Aquifer	Saturated Thickness (feet)	Theis Recovery	
			T (ft^2/d)	K (ft/d)
SM3	Water Table	9	0.014	0.002
OM3	Overlying	10	0.049	0.005
UM3R	Underlying	14	0.074	0.005

Table 2.7B-14: PZM4D Pump Test Drawdown Summary

Well Name	Well Type	Monitored Zone	Distance from PW (feet)	Observed Drawdown at Shut-in (feet)
PZM4D	Pumping	Lower Production Zone Aquifer	0	119.2
PZM16	Observation	Lower Production Zone Aquifer	1,288	1.2
PZM15	Observation	Lower Production Zone Aquifer	1,771	4.5
PZM17	Observation	Production Zone Aquifer	2,827	0.3
PZM14	Observation	Production Zone Aquifer	6,178	No Response
PZM4	Observation	Upper Production Zone Aquifer	57	0.6
OAM4S	Observation	Upper Felix Coal	45	No Response
OAM4D	Observation	Lower Felix Coal	19	No Response
OM4	Observation	Overlying Aquifer	69	No Response
UM4	Observation	Underlying Aquifer	34	No Response

Notes:
Drawdown is calculated from BP corrected water level data.

Table 2.7B-15: PZM4D Pump Test Analytical Results Summary

Well Name	Well Type	Distance from PW (feet)	Theis Drawdown			Theis Recovery	
			T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)
PZM4D	Pump	0	--	--	--	31	0.3
PZM16	Obs.	1288	229	2.3	8.7E-04	286	2.9
PZM15	Obs.	1771	57	0.6	1.3E-04	63	0.6
PZM17	Obs.	2827	--	--	--	--	--
		Averages:	**143**	**1.4**	**5.0E-04**	**126**	**1.3**

Notes:
98.75 ft saturated PZM aquifer thickness.
Drawdown data from PZM4 could not be analyzed.
Drawdown analysis performed on data from 0 - 8,375 minutes prior to pump problems.
Unable to perform analysis of PZM17 with any level of certainty.
Theis recovery analyses are based on an average test rate of 14.1 gpm which includes pump problems.

Single-well Testing

Well Name	Aquifer	Saturated Thickness (feet)	Theis Recovery	
			T (ft^2/d)	K (ft/d)
OM4	Overlying	82	262	3.2
UM4	Underlying	17	0.22	0.013

Table 2.7B-16: PZM5 Pump Test Drawdown Summary

Well Name	Well Type	Monitored Sand	Distance from PW (feet)	Observed Drawdown at Shut-in (feet)
PZM5	Pumping	Production Zone Aquifer	0	102.1
PZM20	Observation	Production Zone Aquifer	499	11.7
PZM19	Observation	Production Zone Aquifer	1048	4.3
PZM18	Observation	Production Zone Aquifer	2085	0.8
PZM6	Observation	Production Zone Aquifer	2696	0.9
BLM ANCVS	Observation	Production Zone Aquifer	4026	0.2
SM5	Observation	Water Table	30	No Response
OM5	Observation	Overlying Aquifer	41	No Response
UM5	Observation	Underlying Aquifer	31	No Response
UM6	Observation	Underlying Aquifer	31	No Response

Notes:
Drawdown is calculated from BP corrected water level data.

Table 2.7B-17: PZM5 Pump Test Analytical Results Summary

Well Name	Well Type	Distance from PW (feet)	Completed Thickness	Drawdown, Leaky (Hantush-Jacob)			Drawdown (Cooper-Jacob)			Theis Recovery	
				T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)	S	T (ft^2/d)	K (ft/d)
PZM5	Pump	0	132	--	--	--	--	--	--	61.8	0.5
PZM20	Obs.	499	47	20.2	0.4	7.9E-05	26.7	0.6	6.5E-05	31.0	0.7
PZM19	Obs.	1048	56	26.0	0.5	1.1E-04	Not Valid	Not Valid	Not Valid	47.0	0.8
		Averages:		**23**	**0.4**	**9.4E-05**	**27**	**0.6**	**6.5E-05**	**NA**	**0.7**

Notes:
Pumping rate for PZM5 well is 10 gpm; 7 gpm flow apportioned for wells PZM20 and PZM19, which are completed in lower sand of PZM. Pumping well completed across entire PZM.
Cooper-Jacob requirement for $u < 0.05$ not met at well PZM19, therefore solution not valid.
Hydraulic conductivity values based on completed sand thickness.

Single-well Testing

Well Name	Aquifer	Saturated Thickness (feet)	Theis Recovery	
			T (ft^2/d)	K (ft/d)
SM5	Water Table	14	0.26	0.019
OM5	Overlying	12	39.1	3.3
UM5	Underlying	18	0.44	0.024

Table 2.7B-18: Non-CBM Groundwater Rights in Proposed Project Area and within 2 Km

Permit Number	Priority Date	Applicant	Facility Name	Status [1]	Uses [1]	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P153958W	9/15/2003	NOLAN & MELISSA JOHNSON	JOHNSON 9101	CAN	DOM	43	73	15	SWSW	500	303	0	N
P110428W	6/10/1998	RICKIE/GALE TAFFNER	TAFFNER #1	GST	DOM,STO	42	74	1	SENE	354	123	10	Y
P19244P	12/31/1953	AUGUST LAUR	LAUR #6	GST	DOM,STO	43	74	25	NESE	180	30	2	N
P72820W	7/8/1986	W.A. MONCRIEF, JR.	MANION 11 1 WSW	CAN	MIS	42	74	11	NWSE	1240	170	0	N
P129340W	9/19/2000	FLOYD C RENO & SON, INC.**W. A. MONC	MANION #11-1 WSW	GSE	MIS	42	74	11	NWSE	0	0	0	N
P59470W	3/1/1982	RUSSELL FORGEY CONSTRUCTION COMPANY	FORGEY #1	CAN	MIS	42	73	6	NENE	0	0	0	Y
P60967W	5/28/1982	RUSSELL FORGEY CONSTRUCTION COMPANY	FORGEY - #1	CAN	MIS	42	73	6	NENE	320	220	0	Y
P45984W	5/16/1978	ROCKY MOUNTAIN ENERGY COMPANY	RENO RANCH ISL P 1	CAN	MIS	43	73	27	NWNW	413	282.27	0	Y
P93136W	9/15/1993	INTERNATIONAL URANIUM (USA) CORP	RI-44	CAN	MIS	43	73	20	SESE	375	175	0	N
P59471W	3/1/1982	RUSSELL FORGEY CONSTRUCTION COMPANY	FORGEY #2	CAN	MIS	43	73	21	SESW	320	220	0	Y
P60143W	3/15/1982	RUSSELL FORGEY CONSTRUCTION COMPANY	FORGEY #3	CAN	MIS	43	73	21	SESW	320	220	0	Y
P60142W	3/15/1982	RUSSEL FORGEY CONSTRUCTION COMPANY	FORGEY #4	CAN	MIS	43	73	21	NWSE	405	220	0	Y
P3827W	12/22/1969	TURNERCREST RANCH CO.	TURNER #1	GST	STO	42	74	13	NWNE	237	130	2	N
P84793W	3/29/1991	FLOYD C. RENO & SON'S INC	COUNTY ROAD #1	GST	STO	42	74	12	NWSE	800	540	8	N
P127251W	7/25/2000	FLOYD C. RENO & SON'S INC.	COUNTY ROAD #1	GST	STO	42	74	12	SWNE	800	380	16	Y
P17460W	12/27/1972	INC. FLOYD C. RENO & SON'S	O'NIEL #4A	GST	STO	42	73	6	SWSE	276	130	15	N
P127147W	7/18/2000	FLOYD C. RENO & SON'S INC.	O'NIEL WELL	GST	STO	42	73	5	NWSW	276	130	12	N
P33284W	5/14/1976	HARRY B. RENO	O'NEIL #1	GST	STO	42	73	6	SENW	254	90	5	Y
P37881W	5/16/1977	PINE TREE RANCH CO.	PINE TREE #11	GST	STO	42	74	3	NENE	185	125	25	N
P19245P	12/31/1953	AUGUST LAUR	LAUR #7	GST	STO	42	74	1	NWNE	120	80	3	Y
P18851P	9/15/1951	INC. FLOYD C. RENO & SON'S	HI WAY	GST	STO	42	73	5	NENW	350	110	7	N
P18841P	7/31/1950	INC. FLOYD C. RENO & SON'S	TUCKER	GST	STO	43	73	32	SWSW	300	100	5	Y
P18852	7/16/1951	INC. FLOYD C. RENO & SON'S	RED WELL	GST	STO	42	74	12	NWSE	350	120	6	
P19241P	12/31/1941	AUGUST LAUR	LAUR #3	GST	STO	43	74	35	NENW	120	90	3	N
P2881P	6/23/1943	ED. R. WILLARD	WILLARD #3	GST	STO	43	73	32	NWNE	90	65	5	Y
P19246W	12/29/1972	AUGUST LAUR	LAUR #8	GST	STO	43	74	26	NWSE	190	110	3	N
P69050W	11/5/1984	LOUISIANA LAND & EXPLORATION CO.**AU	LAUR 1 26	GST	STO	43	74	26	NWSE	730	290	25	N
P26955W	6/13/1974	AUGUST LAUR	LAUR #9	GST	STO	43	73	30	NWSE	174	75	10	Y
P2882P	6/15/1960	ED. R. WILLARD	WILLARD #4	GST	STO	43	73	26	SWNW	205	150	10	N
P174588W	5/4/2006	RICKIE AND GALE TAFFNER	TAFFNER #2	COM	STO	43	73	30	SWNW	0	0	0	N
P2883P	12/31/1960	ED. R. WILLARD	WILLARD #5	GST	STO	43	73	28	NWNE	80	60	5	Y
P2880P	7/26/1940	ED. R. WILLARD	WILLARD #2	GST	STO	43	73	22	SESW	230	210	3	Y

[1] Table Abbreviations Source: WSEO (2012)

DOM: Domestic COM: Completed STO: Stock GSE: Good Standing - Permitted time limits have been extended
CAN: Cancelled GST : Good Standing MIS: Miscellaneous Use

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P159676W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	TURNER FEDERAL 12-19-4273	GSI	CBM	STO,CBM	42	73	19	SWNW	0	0	0	N
P159703W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-24-4274	GSI	CBM	STO,CBM	42	74	24	SWNE	0	0	0	N
P155713W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 32-23-4274	GST	CBM	STO,CBM	42	74	23	SWNE	890	665	9	N
P159699W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-24-4274	GST	CBM	STO,CBM	42	74	24	SWNW	949	578	12	N
P159704W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-24-4274	GSI	CBM	STO,CBM	42	74	24	NENE	0	0	0	N
P159695W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-23-4274	GSI	CBM	STO,CBM	42	74	23	NENW	0	0	0	N
P159701W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-24-4274	GSI	CBM	STO,CBM	42	74	24	NENW	0	0	0	N
P155712W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 41-23-4274	GST	CBM	STO,CBM	42	74	23	NENE	950	606	9	N
P131663W	12/20/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU Turner 34-14-4274	GST	CBM	CBM	42	74	14	SWSE	918	646	10	N
P159650W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-13-4274	GST	CBM	CBM,STO	42	74	13	SWSW	996	646	18	N
P159654W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-13-4274	GST	CBM	CBM,STO	42	74	13	SWSE	927	604	16	N
P159673W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	TURNER FEDERAL 14-18-4273	GSI	CBM	STO,CBM	42	73	18	SWSW	0	0	0	N
P159658W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-14-4274	GSI	CBM	STO,CBM	42	74	14	SWSW	0	0	0	N
P159675W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	TURNER FEDERAL 23-18-4273	GSI	CBM	STO,CBM	42	73	18	NESW	0	0	0	N
P159656W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-13-4274	GST	CBM	CBM,STO	42	74	13	NESE	949	637	16	N
P159665W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-15-4274	GSI	CBM	STO,CBM	42	74	15	NESE	0	0	0	N
P159660W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-14-4274	GSI	CBM	STO,CBM	42	74	14	NESW	0	0	0	N
P155718W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 43-14-4274	COM	CBM	CBM	42	74	14	NESE	960	701	0	N
P159652W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-13-4274	GSI	CBM	STO,CBM	42	74	13	NESW	0	0	0	N
35/3/530W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 43-14-4274	GSI	CBM	STO,CBM	42	74	14	NESE	0	0	0	N
P159653W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-13-4274	GST	CBM	CBM,STO	42	74	13	SWNE	1027	651	16	N
P159672W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	TURNER FEDERAL 12-18-4273	GSI	CBM	STO,CBM	42	73	18	SWNW	0	0	0	N
P159649W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-13-4274	GST	CBM	CBM,STO	42	74	13	SWNW	983	643	16	N
P155715W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU SUCHAN 32-15-4274	GST	CBM	STO,CBM	42	74	15	SWNE	972	625	15	N
P159657W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-14-4274	GSI	CBM	STO,CBM	42	74	14	SWNW	0	0	0	N
P159661W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-14-4274	GSI	CBM	STO,CBM	42	74	14	SWNE	0	0	0	N
P159659W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-14-4274	GSI	CBM	CBM,STO	42	74	14	NENW	1018	756	10	N
P159674W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	TURNER FEDERAL 21-18-4273	GSI	CBM	STO,CBM	42	73	18	NENW	0	0	0	N
P155716W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU SUCHAN 21-15-4274	GST	CBM	STO,CBM	42	74	15	NENW	1070	711	17	N
P159651W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-13-4274	GSI	CBM	STO,CBM	42	74	13	NENW	0	0	0	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P155714W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU SUCHAN 41-15-4274	GST	CBM	STO,CBM	42	74	15	NENE	993	661	14	N
P155719W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 41-14-4274	COM	CBM	CBM	42	74	14	NENE	1010	740	0	N
35/4/530W	11/13/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU TURNER 41-14-4274	GSI	CBM	STO,CBM	42	74	14	NENE	0	0	0	N
P159655W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-13-4274	GSI	CBM	CBM,STO	42	74	13	NENE	1117	724	14	N
P145226W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 14-8-4273	GSI	CBM	CBM	42	73	8	SWSW	0	0	0	N
P159637W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 34-7-4273	GSI	CBM	STO,CBM	42	73	7	SWSE	0	0	0	N
P159633W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 14-7-4273	GSI	CBM	STO,CBM	42	73	7	SWSW	0	0	0	N
P159646W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-12-4274	GSI	CBM	STO,CBM	42	74	12	SWSE	0	0	0	N
P154645W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 34-10-4274	GST	CBM	STO,CBM	42	74	10	SWSE	1048	662	13	Y
P154647W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 14-11-4274	GST	CBM	STO,CBM	42	74	11	SWSW	1046	688	13	Y
P154650W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	RENO 34-11-4274	GST	CBM	STO,CBM	42	74	11	SWSE	1060	642	18	N
P159642W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-12-4274	GSI	CBM	STO,CBM	42	74	12	SWSW	0	0	0	N
P170083W	8/15/2005	LANCE OIL & GAS COMPANY, INC.	F RENO 23-8-4273	GSI	CBM	CBM	42	73	8	NESW	0	0	0	N
P159639W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 43-7-4273	GSI	CBM	STO,CBM	42	73	7	NESE	0	0	0	N
38/4/130W	8/15/2005	LANCE OIL & GAS COMPANY, INC.	F RENO 23-8-4273	UNA	CBM	CBM	42	73	8	NESW	0	0	0	N
P145228W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 23-8-4273	GSI	CBM	CBM	42	73	8	NESW	0	0	0	N
P170613W	9/26/2005	LANCE OIL & GAS COMPANY, INC.	F RENO 23-8-4273CA	GSI	CBM	CBM	42	73	8	NESW	0	0	0	N
P159635W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 23-7-4273	GSI	CBM	STO,CBM	42	73	7	NESW	0	0	0	N
P159648W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-12-4274	GSI	CBM	STO,CBM	42	74	12	NESE	0	0	0	N
P159644W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-12-4274	GSI	CBM	STO,CBM	42	74	12	NESW	0	0	0	N
P154644W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH 23-10-4274	GST	CBM	STO,CBM	42	74	10	NESW	1088	754	13	N
P154646W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 43-10-4274	GST	CBM	STO,CBM	42	74	10	NESE	1084	754	13	N
P154648W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 23-11-4274	GST	CBM	STO,CBM	42	74	11	NESW	1040	668	18	N
P154652W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	RENO 43-11-4274	GST	CBM	STO,CBM	42	74	11	NESE	1060	661	18	N
P145225W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 12-8-4273	GSI	CBM	CBM	42	73	8	SWNW	0	0	0	N
P159636W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 32-7-4273	GSI	CBM	STO, CBM	42	73	7	SWNE	0	0	0	N
P159632W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 12-7-4273	GSI	CBM	STO,CBM	42	73	7	SWNW	0	0	0	N
P128617W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	RENO 32-8-4273	GST	CBM	CBM	42	73	8	SWNE	824	459	10	N
P159645W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-12-4274	GSI	CBM	STO,CBM	42	74	12	SWNE	0	0	0	N
P128618W	8/22/2000	WILLIAMS PRODUCTION RMT COMPANY	BRIDLE BIT RANCH 32-10-4273	CAN	CBM	CBM	42	73	10	SWNE	0	0	0	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P151349W	5/12/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 32-10-4274	GST	CBM	STO,CBM	42	74	10	SWNE	1083	704	0	N
P151351W	5/12/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 12-11-4274	GST	CBM	STO,CBM	42	74	11	SWNW	1027	622	20	N
P159641W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-12-4274	GSI	CBM	STO,CBM	42	74	12	SWNW	0	0	0	N
P154649W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	RENO 32-11-4274	GST	CBM	STO,CBM	42	74	11	SWNE	1062	668	13	N
P159638W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 41-7-4273	GSI	CBM	STO,CBM	42	73	7	NENE	0	0	0	N
P159634W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO & SONS FEDERAL 21-7-4273	GSI	CBM	STO,CBM	42	73	7	NENW	0	0	0	N
P159647W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-12-4274	GSI	CBM	STO,CBM	42	74	12	NENE	0	0	0	N
P145227W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 21-8-4273	GSI	CBM	CBM	42	73	8	NENW	0	0	0	N
P147624W	10/4/2002	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH 21-10-4274	GST	CBM	CBM	42	74	10	NENW	1075	739	17	N
P159643W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-12-4274	GSI	CBM	STO,CBM	42	74	12	NENW	0	0	0	Y
P170622W	9/26/2005	LANCE OIL & GAS COMPANY, INC.	F RENO 41-9-4273CA	GSI	CBM	CBM	42	73	9	NENE	0	0	0	N
P151350W	5/12/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 41-10-4274	GST	CBM	STO,CBM	42	74	10	NENE	1044	683	16	N
P151352W	5/12/2003	WILLIAMS PRODUCTION RMT COMPANY	ROUSH 21-11-4274	GST	CBM	STO,CBM	42	74	11	NENW	1040	669	17	N
P154651W	10/1/2003	WILLIAMS PRODUCTION RMT COMPANY	RENO 41-11-4274	GST	CBM	STO,CBM	42	74	11	NENE	1000	631	13	N
P170371W	9/16/2005	LANCE OIL & GAS COMPANY, INC.	RENO & SONS 21-9-4273CA	GSI	CBM	CBM	42	73	9	NENW	0	0	0	N
P128619W	8/22/2000	Barrett Resources Corp.	BRIDLE BIT RANCH 21-11-4273	CAN	CBM	CBM	42	73	11	NENW	0	0	0	N
P143563W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-3-4274	GST	CBM	CBM	42	74	3	SWSW	1112	667	16	N
P143564W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-3-4274	GST	CBM	CBM	42	74	3	SWSE	1143	583	16	N
P143559W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-2-4274	GST	CBM	CBM	42	74	2	SWSW	1039	577	16	N
P143561W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-2-4274	GST	CBM	CBM	42	74	2	SWSE	1020	518	16	N
P143577W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-1-4274	GST	CBM	CBM	42	74	1	SWSW	1023	630	16	N
P159640W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-1-4274	GSI	CBM	STO,CBM	42	74	1	SWSE	0	0	0	Y
P159624W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-6-4273	GSI	CBM	STO,CBM	42	73	6	SWSW	0	0	0	Y
P159629W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO FEDERAL 34-6-4273	GSI	CBM	STO,CBM	42	73	6	SWSE	0	0	0	N
P145222W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 14-5-4273	GSI	CBM	CBM	42	73	5	SWSW	0	0	0	N
P162967W	9/22/2004	YATES PETROLEUM CORP.	MILLS CS #4	GSI	CBM	STO,CBM	42	73	2	SWSE	0	0	0	N
P138568W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU IBERLIN 43-4-4274	GST	CBM	CBM	42	74	4	NESE	1104	464	16	N
P133014W	3/12/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU IBERLIN 23-3-4274	GST	CBM	CBM	42	74	3	NESW	1109	636	16	N
P133464W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU RENO 43-3-4274	GST	CBM	CBM	42	74	3	NESE	1022	576	16	N
P143560W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-2-4274	GST	CBM	CBM	42	74	2	NESW	1050	573	16	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P143566W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-1-4274	GST	CBM	CBM	42	74	1	NESW	990	519	16	Y
P147571W	10/9/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-1-4274	GST	CBM	CBM	42	74	1	NESE	1043	634	19	Y
P159627W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-6-4273	GSI	CBM	STO,CBM	42	73	6	NESW	0	0	0	Y
P159631W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO FEDERAL 43-6-4273	GSI	CBM	STO,CBM	42	73	6	NESE	0	0	0	N
P145224W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 23-5-4273	GSI	CBM	CBM	42	73	5	NESW	0	0	0	N
P170372W	9/16/2005	LANCE OIL & GAS COMPANY, INC.	LEAVITT TRUST 43-3-4273CA	GSI	CBM	CBM	42	73	3	NESE	0	0	0	N
P170084W	8/15/2005	LANCE OIL & GAS COMPANY, INC.	LEAVITT TRUST 43-2-4273	GSE	CBM	CBM	42	73	2	NESE	0	0	0	N
38/5/130W	8/15/2005	LANCE OIL & GAS COMPANY, INC.	LEAVITT TRUST 43-2-4273	UNA	CBM	CBM	42	73	2	NESE	0	0	0	N
P144917W	5/14/2002	LANCE OIL & GAS COMPANY, INC	LEAVITT TRUST 43-2-4373	GSI	CBM	CBM	42	73	2	NESE	0	0	0	N
P133013W	3/12/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU IBERLIN 12-3-4274	GST	CBM	CBM	42	74	3	SWNW	1072	587	16	N
P143636W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-3-4274	GST	CBM	CBM	42	74	3	SWNE	1124	713	16	N
P133437W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU RENO 12-2-4274	GST	CBM	CBM	42	74	2	SWNW	1059	574	16	N
P138564W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU ATWOOD 32-2-4274	GST	CBM	CBM	42	74	2	SWNE	1000	356	9	N
P143568W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-1-4274	GST	CBM	CBM	42	74	1	SWNE	1042	715	16	Y
P126333W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 12-1-4274	GST	CBM	CBM	42	74	1	SWNW	1010	346	20	N
P145506W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-6-4274	GST	CBM	CBM	42	73	6	SWNW	982	506	10	Y
P159628W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	RENO FEDERAL 32-6-4273	GSI	CBM	STO,CBM	42	73	6	SWNE	0	0	0	Y
P145221W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 12-5-4273	GST	CBM	CBM	42	73	5	SWNW	951	575	20	N
P128616W	8/22/2000	LANCE OIL & GAS COMPANY, INC	RENO 32-5-4273	GST	CBM	CBM	42	73	5	SWNE	927	615	20	N
P149703W	2/19/2003	LANCE OIL & GAS COMPANY, INC	LEAVITT TRUST 34-4-4273	GSI	CBM	STO,CBM	42	73	4	SWNE	0	0	0	N
P143634W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-4-4274	GST	CBM	CBM	42	74	4	NENE	1144	628	17	N
P143637W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-3-4274	GST	CBM	CBM	42	74	3	NENW	1133	719	16	N
P143635W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-3-4274	GST	CBM	CBM	42	74	3	NENE	1085	650	16	N
P143638W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-2-4274	GST	CBM	CBM	42	74	2	NENW	1037	616	16	N
P126335W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 41-2-4274	GST	CBM	CBM	42	74	2	NENE	1068	351	20	N
P143558W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-1-4274	GST	CBM	CBM	42	74	1	NENE	989	680	16	Y
P126334W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 21-1-4274	GST	CBM	CBM	42	74	1	NENW	960	369	20	N
P145493W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-6-4273	GST	CBM	CBM	42	73	6	NENW	972	587	10	Y
P159630W	6/15/2004	WILLIAMS PRODUCTION RMT COMPANY	LEAVITT TRUST FEDERAL 41-6-4273	GSI	CBM	STO,CBM	42	73	6	NENE	0	0	0	Y
P145223W	5/29/2002	LANCE OIL & GAS COMPANY, INC	F RENO 21-5-4273	GSI	CBM	CBM	42	73	5	NENW	0	0	0	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P167126W	4/13/2005	LANCE OIL & GAS COMPANY, INC	F RENO 21-5-4273	GSI	CBM	CBM	42	73	5	NENW	0	0	0	N
P128599W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	RENO 41-5-4273	CAN	CBM	CBM	42	73	5	NENE	0	0	0	N
P149702W	2/19/2003	LANCE OIL & GAS COMPANY, INC	LEAVITT TRUST 41-4-4273	GSI	CBM	STO,CBM	42	73	4	NENE	0	0	0	N
P184321W	10/31/2007	WILLIAMS PRODUCTION RMT, COMPANY	ANCU 34-34-4374	INC	CBM	CBM	43	74	34	SWSE	1147	815	0	N
P129732W	9/15/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU HODGES 14-34-4374	GST	CBM	CBM	43	74	34	SWSW	1202	491	30	N
40/4/424W	10/31/2007	Williams Production RMT	ANCU 34-34-4374	UNA	CBM	CBM	43	74	34	SWSE	0	0	0	N
P143645W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-34-4374	GSI	CBM	CBM	43	74	34	SWSE	0	0	0	N
P138574W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU LAURS TRUST 14-35-4374	GST	CBM	CBM	43	74	35	SWSW	1116	553	10	N
P126345W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 34-35-4374	GST	CBM	CBM	43	74	35	SWSE	1013	525	30	N
P126347W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 14-36-4374	GST	CBM	CBM	43	74	36	SWSW	1103	509	10	Y
P126351W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 34-36-4374	GST	CBM	CBM	43	74	36	SWSE	1040	497	10	Y
P126338W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU LEAVITT TRUST 14-31-4373	GST	CBM	CBM	43	73	31	SWSW	957	346	10	Y
P128606W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 34-31-4373	GST	CBM	CBM	43	73	31	SWSE	991	294	10	Y
P128610W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 14-32-4373	GST	CBM	CBM	43	73	32	SWSW	977	429	18	Y
P128630W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	GROVES 34-32-4373	GST	CBM	CBM	43	73	32	SWSE	905	388	16	Y
P149750W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LEAVITT TRUST 34-33-4373	GSI	CBM	STO,CBM	43	73	33	SWSE	0	0	0	N
P172729W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #34-35 A	COM	CBM	CBM; MIS	43	73	35	SWSE	854	587	0	N
37/3/393W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #34-35 A	GSI	CBM	STO,CBM	43	73	35	SWSE	0	0	0	N
P153787W	8/20/2003	SANDS OIL COMPANY	COSNER #34-35 CA	GSI	CBM	STO,CBM	43	73	35	SWSE	0	0	0	N
P161966W	8/6/2004	YATES PETROLEUM CORP** WY STATE BOAR	MUSTANG CS PLATE #17	GSI	CBM	CBM	43	73	36	SWSW	0	0	0	N
P143656W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-33-4374	GST	CBM	CBM	43	74	33	NESE	1214	824	16	N
P129733W	9/15/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU HODGES 23-34-4374	GST	CBM	CBM	43	74	34	NESW	1199	547	30	N
P143643W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-34-4374	GST	CBM	CBM	43	74	34	NESE	1149	717	17	N
P143649W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-35-4374	GST	CBM	CBM	43	74	35	NESE	1060	457	17	Y
P138562W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU LAURS TRUST 23-35-4374	GST	CBM	CBM	43	74	35	NESW	1090	508	10	N
P126349W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 23-36-4374	GST	CBM	CBM	43	74	36	NESW	1086	484	10	Y
P126353W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 41-36-4374	GST	CBM	CBM	43	74	36	NESE	1023	370	30	Y
P126340W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU LEAVITT TRUST 23-31-4373	GST	CBM	CBM	43	73	31	NESW	996	367	10	Y
P172728W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #43-24 C	GSI	CBM	CBM; MIS	43	73	31	NESE	0	0	0	Y
P128608W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 43-31-4373	GST	CBM	CBM	43	73	31	NESE	1030	575	20	Y

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
37/2/393W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #43-24 C	GSI	CBM	STO,CBM	43	73	31	NESE	0	0	0	Y
P128612W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 23-32-4373	GST	CBM	CBM	43	73	32	NESW	950	498	16	Y
P128613W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	GROVES 43-32-4373	CAN	CBM	CBM	43	73	32	NESE	0	0	0	Y
P153788W	8/20/2003	SANDS OIL COMPANY	COSNER #43-35 CA	GSI	CBM	STO,CBM	43	73	35	NESE	0	0	0	N
P149688W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LEAVITT TRUST 43-33-4373	GSI	CBM	STO,CBM	43	73	33	NESE	0	0	0	Y
P122936W	1/19/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU HODGES 12-34-4374	GST	CBM	CBM	43	74	34	SWNW	1290	625	20	N
P126346W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 12-36-4374	GST	CBM	CBM	43	74	36	SWNW	1175	353	10	Y
P143646W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-34-4374	GST	CBM	CBM	43	74	34	SWNE	1214	782	16	N
P143642W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-35-4374	GST	CBM	CBM	43	74	35	SWNE	1097	499	16	N
P126350W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 32-36-4374	GST	CBM	CBM	43	74	36	SWNE	1048	610	30	Y
P138573W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU LAURS TRUST 12-35-4374	GST	CBM	CBM	43	74	35	SWNW	1123	520	10	N
P126337W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU LEAVITT TRUST 12-31-4373	GST	CBM	CBM	43	73	31	SWNW	1051	436	10	Y
P168985W	7/18/2005	BIG BASIN PETROLEUM, LLC	COSNER #32-35 A	GSI	CBM	CBM; STK	43	73	35	SWNE	0	0	0	N
P128605W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 32-31-4373	GST	CBM	CBM	43	73	31	SWNE	1006	394	12	Y
P128609W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 12-32-4373	GST	CBM	CBM	43	73	32	SWNW	1036	478	17	Y
38/7/59W	7/18/2005	BIG BASIN PETROLEUM, LLC	COSNER #32-35 A	UNA	CBM	STO,CBM	43	73	35	SWNE	0	0	0	N
P153786W	8/20/2003	SANDS OIL COMPANY	COSNER #32-35 CA	GSI	CBM	STO,CBM	43	73	35	SWNE	0	0	0	N
P152266W	6/6/2003	WILLIAMS PRODUCTION RMT COMPANY	B GROVES FEDERAL 32-32-4373	GSI	CBM	CBM	43	73	32	SWNE	0	0	0	Y
P139767W	10/1/2001	YATES PETROLEUM CORP.** WY STATE BOA	MUSTANG CS STATE #7	GSE	CBM	STO,CBM	43	73	36	SWNW	0	0	0	N
P122935W	1/19/2000	BARRETT RESOURCES CORP	ANCU ROUSH 41-33-4374	GST	CBM	CBM	43	74	33	NENE	1182	455	20	N
P143641W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-35-4374	GST	CBM	CBM	43	74	35	NENE	1140	301	17	N
P122937W	1/19/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU HODGES 21-34-4374	GST	CBM	CBM	43	74	34	NENW	1210	510	20	N
P126348W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 21-36-4374	GST	CBM	CBM	43	74	36	NENW	1070	353	10	Y
P138575W	8/24/2001	WILLIAMS PRODUCTION RMT COMPANY	ANCU LAURS TRUST 21-35-4374	GST	CBM	CBM	43	74	35	NENW	1136	512	10	N
P126352W	6/14/2000	WY STATE BOARD OF LAND COMMISSIONERS	ANCU STATE 41-36-4374	GST	CBM	CBM	43	74	36	NENE	1000	383	10	Y
P143644W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-34-4374	GST	CBM	CBM	43	74	34	NENE	1187	744	17	N
P172723W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #41-35 A	COM	CBM	CBM; STK	43	73	35	NENE	856	545	0	N
P126339W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU LEAVITT TRUST 21-31-4373	GST	CBM	CBM	43	73	31	NENW	1015	368	16	Y
P129555W	8/21/2000	YATES PETROLEUM CORPORATION	COLT CS FEE #1	GST	CBM	CBM	43	73	35	NENE	1114	452	200	N
37/7/392W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #41-35 A	GSI	CBM	STO,CBM	43	73	35	NENE	0	0	0	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P128607W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 41-31-4373	GST	CBM	CBM	43	73	31	NENE	1024	399	12	Y
P139766W	10/1/2001	YATES PETROLEUM CORP.** WY STATE BOA	MUSTANG CS STATE #6	GSE	CBM	STO,CBM	43	73	36	NWNW	0	0	0	N
P128611W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 21-32-4373	GST	CBM	CBM	43	73	32	NENW	987	478	19	Y
P152265W	6/6/2003	WILLIAMS PRODUCTION RMT COMPANY	B GROVES FEDERAL 41-32-4373	GSI	CBM	CBM	43	73	32	NENE	0	0	0	Y
P161964W	8/6/2004	YATES PETROLEUM CORP** WY STATE BOAR	MUSTANG CS PLATE #12	GSI	CBM	CBM	43	73	36	NENW	0	0	0	N
P139765W	10/1/2001	YATES PETROLEUM CORP.** WY STATE BOA	MUSTANG CS STATE #5	GSE	CBM	STO,CBM	43	73	36	NENW	0	0	0	N
P184320W	10/31/2007	WILLIAMS PRODUCTION RMT CO	ATWOOD FED 14-29-4373	INC	CBM	CBM	43	73	29	SWSW	952	381	0	Y
P130609W	10/26/2000		LAUR #26-4	CAN	CBM	CBM	43	74	26	SWSE	0	0	0	N
P143624W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-25-4374	GST	CBM	CBM	43	74	25	SWSW	1087	616	17	N
P121997W	12/31/1999	WILLIAMS PRODUCTION RMT, COMPANY	ANCU Roush 14-27-4374	GST	CBM	CBM	43	74	27	SWSW	1155	495	20	N
P128625W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	GROVES 14-26-4273	CAN	CBM	CBM	43	73	26	SWSW	0	0	0	N
P121999W	12/31/1999	WILLIAMS PRODUCTION RMT, COMPANY	ANCU Roush 34-27-4374	GST	CBM	CBM	43	74	27	SWSE	1344	701	20	N
P126342W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 34-25-4374	GST	CBM	CBM	43	74	25	SWSE	1054	465	10	N
P143629W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-26-4374	GST	CBM	CBM	43	74	26	SWSW	1175	733	16	N
P149695W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LAUR 34-26-4374	GSI	CBM	STO,CBM	43	74	26	SWSE	0	0	0	N
P129729W	9/15/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 14-30-4373	GST	CBM	CBM	43	73	30	SWSW	1003	434	16	N
P139975W	10/2/2001	YATES PETROLEUM CORP.	PICKETT CS FEE #4	GSE	CBM	STO,CBM	43	73	27	SWSE	0	0	0	N
40/3/424W	10/31/2007	Williams Production RMT	ATWOOD FED 14-29-4373	UNA	CBM	CBM	43	73	29	SWSW	0	0	0	Y
P143632W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-29-4374	GSI	CBM	CBM	43	73	29	SWSW	0	0	0	Y
P143654W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 34-29-4373	GST	CBM	CBM	43	73	29	SWSE	930	865	10	Y
P128628W	8/22/2000	WILLIAMS PRODUCTION RMT COMPANY	GROVES 34-28-4373	CAN	CBM	CBM	43	73	28	SWSE	0	0	0	Y
P130608W	10/26/2000		LAUR #26-3	CAN	CBM	CBM	43	74	26	NESE	0	0	0	N
P149754W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LAUR 43-26-4374	GSI	CBM	STO,CBM	43	74	26	NESE	0	0	0	N
P143627W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-26-4374	GST	CBM	CBM	43	74	26	NESW	1106	733	16	N
P143631W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-25-4374	GST	CBM	CBM	43	74	25	NESW	1043	662	16	N
P121998W	12/31/1999	WILLIAMS PRODUCTION RMT, COMPANY	ANCU Roush 23-27-4374	GST	CBM	CBM	43	74	27	NESW	1424	748	20	N
P129731W	9/15/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ROUSH 43-27-4374	GST	CBM	CBM	43	74	27	NESE	1163	595	30	N
P126344W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 43-25-4374	GST	CBM	CBM	43	74	25	NESE	1058	300	10	N
P139974W	10/2/2001	YATES PETROLEUM CORP.	PICKETT CS FEE #3	GSE	CBM	STO,CBM	43	73	27	NESE	0	0	0	N
P126336W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 23-30-4373	GST	CBM	CBM	43	73	30	NESW	1002	448	20	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P139774W	10/1/2001	YATES PETROLEUM CORP.	DEAN CS FEE # 5	GSE	CBM	STO,CBM	43	73	25	NESW	0	0	0	N
P143650W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD FEDERAL 43-30-4373	GST	CBM	CBM	43	73	30	NESE	1029	776	16	Y
P143653W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 43-29-4373	GST	CBM	CBM	43	73	29	NESE	930	804	10	Y
P143655W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD FEDERAL 23-29-4373	GST	CBM	CBM	43	73	29	NESW	963	731	16	Y
P130607W	10/26/2000		LAUR #26-2	CAN	CBM	CBM	43	74	26	SENE	0	0	0	N
P143633W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-25-4374	GST	CBM	CBM	43	74	25	SWNW	1071	626	17	N
P149696W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LAUR 32-26-4374	GSI	CBM	STO,CBM	43	74	26	SWNE	0	0	0	N
P172724W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #32-26 A	COM	CBM	CBM; MIS	43	73	26	SWNE	773	499	0	N
P143626W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-27-4374	GST	CBM	CBM	43	74	27	SWNW	1151	716	16	N
P143639W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-26-4374	GST	CBM	CBM	43	74	26	SWNW	1092	681	16	N
37/8/392W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #32-26 A	GSI	CBM	STO,CBM	43	73	26	SWNE	0	0	0	N
P153784W	8/20/2003	SANDS OIL COMPANY	COSNER #32-26 CA	GSI	CBM	STO,CBM	43	73	26	SWNE	0	0	0	N
P143647W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-27-4374	GST	CBM	CBM	43	74	27	SWNE	1125	720	16	N
P153781W	8/20/2003	SANDS OIL COMPANY	COSNER #12-25 CA	GSI	CBM	STO,CBM	43	73	25	SWNW	0	0	0	N
P126341W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU SPITTLER TRUST 32-25-4374	GST	CBM	CBM	43	74	25	SWNE	1034	435	20	N
P143652W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-30-4373	GST	CBM	CBM	43	73	30	SWNW	1114	883	17	N
P139973W	10/2/2001	YATES PETROLEUM CORP.	PICKETT CS FEE #2	GSE	CBM	STO,CBM	43	73	27	SWNE	0	0	0	N
P128629W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 32-30-4373	GST	CBM	CBM	43	73	30	SWNE	995	441	16	N
P133019W	3/12/2001	WILLIAMS PRODUCTION RMT, COMPANY	LEAVITT TRUST 34-30-4373	GST	CBM	CBM	43	73	30	SWNE	990	723	16	N
P128602W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 32-29-4373	GST	CBM	CBM	43	73	29	SWNE	1018	590	30	Y
P152267W	6/6/2003	WILLIAMS PRODUCTION RMT COMPANY	B GROVES FEDERAL 12-28-4373	GSI	CBM	CBM	43	73	28	SWNW	0	0	0	Y
P128600W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 12-29-4373	GST	CBM	CBM	43	73	29	SWNW	1085	504	20	Y
P130606W	10/26/2000		LAUR #26 -1	CAN	CBM	CBM	43	74	26	NENE	0	0	0	N
P149753W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	LAUR 41-26-4374	GSI	CBM	STO,CBM	43	74	26	NENE	0	0	0	N
P143628W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-26-4374	GST	CBM	CBM	43	74	26	NENW	1072	713	16	N
P153785W	8/20/2003	SANDS OIL COMPANY	COSNER #41-26 CA	GSI	CBM	STO,CBM	43	73	26	NENE	0	0	0	N
P143630W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-27-4374	GST	CBM	CBM	43	74	27	NENE	1098	686	16	N
P143625W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-27-4374	GST	CBM	CBM	43	74	27	NENW	1113	689	16	N
P143623W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-25-4374	GST	CBM	CBM	43	74	25	NENW	1098	762	16	N
P139972W	10/2/2001	YATES PETROLEUM CORP.	PICKETT CS FEE #1	GSE	CBM	STO,CBM	43	73	27	NENE	0	0	0	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P126343W	6/14/2000	WILLIAMS PRODUCTION RMT, COMPANY	ANCU SPITTLER TRUST41-25-4374	GST	CBM	CBM	43	74	25	NENE	1371	488	21	N
P153782W	8/20/2003	SANDS OIL COMPANY	COSNER #21-25 CA	GSI	CBM	STO,CBM	43	73	25	NENW	0	0	0	N
P143651W	3/21/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-30-4373	GSI	CBM	CBM	43	73	30	NENW	0	0	0	N
P149939W	2/28/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-30-4373R	GST	CBM	CBM	43	73	30	NENW	1040	998.8	9	N
P128603W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 41-29-4373	GSI	CBM	CBM	43	73	29	NENE	0	0	0	Y
P128601W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 21-29-4373	GST	CBM	CBM	43	73	29	NENW	1020	581	20	N
P128604W	8/22/2000	WILLIAMS PRODUCTION RMT, COMPANY	DRAKE 41-30-4373	GST	CBM	CBM	43	73	30	NENE	1003	440	25	N
P133449W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 34-23-4374	GST	CBM	CBM	43	74	23	SWSE	1103	628	16	N
P133439W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU SPITTLER TRUST 14-24-4374	GST	CBM	CBM	43	74	24	SWSW	1060	541	16	N
P133451W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 14-23-4374	GST	CBM	CBM	43	74	23	SWSW	1063	587	16	N
P143573W	3/25/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-22-4374	GST	CBM	CBM	43	74	22	SWSE	1134	631	16	N
P172725W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #14-24 A	GSI	CBM	CBM; MIS	43	73	24	SWSW	0	0	0	N
37/9/392W	3/31/2005	BIG BASIN PETROLEUM, LLC	COSNER #14-24 A	GSI	CBM	STO,CBM	43	73	24	SWSW	0	0	0	N
P153778W	8/20/2003	SANDS OIL COMPANY	COSNER #14-24 CA	GSI	CBM	STO,CBM	43	73	24	SWSW	0	0	0	N
P133438W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU SPITTLER TRUST 34-24-4374	GST	CBM	CBM	43	74	24	SWSE	1050	587	16	N
P145521W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 14-19-4373	GSI	CBM	CBM	43	73	19	SWSW	0	0	0	N
P145508W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 34-20-4373	GST	CBM	CBM	43	73	20	SWSE	963	810	10	N
P133448W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 43-23-4374	GST	CBM	CBM	43	74	23	NESE	1123	673	16	N
P133450W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ATWOOD 23-23-4374	GST	CBM	CBM	43	74	23	NESW	1073	568	16	N
P133453W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ROUSH 43-22-4374	GST	CBM	CBM	43	74	22	NESE	1096	547	16	N
P145524W	6/24/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-24-4374	GST	CBM	CBM	43	74	24	NESW	1072	652	16	N
P153779W	8/20/2003	SANDS OIL COMPANY	COSNER #23-24 CA	GSI	CBM	STO,CBM	43	73	24	NWSW	0	0	0	N
P145499W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 43-24-4374	GST	CBM	CBM	43	74	24	NESE	1012	622	17	N
P145517W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 43-20-4373	GST	CBM	CBM	43	73	20	NESE	860	746	10	N
P145522W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 23-19-4373	GST	CBM	CBM	43	73	19	NESW	1022	837	16	N
P135225W	5/21/2001	YATES PETROLEUM CORPORATION	Ickes CS Fee # 8	GST	CBM	STO,CBM	43	73	19	NESE	939	805	200	N
P135233W	5/21/2001	YATES PETROLEUM CORPORATION	Ickes CS Fee # 9	GST	CBM	STO,CBM	43	73	19	NESE	1000	788	200	N
P145503W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-23-4374	GST	CBM	CBM	43	74	23	SWNE	1060	688	16	N
P133452W	3/26/2001	WILLIAMS PRODUCTION RMT, COMPANY	ANCU ROUSH 12-23-4374	GST	CBM	CBM	43	74	23	SWNW	1035	534	16	N
P145501W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-24-4374	GST	CBM	CBM	43	74	24	SWNW	1069	731	10	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P145492W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-24-4374	GST	CBM	CBM	43	74	24	SWNE	1085	622	17	N
P145500W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 12-19-4373	GST	CBM	CBM	43	73	19	SWNW	1002	949	10	N
P128627W	8/22/2000	WILLIAMS PRODUCTION RMT COMPANY	GROVES 12-22-4373	CAN	CBM	CBM	43	73	22	SWNW	0	0	0	N
P169797W	8/11/2005	YATES PETROLEUM CORP.	STARLIGHT CS FEDERAL #10	GSI	CBM	CBM; MIS	43	73	19	SWNE	0	0	0	N
P145518W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 32-20-4373	GST	CBM	CBM	43	73	20	SWNE	930	782	10	N
38/5/118W	8/11/2005	YATES PETROLEUM CORP.	STARLIGHT CS FEDERAL #10	UNA	CBM	MIS,CBM	43	73	19	SWNE	0	0	0	N
P145519W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 12-20-4373	GST	CBM	CBM	43	73	20	SWNW	906	821	10	N
P145504W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-23-4374	GSI	CBM	CBM	43	74	23	NENE	0	0	0	N
P145502W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-24-4374	GST	CBM	CBM	43	74	24	NENW	1047	733	14	N
P149744W	2/19/2003	WILLIAMS PRODUCTION RMT COMPANY	ANCU MOORE TRUST 41-24-4374	GST	CBM	STO,CBM	43	74	24	NENE	1050	1000	14	N
P145520W	6/11/2002	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 41-20-4373	GST	CBM	CBM	43	73	20	NENE	809	687	10	N
P135224W	5/21/2001	YATES PETROLEUM CORPORATION	Ickes CS Fee # 7	GST	CBM	STO,CBM	43	73	19	NENW	933	718	200	N
P150077W	3/6/2003	YATES PETROLEUM CORPORATION	STARLIGHT CS FEDERAL # 22	GSI	CBM	STO,CBM	43	73	20	NENW	0	0	0	N
P158784W	3/8/2004	YATES PETROLEUM CORP.	STARLIGHT CS FEDERAL #23	GSI	CBM	STO,CBM	43	73	20	NENW	0	0	0	N
P150076W	3/6/2003	YATES PETROLEUM CORPORATION	STARLIGHT CS FEDERAL #9	GSI	CBM	STO,CBM	43	73	19	NENE	0	0	0	N
P135935W	6/11/2001	YATES PETROLEUM CORP.	JEANNE CS FEE # 2	GST	CBM	STO,CBM	43	74	13	SWSE	998	739	200	N
P135937W	6/11/2001	YATES PETROLEUM CORP.	JEANNE CS FEE #4	GSE	CBM	STO,CBM	43	74	13	SWSE	0	0	0	N
P128626W	8/22/2000	Wyo State Board of Land Commissioners	STATE 14-16-4373	CAN	CBM	CBM	43	73	16	SWSW	0	0	0	N
P133766W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #8	GST	CBM	STO,CBM	43	73	16	SWSW	757	657	200	N
P134149W	4/16/2001	YATES PETROLEUM CORP.	ICKES CS FEE #4	GST	CBM	STO,CBM	43	73	18	SWSW	953	773	200	N
P133767W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #9	GST	CBM	STO,CBM	43	73	16	SWSE	748	663	200	N
P134150W	4/16/2001	YATES PETROLEUM CORP.	ICKES CS FEE #5	GSE	CBM	STO,CBM	43	73	18	SWSE	0	0	0	N
P131594W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 13B-17	GST	CBM	CBM	43	73	17	SWSW	1067	420	2	N
P131610W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 13 A-17	GST	CBM	CBM	43	73	17	SWSW	905	770	1	N
P155311W	10/31/2003	YATES PETROLEUM CORP.	BELLE CS FEDERAL #6	GST	CBM	CBM,STO	43	73	17	SWSE	807	789	200	N
P135934W	6/11/2001	YATES PETROLEUM CORP.	JEANNE CS FEE #1	GSE	CBM	STO,CBM	43	74	13	NESE	0	0	0	N
P135936W	6/11/2001	YATES PETROLEUM CORP.	JEANNE CS FEE #3	GSE	CBM	STO,CBM	43	74	13	NESE	0	0	0	N
P133764W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #6	GST	CBM	STO,CBM	43	73	16	NESE	742	671	200	N
P133765W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #7	GST	CBM	STO,CBM	43	73	16	NESW	762	614	200	N
P134148W	4/16/2001	YATES PETROLEUM CORP.	ICKES CS FEE #3	GSE	CBM	STO,CBM	43	73	18	NESW	0	0	0	N
P131602W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 11B-17	GST	CBM	CBM	43	73	17	NESW	1037	480	2	N

Table 2.7B-19: CBM Groundwater Rights in Proposed Project Area and within 2-Mile Buffer (cont.)

Permit Number	Priority Date	Applicant	Facility Namea	Status[1]	Type	Uses	Township	Range	Section	QtrQtr	Total Depth	Static Water	Yield	In Project Area
P131609W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 11 A-17	GST	CBM	CBM	43	73	17	NESW	815	480	8	N
P134147W	4/16/2001	YATES PETROLEUM CORP.	ICKES CS FEE # 2	GST	CBM	STO,CBM	43	73	18	NESE	906	643	200	N
P133763W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #5	GST	CBM	STO,CBM	43	73	16	SWNE	766	711	200	N
P133762W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #4	GST	CBM	STO,CBM	43	73	16	SWNW	797	482	200	N
P131595W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 7A-17	GST	CBM	CBM	43	73	17	SWNE	820	518	1	N
P131600W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 7B-17	GST	CBM	CBM	43	73	17	SWNE	1045	300	2	N
P131596W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 7A-18	GST	CBM	CBM	43	73	18	SWNE	943	506	9	N
P131599W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 7B-18	GST	CBM	CBM	43	73	18	SWNE	1071	300	2	N
P131601W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 5B-17	GST	CBM	CBM	43	73	17	SWNW	1037	410	1	N
P131612W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 5 A-17	GST	CBM	CBM	43	73	17	SWNW	837	625	1	N
P133760W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #2	GST	CBM	STO,CBM	43	73	16	NENE	702	518	200	N
P133761W	4/5/2001	YATES PETROLEUM CORPORATION** WY STA	AMPOLEX CS STATE #3	GST	CBM	STO,CBM	43	73	16	NENW	748	562	200	N
P131605W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 1B-17	GST	CBM	CBM	43	73	17	NENE	1133	385	0	N
P131611W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 1 A-17	GST	CBM	CBM	43	73	17	NENE	865	546	1	N
P131606W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 3B-17	GST	CBM	CBM	43	73	17	NENW	1057	360	1	N
P131613W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 3 A-17	GST	CBM	CBM	43	73	17	NENW	825	511	2	N
P129603W	8/30/2000	YATES PETROLEUM CORPORATION	GROVES CS FEE #38	GST	CBM	CBM	43	73	18	NENE	867	689	200	N
P134151W	4/16/2001	YATES PETROLEUM CORP.	ICKES CS FEE #6	GSE	CBM	STO,CBM	43	73	9	SWSW	0	0	0	N
P131597W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 15 A-8	GST	CBM	CBM	43	73	8	SWSE	832	689	4	N
P131598W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 15 B-8	GST	CBM	CBM	43	73	8	SWSE	1147	332	4	N
P111809W	9/15/1998	YATES PETROLEUM CORP.	Groves CS #10	GST	CBM	STO,CBM	43	73	8	SWSW	826	480	20	N
P131604W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 9B-8	GST	CBM	CBM	43	73	8	NESE	1192	390	1	N
P131608W	12/15/2000	SUNSHINE VALLEY PETROLEUM CORP.	K-BAR # 9 A-8	GST	CBM	CBM	43	73	8	NESE	809	612	2	N

[1]Status Abbreviations

ADJ	Adjudicated
DOM	Domestic
EXP	Expired
GST	Good Standing
IRR	Irrigation
PU	Point of use Non-irrigation (Not actual status)
PUD	Point of Diversion (Not actual status)
PUO	Point of Reservoir Outlet (Not actual status)
REJ	Rejected by the State Engineer
STO	Stock
UNA	Unadjudicated

Source: WSEO (2012)

Table 2.7B-20: Groundwater Use in Proposed Project Area and within 2-Mile Buffer

Use	Project Area		Project Area + 2-Mile Buffer			
	Number of Wells	Percent of Total	Number of Wells	Percent of Total	Average Yield (gpm)	Static Depth Range (ft)
CBM	54	78.3	324	86.9	0-200	294-1,000
DOM; GW	0	0	3	0.8	5-15	100-303
DOM; GW; STK	1	1.4	4	1.1	2.5-15	30-123
MIS	6	8.7	12	3.2	30	80-282.7
STK	8	11.6	30	8.0	2.5-25	15-540

Table 2.7B-21: Total Dissolved Solids Concentrations by Formation

Formation	Average	Minimum	Maximum	No. of Samples
Alluvium	2,128	106	6,610	38
Wasatch Formation	1,298	227	8,200	191
Fort Union Formation	1,464	209	5,620	257
Fox Hills/Hell Creek Formations	1,100	340	5,450	73
Lance Formation	1,218	251	2,850	31

Table 2.7B-22: Baseline Groundwater Monitoring Constituents

Constituents (reported in mg/l unless noted)	Recommended Analytical Method (methods may be substituted using Best Available Technology (BAT) and current approved agency methods)
General Parameters	
Conductivity	SM 2510B
pH	SM 4500H+ B
Total Dissolved Solids (TDS) @ 180ºF	EPA 160.1/SM2540C
Major Anions	
Ammonia Nitrogen as N	EPA 350.1
Bicarbonate as HCO_3	SM 2320B
Carbonate as CO_3	SM 2320B
Chloride	EPA 300.0/SM 4500CL B
Fluoride	SM 4500F C/EPA 300.0
Nitrate + Nitrite as N	EPA 353.2/300.0
Sulfate	EPA 375.1/375.2/300.0
Total Alkalinity	SM 2320B
Major Cations	
Calcium	EPA 200.7/215.1/215.2
Magnesium	EPA 200.7/242.1
Potassium	EPA 200.7/258.1
Sodium	EPA 200.7/273.1
Metals	
Arsenic	EPA 206.3/200.9/200.8
Barium	EPA 200.7/200.8
Boron	EPA 212.3/200.7
Cadmium	EPA 200.9/200.7/200.8
Chromium	EPA 200.9/200.7/200.8
Copper	EPA 200.7/200.8
Total and Dissolved Iron	EPA 236.1/200.9/200.7/200.8
Lead	EPA 200.7/200.8
Mercury	EPA 245.1
Molybdenum	EPA 200.7/200.8
Nickel	EPA 200.7/200.8
Selenium	EPA 270.3/200.9/200.8
Total Manganese	EPA 200.9/200.7/200.8/243.1/243.2
Uranium	DOE MM 800/EPA 200.8
Vanadium	EPA 286.1/286.2/200.7/200.8
Zinc	EPA 200.7/200.8
Radionuclides	
Gross Alpha (pCi/l)	EPA 900.0/EPA 900.1/SM 7110B
Gross Beta (pCi/l)	EPA 900.0/EPA 900.1/SM 7110B
^{226}Radium (pCi/l)	DOE RP450/EPA 903.0/SM 7500-R-AC
^{228}Radium (pCi/l)	SM 7500-R-AD/EPA RA-05

Source: NRC (2003), WDEQ (2005)

Table 2.7B-23: Cluster Well Water Quality

Parameter	Units	Zone			
		SM	OM	PZM	UM
Field					
Field pH	s.u.	6.45 - 9.26	7.09 - 11.87	7.64 - 12.6	7.5 - 11.57
Field Conductivity	µmhos/cm	554 - 3199	455 - 1899	585 - 2923	288 - 1986
Dissolved Oxygen	mg/L	0.08 - 43.6	0.09 - 4.51	0.14 - 6.43	0.18 - 10.63
Field Turbidity	NTU	1.2 - 502	0.32 - 31.4	0.3 - 19.4	0.93 - 54
Temperature	°C	6.17 - 34.13	7.03 - 30.94	4.89 - 1283	5.41 - 22.78
ORP	mV	-193.5 - 164.63	-226.2 - 120.9	-268.1 - 79.2	-269.3 - 72.6
Depth to Water	Ft.	35.32 - 73.03	37.6 - 179.68	127.14 - 305.45	155.75 - 318.88
Anions/Cations					
Alkalinity, Total (As CaCO3)	mg/L	84 - 487	30 - 276	37 - 501	24 - 343
Alkalinity, Bicarbonate as HCO3	mg/L	103 - 594	<5 - 337	<5 - 305	<5 - 408
Alkalinty, Carbonate as CO3	mg/L	<5 - 5	<5 - 116	<5 - 34	<5 - 69
Chloride	mg/L	3 - 14	3 - 35	2 - 11	5 - 38
Flouride	mg/L	<0.1 - 0.4	<0.1 - 2	<0.1 - 0.4	0.2 - 0.9
Nitrogen, Nitrate-Nitrite (as N)	mg/L	<0.1 - 1.4	<0.1 - 0.3	<0.1 - 0.1	<0.1 - 0.3
Sulfate	mg/L	68 - 1730	17 - 834	231 - 880	<1 - 852
Calcium	mg/L	62 - 478	5 - 206	44 - 198	5 - 114
Magnesium	mg/L	15 - 135	<1 - 47	<1 - 26	<1 - 20
Potassium	mg/L	9 - 18	6 - 37	6 - 54	3 - 33
Sodium	mg/L	22 - 434	34 - 267	120 - 323	89 - 352
Nitrogen, Ammonia (As N)	mg/L	<0.1 - 1.5	<0.1 - 2.6	<0.1 - 1.2	<0.1 - 1.4
Silica as SiO2	mg/L	6 - 13	3 - 20	4 - 13	4 - 18
General Parameters					
Laboratory pH	s.u.	7.6 - 8.4	7.7 - 11.2	8 - 12	7.6 - 10.9
Electrical Conductivity	µmhos/cm	553 - 3240	449 - 1960	730 - 2240	430 - 2010
Total Dissolved Solids (180)	mg/L	430 - 3060	250 - 1660	550 - 1520	250 - 1620
Total Suspended Solids	mg/L	---	---	#REF!	---
Data Quality					
Cation Sum	meq/L	5.57 - 45.33	3.78 - 23.6	8.57 - 21.86	4.53 - 22.86
Anion Sum	meq/L	5.62 - 45.88	3.78 - 22.12	7.83 - 22.44	4.67 - 21.58
Cation-Anion Balance (±5%)	%	0.31 - 6.3	0.02 - 5.11	0.04 - 5.68	<0.01 - 6.81
Solids, Total Dissolved (Calc)	mg/L	310 - 2870	240 - 1450	530 - 1450	260 - 1460
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	1.01 - 1.37	0.97 - 1.46	0.91 - 1.18	0.98 - 1.29
Metals-Dissolved					
Aluminum	mg/L	<0.1 - 0.3	<0.1 - 0.1	<0.1 - 0.1	<0.1 - 0.1
Arsenic	mg/L	<0.001 - 0.013	<0.001 - 0.033	<0.001 - 0.045	<0.001 - 0.022
Barium	mg/L	<0.1 - 0.1	<0.1 - 0.2	<0.1 - 0.1	<0.1 - 0.1
Boron	mg/L	<0.1 - 0.1	<0.1 - 0.1	<0.1 - 0.1	<0.1 - 0.1
Cadmium	mg/L	<0.001 - 0.001	<0.001 - 0.001	<0.001 - 0.026	<0.001 - 0.001
Chromium	mg/L	<0.01 - 0.01	<0.01 - 0.01	<0.01 - 0.01	<0.01 - 0.01
Copper	mg/L	<0.01 - 0.01	<0.01 - 0.01	<0.01 - 0.03	<0.01 - 0.01
Iron	mg/L	<0.05 - 3.28	<0.05 - 0.38	<0.05 - 0.41	<0.05 - 0.17
Lead	mg/L	<0.01 - 0.01	<0.01 - 0.01	<0.01 - 0.02	<0.01 - 0.01
Manganese	mg/L	0.08 - 0.96	<0.01 - 1.12	<0.01 - 0.25	<0.01 - 0.69
Mercury	mg/L	<0.001 - 0.001	<0.001 - 0.001	<0.001 - 0.001	<0.001 - 0.001
Molybdenum	mg/L	<0.01 - 0.04	<0.01 - 0.04	<0.01 - 0.4	<0.01 - 0.03
Nickel	mg/L	<0.05 - 0.05	<0.05 - 0.05	<0.05 - 0.05	<0.05 - 0.05
Selenium	mg/L	<0.005 - 0.012	<0.005 - 0.01	<0.005 - 0.049	<0.005 - 0.007
Uranium	mg/L	0.0005 - 0.0304	<0.0003 - 0.0035	0.0016 - 0.661	<0.0003 - 0.008
Vanadium	mg/L	<0.1 - 0.1	<0.1 - 0.1	<0.1 - 0.4	<0.1 - 0.1
Zinc	mg/L	<0.01 - 0.03	<0.01 - 0.06	<0.01 - 0.01	<0.01 - 0.13
Metals-Suspended					
Uranium	mg/L	<0.0003 - 0.0032	<0.0003 - 0.0004	<0.0003 - 0.0219	<0.0003 - 0.0003
Metals-Total					
Iron	mg/L	0.17 - 11.9	<0.05 - 0.76	<0.05 - 1.07	<0.05 - 1.16
Manganese	mg/L	0.15 - 0.99	<0.01 - 1.16	<0.01 - 0.27	<0.01 - 0.72
Uranium	mg/L	---	---	#REF!	---
Radionuclides-Dissolved					
Gross Alpha	pCi/L	3.7 - 30.7	2 - 10	23.9 - 2760	2 - 24.6
Gross Beta	pCi/L	7.6 - 19.9	3.4 - 39.1	10.9 - 1420	3 - 29.1
Lead 210	pCi/L	<1 - 6.3	<1 - 2.9	<1 - 469	<1 - 4.7
Polonium 210	pCi/L	<1 - 1	<1 - 1.5	<1 - 126	<1 - 1
Radium 226	pCi/L	0.3 - 2.2	0.3 - 2.1	3.1 - 700	<0.2 - 6.3
Radium 228	pCi/L	<1 - 1.7	<1 - 2.5	<1 - 1.9	<1 - 1.9
Thorium 230	pCi/L	<0.2 - 0.2	<0.2 - 0.2	<0.2 - 1.4	<0.2 - 0.3
Radionuclides-Suspended					
Lead 210	pCi/L	<1 - 2.1	<1 - 9.1	<1 - 437	<1 - 4.7
Polonium 210	pCi/L	<1 - 1.6	<1 - 1	<1 - 203	<1 - 2.5
Radium 226	pCi/L	<0.2 - 0.5	<0.2 - 0.2	<0.2 - 16.5	<0.2 - 0.7
Thorium 230	pCi/L	<0.2 - 0.4	<0.2 - 0.9	<0.2 - 2.7	<0.2 - 0.3
Radionuclides-Total					
Radon 222	pCi/L	<50 - 722	<50 - 1810	92 - 2830000	<50 - 4640

Table 2.7B-24: Comparison of Probable WDEQ Classes of Use

Zone	Probable WDEQ Groundwater Class	Suitability
SM	III or IV	Livestock or Industrial
OM	IV	Industrial
PZM	IV	Industrial
UM	III or IV	Livestock or Industrial

Table 2.7B-25: SM Zone Monitoring Results

Parameter	Units	Lab Detection Limit	SM5				SM6				SM3				SM7			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			10/29/2010	3/23/2011	6/7/2011	8/9/2011	2/7/2011	6/6/2011	8/17/2011	10/19/2011	7/22/2011	9/7/2011	11/15/2011	1/10/2012	9/1/2011	11/15/2011	1/10/2012	5/8/2012
Field																		
Field pH	s.u.		7.35	6.9	9.18	9.26	8.45	8.43	8.13	7.51	8.24	8.52	6.45	6.95	8.27	7.51	7.32	7.1
Field Conductivity	µmhos/cm		3186	2175	3193	3199	1282	1963	2074	2212	554	2104	2349	2212	2625	2945	2911	3058
Dissolved Oxygen	mg/L		0.08	0.64	2.04	0.94	2.71	2.08	5.14	4.89	43.6	7.16	4.3	6.5	6.06	1.56	3.28	3.29
Field Turbidity	NTU		2.81	1.4	2.4	2.2	502	7.8	5.2	32.7	28.9	1.2	47.1	25.8	Maxed out	22.7	Maxed out	10.4
Temperature	°C		16.09	6.17	11.06	13.52	8.39	34.13	26.21	11.31	12.27	11.75	8.49	9.97	11.81	9.45	10.15	14.36
ORP	mV		---	179.2	31.2	85.2	369.63	66.2	101.5	155.4	323.4	11.5	289.9	288.6	157.6	195.5	139.6	13.2
Depth to Water	Ft.		36.45	35.4	35.32	35.83	73.03	72.4	72.6	72.58	69.38	70.25	70.25	71.53	65.5	65.27	65.38	65.48
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	477	487	479	461	84	88	95	113	206	287	270	262	263	259	254	357
Alkalinity, Bicarbonate as HCO3	mg/L	5	581	594	584	562	103	107	116	138	252	350	329	320	314	316	310	436
Alkalinity, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	1	5	6	7	8	5	5	4	5	3	11	12	12	10	14	14	14
Flouride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.3	0.3	0.4	0.2	<0.1	<0.1	<0.1	0.4	0.3	0.2	0.2
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	0.4	1.4	<0.1	<0.1	<0.1
Sulfate	mg/L	1	1540	1730	1620	1640	832	930	900	989	68	855	1100	1100	1070	1420	1550	1590
Calcium	mg/L	1	436	473	478	444	133	146	146	156	62	257	286	283	188	285	301	359
Magnesium	mg/L	1	121	130	135	125	19	24	24	27	15	57	64	65	44	50	52	61
Potassium	mg/L	1	13	16	16	14	10	10	9	10	11	14	14	14	18	14	14	13
Sodium	mg/L	1	184	216	228	207	294	309	308	326	22	190	207	218	420	405	407	434
Nitrogen, Ammonia (As N)	mg/L	0.1	1.5	0.9	1.2	<0.1	0.4	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	0.4	0.4
Silica as SiO2	mg/L	1	9	9	10	10	6	6	6	7	9	13	9	10	6	9	9	9
General Parameters																		
Laboratory pH	s.u.	0.1	8	7.6	7.7	7.7	8.3	8	8.1	8.1	8	7.8	7.8	7.9	8.4	8.1	8.1	8.1
Electrical Conductivity	µmhos/cm	5	3010	2860	2410	3240	1800	1690	2080	2190	553	2010	2190	1890	2620	2850	2530	2820
Total Dissolved Solids (180)	mg/L	10	3040	3000	2950	3060	1450	1520	1590	1620	430	1730	1940	1960	2190	2490	2620	2730
Data Quality																		
Cation Sum	meq/L	0.01	40.04	44.1	45.33	41.82	21.26	22.99	22.87	24.42	5.57	26.09	28.87	29.31	31.74	36.34	37.33	42.09
Anion Sum	meq/L	0.01	41.81	45.88	43.5	43.61	19.25	21.27	20.77	22.99	5.62	23.85	28.68	28.48	27.97	35.24	37.77	40.71
Cation-Anion Balance (±5%)	%	0.01	2.17	1.97	2.06	2.09	4.94	3.89	4.82	3.03	0.38	4.49	0.31	1.44	6.3	1.53	0.57	1.66
Solids, Total Dissolved (Calc)	mg/L	10	2590	2870	2770	2730	1340	1480	1450	1590	310	1570	1860	1860	1920	2360	2500	2690
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.05	1.06	1.12	1.08	1.03	1.1	1.02	1.37	1.1	1.04	1.05	1.14	1.06	1.05	1.01
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.003	<0.001	0.004	<0.001	0.002	0.004	0.003	0.005	0.008	0.002	0.005	0.009	0.004	0.007	0.013	<0.001
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	1.16	0.58	<0.05	<0.05	0.07	<0.05	0.07	3.28	<0.05	0.27	0.11	0.17	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.72	0.51	0.57	0.65	0.08	0.22	0.24	0.31	0.13	0.96	0.18	0.16	0.17	0.83	0.8	0.86
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.04	0.02	0.02	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0026	0.0005	0.0007	0.0006	0.0268	0.0272	0.0268	0.0236	0.0042	0.0026	0.001	0.0009	0.0304	0.0092	0.0063	0.0058
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended																		
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0032	0.0004	<0.0003	0.0005	<0.0003	<0.0003	0.0004	0.0005	<0.0003	<0.0003	<0.0003	0.0004
Metals-Total																		
Iron	mg/L	0.05	0.97	3.26	3.43	3.47	3.01	10.8	0.17	0.33	0.51	5.41	2.18	0.28	11.9	3.77	2.88	0.64
Manganese	mg/L	0.01	0.86	0.51	0.59	0.74	0.23	0.47	0.26	0.31	0.18	0.99	0.2	0.15	0.42	0.88	0.89	0.88
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	7.1	5.7	<4	6	22.8	20	25.7	13.1	3.7	4.9	5	5	30.7	7	6	5
Gross Beta	pCi/L	7	14.5	9.9	8	13.6	15.6	16.9	14.7	10.1	10.7	10.2	7.6	11.2	19.9	15.9	9.6	8
Lead 210	pCi/L	1	<1	<1	<1	<1	1.5	1.2	3.9	3.5	1.6	<1	<1	<1	6.3	<1	1.1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	2	1.7	1.5	1.6	1.6	1.7	2.2	1.4	0.3	0.7	0.9	1.2	0.5	1.1	1.2	0.9
Radium 228	pCi/L	1	1.46	1.1	1.3	1.7	<1	1.4	1.3	1.6	<1	1.5	<1	<1	<1	1.3	1.3	1.7
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended																		
Lead 210	pCi/L	1	<1	1.2	<1	<1	2.1	<1	1.1	1.9	<1	<1	1.5	1.2	<1	1.9	<1	1.2
Polonium 210	pCi/L	1	<1	<1	<1	<1	1.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	0.5	<0.2	<0.2	0.4	<0.2	<0.2	0.4	0.5	<0.2	<0.2	<0.2	0.3
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total																		
Radon 222	pCi/L	50	---	389	211	139	722	151	119	164	100	79	601	395	85	136	107	<50

Table 2.7B-26: SM Zone Comparison with WDEQ Class of Use Standards

Well ID	Probable WDEQ Class of Use	Parameters Exceeding Class I Standards	Parameters Exceeding Class II Standards	Parameters Exceeding Class III Standards
SM3	III or IV	Iron, Manganese, Sulfate, TDS	Manganese, Sulfate, TDS	---
SM7	IV	Iron, Nitrogen, Ammonia, (as N), Manganese, Sulfate, TDS, Gross alpha	Iron, Sulfate, Manganese, TDS, Gross alpha	Gross alpha
SM5	III or IV	Iron, Manganese, Nitrogen, Ammonia (As N), Sulfate, TDS	Iron, Manganese, Sulfate, TDS	---
SM6	IV	Iron, Manganese, Sulfate, TDS, Gross alpha	Iron, Sulfate, Manganese, Gross alpha	Gross alpha

Table 2.7B-27: SM Zone Comparison with EPA Standards

Well ID	Parameters Exceeding EPA Primary MCLs	Parameters Exceeding EPA Secondary MCLs
SM3	^{222}Radon	Iron, Manganese, Sulfate, TDS
SM5	^{222}Radon	Iron, Manganese, Sulfate, TDS
SM6	Gross Alpha, ^{222}Radon	Iron, Manganese, Sulfate, TDS
SM7	Gross alpha, Uranium	Iron, Manganese, Sulfate, TDS

Table 2.7B-28: OM Zone Monitoring Results

Parameter	Units	Lab Detection Limit	OM1				OM2				OM3				OM4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			11/11/2010	2/23/2011	6/14/2011	8/11/2011	7/26/2011	9/8/2011	12/15/2011	2/2/2012	7/22/2011	9/7/2011	12/15/2011	2/1/2012	2/17/2011	5/17/2011	8/30/2011	11/2/2011
Field[1]																		
Field pH	s.u.		7.62	7.37	10.12	9.17	10.47	10.54	9.96	9.49	11.4	11.55	11.87	11.45	7.31	7.19	8.05	7.09
Field Conductivity	µmhos/cm		1646	1301	1899	1892	481	455	558	516	568	625	645	637	718	1021	1047	1066
Dissolved Oxygen	mg/L		0.61	0.18	0.72	0.33	1.87	1.24	0.43	1.65	0.74	0.6	0.97	4.31	1.15	0.76	0.63	0.89
Field Turbidity	NTU		12.3	0.34	1.8	0.6	16.1	7.8	0.67	0.86	31.4	4.1	3.9	3.93	2.52	0.32	2.5	5.3
Temperature	°C		9.28	9.81	12.28	14.43	16.62	24.2	8.03	7.71	29.82	26.12	7.03	8.14	9.04	10.35	12.29	9.86
ORP	mV		229.7	127.4	18.5	141.5	275.5	50.6	47.9	-226.2	248.1	-212.1	-66.8	-33.13	282.9	224.3	101.1	120.9
Depth to Water	Ft.		179.6	179.41	179.68	179.58	144.02	138.85	138.8	137.1	138.13	136.86	136.48	136.35	94.68	94.15	94.45	94.69
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	253	225	228	224	98	81	72	86	205	173	181	186	265	265	262	260
Alkalinity, Bicarbonate as HCO3	mg/L	5	308	275	279	273	31	28	66	80	14	<5	<5	<5	323	323	320	317
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	43	35	11	12	116	83	97	77	<5	<5	<5	<5
Chloride	mg/L	1	5	6	6	6	6	7	9	10	6	4	6	6	3	3	3	3
Flouride	mg/L	0.1	0.2	0.2	0.2	0.2	1.4	1.7	1.4	1.4	0.6	1.1	2	1.7	0.2	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	728	803	834	794	102	90	158	135	29	22	20	17	328	296	281	306
Calcium	mg/L	1	201	183	206	195	7	5	6	6	13	9	7	8	138	129	136	140
Magnesium	mg/L	1	46	42	47	44	<1	<1	<1	<1	<1	<1	<1	<1	41	40	40	41
Potassium	mg/L	1	11	11	12	12	10	9	10	10	23	19	18	18	7	7	8	8
Sodium	mg/L	1	187	203	210	218	82	76	103	100	79	77	78	81	40	34	36	41
Nitrogen, Ammonia (As N)	mg/L	0.1	0.2	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	1.1	1.1	1.4	<0.1	<0.1	<0.1	2.6
Silica as SiO2	mg/L	1	10	12	14	13	5	5	4	4	7	7	16	20	15	16	17	18
General Parameters																		
Laboratory pH	s.u.	0.1	7.9	7.8	8	7.9	10.2	10.2	9	9.3	10.6	10.8	10.6	11.2	7.7	7.8	7.9	7.8
Electrical Conductivity	µmhos/cm	5	1680	1650	1310	1960	507	452	533	553	550	528	449	604	950	919	1050	1040
Total Dissolved Solids (180)	mg/L	10	1410	1470	1500	1660	290	260	320	340	330	350	250	250	780	790	760	750
Data Quality																		
Cation Sum	meq/L	0.01	22.26	21.68	23.6	23.13	4.29	3.78	5.16	5	4.79	4.26	4.21	4.34	12.18	11.37	11.89	12.25
Anion Sum	meq/L	0.01	20.38	21.4	22.12	21.19	4.33	3.78	5.04	4.87	4.88	4.1	4.3	4.33	12.2	11.54	11.19	11.65
Cation-Anion Balance (±5%)	%	0.01	4.42	0.64	3.25	4.37	0.5	0.05	1.1	1.3	0.97	1.93	1.11	0.02	0.07	0.72	3.01	2.54
Solids, Total Dissolved (Calc)	mg/L	10	1330	1390	1450	1420	270	240	330	320	280	240	250	240	730	670	680	710
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.06	1.03	1.17	1.05	1.08	0.97	1.06	1.19	1.46	1	1.04	1.07	1.18	1.12	1.06
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.004	<0.001	<0.001	0.003	0.008	0.002	0.006	0.005	0.026	0.015	0.017	0.019	<0.001	<0.001	<0.001	0.008
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	0.1	0.38	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.21	0.26	0.22	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.21	0.28	0.26	0.16
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.02	0.04	0.03	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0023	0.0006	<0.0003	<0.0003	0.0017	<0.0003	0.0005	0.0004	0.0022	0.0004	<0.0003	0.0004	0.0023	0.0035	0.0012	0.0007
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	<0.01	<0.01	<0.01
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0004	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total	mg/L																	
Iron	mg/L	0.05	0.35	0.57	0.76	0.69	0.22	0.23	<0.05	<0.05	0.36	0.14	<0.05	<0.05	0.07	0.1	0.4	0.43
Manganese	mg/L	0.01	0.23	0.26	0.24	0.21	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.24	0.29	0.29	0.16
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	8.1	5	2	5	4.5	2	2	2	10	5	2	2	2	2	3	3
Gross Beta	pCi/L	7	5.1	<7	3.4	12.5	11.9	7.1	8.7	5.7	19.8	16.8	15.5	15.1	4.7	5.7	6.9	7.2
Lead 210	pCi/L	1	1.4	<1	<1	<1	<1	<1	<1	<1	<1	1.1	1.5	2.9	<1	<1	<1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	<1	<1	<1
Radium 226	pCi/L	0.2	2.1	0.7	0.3	0.4	0.3	0.5	0.3	1.2	0.9	1.1	0.3	0.5	0.5	0.3	0.5	0.5
Radium 228	pCi/L	1	1.6	<1	<1	1.4	<1	1.1	<1	<1	<1	<1	<1	<1	<1	1.1	<1	1.6
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1	<1	<1	9.1	<1	1.3	<1	1.7	1.6	<1	1.2	2	<1	<1	<1	1.4	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50	---	95	105	119	406	339	251	269	653	613	481	528	<50	90	133	77

Table 2.7B-28: OM Zone Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	OM5				OM6				OM7			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			11/1/2010	3/30/2011	6/7/2011	8/9/2011	3/10/2011	6/2/2011	8/10/2011	10/18/2011	7/27/2011	9/6/2011	12/15/2011	2/1/2012
Field[1]														
Field pH	s.u.		7.62	7.59	9.92	10.94	7.75	10.32	10.5	7.75	11.41	10.99	11.04	10.21
Field Conductivity	µmhos/cm		1778	1270	1768	1756	760	1203	1210	1363	760	1110	1676	1683
Dissolved Oxygen	mg/L		0.11	0.44	3.21	0.36	0.21	0.09	0.29	3.15	3.48	4.51	3.1	2.03
Field Turbidity	NTU		1.28	3.2	1.63	0.5	14.57	3.4	1.3	2.2	9.93	2.4	3.17	0.83
Temperature	°C		12.48	8.46	12.37	12.07	8.06	13.52	13.52	10.58	30.94	20.1	8.72	8.13
ORP	mV		248.2	117.7	49.6	38.8	89.7	38.4	29	-166.1	240	68.7	-25.7	-74.1
Depth to Water	Ft.		37.63	38.2	37.6	37.96	120.15	119.82	120.15	119.7	126.62	126.95	127.26	127.46
Anions/Cations														
Alkalinity, Total (As CaCO3)	mg/L	5	123	117	119	116	251	267	266	276	110	73	30	31
Alkalinity, Bicarbonate as HCO3	mg/L	5	150	142	145	142	306	325	325	337	12	<5	11	17
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	60	30	12	10
Chloride	mg/L	1	7	8	8	8	28	32	32	35	3	3	5	4
Flouride	mg/L	0.1	0.2	0.3	0.3	0.2	0.6	0.7	0.5	0.8	0.2	0.2	0.2	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
Sulfate	mg/L	1	761	792	762	743	290	304	316	334	210	360	768	773
Calcium	mg/L	1	131	128	127	120	50	57	57	68	51	69	110	109
Magnesium	mg/L	1	24	23	24	23	9	10	10	12	2	<1	5	9
Potassium	mg/L	1	8	8	8	8	6	6	6	7	36	31	37	35
Sodium	mg/L	1	256	267	261	258	218	221	231	238	75	138	254	243
Nitrogen, Ammonia (As N)	mg/L	0.1	0.2	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	2.1	2.5	0.9	0.8
Silica as SiO2	mg/L	1	12	10	10	9	10	10	10	11	10	9	3	3
General Parameters														
Laboratory pH	s.u.	0.1	7.9	8	8	8.1	8.1	8.2	8.1	8.3	10.3	10.5	9.5	9.6
Electrical Conductivity	µmhos/cm	5	1680	1540	1450	1820	1100	1060	1340	1440	771	1080	1470	1780
Total Dissolved Solids (180)	mg/L	10	1430	1370	1370	1340	810	840	890	950	530	760	1170	1250
Data Quality														
Cation Sum	meq/L	0.01	19.87	20.09	19.88	19.36	12.84	13.46	13.86	14.86	6.91	10.22	17.88	17.64
Anion Sum	meq/L	0.01	18.5	19.06	18.48	18.04	11.87	12.61	12.84	13.49	6.7	9.22	16.71	16.85
Cation-Anion Balance (±5%)	%	0.01	3.55	2.62	3.64	3.53	3.93	3.25	3.83	4.81	1.58	5.11	3.39	2.3
Solids, Total Dissolved (Calc)	mg/L	10	1260	1300	1260	1240	760	790	820	870	460	650	1200	1200
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.05	1.09	1.08	1.07	1.06	1.09	1.09	1.16	1.17	0.98	1.04
Metals-Dissolved														
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.002	<0.001	0.003	<0.001	0.002	0.002	0.002	0.007	0.005	0.033	0.004	0.008
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	0.25	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	1.12	0.48	0.33	0.3	0.44	0.51	0.47	0.43	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.03	0.02	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.01	<0.005	<0.005
Uranium	mg/L	0.0003	0.0011	0.0007	0.0006	<0.0003	0.0017	0.0009	0.0009	0.0011	0.0012	<0.0003	0.0007	<0.0003
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Metals-Suspended	mg/L													
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total	mg/L													
Iron	mg/L	0.05	0.45	0.5	0.4	0.36	0.4	0.3	0.68	0.39	0.37	0.11	0.19	<0.05
Manganese	mg/L	0.01	1.16	0.47	0.34	0.32	0.46	0.49	0.54	0.45	0.02	<0.01	<0.01	<0.01
Radionuclides-Dissolved														
Gross Alpha	pCi/L	4	3.5	3	4.9	5.4	7.5	2.8	2.3	3	8.6	2.2	3	<4
Gross Beta	pCi/L	7	5.7	8	8	8	11.3	4.2	7.1	4.6	39.1	23.8	26.6	18.4
Lead 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	2.5	<1	1.2	1.3
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.6	0.6	0.3	0.6	0.9	0.7	0.5	0.6	1.1	0.4	0.8	0.9
Radium 228	pCi/L	1	<1	<1	<1	1.7	1.3	1.2	<1	2.5	<1	<1	<1	1.3
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L													
Lead 210	pCi/L	1	<1	<1	<1	<1	<1	1.1	<1	<1	1.6	<1	1.9	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L													
Radon 222	pCi/L	50	156	294	167	136	55	100	<50	96	1500	57	68	78

Table 2.7B-29: OM Zone Comparison with WDEQ Class of Use Standards

Well ID	Probable WDEQ Class of Use	Parameters Exceeding Class I Standards	Parameters Exceeding Class II Standards	Parameters Exceeding Class III Standards
OM1	III or IV	Iron, Sulfate, TDS	Sulfate, Manganese	---
OM2	IV	pH	pH	pH
OM3	IV	Iron, pH	pH	pH
OM4	III or IV	Manganese, Sulfate, TDS	Manganese, Sulfate	---
OM5	III or IV	Manganese,TDS, Iron, Sulfate	Manganese, Sulfate	---
OM6	III or IV	Manganese, Iron Sulfate	Manganese, Sulfate	---
OM7	IV	Sulfate, Nitrogen, Ammonia (As N), pH, TDS	Sulfate, pH	pH

Table 2.7B-30: OM Zone Comparison with EPA Standards

Well ID	Parameters Exceeding EPA Primary MCLs	Parameters Exceeding EPA Secondary MCLs
OM1	---	Iron, Manganese, Sulfate, TDS
OM2	^{222}Radon	pH
OM3	Arsenic, ^{222}Radon	pH, Iron
OM4	---	Manganese, Sulfate, TDS
OM5	---	Iron, Manganese, Sulfate, TDS
OM6	---	Iron, Manganese, Sulfate, TDS
OM7	Arsenic, ^{222}Radon	Sulfate, pH, TDS

Table 2.7B-31: PZM Zone Monitoring Results

Parameter	Units	Lab Detection Limit	PZM2				PZM6				PZM7				PZM8			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			7/26/2011	9/19/2011	12/20/2011	2/1/2012	11/3/2010	3/22/2011	6/2/2011	8/10/2011	7/28/2011	9/6/2011	12/20/2011	1/31/2012	12/20/2010	3/29/2011	6/14/2011	8/16/2011
Field[1]																		
Field pH	s.u.		11.09	11.20	8.59	8.31	7.64	7.77	11.13	12.60	11.88	9.46	12.14	12.19	8.31	8.10	10.19	8.86
Field Conductivity	µmhos/cm		1861	2064	1834	1845	1243	914	1167	1185	1291	965	2816	2923	1172	1525	1915	1918
Dissolved Oxygen	mg/L		1.37	0.58	1.30	1.70	1.50	2.40	0.16	0.22	1.96	0.70	0.80	1.90	2.11	0.33	0.37	0.24
Field Turbidity	NTU		5.20	4.40	4.37	2.73	4.52	1.33	2.70	0.60	7.20	6.56	9.00	4.50	0.81	3.30	0.40	0.30
Temperature	°C		19.61	19.23	10.20	9.98	10.87	10.22	13.57	15.65	21.95	22.26	9.74	10.02	4.89	11.95	12.97	13.51
ORP	mV		284.2	59.6	113.0	-197.3	60.9	34.1	-40.4	-63.1	271.4	62.3	-41.6	14.3	84.2	53.5	39.9	104.4
Depth to Water	Ft.		304.98	305.45	305.17	305.43	196.42	197.61	196.07	197.44	184.05	184.98	185.25	184.90	287.55	287.87	287.91	288.02
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	128	90	73	79	174	170	192	200	71	37	501	446	75	78	75	75
Alkalinity, Bicarbonate as HCO3	mg/L	5	<5	<5	66	87	212	197	209	223	<5	39	<5	<5	91	96	92	91
Alkalinty, Carbonate as CO3	mg/L	5	30	25	11	<5	<5	<5	13	10	27	<5	31	34	<5	<5	<5	<5
Chloride	mg/L	1	9	7	7	7	11	7	8	8	3	2	3	3	6	7	7	7
Flouride	mg/L	0.1	0.2	<0.1	<0.1	<0.1	0.3	0.2	0.4	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	570	726	859	857	437	407	375	346	345	362	231	277	842	846	880	842
Calcium	mg/L	1	84	84	106	109	85	77	72	66	66	52	181	198	110	110	115	105
Magnesium	mg/L	1	2	<1	25	25	15	13	12	11	<1	9	<1	<1	23	24	26	23
Potassium	mg/L	1	54	48	16	13	8	7	7	7	32	19	37	31	9	9	9	8
Sodium	mg/L	1	237	268	309	314	191	186	193	188	121	126	146	127	270	320	316	318
Nitrogen, Ammonia (As N)	mg/L	0.1	0.3	0.5	<0.1	<0.1	0.6	0.4	0.5	0.3	0.2	<0.1	0.6	0.4	<0.1	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	7	4	10	11	13	12	13	13	10	10	6	5	10	11	12	11
General Parameters																		
Laboratory pH	s.u.	0.1	11.3	11	8.5	8.5	8.1	8.5	8.7	8.6	10.8	8.9	11.7	12	8.1	8.3	8	8.2
Electrical Conductivity	µmhos/cm	5	1880	2000	1630	1960	1310	1130	1030	1220	1100	974	2240	1800	1780	1700	1370	2000
Total Dissolved Solids (180)	mg/L	10	1050	1200	1380	1370	1030	890	890	860	630	680	820	920	1430	1520	1440	1460
Data Quality																		
Cation Sum	meq/L	0.01	16.02	17.09	21.14	21.52	13.93	13.14	13.15	12.49	9.37	9.31	16.31	16.2	19.38	21.6	21.86	21.16
Anion Sum	meq/L	0.01	14.66	17.12	19.55	19.6	12.88	12.28	11.91	11.43	8.86	8.49	14.91	14.76	19.21	19.55	20.05	19.24
Cation-Anion Balance (±5%)	%	0.01	4.4	0.07	3.92	4.65	3.9	3.37	4.95	4.43	2.79	4.6	4.46	4.63	0.44	4.97	4.33	4.75
Solids, Total Dissolved (Calc)	mg/L	10	1040	1190	1380	1380	850	800	780	760	620	600	900	910	1310	1360	1400	1360
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.01	1.01	1	0.99	---	1.11	1.14	1.13	1.02	1.13	0.91	1.01	---	1.12	1.03	1.07
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.006	0.004	0.02	0.009	<0.001	0.002	0.003	0.002	0.002	0.006	0.045	0.034	0.008	0.003	0.002	0.003
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	<0.01	<0.01	<0.01	0.02	0.25	0.11	0.09	0.09	<0.01	<0.01	<0.01	<0.01	0.11	0.09	0.09	0.08
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	0.02	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	0.049	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0943	0.0293	0.661	0.326	0.0139	0.0358	0.0257	0.0191	0.0016	0.0728	0.0195	0.0136	0.0664	0.0194	0.012	0.0144
Vanadium	mg/L	0.1	0.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003	<0.0003	0.0219	0.0007	0.0009	<0.0003	0.0007	<0.0003	<0.0003	0.0173	0.0009	0.004	0.0046	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total	mg/L																	
Iron	mg/L	0.05	0.06	0.07	<0.05	<0.05	0.28	0.12	0.07	<0.05	0.07	0.19	<0.05	<0.05	0.18	0.23	0.06	<0.05
Manganese	mg/L	0.01	<0.01	<0.01	0.02	0.03	0.27	0.11	0.1	0.09	<0.01	<0.01	<0.01	<0.01	0.11	0.1	0.1	0.09
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	1210	1460	2760	1800	58	74.7	71.1	95.1	188	359	276	212	151	133	102	217
Gross Beta	pCi/L	7	597	635	1420	833	42.3	38.7	33	48.2	93.8	152	80.9	81.6	57.5	60.6	50	92
Lead 210	pCi/L	1	101	77.4	428	469	6.4	5.1	7.8	7.7	4.3	26.8	5.3	5.4	4	2.7	13.2	6.7
Polonium 210	pCi/L	1	10.2	6.6	1.3	126	<1	<1	2.2	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	281	385	672	700	23.4	24.1	21.4	20.2	96.3	125	203	177	50.7	46.9	51	55.5
Radium 228	pCi/L	1	1.9	1.1	1.1	1.4	1.4	<1	1.4	<1	1.9	<1	<1	<1	1.8	<1	<1	1.4
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1	328	321	437	214	9.1	7.9	6.9	7.2	43.7	24.7	8.7	9.9	22.6	17.7	<1	9
Polonium 210	pCi/L	1	48.3	203	73.6	6.8	3.8	3.4	<1	<1	7.3	3	<1	15.4	2.1	<1	<1	1.7
Radium 226	pCi/L	0.2	6.4	3.8	2.6	1.7	0.3	0.4	<0.2	<0.2	2.1	6	7.5	8.9	0.5	0.7	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50	1710000	1030000	2580000	2830000	9300	741	2240	1960	34700	128000	6250	2620	38600	40900	47700	47900

Table 2.7B-31: PZM Zone Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	PZM10				PZM14				PZM15				PZM16			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			11/11/2010	3/1/2011	6/13/2011	8/16/2011	3/29/2011	6/15/2011	8/31/2011	10/19/2011	2/23/2011	5/18/2011	8/30/2011	11/15/2011	2/16/2011	6/1/2011	8/31/2011	11/2/2011
Field[1]																		
Field pH	s.u.		9.14	8.80	10.55	8.75	8.07	10.19	9.30	8.03	8.47	8.34	9.62	8.49	7.65	10.08	9.45	7.80
Field Conductivity	µmhos/cm		1695	1316	1907	1896	777	1136	1145	1168	585	835	865	875	978	1331	1370	1383
Dissolved Oxygen	mg/L		2.99	6.39	3.79	6.43	1.51	0.38	0.57	2.87	0.20	0.22	0.14	0.84	1.34	0.18	0.33	0.14
Field Turbidity	NTU		19.40	0.33	2.10	1.30	13.50	10.43	2.50	3.30	7.29	3.77	3.70	2.50	4.45	3.73	0.56	6.13
Temperature	°C		9.50	9.93	13.71	13.68	6.47	12.89	16.35	11.09	9.43	10.86	12.11	9.23	11.26	11.60	15.72	10.04
ORP	mV		280.7	81.5	15.9	140.3	86.1	3.2	41.4	60.3	119.0	132.3	0.1	-1.2	229.2	87.6	-8.1	-1.3
Depth to Water	Ft.		288.65	289.00	288.91	289.06	198.50	198.53	198.48	198.68	226.85	225.90	227.79	225.94	137.13	137.30	137.64	137.65
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	250	57	58	59	106	106	102	101	110	111	110	109	193	190	191	191
Alkalinity, Bicarbonate as HCO3	mg/L	5	305	69	71	70	129	130	125	123	134	135	134	132	236	232	234	232
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	1	6	8	7	8	5	5	4	4	3	3	2	2	3	4	3	4
Flouride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	829	862	863	829	445	433	395	431	293	352	268	267	527	492	469	514
Calcium	mg/L	1	112	112	110	104	58	57	59	60	44	48	46	48	103	108	110	112
Magnesium	mg/L	1	23	21	23	21	11	12	12	12	10	10	10	10	23	23	25	24
Potassium	mg/L	1	9	9	9	9	7	7	7	8	7	7	7	7	9	8	9	8
Sodium	mg/L	1	323	313	306	309	187	169	176	181	124	129	121	120	176	166	172	185
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.2
Silica as SiO2	mg/L	1	10	8	8	8	8	9	9	9	9	10	9	9	10	10	11	10
General Parameters																		
Laboratory pH	s.u.	0.1	8.4	8	8.1	8.4	8.1	8.2	8.2	8.1	8.1	8.1	8.3	8	8	8	8.1	8
Electrical Conductivity	µmhos/cm	5	1800	1640	1350	1970	1020	873	1170	1220	785	730	887	876	1220	1140	1390	1350
Total Dissolved Solids (180)	mg/L	10	1390	1430	1470	1440	830	790	800	810	650	600	550	600	980	1030	1000	1000
Data Quality																		
Cation Sum	meq/L	0.01	21.78	21.15	20.87	20.56	12.16	11.38	11.77	12.09	8.6	9.03	8.57	8.61	14.95	14.74	15.25	15.88
Anion Sum	meq/L	0.01	22.44	19.31	19.34	18.66	11.53	11.29	10.53	11.11	8.37	9.62	7.83	7.94	14.93	14.14	13.87	14.61
Cation-Anion Balance (±5%)	%	0.01	1.47	4.54	3.79	4.83	2.67	0.39	5.54	4.22	1.36	3.18	4.49	4.03	0.04	2.09	4.72	4.13
Solids, Total Dissolved (Calc)	mg/L	10	1450	1360	1350	1320	780	750	720	770	550	620	530	530	960	920	910	970
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.05	1.09	1.09	1.06	1.05	1.11	1.05	1.18	0.97	1.04	1.13	1.02	1.12	1.1	1.03
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.035	0.031	0.026	0.023	<0.001	<0.001	0.002	0.003	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.007
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	0.026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.38	0.41	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.02	0.04	0.05	0.04	0.07	0.08	0.09	0.09	0.05	0.04	0.05	0.04	0.06	0.07	0.07	0.05
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	0.05	0.32	0.4	0.37	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	0.031	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.397	0.607	0.477	0.387	0.0191	0.0126	0.0128	0.0113	0.0413	0.0514	0.0517	0.0456	0.286	0.296	0.338	0.296
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003	0.0005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.001	<0.0003	<0.0003	<0.0003	0.0007	<0.0003	0.0008	0.0009
Metals-Total	mg/L																	
Iron	mg/L	0.05	0.58	<0.05	<0.05	<0.05	0.85	1.07	0.88	0.69	0.35	0.16	0.23	0.07	0.24	<0.05	0.15	0.63
Manganese	mg/L	0.01	0.04	0.05	0.05	0.05	0.07	0.08	0.1	0.09	0.06	0.05	0.05	0.04	0.07	0.08	0.08	0.06
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	589	594	713	713	23.9	30.3	26.5	25.3	61.3	62.2	68.4	51.7	241.4	243	263	243
Gross Beta	pCi/L	7	197	350	236	245	10.9	15.3	18.4	20.1	16.4	15.6	22.5	16.6	40	72.2	90.4	29.7
Lead 210	pCi/L	1	9.3	10.5	27.6	30.3	<1	2.8	6.3	6.7	2.3	<1	4.1	3.2	1.6	5.5	4.5	<1
Polonium 210	pCi/L	1	<1	<1	1.2	2.9	<1	<1	<1	1.9	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	146	86.4	94.4	84.7	3.2	3.1	3.6	3.7	6.5	5.4	6.4	6.3	4.5	3.5	4.5	3.1
Radium 228	pCi/L	1	<1	1.4	<1	1.3	<1	1.2	1.2	<1	1.4	<1	<1	<1	1.7	1.6	1.9	<1
Thorium 230	pCi/L	0.2	<0.2	1.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1	<1	21.5	33.9	29	5	3.8	7.7	11.1	1.6	1.3	<1	2.6	1.8	2.4	<1	<1
Polonium 210	pCi/L	1	22	<1	12.1	20.2	<1	<1	3.2	2.4	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	16.5	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4
Thorium 230	pCi/L	0.2	<0.2	2.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	0.6	0.3
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50	232000	63300	61400	54200	3130	3900	1220	372	2190	2120	2700	2540	2300	2110	92	2510

Table 2.7B-31: PZM Zone Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	PZM17				PZM18			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			2/16/2011	6/1/2011	8/31/2011	11/15/2011	11/9/2010	3/22/2011	6/8/2011	8/10/2011
Field[1]										
Field pH	s.u.		8.06	10.25	8.46	8.03	10.60	10.88	11.32	10.68
Field Conductivity	µmhos/cm		739	988	1015	1031	1254	928	1170	1166
Dissolved Oxygen	mg/L		1.10	0.20	0.42	0.25	1.43	0.63	1.40	1.16
Field Turbidity	NTU		3.61	1.70	4.10	1.00	11.06	2.80	0.60	1.20
Temperature	°C		11.86	13.20	13.37	9.09	5.05	11.09	1283.00	12.01
ORP	mV		95.7	73.7	126.8	-23.5	36.0	220.0	13.9	189.3
Depth to Water	Ft.		127.14	127.35	128.04	127.65	161.75	163.21	163.24	163.34
Anions/Cations										
Alkalinity, Total (As CaCO3)	mg/L	5	93	92	90	90	79	48	42	42
Alkalinity, Bicarbonate as HCO3	mg/L	5	114	112	110	110	78	<5	8	27
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	9	26	21	12
Chloride	mg/L	1	3	3	3	4	3	4	4	5
Flouride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	396	385	345	388	502	480	487	500
Calcium	mg/L	1	62	65	67	69	73	80	86	88
Magnesium	mg/L	1	13	13	14	14	7	5	5	8
Potassium	mg/L	1	7	6	7	7	14	13	12	10
Sodium	mg/L	1	143	130	131	133	171	170	168	164
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.8	0.5	<0.1	<0.1
Silica as SiO2	mg/L	1	10	10	11	10	8	5	8	9
General Parameters										
Laboratory pH	s.u.	0.1	8.1	8	8.1	8.1	10.6	10.6	10	9.6
Electrical Conductivity	µmhos/cm	5	928	863	1030	1020	1160	1110	991	1200
Total Dissolved Solids (180)	mg/L	10	710	740	710	710	860	860	890	870
Data Quality										
Cation Sum	meq/L	0.01	10.53	10.11	10.37	10.51	12.02	12.12	12.24	12.43
Anion Sum	meq/L	0.01	10.39	9.92	9.25	10.14	12.11	11.15	11.1	11.39
Cation-Anion Balance (±5%)	%	0.01	0.66	0.93	5.68	1.77	0.39	4.14	4.86	4.38
Solids, Total Dissolved (Calc)	mg/L	10	680	660	630	680	820	780	790	810
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.04	1.12	1.13	1.04	---	1.1	1.13	1.07
Metals-Dissolved										
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.002	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	0.003
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.06	0.07	0.07	0.06	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0304	0.0308	0.0361	0.034	0.0074	0.0017	0.004	0.0102
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L									
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0023	0.0009	0.0011	0.0004
Metals-Total	mg/L									
Iron	mg/L	0.05	0.22	0.14	0.13	0.09	0.16	<0.05	<0.05	<0.05
Manganese	mg/L	0.01	0.06	0.07	0.08	0.06	<0.01	<0.01	<0.01	<0.01
Radionuclides-Dissolved										
Gross Alpha	pCi/L	4	60.7	72	82.9	95.5	54.8	32.2	53.5	23.9
Gross Beta	pCi/L	7	20.4	18.5	37.6	31.9	32.8	23.9	31.3	17.9
Lead 210	pCi/L	1	<1	2	11.5	2.5	2.7	1.4	4.4	2.6
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	21.6	23.1	20.7	19.2	21.7	15.4	15.9	14.8
Radium 228	pCi/L	1	1.3	<1	<1	<1	<1	<1	1.6	<1
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L									
Lead 210	pCi/L	1	10.3	7.2	2.8	7.3	10.5	2.9	4	3.1
Polonium 210	pCi/L	1	<1	1.3	1.2	<1	<1	<1	1.1	2
Radium 226	pCi/L	0.2	0.4	<0.2	<0.2	0.4	0.7	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L									
Radon 222	pCi/L	50	13600	1660	1750	1430	3960	2190	1190	3750

Table 2.7B-31a: Non-Baseline PZA Monitoring Well Results

Parameter	Units	Lab Detection	PZM1	PZM3	PZM4		PZM5	PZM9	PZM13	PZM19	PZM20	PZM4D
Collection Date			12/15/2010	8/11/2011	12/16/2010	1/27/2011	11/2/2010	12/20/2010	12/27/2011	6/8/2011	3/10/2011	7/7/2011
Field1												
Field pH	s.u.		8.05	8.85	0.00	7.86	7.52	11.45	7.45	9.67	0.00	0.00
Field Conductivity	µmhos/cm		1266	1408	0	630	1773	1220	3606	1279	0	0
Dissolved Oxygen	mg/L		0.92	2.18	0.00	6.00	7.92	0.35	2.46	0.68	0.00	0.00
Field Turbidity	NTU		4.81	0.00	0.00	1.13	9.89	2.86	0.50	4.90	0.00	0.00
Temperature	°C		6.67	21.77	0.00	8.27	14.89	5.93	10.97	18.07	0.00	0.00
ORP	mV		63.5	207.2	0	176.7	362.1	0	232.2	28.1	0	0
Depth to Water	Ft.		291.83	300.71	0.00	148.20	65.73	291.68	0.00	157.51	0.00	0.00
Anions/Cations												
Alkalinity, Total (As CaCO3)	mg/L	5	75	127	144	145	238	80	119	94	98	0
Alkalinity, Bicarbonate as HCO3	mg/L	5	92	155	175	174	291	<5	145	115	120	0
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5	40	<5	<5	<5	0
Chloride	mg/L	1	6	5	3	3	15	0.1	5	4	3	0
Flouride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	0
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Sulfate	mg/L	1	913	546	329	330	32	754	2400	541	512	0
Calcium	mg/L	1	100	77	61	66	17	113	526	92	89	0
Magnesium	mg/L	1	23	16	13	14	3	5	102	18	16	0
Potassium	mg/L	1	8	10	6	6	9	21	15	9	8	0
Sodium	mg/L	1	321	227	125	128	109	266	325	171	172	0
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	2	<0.1	<0.1	0.8	0.3	0.5	<0.1	<0.1	0
Silica as SiO2	mg/L	1	10	11	10	10	13	4	12	10	9	0
General Parameters												
Laboratory pH	s.u.	0.1	8	8.2	7.9	8.3	8.2	10.7	7.9	7.9	8.2	8.7
Electrical Conductivity	µmhos/cm	5	1790	1480	906	916	579	1720	3110	1070	1180	0
Total Dissolved Solids (180)	mg/L	10	1500	1020	640	690	420	1340	3580	950	920	640
Data Quality												
Cation Sum	meq/L	0.01	21.06	15.29	9.74	10.22	6.05	18.19	49.15	13.7	13.37	0
Anion Sum	meq/L	0.01	21.28	14.06	9.8	10	5.86	17.48	52.53	13.25	12.72	0
Cation-Anion Balance (±5%)	%	0.01	0.53	4.2	0.29	1.08	1.56	1.97	3.32	1.67	2.5	0
Solids, Total Dissolved (Calc)	mg/L	10	1430	970	620	630	330	1210	3460	890	860	0
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	0	1.05	0	1.1	0	0	1.03	1.07	1.07	0
Metals-Dissolved												
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Arsenic	mg/L	0.001	0.002	0.006	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	0
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0
Iron	mg/L	0.05	0.07	<0.05	<0.05	<0.05	0.07	<0.05	0.37	<0.05	<0.05	0
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
Manganese	mg/L	0.01	0.08	0.06	0.03	0.03	0.06	<0.01	0.42	0.11	0.06	0
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0
Uranium	mg/L	0.0003	0.0047	0.016	0.0638	0.0819	0.0018	0.003	<0.0003	0.0418	0.0922	0
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Zinc	mg/L	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
Metals-Suspended	mg/L											
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0006	<0.0003	0.0004	<0.0003	<0.0003
Metals-Total	mg/L											
Iron	mg/L	0.05	0.31	2.79	0.54	0.13	0.24	0.06	1.11	0.76	0.07	0
Manganese	mg/L	0.01	0.1	0.11	0.03	0.04	0.07	<0.01	0.48	0.12	0.06	0
Radionuclides-Dissolved												
Gross Alpha	pCi/L	4	42	28.9	52.1	78.6	3.4	186	2	35.5	63.9	0
Gross Beta	pCi/L	7	25.3	10	19.6	25.8	6	70.8	7.6	19.3	45.2	0
Lead 210	pCi/L	1	4.8	<1	4.5	3	1.5	5.6	0	1.3	<1	0
Polonium 210	pCi/L	1	2.7	<1	<1	<1	<1	1.3	0	<1	<1	0
Radium 226	pCi/L	0.2	23.5	3.1	2.5	7.9	0.282	107	0.3	1.4	1.3	.7
Radium 228	pCi/L	1	1.5	<1	<1	<1	1.35	1.4	5.2	1.4	<1	0
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0	<0.2	<0.2	0
Radionuclides-Suspended	pCi/L											
Lead 210	pCi/L	1	5.8	1.5	5	15.4	1.3	8.1	0	<1	<1	0
Polonium 210	pCi/L	1	<1	<1	1.1	<1	<1	<1	0	<1	<1	0
Radium 226	pCi/L	0.2	0.3	<0.2	<0.2	7.9	<0.2	0.7	0	<0.2	<0.2	0
Thorium 230	pCi/L	0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0	<0.2	<0.2	0
Radionuclides-Total	pCi/L											
Radon 222	pCi/L	50	11900	8460	0	67300	2150	38600	22900	396	2690	0

Table 2.7B-31b: PZA Monitoring Well Information

Monitoring Well ID	Monitoring Well Uses					
	PZA Baseline Monitoring Wells (TR Table 2.7B-31)	Hydrologic Pump Test Wells	PZA Pump Test Observation Wells	Non-Baseline PZA Monitoring Wells Sampled	PZA Monitoring Wells plotted on Piper Diagram (TR Figure 2.7B-60)	PZA Monitoring Wells not plotted on Piper Diagram (TR Figure 2.7B-60)
PZM-1		x		x	x	
PZM-2	x				x	
PZM-3		x		x	x	
PZM-4			x	x		x
PZM-4D		x		x		x
PZM-5		x		x	x	
PZM-6	x		x		x	
PZM-7	x				x	
PZM-8	x		x		x	
PZM-9			x	x	x	
PZM-10	x		x		x	
PZM-11			x			x
PZM-12			x			x
PZM-13			x			x
PZM-14	x		x		x	
PZM-15	x		x		x	
PZM-16	x		x		x	
PZM-17	x		x		x	
PZM-18	x		x		x	
PZM-19			x	x	x	
PZM-20			x	x		x
Total	**10**	**4**	**15**	**8**	**15**	**6**

Table 2.7B-32: PZM Zone Comparison with WDEQ Class of Use Standards

Well ID	Probable WDEQ Class of Use	Parameters Exceeding Class I Standards	Parameters Exceeding Class II Standards	Parameters Exceeding Class III Standards
PZM2	IV	Gross alpha, Sulfate, TDS, pH, Combined radium 226 + radium 228	Gross alpha, Selenium, Vanadium, pH, Combined radium 226 + radium 228	Gross alpha, pH, Vanadium, Combined radium 226 + radium 228
PZM6	IV	Manganese, Sulfate, TDS, pH, Combined radium 226 + radium 228, Gross alpha	Manganese, Sulfate, , Combined radium 226 + radium 228, Gross alpha	pH, Combined radium 226 + radium 228, Gross alpha
PZM7	IV	pH, Sulfate, TDS, Gross alpha, Combined radium 226 + radium 228	pH, Sulfate, Gross alpha, Combined radium 226 + radium 228	pH, Gross alpha, Combined radium 226 + radium 228
PZM8	IV	Manganese, Sulfate, TDS, Combined radium 226 + radium 228, Gross alpha	Sulfate, Combined radium 226 + radium 228, Gross alpha	Combined radium 226 + radium 228, Gross alpha
PZM10	IV	Cadmium, Lead Gross alpha, Combined radium 226 + radium 228, Sulfate, TDS	Cadmium, Gross alpha, Combined radium 226 + radium 228	Gross alpha, Combined radium 226 + radium 228
PZM14	IV	Manganese, Gross alpha, Iron, Sulfate, TDS	Gross alpha	Gross alpha
PZM15	IV	Gross alpha, Combined radium 226 + radium 228, Sulfate, Mangnese, TDS	Sulfate, Gross alpha, Combined radium 226 + radium 228	Gross alpha, Combined radium 226 + radium 228
PZM16	IV	Manganese, Gross alpha, Combined radium 226 + radium 228, Sulfate, TDS	Gross alpha, Sulfate, Combined radium 226 + radium 228	Gross alpha, Combined radium 226 + radium 228
PZM17	IV	Manganese, Sulfate, TDS, Combined radium 226 + radium 228, Gross alpha	Sulfate, Combined radium 226 + radium 228, Gross alpha	Combined radium 226 + radium 228, Gross alpha
PZM18	IV	pH, Sulfate, TDS, Combined radium 226 + radium 228, Gross alpha	pH, Sulfate, Combined radium 226 + radium 228, Gross alpha	pH, Combined radium 226 + radium 228, Gross alpha

Table 2.7B-33: PZM Zone Comparison with EPA Standards

Well ID	Parameters Exceeding EPA Primary MCLs	Parameters Exceeding EPA Secondary MCLs
PZM2	Uranium, Arsenic, Gross alpha, Combined radium 226 + radium 228, ^{222}Radon	pH, Sulfate, TDS
PZM6	Combined radium 226 + radium 228, Gross alpha, ^{222}Radon	Manganese, Sulfate, TDS, pH
PZM7	Uranium, Arsenic, Gross alpha, Combined radium 226 + radium 228, ^{222}Radon	pH, TDS, Sulfate
PZM8	Combined radium 226 + radium 228, Gross alpha, Uranium, ^{222}Radon	Manganese, Sulfate, TDS
PZM10	Arsenic, Cadmium, Lead, Uranium, Gross alpha, Combined radium 226 + radium 228, ^{222}Radon	Sulfate, TDS
PZM14	Gross alpha, ^{222}Radon	Manganese, Iron, Sulfate, TDS
PZM15	Uranium, Gross alpha, Combined radium 226 + radium 228, 222Radon	Sulfate, TDS
PZM16	Uranium, Gross alpha, Combined radium 226 + radium 228, ^{222}Radon	Manganese, Sulfate, TDS
PZM17	Uranium, Combined radium 226 + radium 228, Gross alpha, ^{222}Radon	Manganese, Sulfate, TDS
PZM18	Combined radium 226 + radium 228, Gross alpha, ^{222}Radon	pH, Sulfate, TDS

Table 2.7B-34: UM Zone Monitoring Results

Parameter	Units	Lab Detection	UM1				UM2				UM3R				UM4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			11/16/2010	2/22/2011	6/6/2011	8/16/2011	7/26/2011	9/19/2011	12/20/2011	2/2/2012	11/29/2011	1/12/2012	3/7/2012	5/8/2012	2/17/2011	5/17/2011	8/30/2011	12/14/2011
Field																		
Field pH	s.u.		8.67	8.35	9.24	8.24	10.85	10.86	10.83	10.72	9.9	11.45	11.32	11.13	7.5	8.17	10.07	7.97
Field Conductivity[1]	µmhos/cm		465	362	609	513	970	1022	1068	1048	1582	1385	1365	1310	1270	1916	1986	1287
Dissolved Oxygen	mg/L		10.63	0.71	1.17	2.87	0.52	3.96	2.68	2.77	1.19	5	1.63	1	0.19	0.35	1	1.55
Field Turbidity	NTU		5.22	4.56	12.9	14.2	5	3.1	8.27	3.56	3	18.4	5.76	1.4	3.4	1.07	0.93	2.53
Temperature	°C		8.16	6.97	17.28	22.78	15.56	21.79	9.86	7.96	10.88	7.25	8.15	11.25	8.58	10.36	14.67	5.41
ORP	mV		164.3	112.5	34.3	164.6	267.2	102.7	210.83	70	249	-36.9	-143.5	-238	15.7	126	-64.3	-11.5
Depth to Water	Ft.		302.5	296.24	295.75	296.06	318.13	314.03	314.03	314.89	304.86	318.5	318.58	318.88	155.88	155.75	158.1	156.13
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	181	194	203	202	103	77	68	44	24	46	36	134	138	167	248	141
Alkalinity, Bicarbonate as HCO3	mg/L	5	208	236	240	246	<5	<5	83	14	29	6	<5	23	168	203	299	172
Alkalinty, Carbonate as CO3	mg/L	5	6	<5	<5	<5	48	46	<5	20	<5	25	21	69	<5	<5	<5	<5
Chloride	mg/L	1	18	25	28	30	13	16	16	16	5	8	8	7	38	38	32	29
Flouride	mg/L	0.1	0.2	0.7	0.7	0.6	0.4	0.3	0.4	0.3	0.3	0.6	0.5	0.6	0.3	0.3	0.3	0.3
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	26	51	64	61	231	277	371	354	591	471	452	456	852	764	661	464
Calcium	mg/L	1	9	14	17	16	17	19	27	24	69	35	28	35	114	110	114	62
Magnesium	mg/L	1	2	2	3	3	<1	<1	<1	<1	12	<1	<1	<1	19	19	20	11
Potassium	mg/L	1	3	4	4	4	26	26	28	27	33	31	29	26	10	9	10	7
Sodium	mg/L	1	89	112	117	121	134	157	178	171	209	221	214	235	340	317	352	231
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.8	0.4	0.6	0.4	0.4	0.4	0.5	0.4	<0.1	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	8	8	9	9	4	6	6	7	6	4	7	9	14	15	18	12
General Parameters																		
Laboratory pH	s.u.	0.1	8.6	8.3	8.4	8.3	10.9	10.4	9.7	9.8	8.2	10.3	10.2	10.7	7.6	8.3	8.4	7.9
Electrical Conductivity	µmhos/cm	5	459	533	655	638	985	1000	1030	1090	1410	1380	1340	1180	1770	1640	2010	1180
Total Dissolved Solids (180)	mg/L	10	250	380	390	400	520	580	690	710	1050	810	800	820	1500	1600	1620	920
Data Quality																		
Cation Sum	meq/L	0.01	4.53	5.84	6.3	6.38	7.42	8.42	9.78	9.33	14.32	12.17	11.4	12.63	22.31	21.08	22.86	14.16
Anion Sum	meq/L	0.01	4.67	5.8	6.21	6.19	7.26	7.77	9.54	8.83	13.03	11.06	10.36	12.39	21.58	20.33	19.94	13.29
Cation-Anion Balance (±5%)	%	0.01	1.43	0.36	0.67	1.5	1.11	4.02	1.26	2.78	4.7	4.76	4.76	0.93	1.66	1.8	6.81	3.15
Solids, Total Dissolved (Calc)	mg/L	10	260	320	350	370	490	550	670	630	940	800	760	840	1460	1360	1350	900
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.19	1.11	1.08	1.07	1.05	1.03	1.13	1.12	1.01	1.05	0.98	1.03	1.18	1.2	1.02
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	0.002	0.006	0.004	0.015	0.01	0.011	0.022	<0.001	<0.001	0.003	0.003	0.016	0.008
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	0.13	0.06	0.11	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.02	0.02	0.03	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.69	0.68	0.59	0.17
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.03	0.03	0.02	0.02	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.008	0.0068	0.0063	0.0075	<0.0003	0.0005	0.0005	<0.0003	0.0031	0.0008	<0.0003	<0.0003	0.0021	0.0035	0.0014	0.0004
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	0.06	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01
Metals-Suspended	mg/L																	
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total	mg/L																	
Iron	mg/L	0.05	0.5	0.16	0.45	0.58	0.1	0.09	0.1	<0.05	<0.05	0.08	<0.05	0.11	0.26	0.18	0.09	1.16
Manganese	mg/L	0.01	0.02	0.02	0.03	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.72	0.71	0.66	0.2
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	14	21.7	21.2	24.2	2.7	6.7	3	3.6	2.2	3	2	2	6.3	<4	6	3.9
Gross Beta	pCi/L	7	5.3	9.1	9.2	13.7	26.4	24.2	20.8	19.5	29.1	21	22.1	17.5	<7	<7	9.5	5.6
Lead 210	pCi/L	1	1.1	3	3.8	4.7	<1	2.3	1.9	<1	<1	<1	<1	<1	<1	1.3	<1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	2.4	4.8	4.5	2.7	0.5	1.9	1.6	2.3	1.6	<0.2	0.4	0.4	0.8	0.6	1.6	0.7
Radium 228	pCi/L	1	<1	<1	<1	<1	<1	<1	1.7	<1	<1	<1	<1	1.5	1.1	<1	1.9	<1
Thorium 230	pCi/L	0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L																	
Lead 210	pCi/L	1	4.1	2.3	1.8	2.6	<1	4.7	<1	2	<1	<1	1.5	1.2	<1	<1	<1	2.1
Polonium 210	pCi/L	1	<1	<1	<1	1.2	<1	2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L																	
Radon 222	pCi/L	50	1240	398	307	267	1220	4640	2110	302	<50	<50	<50	<50	114	<50	<50	<50

Table 2.7B-34: UM Zone Monitoring Results (cont.)

Parameter	Units	Lab Detection	UM5				UM6				UM7			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			11/2/2010	3/23/2011	6/7/2011	8/9/2011	3/31/2011	6/2/2011	8/10/2011	10/18/2011	7/27/2011	9/7/2011	12/29/2011	3/7/2012
Field														
Field pH	s.u.		7.97	8.58	10.17	11.11	9.48	11.16	11.57	9.55	10.86	11.12	10.56	10.61
Field Conductivity[1]	µmhos/cm		552	288	670	675	403	575	590	613	729	671	636	628
Dissolved Oxygen	mg/L		7.9	0.48	0.39	0.39	0.91	0.18	0.57	9.6	1.28	1.1	2.83	3.43
Field Turbidity	NTU		9.36	4.1	2.5	1.4	15.5	7.7	1.7	2.94	2.5	2.9	54	4.2
Temperature	°C		14.64	7.88	15.97	17.86	6.14	13.52	16.53	10.06	16.72	18.84	10.76	9.36
ORP	mV		36.8	102.2	8.5	-25	209.8	81	94.2	-4.5	277.6	23.1	190.8	61
Depth to Water	Ft.		165.58	165.91	165.53	165.86	211.65	211.1	211.34	211.06	188.67	186.2	186.36	186.3
Anions/Cations														
Alkalinity, Total (As CaCO3)	mg/L	5	231	197	330	343	48	44	44	41	64	49	30	29
Alkalinity, Bicarbonate as HCO3	mg/L	5	282	235	383	408	50	41	42	45	<5	6	28	21
Alkalinity, Carbonate as CO3	mg/L	5	<5	<5	10	<5	<5	6	6	<5	37	26	<5	7
Chloride	mg/L	1	14	15	17	17	18	21	19	18	15	15	16	15
Flouride	mg/L	0.1	0.6	0.8	0.5	0.5	0.5	0.6	0.6	0.9	0.4	0.3	0.4	0.6
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	31	15	<1	2	164	205	177	171	187	164	192	204
Calcium	mg/L	1	17	12	28	26	16	17	16	17	8	5	6	7
Magnesium	mg/L	1	3	2	5	5	<1	<1	<1	<1	2	<1	<1	<1
Potassium	mg/L	1	8	4	6	6	4	4	4	4	25	18	19	18
Sodium	mg/L	1	106	93	124	134	101	105	104	102	103	94	104	102
Nitrogen, Ammonia (As N)	mg/L	0.1	0.8	0.2	1.4	0.9	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	12	8	15	14	11	11	10	10	5	6	6	6
General Parameters														
Laboratory pH	s.u.	0.1	8.2	8.4	8.6	8.4	8.8	9.1	9.2	8.8	10.5	10	9.1	9.5
Electrical Conductivity	µmhos/cm	5	576	430	596	706	549	537	627	641	737	585	614	635
Total Dissolved Solids (180)	mg/L	10	420	290	490	500	400	400	390	410	400	350	370	370
Data Quality														
Cation Sum	meq/L	0.01	5.89	4.9	7.31	7.67	5.39	5.62	5.5	5.45	5.62	4.83	5.32	5.2
Anion Sum	meq/L	0.01	5.69	4.71	7.14	7.4	5.14	5.78	5.13	4.94	5.6	4.83	5.16	5.27
Cation-Anion Balance (±5%)	%	0.01	1.7	1.93	1.22	1.75	2.42	1.41	3.52	4.91	0.2	<0.01	1.57	0.72
Solids, Total Dissolved (Calc)	mg/L	10	320	260	380	410	340	380	360	350	380	330	360	370
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.12	1.29	1.22	1.18	1.05	1.08	1.17	1.05	1.06	1.03	1
Metals-Dissolved														
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	<0.001	<0.001	0.003	<0.001	<0.001	0.002	<0.001	0.01	0.002	0.005	0.009	0.003
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	0.06	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.06	<0.01	0.12	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0014	0.0004	0.0009	0.0012	0.0004	0.0005	<0.0003	0.0004	0.0008	0.0005	<0.0003	<0.0003
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	0.03	<0.01	<0.01	<0.01	0.1	0.03	0.02	<0.01	<0.01	<0.01	<0.01
Metals-Suspended	mg/L													
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total	mg/L													
Iron	mg/L	0.05	0.23	0.13	0.07	0.08	0.85	0.21	0.07	0.06	<0.05	0.34	<0.05	0.11
Manganese	mg/L	0.01	0.07	0.02	0.13	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Radionuclides-Dissolved														
Gross Alpha	pCi/L	4	3.3	2.4	2	3.2	2	2	2	2	5	24.6	2	2
Gross Beta	pCi/L	7	6.7	4.8	4.7	5.8	3.8	3	3	3.9	21.1	20.6	17	13.8
Lead 210	pCi/L	1	<1	<1	<1	1.1	<1	<1	<1	<1	2.7	<1	1.3	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.234	0.4	0.5	0.5	0.3	0.3	<0.2	0.3	1.1	6.3	0.4	0.3
Radium 228	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended	pCi/L													
Lead 210	pCi/L	1	1.3	<1	<1	<1	<1	<1	<1	1.1	3.4	<1	1.2	2.7
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	1.9	<1	1.7	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total	pCi/L													
Radon 222	pCi/L	50	133	<50	<50	<50	202	63	<50	<50	3610	1200	1250	376

Table 2.7B-35: UM Zone Comparison with WDEQ Class of Use Standards

Well ID	Probable WDEQ Class of Use	Parameters Exceeding Class I Standards	Parameters Exceeding Class II Standards	Parameters Exceeding Class III Standards
UM1	IV	pH, Iron, Gross alpha	Gross alpha	pH, Gross alpha
UM2	IV	pH, TDS, Sulfate	pH, Sulfate	pH
UM3R	III or IV	Sulfate, TDS	Sulfate	---
UM4	III or IV	Iron, Manganese, Sulfate, TDS	Manganese, Sulfate	---
UM5	II or IV	pH	---	pH
UM6	IV	pH, Iron	Sulfate, pH	pH
UM7	IV	Iron, pH, Gross alpha, Combined radium 226 + radium 228	pH, Gross alpha, Combined radium 226 + radium 228	pH, Gross alpha, Combined radium 226 + radium 228

Table 2.7B-36: UM Zone Comparison with EPA Standards

Well ID	Parameters Exceeding EPA Primary MCLs	Parameters Exceeding EPA Secondary MCLs
UM1	Gross alpha, ^{222}Radon	pH, Iron
UM2	^{222}Radon, Arsenic	pH, Sulfate, TDS
UM3R	Arsenic	Sulfate, TDS
UM4	Arsenic	Iron, Manganese, Sulfate, TDS
UM5	---	Manganese, pH
UM6	---	pH, Iron
UM7	Gross alpha, ^{222}Radon, Combined radium 226 + radium 228	pH, Iron

Table 2.7B-37: Stock/Domestic Water Supply Wells

Well ID	WSEO Permit	Total Depth (ft)	Use	Legal Location (Tns-Rng-Sec-¼¼)	1Q	2Q	3Q	4Q
GW1	P2883P	80	Stock	43-73-28-NENW	6/15/2011	8/17/2011	10/19/2011	1/11/2012
GW2	P2882P	205	Stock	43-73-26-SWNW	9/29/2010	8/17/2011	10/19/2011	1/11/2012
GW3	Unknown	Unknown	Stock	43-73-26-NWSE	9/29/2010	8/17/2011	10/19/2011	1/10/2012
GW4	Unknown	Unknown	Stock	43-73-34-NWNW	6/30/2011	8/17/2011	10/19/2011	1/10/2012
GW5	P18841P	300	Stock	43-73-32-SWSW	9/29/2010	8/17/2011	10/19/2011	Not Operating
GW6	P174588W	400	Stock	43-73-30-SWNW	9/29/2010	8/17/2011	10/18/2011	Not Operating
GW7	P110428W	354	Domestic	42-74-1-SENE	9/29/2010	8/18/2011	10/13/2011	1/10/2012
GW8	Unknown	380	Stock	43-73-29-NWSW	9/29/2010	Not Operating	Not Operating	Not Operating
GW9	P33284W	378	Stock	42-73-6-SENW	6/30/2011	8/17/2011	10/18/2011	1/11/2012
GW10	P127147W	276	Stock	42-73-5-NWSW	12/27/2011	3/6/2012	5/8/2012	7/3/2012
GW11	P2881P	90	Stock	43-73-32-NWNE	12/28/2011	Not Operating	5/8/2012	7/3/2012
GW12	P165695W	243	Domestic	43-73-25-SWNW	12/27/2011	3/6/2012	5/8/2012	7/3/2012
GW14	P18848P	200	Domestic	42-73-2-SWNW	12/27/2011	3/6/2012	5/8/2012	7/3/2012
GW15	P127251.0W	800	Stock	42-74-12-NWSE	12/28/2011	Not Operating	Not Operating	Not Operating
GW17	Unknown	Unknown	Stock	42-74-24-NWNE	12/29/2011	3/6/2012	5/8/2012	7/3/2012

Table 2.7B-38: Stock/Domestic Well Monitoring Results

Parameter	Units	Lab Detection Limit	GW1				GW2				GW3				GW4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			6/25/2011	8/17/2011	10/19/2011	1/11/2012	9/30/2010	8/17/2011	10/19/2011	1/11/2012	9/30/2010	8/17/2011	10/19/2011	1/10/2012	6/30/2011	8/17/2011	10/19/2011	1/10/2012
Field																		
Field pH	s.u.		8.66	---	7.16	7.14	7.90	---	7.60	7.89	8.30	---	8.09	7.42	8.37	---	8.04	7.86
Field Conductivity	µmhos/cm		1235	---	1164	1447	3000	---	2806	2436	2700	---	2544	2763	1894	---	1879	1844
Dissolved Oxygen	mg/L		7.34	---	7.52	7.37	---	---	3.47	3.22	---	---	9.60	5.16	2.39	---	4.47	3.01
Field Turbidity	NTU		6.00	---	0.90	1.20	malfunction	---	19.50	0.30	0.32	---	0.60	3.10	0.60	---	6.80	2.20
Temperature	°C		12.66	---	10.35	9.22	12.46	---	11.88	9.22	11.73	---	11.14	10.28	13.65	---	11.28	11.94
ORP	mV		64.60	---	270.00	322.90	---	---	41.40	262.60	---	---	68.30	275.40	107.60	---	206.50	242.60
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	225	229	231	223	53	44	51	60	63	60	60	52	77	53	61	75
Alkalinity, Bicarbonate as HCO3	mg/L	5	274	279	282	272	64	53	62	74	76	73	73	64	94	65	74	91
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	1	4	3	5	6	5	8	7	5	3	4	5	7	6	7	7	7
Flouride	mg/L	0.1	<0.1	0.5	0.5	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	472	271	398	639	1560	866	1520	1310	1270	1240	1290	1520	848	812	853	866
Calcium	mg/L	1	197	142	170	240	231	118	246	193	173	187	190	250	119	109	116	122
Magnesium	mg/L	1	52	34	45	64	42	28	43	31	30	32	31	44	21	20	21	21
Potassium	mg/L	1	5	4	5	5	12	9	13	11	10	11	11	13	8	8	9	9
Sodium	mg/L	1	23	18	21	26	362	299	453	430	329	408	408	443	292	286	303	312
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.2	<0.1	0.2	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	10	9	10	10	8	3	8	9	9	9	9	10	10	5	5	9
General Parameters																		
Laboratory pH	s.u.	0.1	8.1	8	8	8	8	7.9	7.8	8	8.2	8.1	8	7.8	8.1	7.7	7.9	8
Electrical Conductivity	µmhos/cm	5	1380	1000	1220	1480	2710	1910	2980	2350	2380	2540	2610	2310	2010	1920	1980	1630
Total Dissolved Solids (180)	mg/L	10	990	730	880	1140	2360	1460	2400	2000	1980	2050	2020	2360	1430	1430	1400	1420
Data Quality																		
Cation Sum	meq/L	0.01	15.23	10.77	13.22	18.52	31.02	21.37	35.86	31.13	25.68	29.94	30.01	35.65	20.59	19.76	20.95	21.61
Anion Sum	meq/L	0.01	15.9	10.31	13.07	17.94	33.81	19.13	32.92	28.69	27.94	27.35	28.14	32.84	19.37	18.16	19.16	19.74
Cation-Anion Balance (±5%)	%	0.01	2.16	2.18	0.57	1.56	4.29	5.5	4.27	4.07	4.22	4.52	3.2	4.1	3.04	4.23	4.45	4.52
Solids, Total Dissolved (Calc)	mg/L	10	890	620	790	1120	2240	1360	2320	2030	1860	1930	1980	2320	1340	1280	1350	1390
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.11	1.18	1.11	1.02	---	1.07	1.03	0.99	---	1.06	1.02	<0.01	1.07	1.12	1.04	1.02
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	<0.001	<0.001	0.002	0.003	<0.001	<0.001	0.002	0.002	<0.001	0.002	0.003	0.005	<0.001	<0.001	0.002	0.004
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.16	0.08	0.17	0.28	0.24	0.12	0.3	0.29	0.27	0.27	0.29	0.26	0.15	0.15	0.15	0.14
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.0019	0.002	0.0024	0.0028	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0009	<0.0003	0.0114	0.0037	0.0042	0.0097
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	0.04	0.06	<0.01	<0.01	0.04	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.13	0.05	0.05
Metals-Suspended																		
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0016	0.001	0.0006
Metals-Total																		
Iron	mg/L	0.05	0.45	0.42	0.22	0.26	9.88	9.16	4.62	0.1	0.1	0.09	0.09	0.47	0.31	5.82	4.53	0.92
Manganese	mg/L	0.01	0.18	0.12	0.18	0.3	0.27	0.14	0.3	0.31	0.3	0.29	0.28	0.27	0.14	0.16	0.15	0.15
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	2	2.6	3	3	3.6	<4	6	5	5.1	7.6	5	5	17.7	18.7	12.3	18.2
Gross Beta	pCi/L	7	7.8	6.9	4	4	9.3	12	10	8	8.3	13.8	<7	13.7	10.3	8.6	15.7	13.3
Lead 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	8.1	<1	<1	<1	<1	1.2
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.6	0.6	0.8	1.1	0.6	0.3	1.2	0.5	0.6	0.9	0.9	1.4	2	3.5	2.8	2.8
Radium 228	pCi/L	1	<1	1.1	1.7	1.5	1.6	<1	2.5	<1	2.2	2.3	1.1	1.7	2.3	<1	<1	<1
Thorium 230	pCi/L	0.2	<0.2	<0.2	0.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended																		
Lead 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.7	1.2	2.9	1.3	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	<1	<1
Radium 226	pCi/L	0.2	<0.2	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total																		
Radon 222	pCi/L	50	567	260	566	486	---	100	468	664	---	472	667	476	5640	2330	1510	4530

Table 2.7B-38: Stock/Domestic Well Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	GW5				GW6				GW7				GW9			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			9/30/2010	8/17/2011	10/19/2011	Not Operational	9/30/2010	8/17/2011	10/18/2011	Not Operational	9/30/2010	8/17/2011	10/13/2011	1/10/2012	6/30/2011	8/17/2011	10/18/2011	1/11/2012
Field																		
Field pH	s.u.		7.53	---	7.13		8.40	---	7.93		8.00	0.00	7.38	7.44	8.13	---	7.43	7.48
Field Conductivity	µmhos/cm		1633	---	1587		1620	---	1900		1166	0	1369	1276	2568	---	1913	1714
Dissolved Oxygen	mg/L		---	---	6.04		---	---	10.30		---	0.00	6.92	3.55	1.86	---	5.18	3.53
Field Turbidity	NTU		5.37	---	3.10		2.17	---	0.80		4.66	0.00	0.70	1.50	0.80	---	0.80	0.60
Temperature	℃		12.86	---	11.17		12.43	---	5.90		12.86	0.00	11.83	11.87	11.84	---	11.65	8.80
ORP	mV		---	---	250.80		---	---	334.10		---	205.00	299.30	230.80	293.60	---	252.40	227.90
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	304	288	293		244	237	225		171	166	225	230	226	145	170	157
Alkalinity, Bicarbonate as HCO3	mg/L	5	371	351	358		280	289	274		199	203	274	281	276	177	208	191
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5		9	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	1	2	3	3		5	6	6		3	2	9	9	5	4	5	4
Flouride	mg/L	0.1	<0.1	<0.1	<0.1		0.4	0.3	0.5		0.3	0.3	0.5	0.6	<0.1	<0.1	0.2	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1		0.2	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	634	609	624		592	592	577		388	375	418	418	1180	637	841	747
Calcium	mg/L	1	206	225	222		155	175	169		82	87	93	91	280	143	201	181
Magnesium	mg/L	1	65	64	68		33	31	34		17	17	16	15	48	26	36	34
Potassium	mg/L	1	9	9	10		8	8	9		7	7	7	7	10	9	10	10
Sodium	mg/L	1	52	51	54		130	145	152		122	143	197	197	265	171	216	199
Nitrogen, Ammonia (As N)	mg/L	0.1	0.2	<0.1	0.2		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	16	16	17		8	8	9		8	9	8	9	13	11	12	12
General Parameters																		
Laboratory pH	s.u.	0.1	8.1	7.8	8		8.5	8.3	8.3		8.4	8.1	8.2	8.3	8	8	8	8.1
Electrical Conductivity	µmhos/cm	5	1550	1650	1680		1490	1590	1640		1080	1170	1350	1140	2710	1570	2010	1740
Total Dissolved Solids (180)	mg/L	10	1280	1310	1340		1190	1220	1200		770	810	900	910	2170	1200	1530	1320
Data Quality																		
Cation Sum	meq/L	0.01	18.13	18.96	19.26		16.28	17.82	18.08		10.92	12.08	14.65	14.48	29.76	16.95	22.65	20.7
Anion Sum	meq/L	0.01	19.39	18.5	18.94		17.38	17.25	16.71		11.58	11.22	13.47	13.6	29.24	16.26	21.05	18.8
Cation-Anion Balance (±5%)	%	0.01	3.36	1.23	0.82		3.25	1.62	3.93		2.94	3.71	4.21	3.14	0.86	2.05	3.67	4.78
Solids, Total Dissolved (Calc)	mg/L	10	1150	1150	1170		1070	1110	1090		720	740	880	880	1940	1090	1420	1280
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	---	1.14	1.15		---	1.1	1.1		---	1.09	1.02	1.03	1.12	1.1	1.08	1.03
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	<0.001	<0.001	0.002		<0.001	<0.001	0.007		0.003	0.002	<0.001	0.007	<0.001	<0.001	0.004	0.003
Barium	mg/L	0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001		0.002	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	0.37	0.27	0.93		<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	0.29	<0.05	0.43	0.09
Lead	mg/L	0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.2	0.21	0.22		0.15	0.16	0.08		0.1	0.09	0.09	0.08	0.52	0.16	0.28	0.19
Mercury	mg/L	0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	<0.0003	<0.0003	0.0007		0.0004	<0.0003	0.0007		0.0745	0.0587	0.0172	0.0015	0.001	0.0469	0.0252	0.0417
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01		0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metals-Suspended																		
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total																		
Iron	mg/L	0.05	3.8	3.27	4.28		0.39	0.17	0.13		0.44	0.44	0.45	0.46	0.96	0.45	0.64	0.51
Manganese	mg/L	0.01	0.23	0.23	0.23		0.18	0.17	0.1		0.11	0.1	0.1	0.09	0.52	0.17	0.28	0.19
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	5.3	4.1	3		9.2	5.9	3		64.2	39.5	12.7	2	4.3	50.9	17.4	43.6
Gross Beta	pCi/L	7	10.8	9	7.5		12.8	<7	5		22.2	18.3	9.2	4	10.1	26.1	11.8	19.8
Lead 210	pCi/L	1	<1	<1	<1		<1	<1	1.3		<1	1.5	<1	<1	<1	1.7	8.9	<1
Polonium 210	pCi/L	1	<1	<1	<1		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.6	1.4	0.8		0.5	0.7	0.5		0.7	0.5	0.5	0.5	1.6	3	3	2.9
Radium 228	pCi/L	1	2.7	2.8	1.3		<1	<1	<1		1.5	<1	<1	1.1	3.1	<1	<1	2.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended																		
Lead 210	pCi/L	1	<1	<1	<1		<1	<1	<1		1.4	<1	<1	1.5	<1	1.3	<1	1.6
Polonium 210	pCi/L	1	<1	<1	<1		<1	<1	<1		<1	<1	<1	1.5	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2		0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total																		
Radon 222	pCi/L	50	---	522	522		---	<50	<50		---	930	434	341	1110	5180	3730	4020

Sampling location not operational

Sampling location not operational

Table 2.7B-38: Stock/Domestic Well Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	GW10				GW11				GW12				GW14			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Collection Date			12/27/2011	3/6/2012	5/8/2012	7/3/2012	12/28/2012	Not Operational	5/8/2012	7/3/2012	12/27/2011	3/6/2012	5/8/2012	7/3/2012	12/27/2011	3/6/2012	5/8/2012	7/3/2012
Field																		
Field pH	s.u.		7.53	7.37	7.51	7.34	6.58		6.52	6.26	7.18	7.13	7.07	7.02	8.72	8.63	8.55	8.42
Field Conductivity	µmhos/cm		979	964	953	974	2376		2350	2380	2604	2574	2455	2582	476	479	461	453
Dissolved Oxygen	mg/L		1.59	2.48	2.40	2.06	4.13		4.06	2.99	3.17	4.27	4.96	2.24	1.40	2.79	2.96	1.20
Field Turbidity	NTU		0.50	0.90	0.12	0.20	1.20		0.30	0.70	0.50	0.90	0.20	0.20	1.30	3.70	1.30	5.30
Temperature	°C		12.35	13.06	12.78	14.81	9.89		11.74	14.93	8.36	9.66	11.97	13.67	13.68	14.36	15.13	18.62
ORP	mV		284.80	313.80	241.50	226.00	283.60		255.00	321.50	288.20	295.60	289.20	242.80	138.80	242.50	244.60	218.00
Anions/Cations																		
Alkalinity, Total (As CaCO3)	mg/L	5	150	147	224	154	345		481	345	372	360	542	376	167	162	204	169
Alkalinity, Bicarbonate as HCO3	mg/L	5	184	179	273	188	420		587	421	454	440	661	458	192	195	238	191
Alkalinty, Carbonate as CO3	mg/L	5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	6	<5	6	7
Chloride	mg/L	1	3	2	2	3	12		12	12	16	14	15	17	7	6	6	7
Flouride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.2		0.2	0.2	0.2	<0.1	<0.1	<0.1	0.4	0.5	0.3	0.3
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	1		1.3	1.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	327	315	338	325	1200		1190	1270	1240	1180	1290	1300	58	62	56	61
Calcium	mg/L	1	75	78	81	73	412		405	384	394	406	415	389	5	5	6	5
Magnesium	mg/L	1	16	16	17	16	100		100	102	64	64	67	66	<1	<1	<1	<1
Potassium	mg/L	1	6	7	7	7	11		9	10	12	13	11	12	2	2	2	2
Sodium	mg/L	1	116	107	129	119	77		73	80	184	178	202	204	100	96	108	103
Nitrogen, Ammonia (As N)	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.8	0.7	0.4	0.5	<0.1	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	10	10	10	10	19		17	18	11	11	11	11	10	9	9	9
General Parameters																		
Laboratory pH	s.u.	0.1	8.2	8	8.3	8.2	7.8		7.8	7.8	7.9	7.8	8.1	8	8.7	8.4	8.6	8.7
Electrical Conductivity	µmhos/cm	5	941	1010	928	979	2030		2210	2360	2260	2640	2360	2550	468	476	453	471
Total Dissolved Solids (180)	mg/L	10	690	700	710	690	2110		2260	2210	2250	2300	2350	2340	280	300	300	290
Data Quality																		
Cation Sum	meq/L	0.01	10.24	9.98	11.22	10.29	32.38		31.8	31.3	33.25	33.58	35.33	34.01	4.64	4.46	5.04	4.77
Anion Sum	meq/L	0.01	9.89	9.72	11.57	9.92	32.24		34.77	33.72	33.7	32.17	38.09	34.97	4.76	4.72	5.43	4.85
Cation-Anion Balance (±5%)	%	0.01	1.72	1.32	1.53	1.83	0.22		4.46	3.71	0.68	2.15	3.75	1.38	1.2	2.77	3.69	0.81
Solids, Total Dissolved (Calc)	mg/L	10	640	620	710	640	2040		2080	2090	2140	2080	2330	2220	280	280	310	290
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.08	1.13	1	1.08	1.03		1.09	1.06	1.05	1.11	1.01	1.05	1	1.07	0.97	1
Metals-Dissolved																		
Aluminum	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.003	<0.001	<0.001	<0.001	0.005		<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001
Barium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	0.63		0.56	0.34	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	0.09	0.12
Lead	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	0.03	0.03	0.03	0.03	0.77		0.81	0.81	0.71	0.71	0.7	0.69	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	0.014	0.012	0.01	0.014	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	0.171	0.152	0.174	0.185	0.0071		0.0079	0.0075	<0.0003	<0.0003	<0.0003	0.0008	<0.0003	<0.0003	0.0015	<0.0003
Vanadium	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	0.02	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01
Metals-Suspended																		
Uranium	mg/L	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Metals-Total																		
Iron	mg/L	0.05	0.1	0.1	0.09	0.13	0.75		0.79	1.03	0.42	0.11	0.06	<0.05	0.09	0.09	0.16	0.17
Manganese	mg/L	0.01	0.03	0.03	0.03	0.03	0.78		0.86	0.86	0.76	0.72	0.71	0.72	<0.01	<0.01	<0.01	<0.01
Radionuclides-Dissolved																		
Gross Alpha	pCi/L	4	151	154	148	135	5		7.7	2.3	4.1	<4	<4	2	2	2	2	2
Gross Beta	pCi/L	7	51.3	35.2	52.7	39.9	13.6		16.1	8.8	20	<7	<7	5.3	3.2	3	3	3
Lead 210	pCi/L	1	2.9	3.9	2.2	2.1	1.4		1.1	<1	<1	<1	<1	<1	<1	1.2	<1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	0.7	0.7	0.7	0.6	1.3		1.5	1.3	<0.2	0.3	0.3	0.3	1.2	<0.2	0.3	<0.2
Radium 228	pCi/L	1	3.7	<1	<1	<1	4.9		4.1	1.5	<1	<1	1.2	1.29	<1	<1	1.1	<1
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Suspended																		
Lead 210	pCi/L	1	<1	1.9	2	1.4	<1		<1	<1	<1	1.2	<1	1.1	<1	1.2	<1	<1
Polonium 210	pCi/L	1	<1	<1	<1	<1	1.4		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Radionuclides-Total																		
Radon 222	pCi/L	50	2110	1880	1740	1910	796		350	820	<50	<50	<50	<50	710	710	191	820

Sampling location not operational

Table 2.7B-38: Stock/Domestic Well Monitoring Results (cont.)

Parameter	Units	Lab Detection Limit	GW15 Q1	GW15 Q2	GW15 Q3	GW15 Q4	GW17 Q1	GW17 Q2	GW17 Q3	GW17 Q4
Collection Date			12/28/2011	Not Operational	Not Operational	Not Operational	12/29/2011	3/6/2012	5/8/2012	7/3/2012
Field										
Field pH	s.u.		9.80				7.71	7.50	7.64	7.57
Field Conductivity	µmhos/cm		628				1077	1074	1067	1093
Dissolved Oxygen	mg/L		1.87				2.44	2.29	1.64	2.56
Field Turbidity	NTU		8.40				1.50	1.10	0.70	4.80
Temperature	°C		14.02				10.31	14.92	12.32	14.08
ORP	mV		1.70				145.10	171.50	140.70	120.90
Anions/Cations										
Alkalinity, Total (As CaCO3)	mg/L	5	226				78	70	133	72
Alkalinity, Bicarbonate as HCO3	mg/L	5	156				95	85	162	88
Alkalinty, Carbonate as CO3	mg/L	5	59				<5	<5	<5	<5
Chloride	mg/L	1	11				8	3	2	4
Flouride	mg/L	0.1	0.6				<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate-Nitrite (as N)	mg/L	0.1	<0.1				<0.1	<0.1	<0.1	<0.1
Sulfate	mg/L	1	64				477	454	477	468
Calcium	mg/L	1	5				113	105	108	100
Magnesium	mg/L	1	<1				36	34	37	37
Potassium	mg/L	1	4				10	9	9	9
Sodium	mg/L	1	139				69	71	82	79
Nitrogen, Ammonia (As N)	mg/L	0.1	2.4				0.2	<0.1	<0.1	<0.1
Silica as SiO2	mg/L	1	3				3	2	2	2
General Parameters										
Laboratory pH	s.u.	0.1	9.6				7.6	7.7	7.9	7.9
Electrical Conductivity	µmhos/cm	5	632				1040	1110	1020	1090
Total Dissolved Solids (180)	mg/L	10	370				810	820	850	830
Data Quality										
Cation Sum	meq/L	0.01	6.41				11.81	11.34	12.2	11.68
Anion Sum	meq/L	0.01	6.19				11.7	10.91	12.66	11.28
Cation-Anion Balance (±5%)	%	0.01	1.72				0.47	1.91	1.82	1.7
Solids, Total Dissolved (Calc)	mg/L	10	360				760	720	800	740
Calculated TDS/TDS Ratio (0.80-1.20)	dec. %	0.01	1.03				1.07	1.14	1.06	1.12
Metals-Dissolved										
Aluminum	mg/L	0.1	<0.1				<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	0.001	0.008				<0.001	<0.001	<0.001	<0.001
Barium	mg/L	0.1	<0.1				<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1	<0.1				<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	0.001	<0.001				<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.01	<0.01				<0.01	<0.01	<0.01	<0.01
Copper	mg/L	0.01	<0.01				<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05	<0.05				<0.05	0.06	<0.05	<0.05
Lead	mg/L	0.01	<0.01				<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.01	<0.01				0.41	0.37	0.44	0.43
Mercury	mg/L	0.001	<0.001				<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	0.02				<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	0.05	<0.05				<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	0.005	<0.005				<0.005	<0.005	<0.005	<0.005
Uranium	mg/L	0.0003	<0.0003				0.0018	0.0027	0.0014	0.001
Vanadium	mg/L	0.1	<0.1				<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01				<0.01	<0.01	<0.01	<0.01
Metals-Suspended										
Uranium	mg/L	0.0003	<0.0003				<0.0003	0.0004	<0.0003	<0.0003
Metals-Total										
Iron	mg/L	0.05	1.16				5.61	4.95	6.11	6.23
Manganese	mg/L	0.01	0.02				0.43	0.39	0.48	0.48
Radionuclides-Dissolved										
Gross Alpha	pCi/L	4	2				3.5	3.1	2	2.7
Gross Beta	pCi/L	7	3.6				8.4	9	10.6	8.7
Lead 210	pCi/L	1	1.6				<1	2	<1	<1
Polonium 210	pCi/L	1	<1				<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2				0.9	1	1.1	1.1
Radium 228	pCi/L	1	<1				<1	1.4	1.8	1.35
Thorium 230	pCi/L	0.2	<0.2				1.1	<0.2	<0.2	<0.2
Radionuclides-Suspended										
Lead 210	pCi/L	1	1.4				1.1	1.4	1.1	1.7
Polonium 210	pCi/L	1	<1				<1	<1	<1	<1
Radium 226	pCi/L	0.2	<0.2				<0.2	<0.2	<0.2	<0.2
Thorium 230	pCi/L	0.2	<0.2				<0.2	<0.2	<0.2	<0.2
Radionuclides-Total										
Radon 222	pCi/L	50	202				141	87	<50	79

Sampling location not operational

Sampling location not operational

Sampling location not operational

Table 2.7B-39: Stock/Domestic Well Comparison with WDEQ Class of Use Standards

Well ID	Probable WDEQ Class of Use	Parameters Exceeding Class I Standards	Parameters Exceeding Class II Standards	Parameters Exceeding Class III Standards
GW1	III or IV	Manganese, Sulfate, TDS	Manganese, Sulfate	---
GW2	III or IV	Manganese, Sulfate, TDS	Manganese, Sulfate, TDS	---
GW3	III or IV	Manganese, Sulfate, TDS	Manganese, Sulfate	---
GW4	IV	Manganese, Sulfate, TDS, Gross alpha	Sulfate, Gross alpha	Gross alpha
GW5	III or IV	Iron, Manganese, Sulfate, TDS	Sulfate	---
GW6	III or IV	Manganese, Sulfate, TDS	Sulfate	---
GW7	IV	Manganese, Sulfate, TDS, Gross alpha	Sulfate, Gross alpha	Gross alpha
GW8	IV	Gross alpha	Gross alpha	Gross alpha
GW9	IV	Manganese, Sulfate, TDS, Combined radium 226 + radium 228	Manganese, Sulfate, Combined radium 226 + radium 228	Combined radium 226 + radium 228
GW10	IV	Sulfate, TDS, Gross alpha, TDS	Sulfate, Gross alpha	Gross alpha
GW11	IV	Iron, Manganese, Combined radium 226 + radium 228, Sulfate, TDS	Manganese, Combined radium 226 + radium 228, Sulfate, TDS	Combined radium 226 + radium 228
GW12	III or IV	Sulfate, TDS, Manganese, Iron, Ammonia	Sulfate, TDS, Manganese	---
GW14	II or IV	pH, Iron	---	pH
GW15	IV	Ammonia, Iron, Sulfate, TDS, Manganese, pH, Lead	Iron, Sulfate, Manganese, pH	pH, Lead
GW17	III or IV	Iron, Sulfate, TDS, Manganese	Iron, Sulfate, Manganese	

Table 2.7B-40: Stock/Domestic Well Comparison with EPA Standards

Well ID	Parameters Exceeding EPA Primary MCLs	Parameters Exceeding EPA Secondary MCLs
GW1	^{222}Radon	Manganese, Sulfate, TDS
GW2	^{222}Radon	Manganese, Sulfate, TDS
GW3	^{222}Radon	Manganese, Sulfate, TDS
GW4	Gross alpha, ^{222}Radon	Manganese, Sulfate, TDS
GW5	^{222}Radon	Iron, Manganese, Sulfate, TDS
GW6	---	Manganese, Sulfate, TDS
GW7	Gross alpha, Uranium, ^{222}Radon	Manganese, Sulfate, TDS
GW8	Gross alpha	---
GW9	Gross alpha, ^{222}Radon, Combined radium 226 + radium 228	Manganese, Sulfate, TDS
GW10	Uranium, ^{222}Radon, Gross alpha	Sulfate, TDS
GW11	Combined radium 226 + radium 228, ^{222}Radon	Iron, Manganese, Sulfate, TDS
GW12	---	Iron, Manganese, Sulfate, TDS
GW14	^{222}Radon	pH
GW15	Lead	pH, Iron
GW17	---	Sulfate, TDS, Iron, Manganese

Table 2.7B-41: Northern Great Plains Aquifer Systems and Formations General Characteristics

Aquifer System	Formations	General Transmissivity (gpd/ft).	General Water Yields (gpm)
Quaternary Aquifers	Alluvium, Terrace, and Eolian Deposits	15 to 64,000	Up to 1,000
Middle Tertiary Aquifers	Arikaree Formation	Up to 77,000	Up to 1,000
Lower Tertiary Aquifers	Wasatch and Fort Union Formations	1 to 5,000	1 to 60
Upper Cretaceous Aquifers	Lance and Fox Hills Formations	76 to 2,100	Up to 350 gpm (Lance) and 700 gpm (Fox Hills)
Lower Cretaceous Aquifers	Dakota Sandstone Formation	220-810	Up to 150
Paleozoic Aquifers	Madison Limestone Formation	1,000 to 300,000	Up to 1,000

Source: HKM, et. al., 2002

Table 2.7B-42: Estimated Water Use in Campbell County, Wyoming

Water Use Type	Withdraws (MGD)
Public Supply	1.88
Domestic GW	0.01
Industrial GW	0.25
Industrial SW	0.15
Irrigated Acres, sprinkler	0.00184
Irrigated Acres, surface flood	0.01096
Irrigated Acres, total	0.0128
Irrigation GW	1.26
Irrigation SW	40.85
Irrigation, total	42.11
Mining GW	56.67
Mining SW	13.29
Mining, total	69.96
Thermoelectric, total	0.41
Total GW, fresh	41.26
Total GW, saline	18.97
Total GW	60.22
Total SW, fresh	54.55
Total SW, saline	0
Total SW	54.55

Notes: GW = Groundwater
SW = Surface water
MGD = Million gallons per day
Source: Hutson et al. 2004

ERA	SYSTEM, SERIES AND OTHER SUBDIVISIONS			STRATIGRAPHIC UNIT	
Cenozoic	Quaternary			Alluvium	
	Tertiary	Pliocene Miocene	Upper	(Absent in Powder River Basin)	
		Oligocene	Lower	White River Formation	
		Eocene		Wasatch Formation	
		Paleocene		Fort Union Formation	
Mesozoic	Cretaceous		Upper	Lance Formation Fox Hills Sandstone	
				Lewis Shale Teckla, Teapot and Parkman Sandstones Steel Shale Sussex Sandstone Shannon Sandstone Niobrara Formation Carlile Shale Turner Sandstone Frontier Formation Mowry Shale	
			Lower	Muddy Sandstone Thermopolis Shale	
				Inyan Kara Group	Fall River Formation Lakota Formation
	Jurassic			Morrison Formation Sundance Formation Gypsum Spring Formation	
	Triassic			Chugwater Formation	
Paleozoic	Permian			Goose Egg Formation	
	Pennsylvanian			Tensleep Sandstone	Minnelusa Formation
				Amsden Formation	
	Mississippian			Madison Formation	
	Cambrian			Gross Venture Shale Flathead Sandstone	
	Precambrian			Granite	

AUC LLC
THE RENO CREEK PROJECT

Figure 2.7B-1
Regional Hydrostratigraphic Section,
Powder River Basin

Scale: NTS	Date: September 2011	
AUC_RC_NRC_Fig_2.7B-1.ai	By: JLM	Checked: AAP

Petrotek
10288 West Chatfield Ave., Suite 201
Littleton, Colorado 80127-4239 USA
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MONTANA

MONTANA

SOUTH DAKOTA

Park

Sheridan

Big Horn

Crooke

Campbell

Teton

Washakie

Johnson

Weston

Proposed Reno Creek Project Area

Hot Springs

Eastern Snake River Plain Aquifer

IDAHO

Eastern Snake RiverPlain Aquifer Source Area

WYOMING

Natrona

Niobrara

Converse

Fremont

Sublette

Lincoln

Platte

Goshen

NEBRASKA

Sweetwater

Elk Mountain Aquifer

Carbon

Albany

UTAH

Uinta

Laramie

COLORADO

PREPARED FOR

AUC LLC

LAKEWOOD, CO

PROPOSED RENO CREEK PROJECT

CAMPBELL COUNTY, WY

TREC, Inc.
Engineering & Environmental Management

900 Werner Court
Suite 150
Casper, WY 82601
Phone (307) 265-0696
Fax (307) 265-2498
www.treccorp.com

Legend

- Proposed Reno Creek Project Area
- Sole Source Aquifer Source Area
- Sole Source Aquifer

1:2,000,000

0 12.5 25 50 75 100 Miles

N W E S

DRAWN BY: EGS

CHECKED BY: CAT

APPROVED BY: RMD

Sole Source Aquifers

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft for Review	EGS	04/22/14	
1	Final	EGS	04/22/14	2.7B-1a
2				

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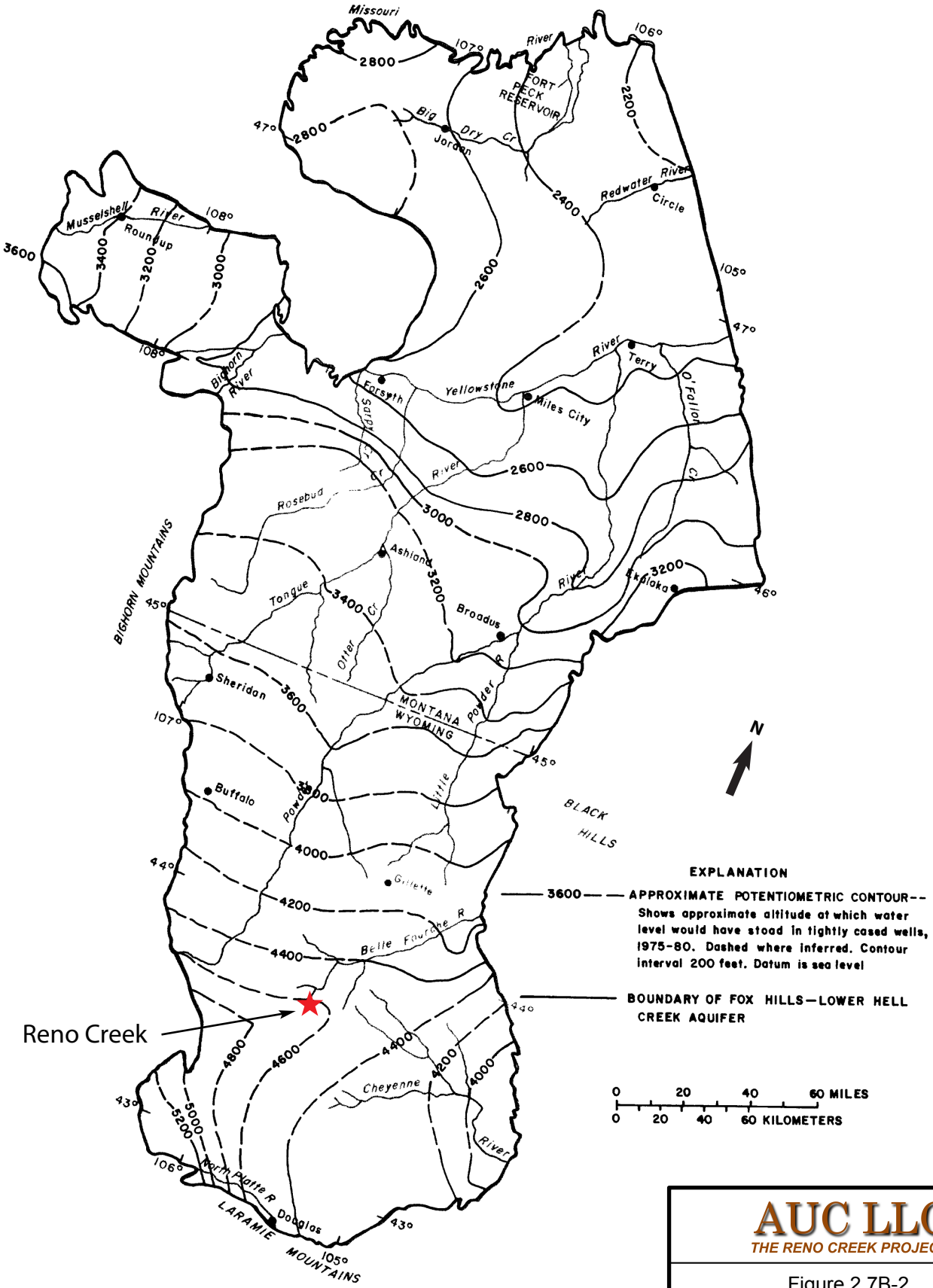

From: Hotchkiss - Levings, 1986

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Figure 2.7B-2
Potentiometric Surface, Fox Hills - Lance Aquifer System, Powder River Basin

Scale: See Bar Scale	Date: October 2011	
AUC_RC_NRC_Fig_2.7B-2.ai	By: JLM	Checked: AAP

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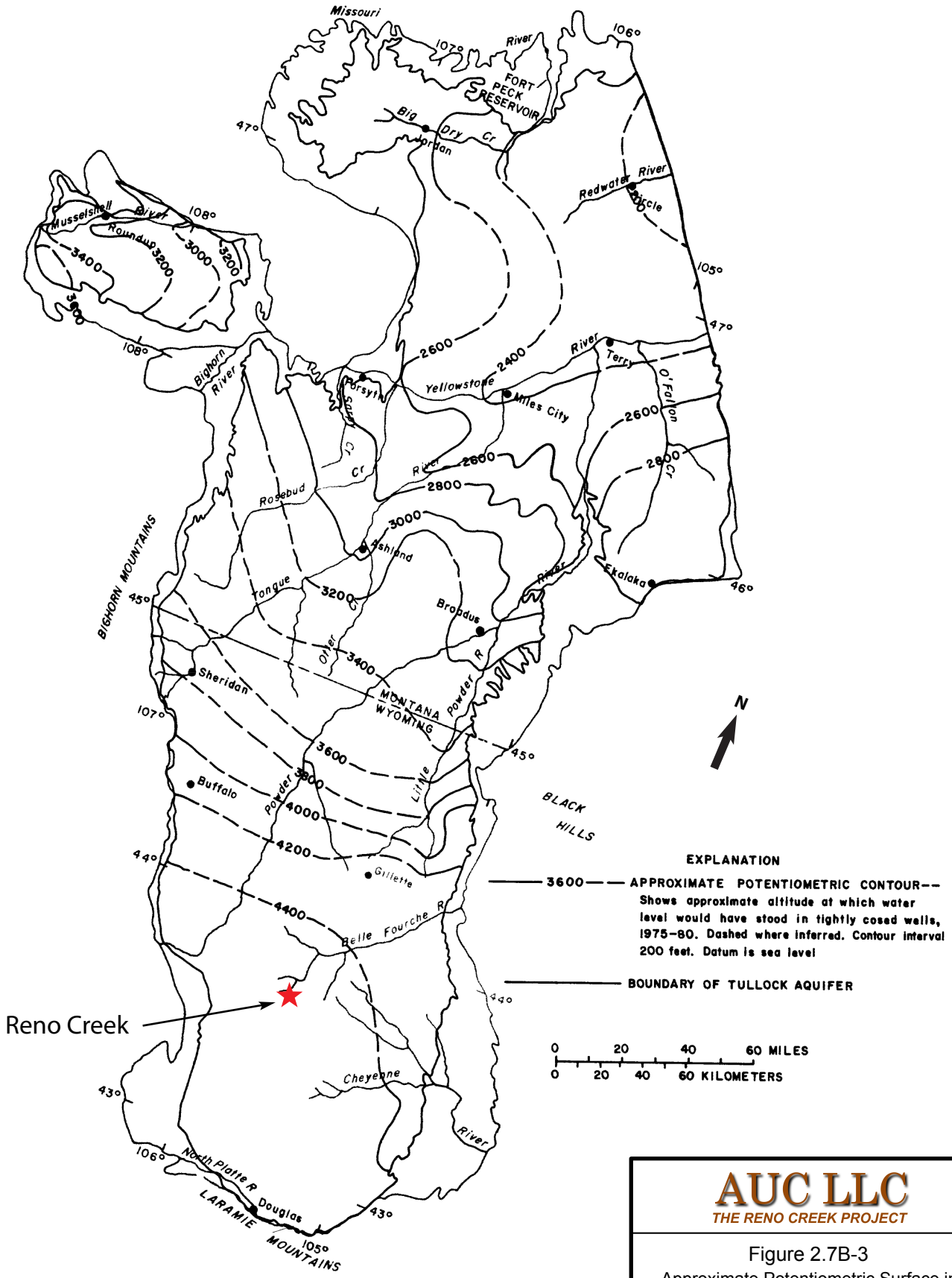

From: Hotchkiss - Levings, 1986

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Figure 2.7B-3
Approximate Potentiometric Surface in Tullock Aquifer System, Powder River Basin

Scale: See Bar Scale	Date: October 2011	
AUC_RC_NRC_Fig_2.7B-3.ai	By: JLM	Checked: AAP

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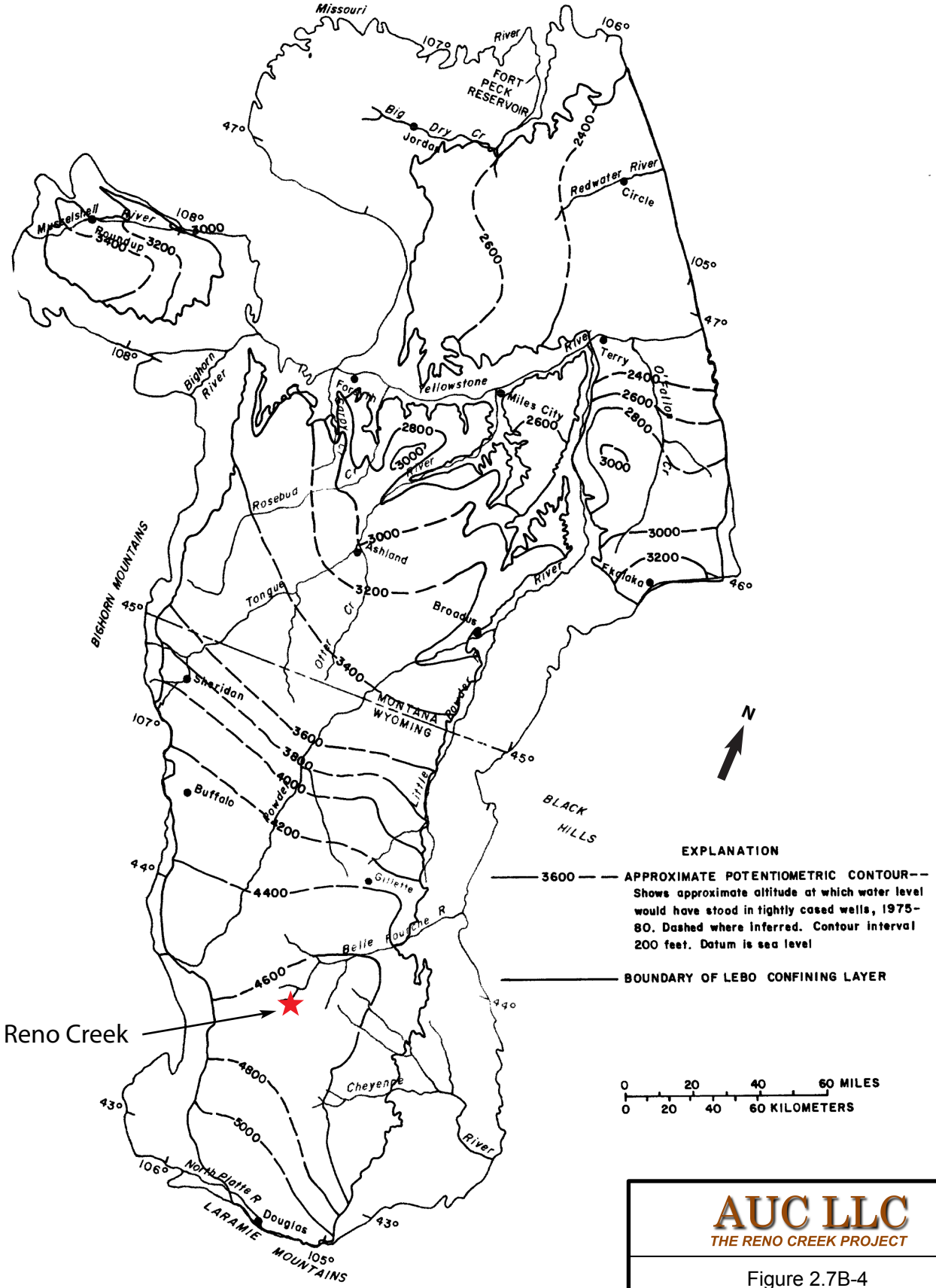

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Figure 2.7B-4
Approximate Potentiometric Surface in Lebo Shale Aquifer System, Powder River Basin

Scale: See Bar Scale	Date: October 2011	
AUC_RC_NRC_Fig_2.7B-4.ai	By: JLM	Checked: AAP

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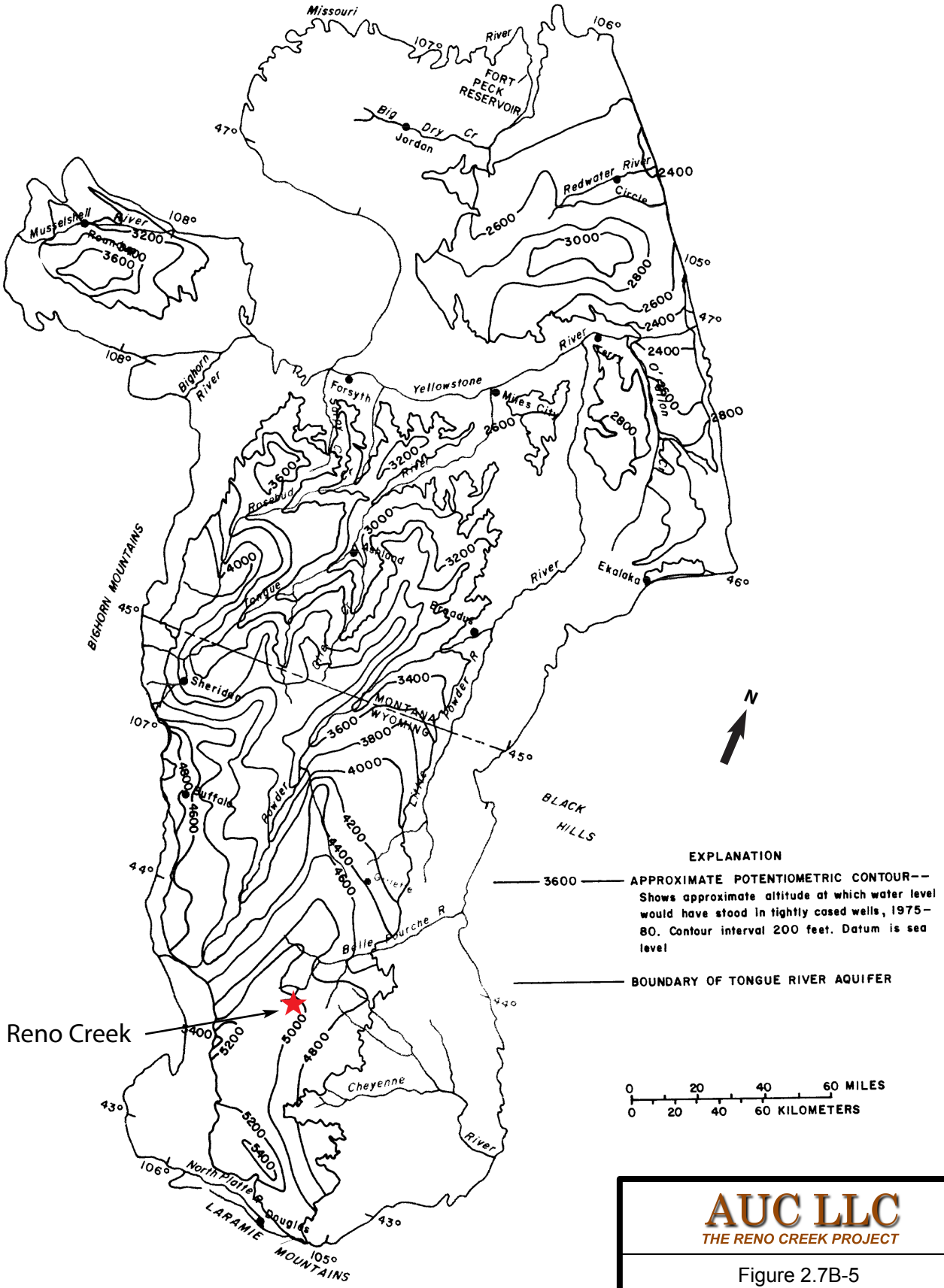

From: Hotchkiss - Levings, 1986

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Figure 2.7B-5

Approximate Potentiometric Surface in Tongue River Aquifer System, Powder River Basin

Scale: See Bar Scale	Date: October 2011	
AUC_RC_NRC_Fig_2.7B-5.ai	By: JLM	Checked: AAP

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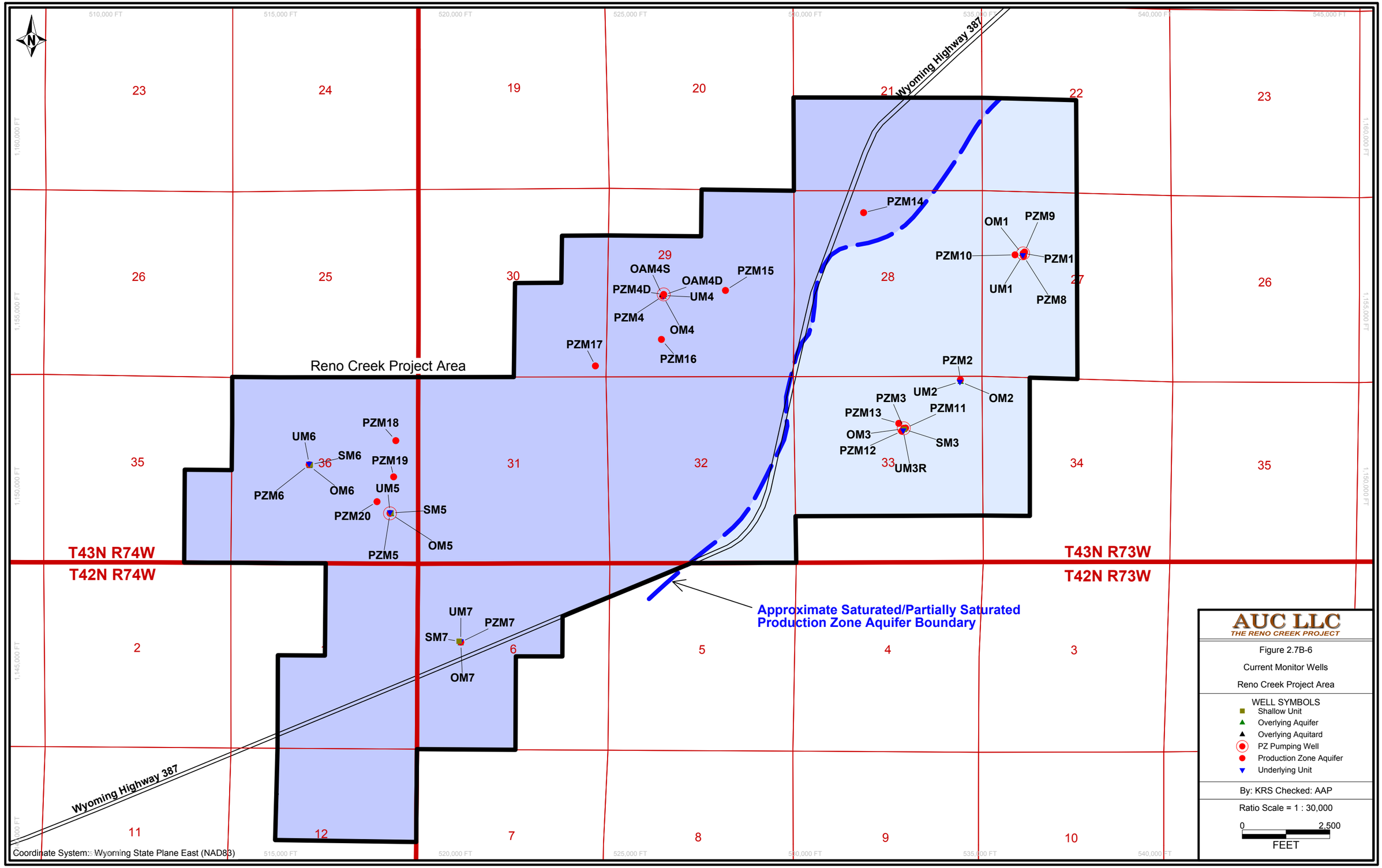
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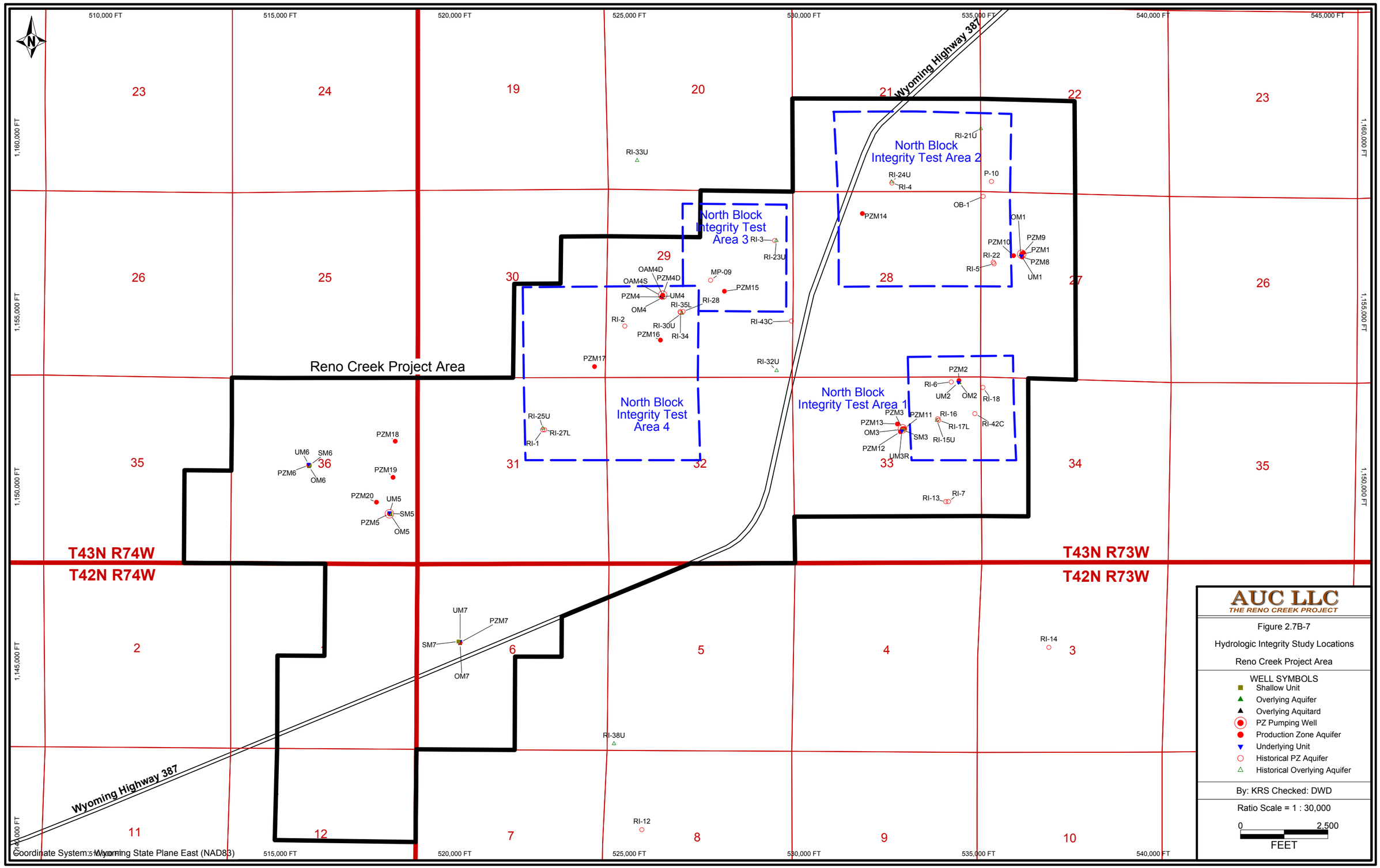
Wyoming Highway 387
Reno Creek Project Area
T43N R74W
T42N R74W
T43N R73W
T42N R73W
PZM14
PZM15
OAM4S
OAM4D
PZM4D
UM4
PZM4
OM4
PZM17
PZM16
OM1
PZM9
PZM10
PZM1
UM1
PZM8
PZM2
UM2
OM2
PZM3
PZM11
PZM13
OM3
SM3
PZM12
UM3R
PZM18
UM6
SM6
PZM19
PZM6
OM6
UM5
PZM20
SM5
OM5
PZM5
UM7
PZM7
SM7
OM7
Approximate Saturated/Partially Saturated
Production Zone Aquifer Boundary
Coordinate System: Wyoming State Plane East (NAD83)
AUC LLC
THE RENO CREEK PROJECT
Figure 2.7B-6
Current Monitor Wells
Reno Creek Project Area
WELL SYMBOLS
Shallow Unit
Overlying Aquifer
Overlying Aquitard
PZ Pumping Well
Production Zone Aquifer
Underlying Unit
By: KRS Checked: AAP
Ratio Scale = 1 : 30,000
0
2,500
FEET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Wyoming Highway 387
Reno Creek Project Area
North Block Integrity Test Area 1
North Block Integrity Test Area 2
North Block Integrity Test Area 3
North Block Integrity Test Area 4
T43N R74W
T42N R74W
T43N R73W
T42N R73W
RI-33U
RI-21U
RI-24U
RI-4
P-10
OB-1
PZM14
OM1
PZM9
PZM10
PZM1
RI-22
PZM8
RI-5
UM1
RI-3
RI-23U
MP-09
PZM15
OAM4D
PZM4D
OAM4S
PZM4
UM4
RI-35L
RI-28
OM4
RI-2
RI-30U
PZM16
RI-34
RI-43C
PZM17
RI-32U
PZM2
RI-6
UM2
OM2
RI-18
PZM3
PZM11
RI-16
PZM13
RI-17L
OM3
SM3
RI-15U
RI-42C
PZM12
UM3R
RI-13
RI-7
RI-25U
RI-27L
RI-1
PZM18
UM6
SM6
PZM6
OM6
PZM19
PZM20
UM5
SM5
PZM5
OM5
UM7
PZM7
SM7
OM7
RI-38U
RI-14
RI-12
29
30
28
27
35
36
31
32
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THE RENO CREEK PROJECT
Figure 2.7B-7
Hydrologic Integrity Study Locations
Reno Creek Project Area
WELL SYMBOLS
Shallow Unit
Overlying Aquifer
Overlying Aquitard
PZ Pumping Well
Production Zone Aquifer
Underlying Unit
Historical PZ Aquifer
Historical Overlying Aquifer
By: KRS Checked: DWD
Ratio Scale = 1 : 30,000
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2,500
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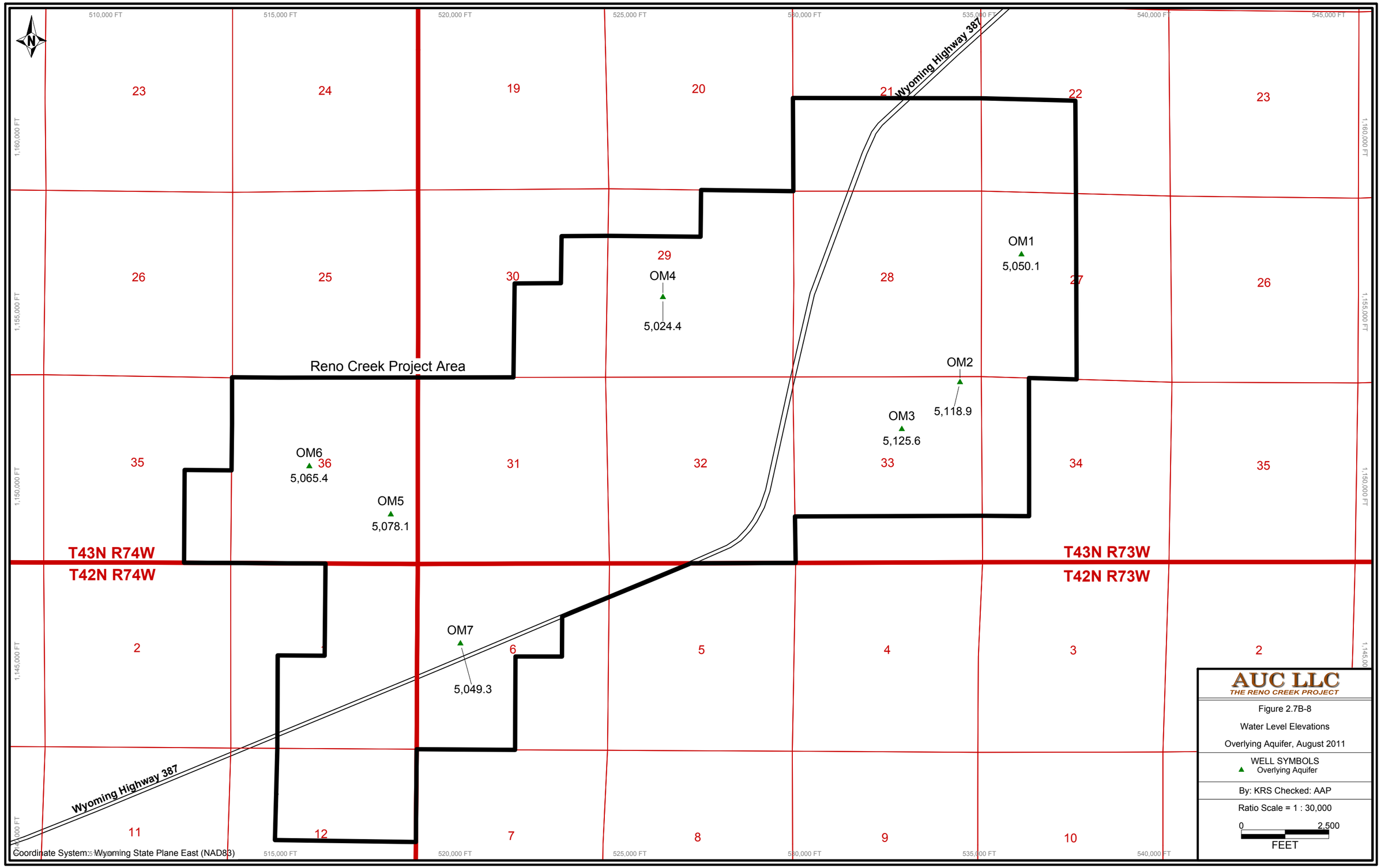
Coordinate System: Wyoming State Plane East (NAD83)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36
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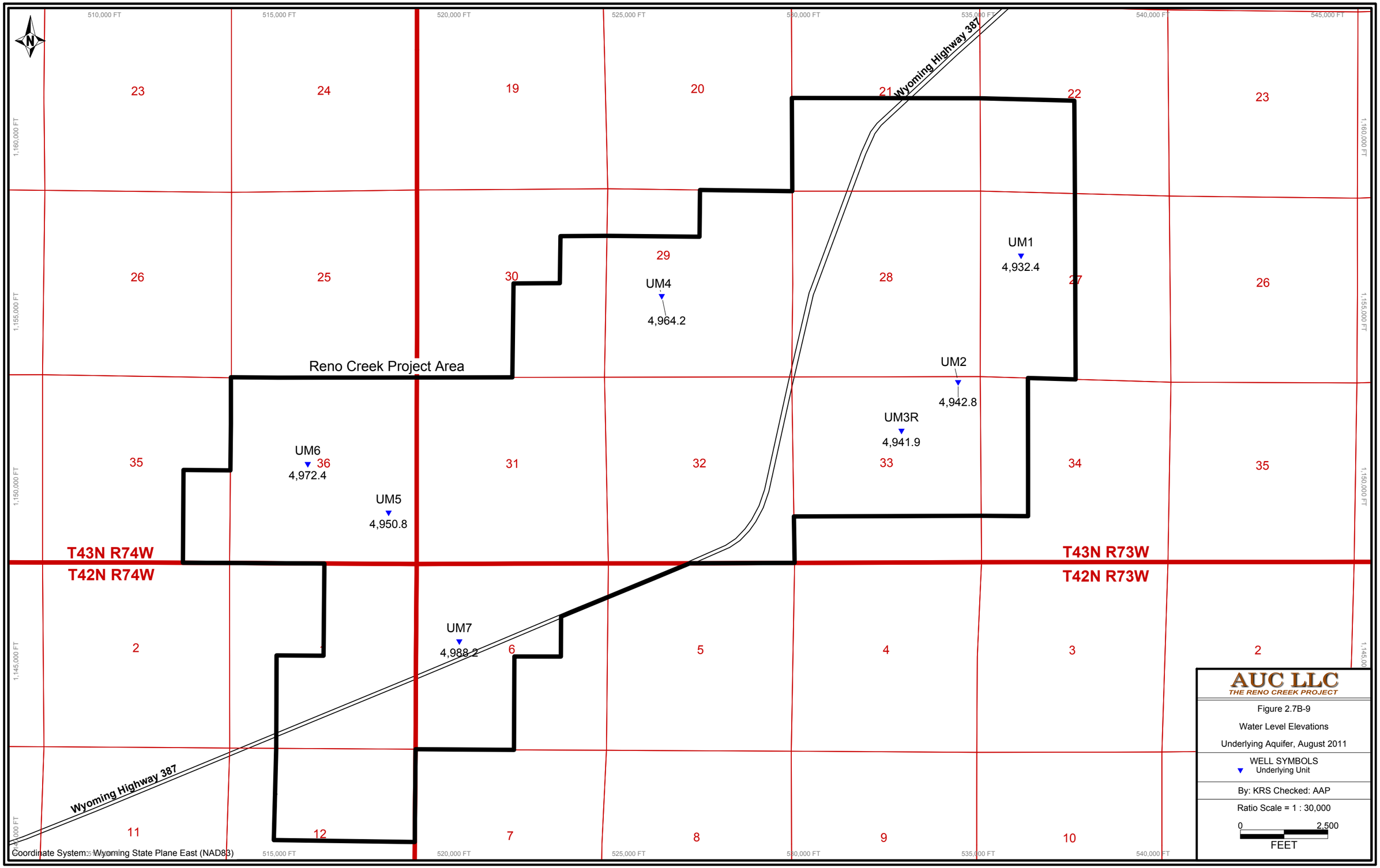
32
33
34
35
2
6
5
4
3
2
11
12
7
8
9
10
Wyoming Highway 387
Reno Creek Project Area
OM1
5,050.1
OM2
5,118.9
OM3
5,125.6
OM4
5,024.4
OM5
5,078.1
OM6
5,065.4
OM7
5,049.3
T43N R74W
T42N R74W
T43N R73W
T42N R73W
Coordinate System: Wyoming State Plane East (NAD83)
AUC LLC
THE RENO CREEK PROJECT
Figure 2.7B-8
Water Level Elevations
Overlying Aquifer, August 2011
WELL SYMBOLS
Overlying Aquifer
By: KRS Checked: AAP
Ratio Scale = 1 : 30,000
0
2,500
FEET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Wyoming Highway 387
Reno Creek Project Area
UM1
4,932.4
UM2
4,942.8
UM3R
4,941.9
UM4
4,964.2
UM5
4,950.8
UM6
4,972.4
UM7
4,988.2
T43N R74W
T42N R74W
T43N R73W
T42N R73W
23
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11
12
7
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9
10
Coordinate System: Wyoming State Plane East (NAD83)
AUC LLC
THE RENO CREEK PROJECT
Figure 2.7B-9
Water Level Elevations
Underlying Aquifer, August 2011
WELL SYMBOLS
Underlying Unit
By: KRS Checked: AAP
Ratio Scale = 1 : 30,000
0
2,500
FEET

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530,000 FT
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1,160,000 FT
1,156,000 FT
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1,148,000 FT
1,144,000 FT
1,140,000 FT
Wyoming Highway 387
Reno Creek Project Area
Groundwater Flow
T43N R74W
T42N R74W
T43N R73W
T42N R73W
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RI-3 4,956
RI-4 4,937.7
RI-7 4,963.1
RI-12 4,988.3
RI-18 4,947.3
RI-28 4,968.8
RI-34 4,969.7
RI-42C 4,949.3
RI-43C 4,956.6
4940
4950
4960
4970
4980
Coordinate System: Wyoming State Plane East (NAD83)

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Figure 2.7B-10

Historic Potentiometric Surface

Production Zone Aquifer, October 1993

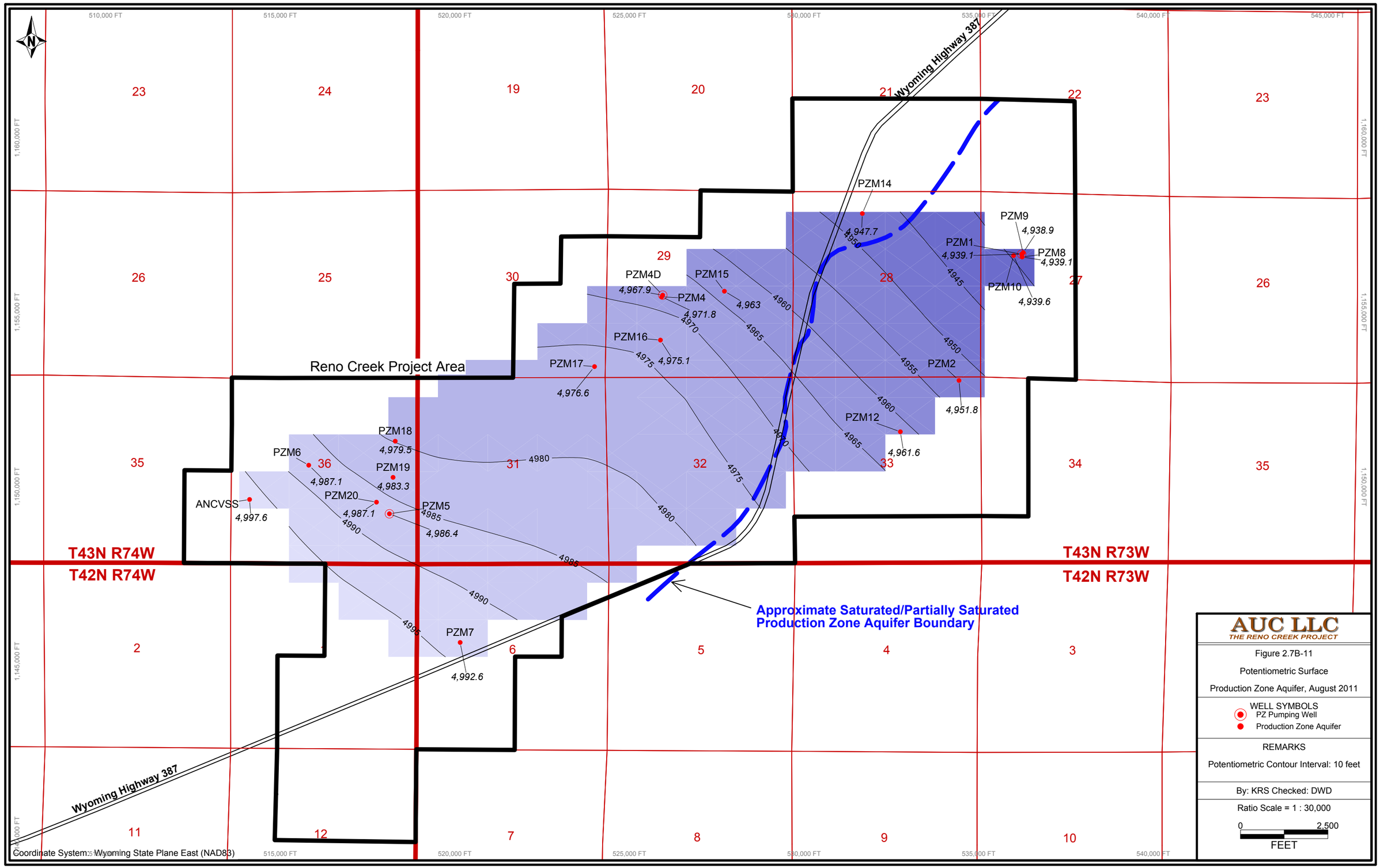
WELL SYMBOLS
Historical PZ Aquifer

REMARKS
Potentiometric Contour Interval: 10 feet
From Energy Fuels Nuclear, Inc.

By: KRS Checked: DWD

Ratio Scale = 1 : 30,000

0 2,500
FEET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1,150,000 FT
1,145,000 FT
1,140,000 FT
Wyoming Highway 387
Reno Creek Project Area
PZM14
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PZM9
4,938.9
PZM1
4,939.1
PZM8
4,939.1
PZM10
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PZM4D
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PZM5
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PZM7
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4970
4975
4980
4985
4990
4995
T43N R74W
T42N R74W
T43N R73W
T42N R73W
Approximate Saturated/Partially Saturated
Production Zone Aquifer Boundary
Coordinate System: Wyoming State Plane East (NAD83)
AUC LLC
THE RENO CREEK PROJECT
Figure 2.7B-11
Potentiometric Surface
Production Zone Aquifer, August 2011
WELL SYMBOLS
PZ Pumping Well
Production Zone Aquifer
REMARKS
Potentiometric Contour Interval: 10 feet
By: KRS Checked: DWD
Ratio Scale = 1 : 30,000
0
2,500
FEET

Figure 2.7B-12. Shallow Water Table Unit Hydrograph, Well SM5
Reno Creek Project

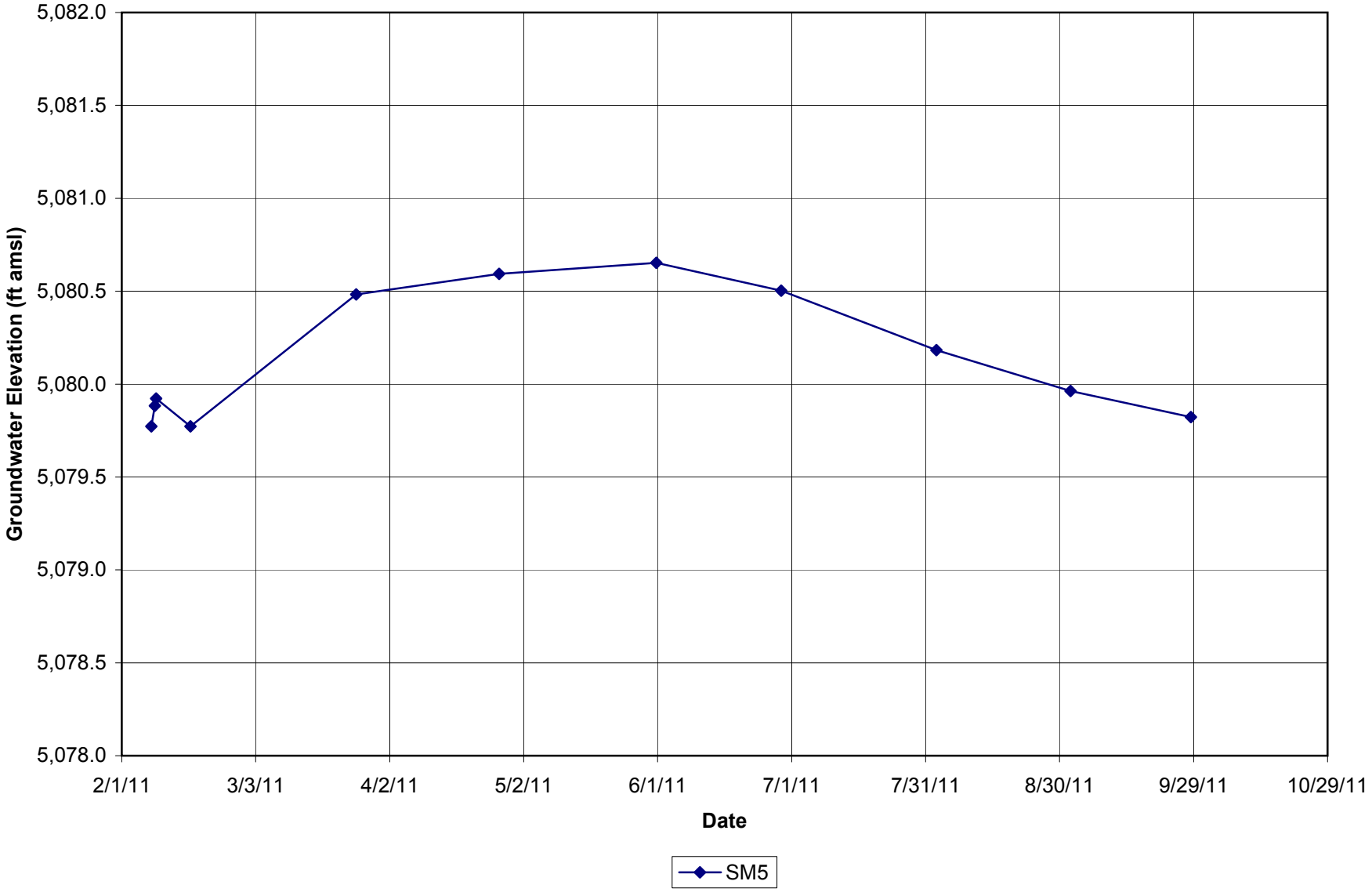

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Figure 2.7B-13. Overlying Aquifer Hydrograph, Well OM5
Reno Creek Project

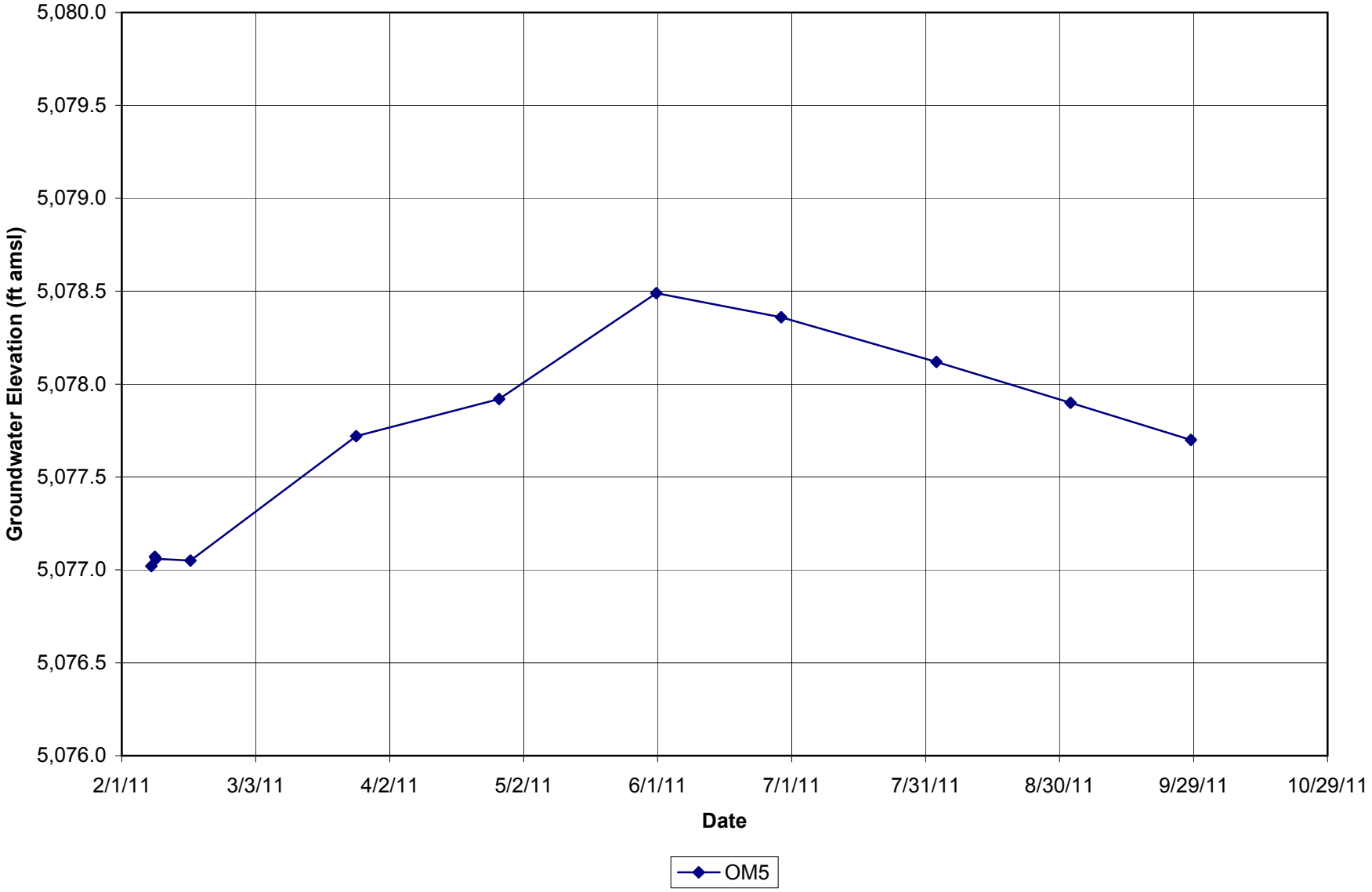

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Figure 2.7B-14. Production Zone Aquifer Hydrograph, Well PZM5
Reno Creek Project

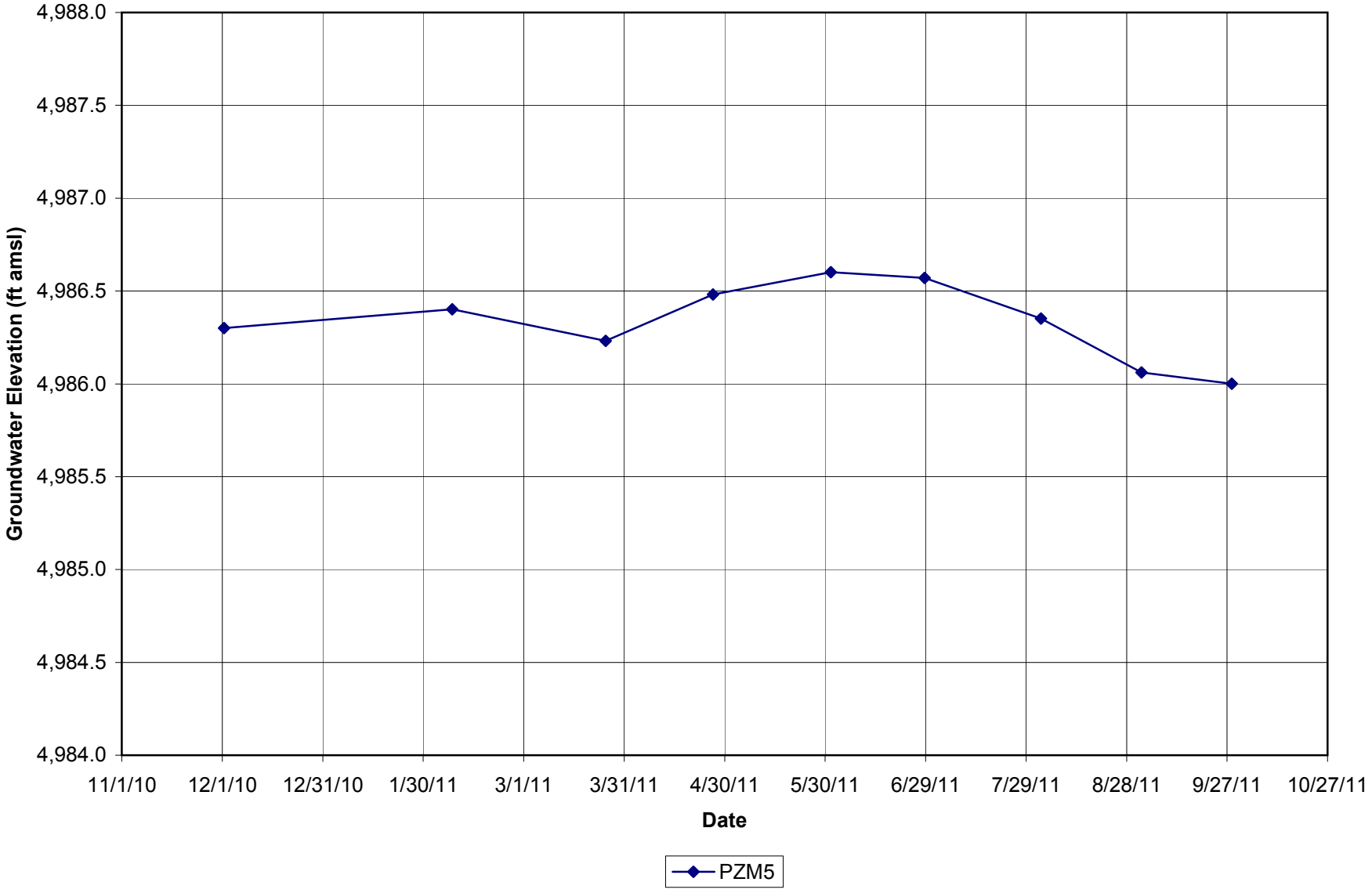

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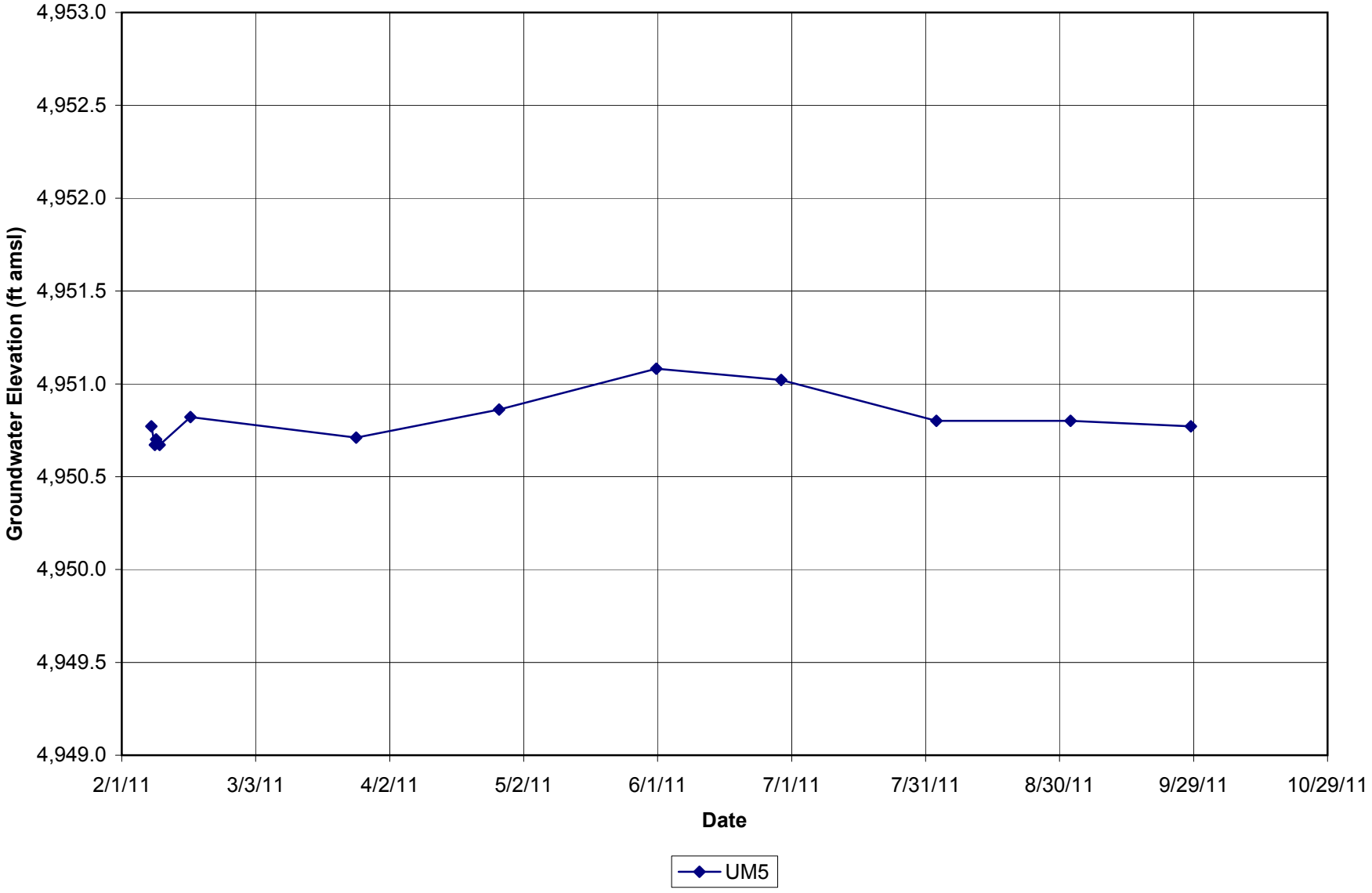
Figure 2.7B-15. Underlying Unit Hydrograph, Well UM5
Reno Creek Project



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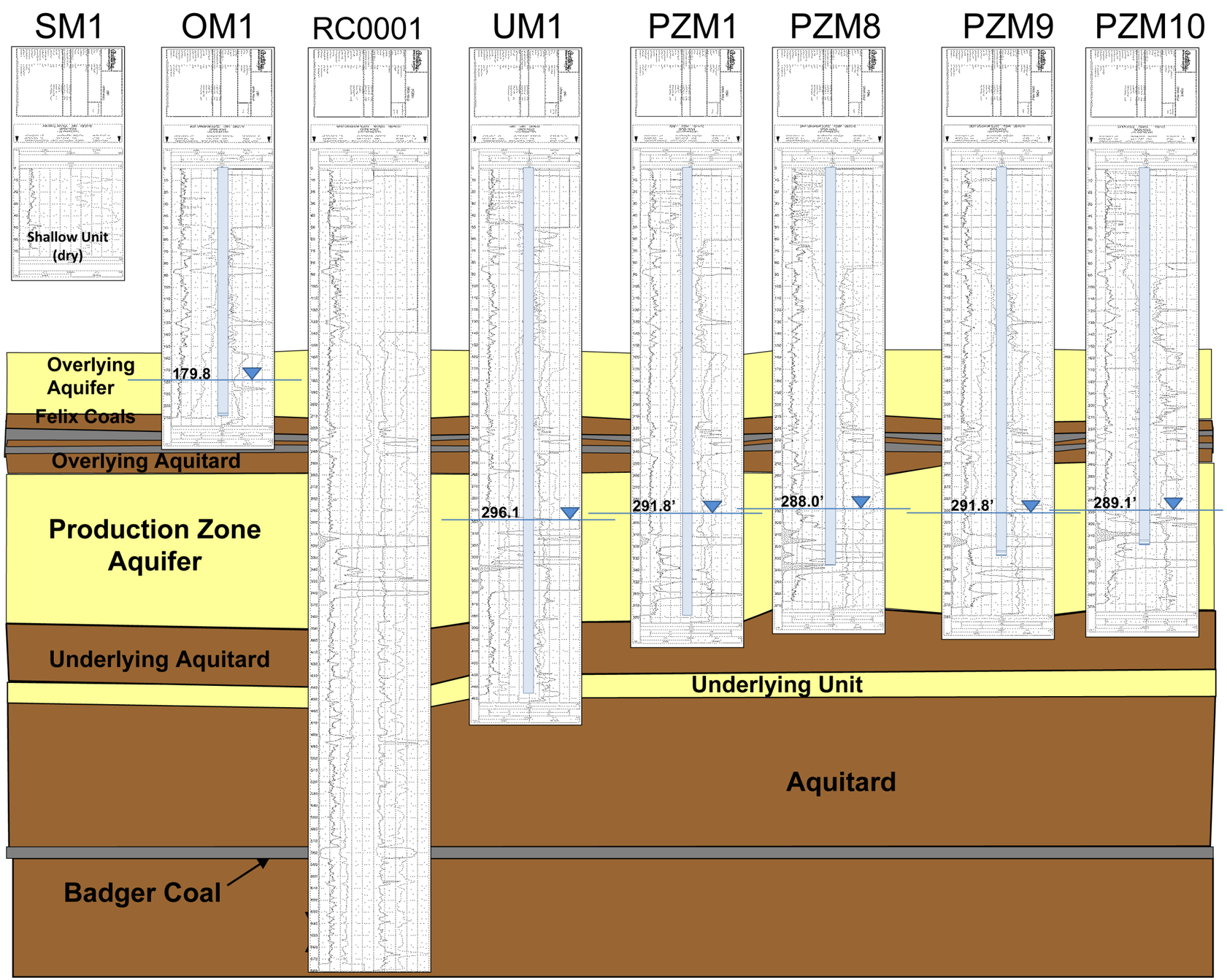

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Figure 2.7B-16
PZM1 Hydrostratigraphic Diagram

Scale: NTS	Date: December 2011	
AUC_RC_NRC_Fig_2.7B-16	By: KRS	Checked: AAP

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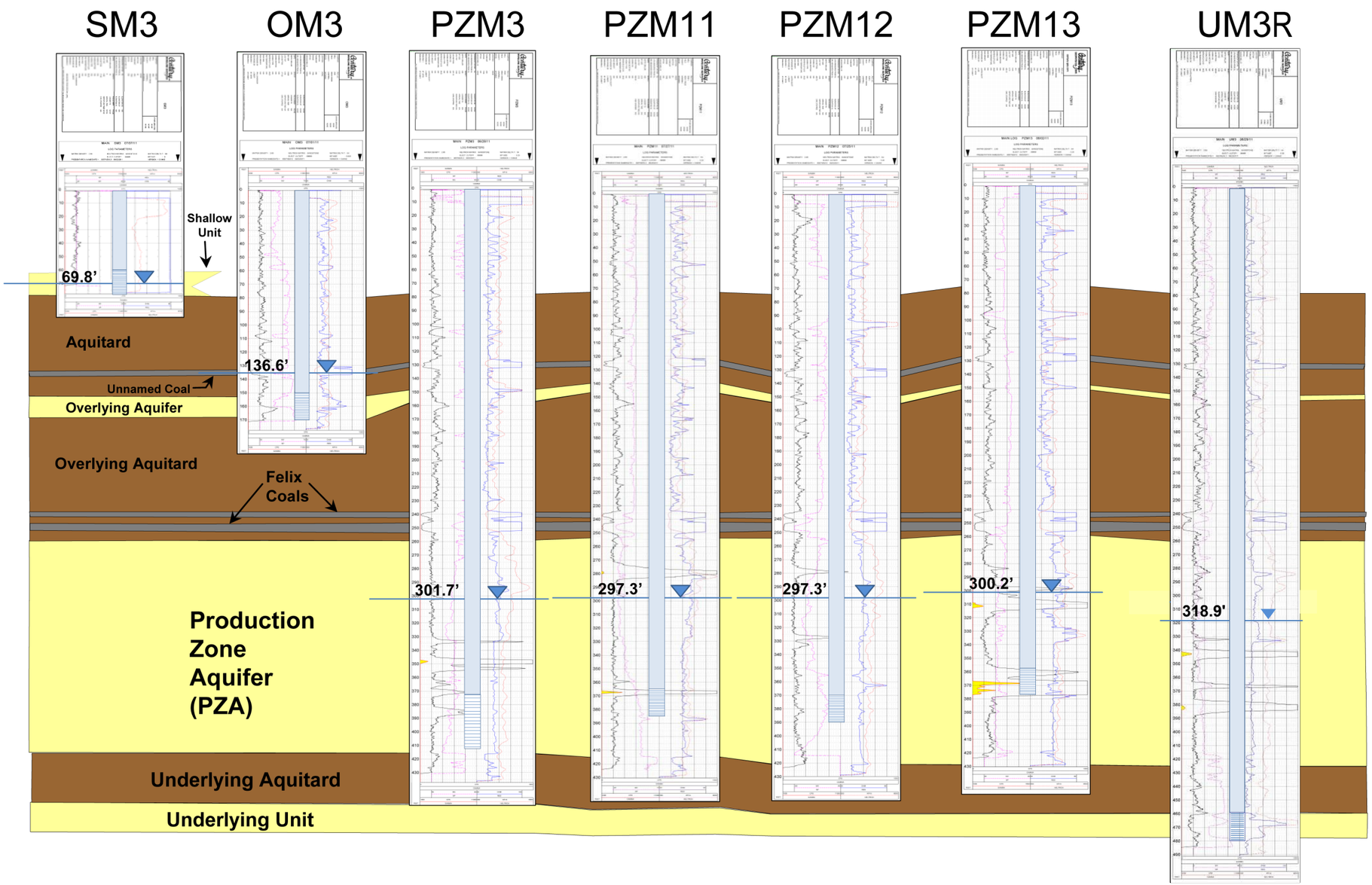

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Figure 2.7B-17
PZM3 Hydrostratigraphic Diagram

Scale: NTS	Date: December 2011	
AUC_RC_NRC_Fig_2.7B-17	By: KRS	Checked: AAP

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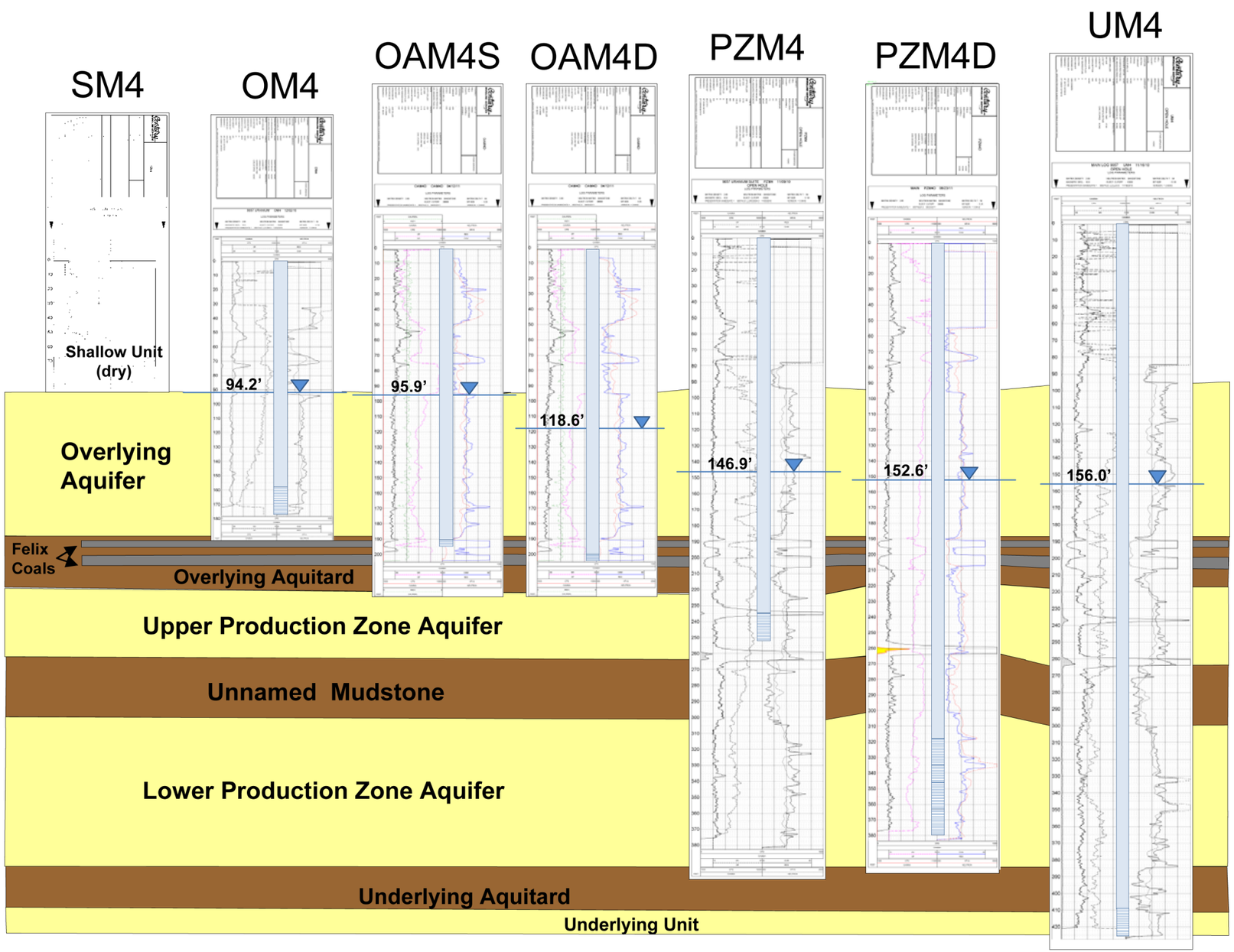

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Figure 2.7B-18
PZM4 Hydrostratigraphic Diagram

Scale: NTS	Date: December 2011	
AUC_RC_NRC_Fig_2.7B-18	By: KRS	Checked: AAP

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303-290-9414
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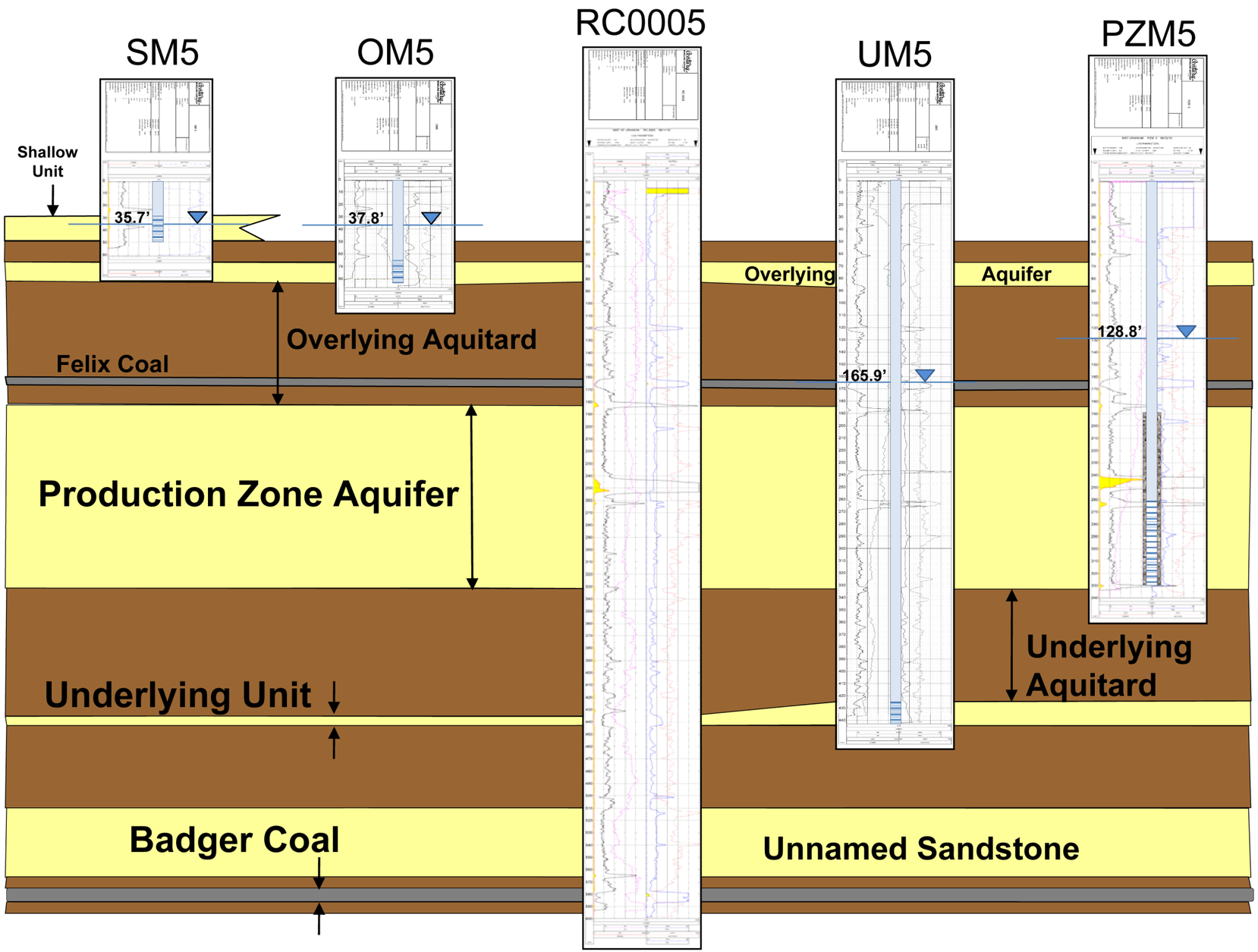

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Figure 2.7B-19
PZM5 Hydrostratigraphic Diagram

Scale: NTS	Date: December 2011	
AUC_RC_NRC_Fig_2.7B-19.ai	By: KRS	Checked: AAP

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303-290-9414
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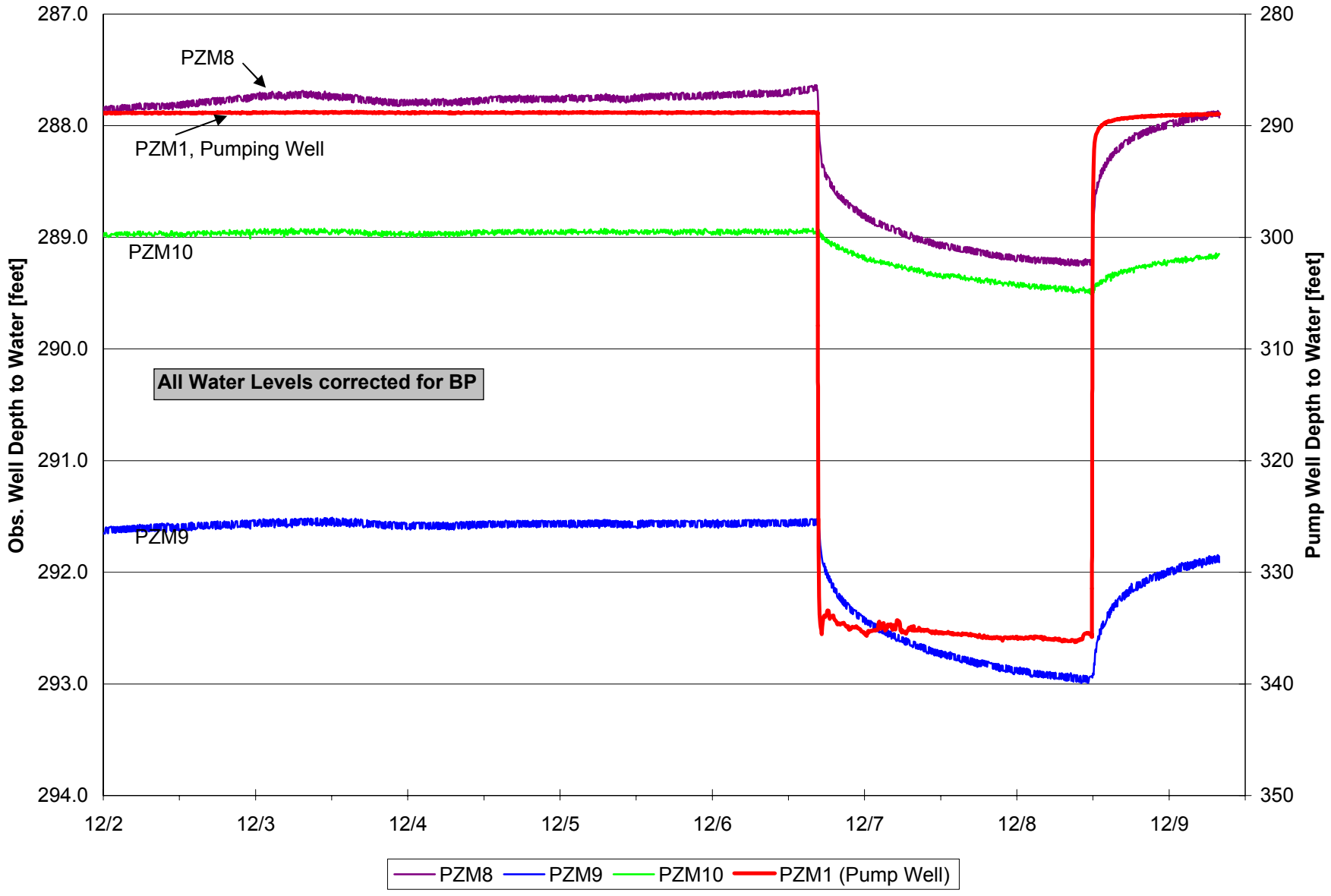
Figure 2.7B-20. Production Zone Observation Wells vs. Pumping Well Water Level Data
PZM1 Pump Test, Reno Creek Project



Petrotek

Figure 2.7B-21. Early Time Water Level Data in Production Zone PZM1 Pump Test, Reno Creek Project

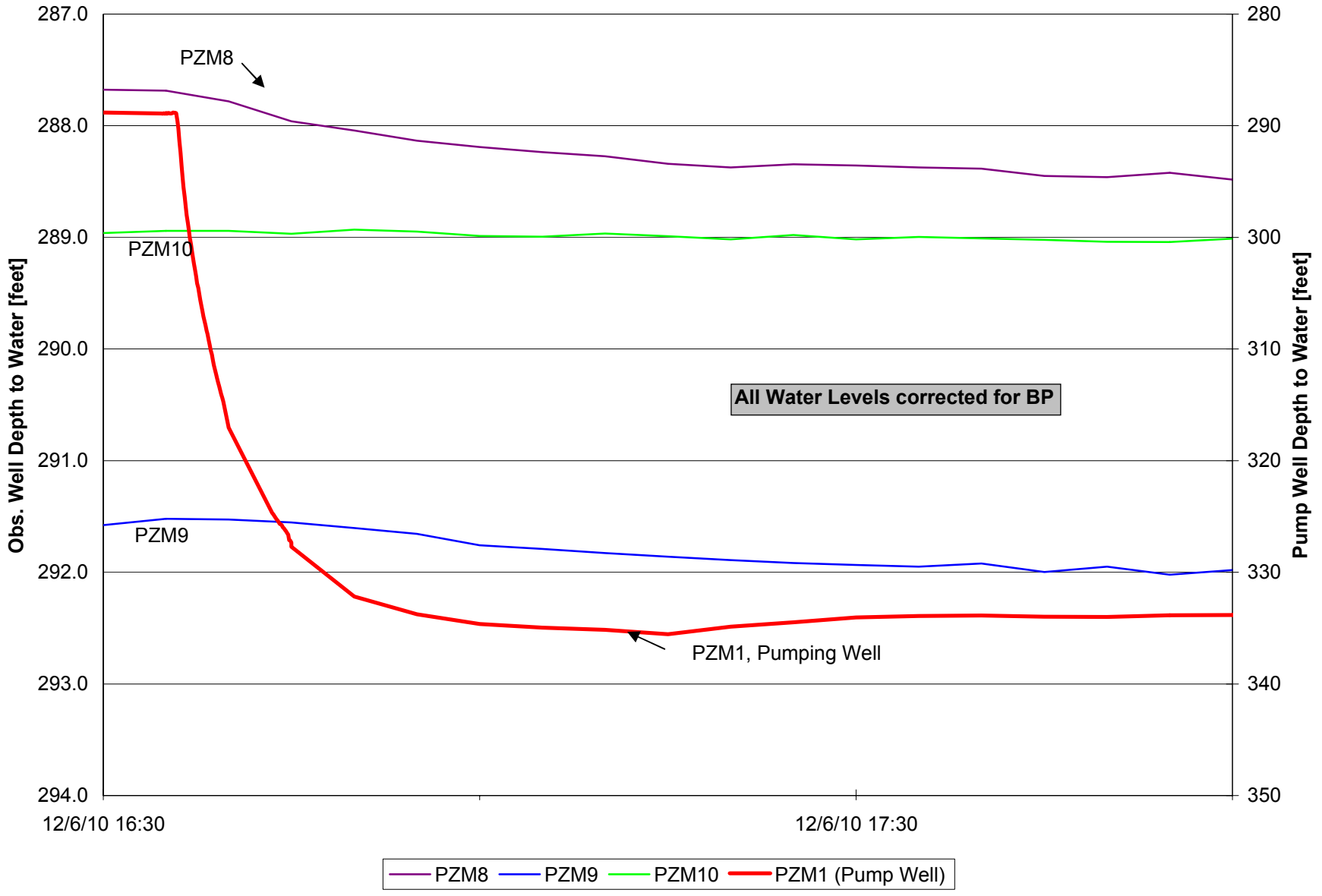


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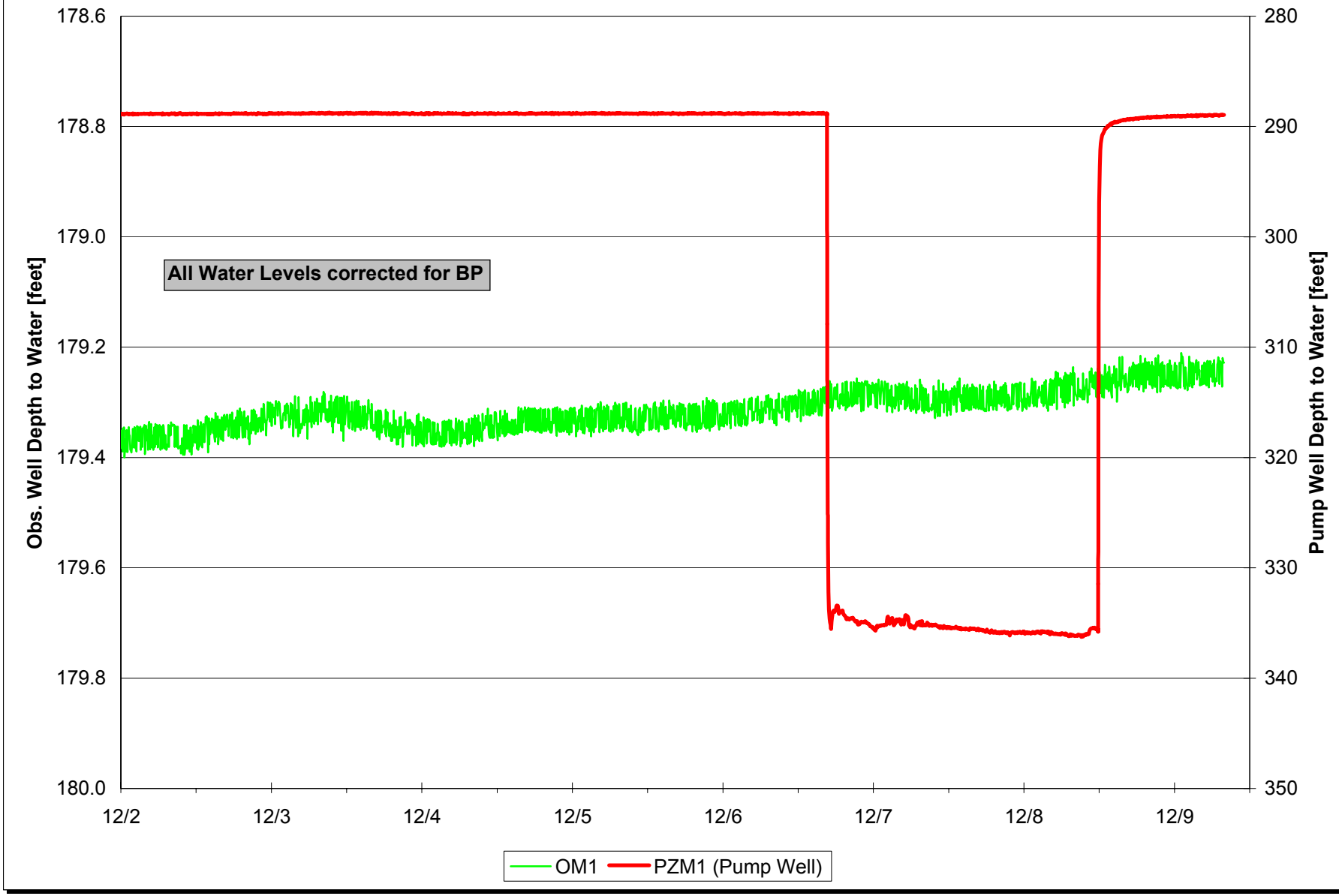
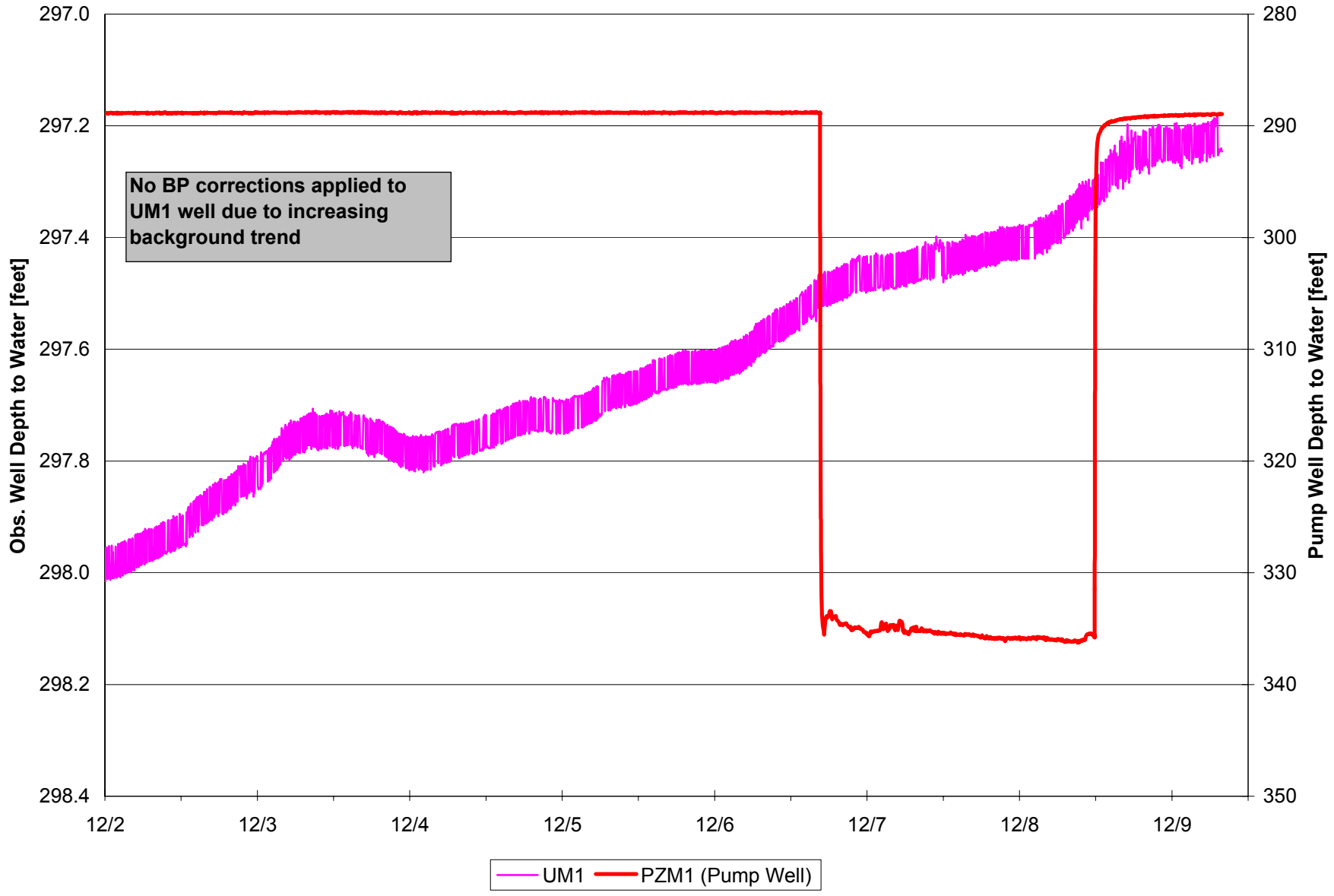
Figure 2.7B-22. Overlying Aquifer Observation Well vs. Pumping Well Water Level Data
PZM1 Pump Test, Reno Creek Project



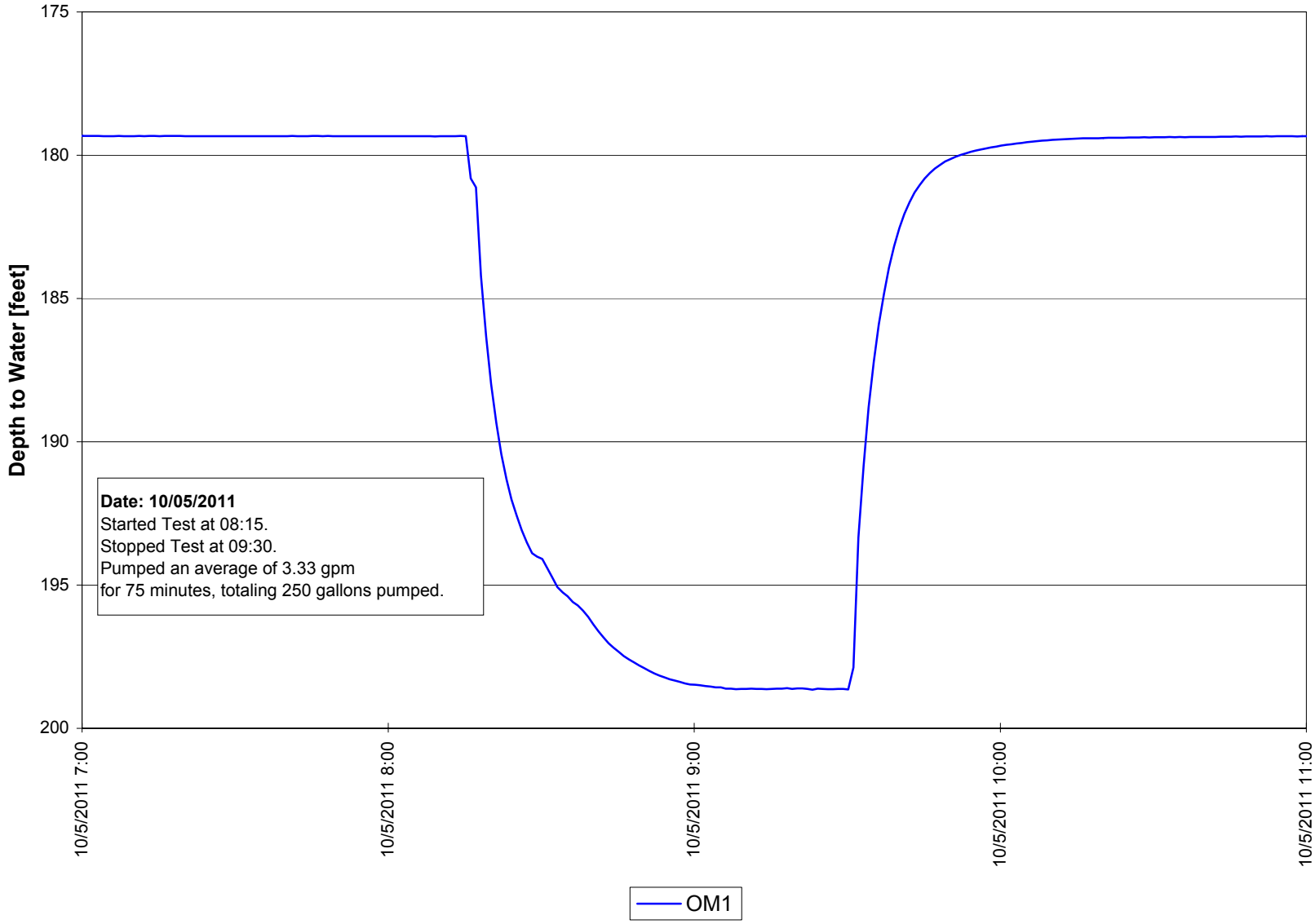
Petrotek

Figure 2.7B-23. Underlying Unit Observation Well vs. Pumping Well Water Level Data
PZM1 Pump Test, Reno Creek Project



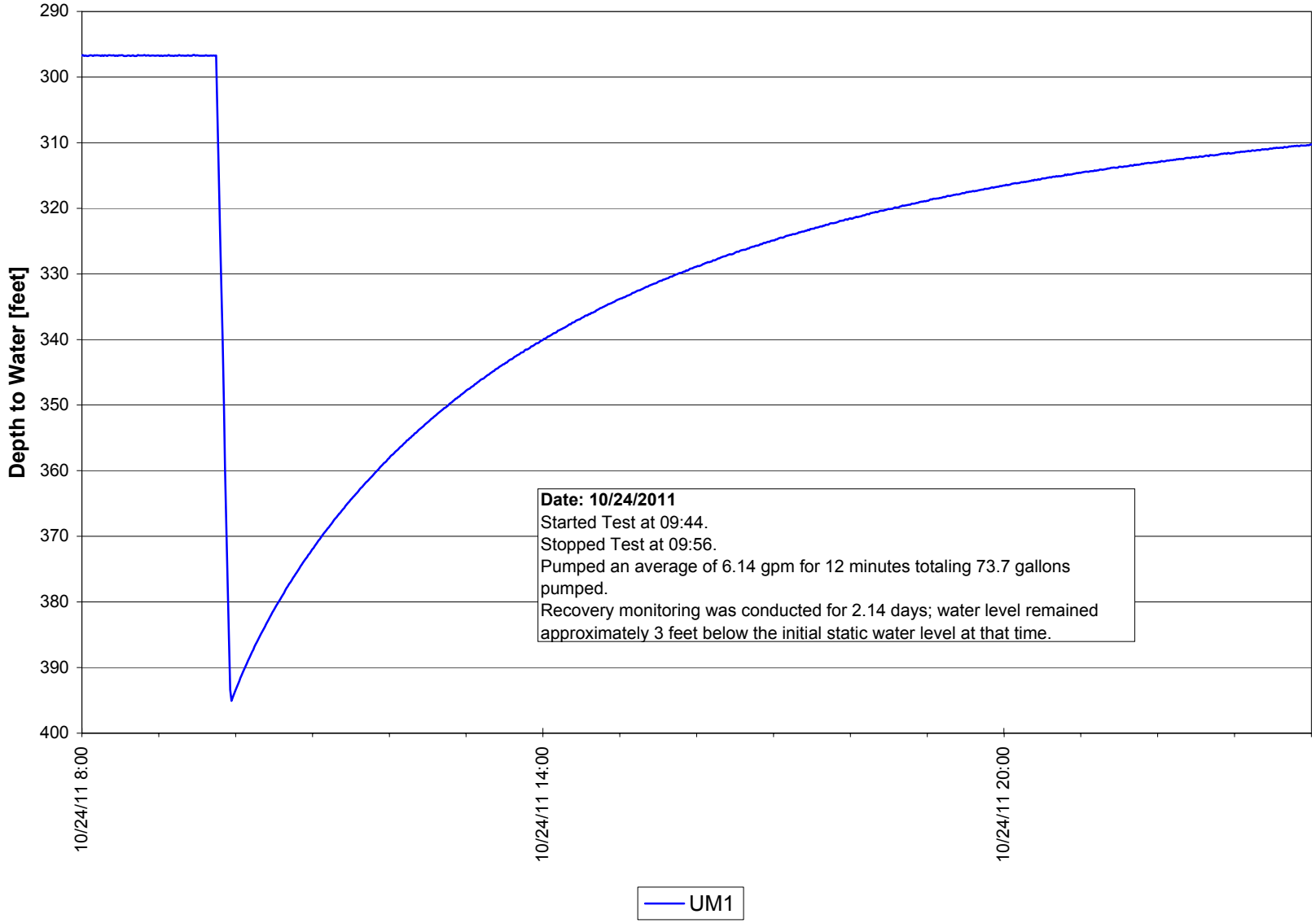
Petrotek

Figure 2.7B-24. OM1 Single-well Test Water Level Data
Reno Creek Project



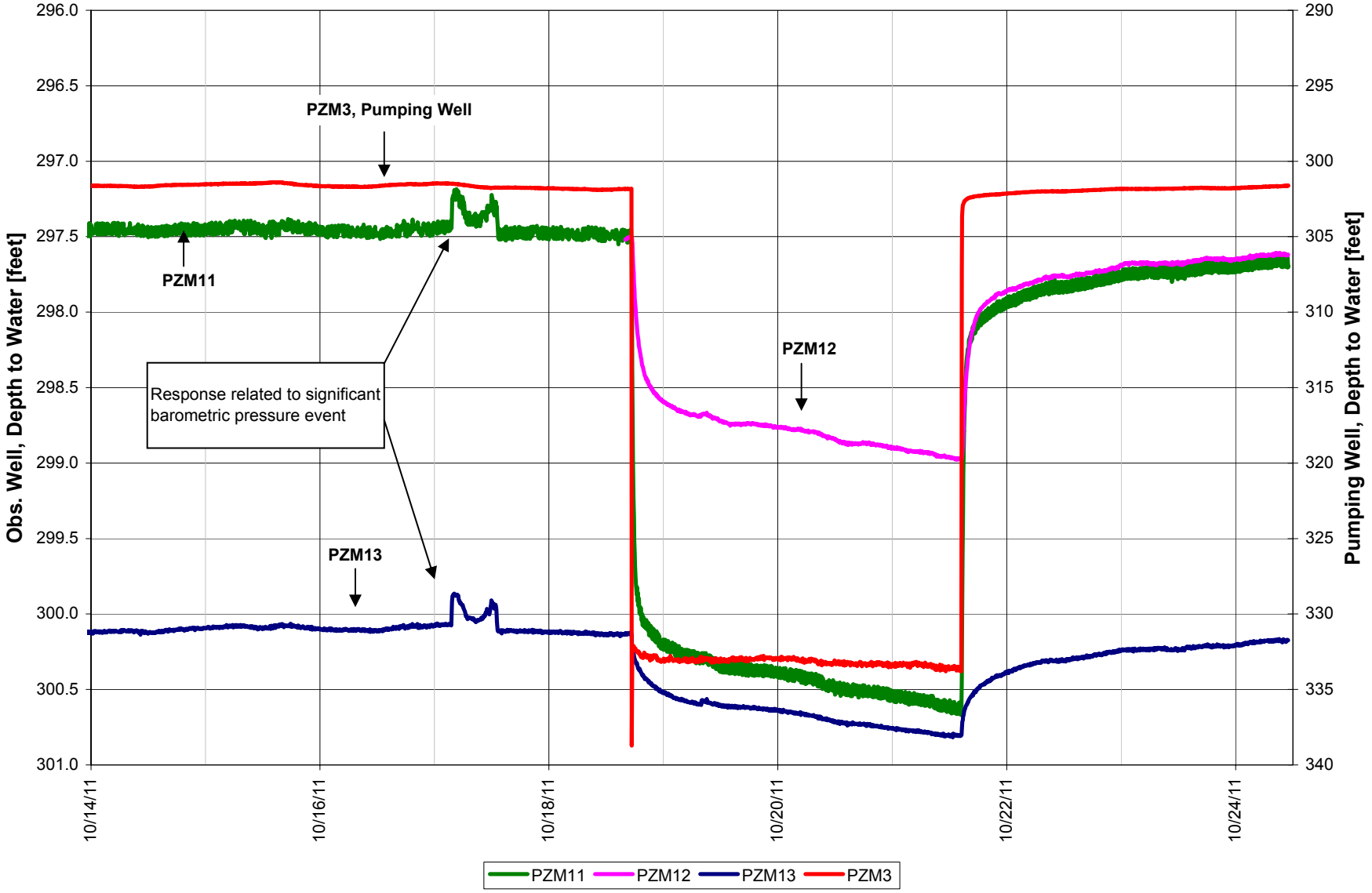
Petrotek

Figure 2.7B-25. UM1 Single-well Test Water Level Data
Reno Creek Project



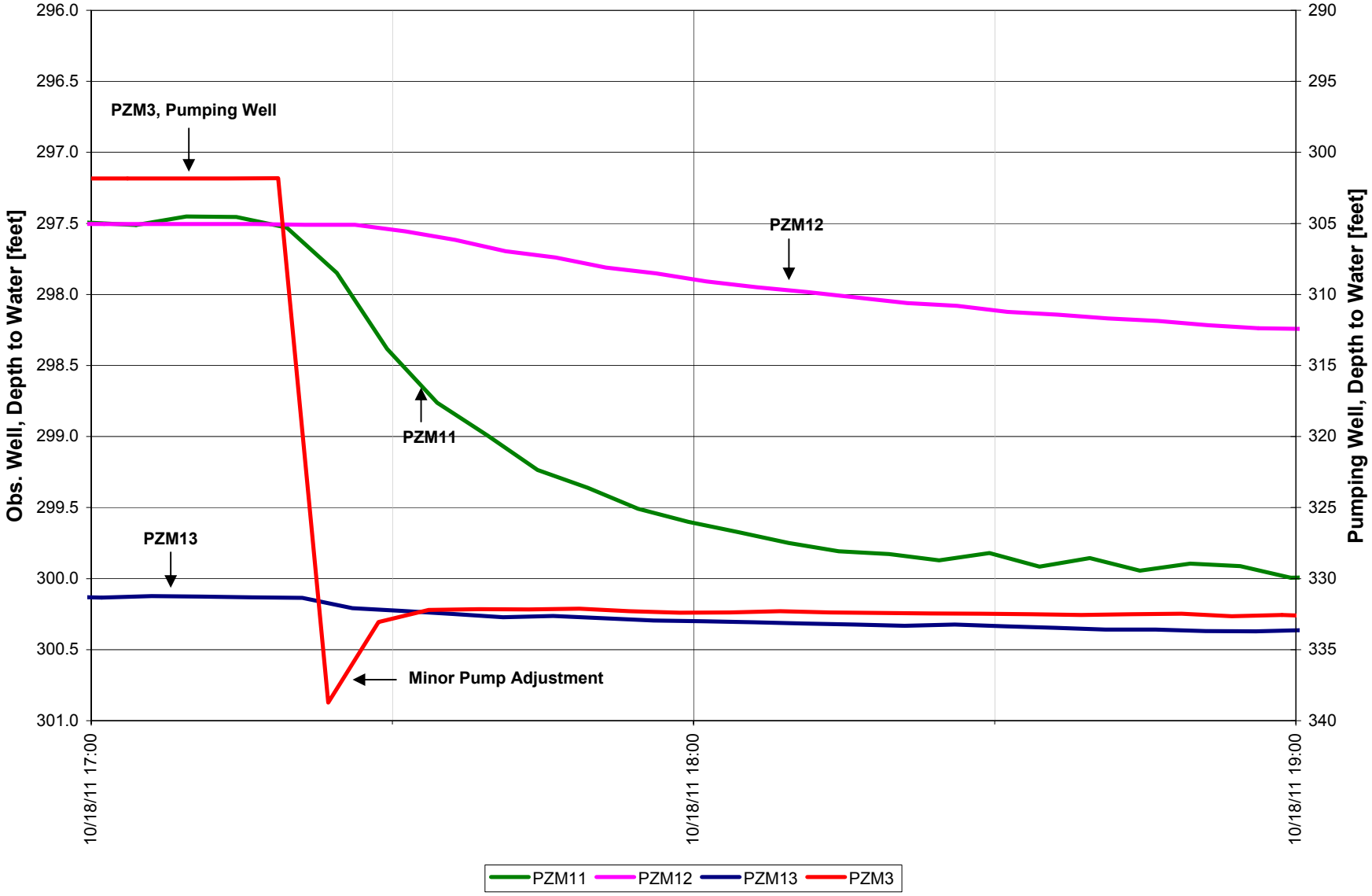
Petrotek

Figure 2.7B-26 Production Zone Observation Wells vs. Pumping Well Water Level Data
PZM3 Pump Test, Reno Creek Project



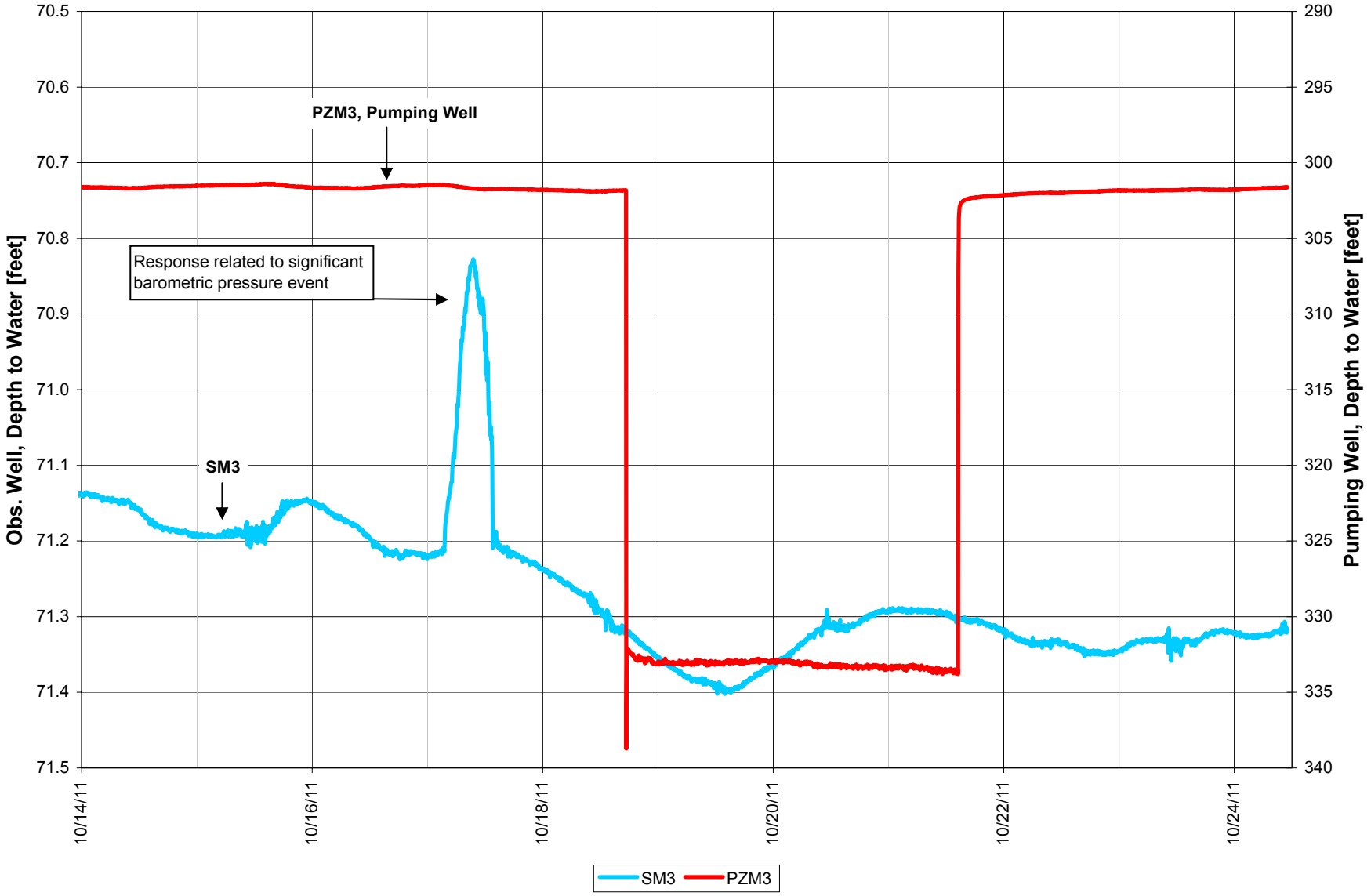
Petrotek

Figure 2.7B-27 Early Time Production Zone Aquifer Water Level Data
PZM3 Pump Test, Reno Creek Project



Petrotek

Figure 2.7B-28 Shallow Water Table Unit Observation Well vs. Pumping Well Water Level Data
PZM3 Pump Test, Reno Creek Project



Petrotek

Figure 2.7B-29 Overlying Aquifer Observation Well vs. Pumping Well Water Level Data
PZM3 Pump Test, Reno Creek Project

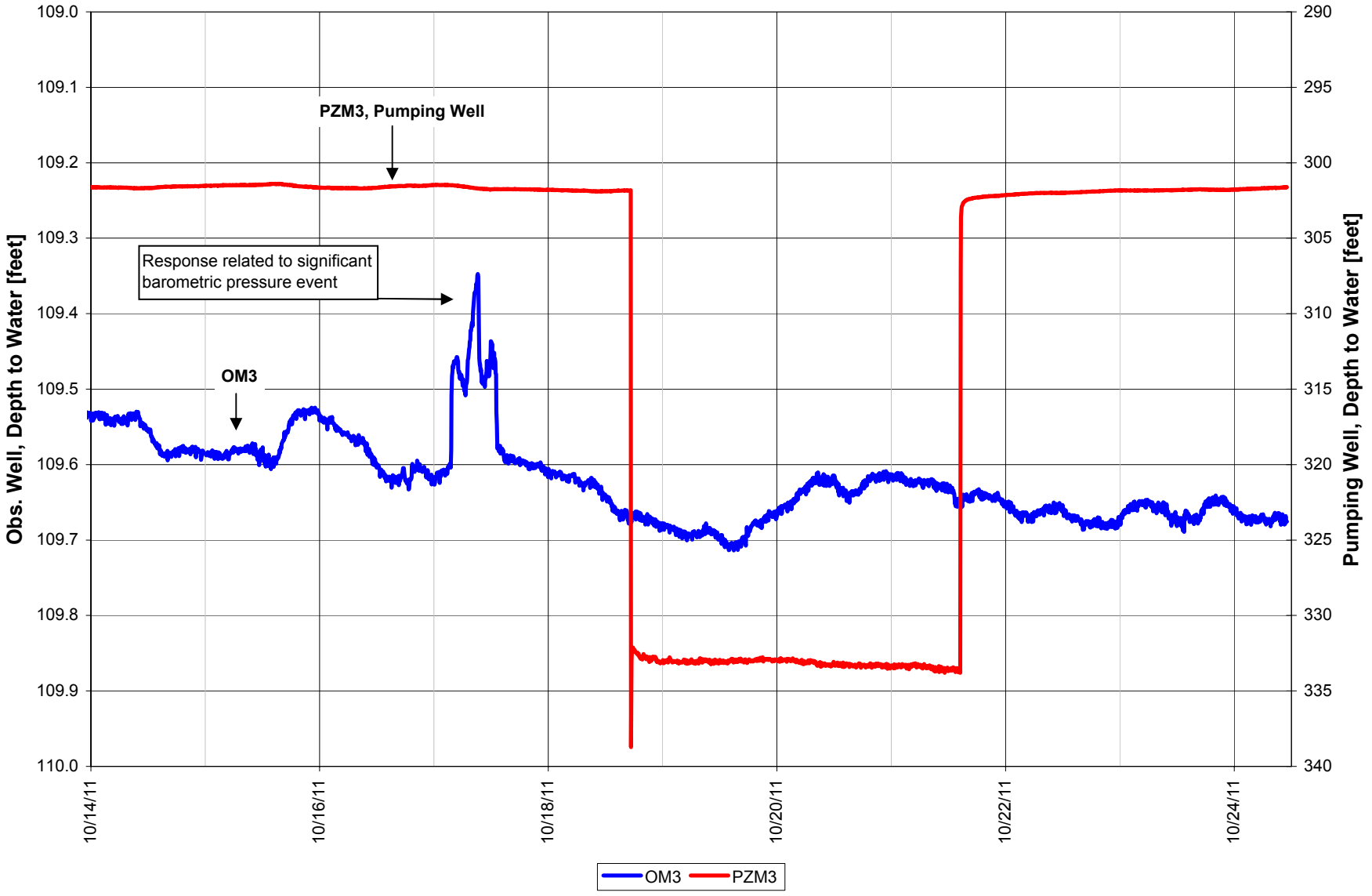


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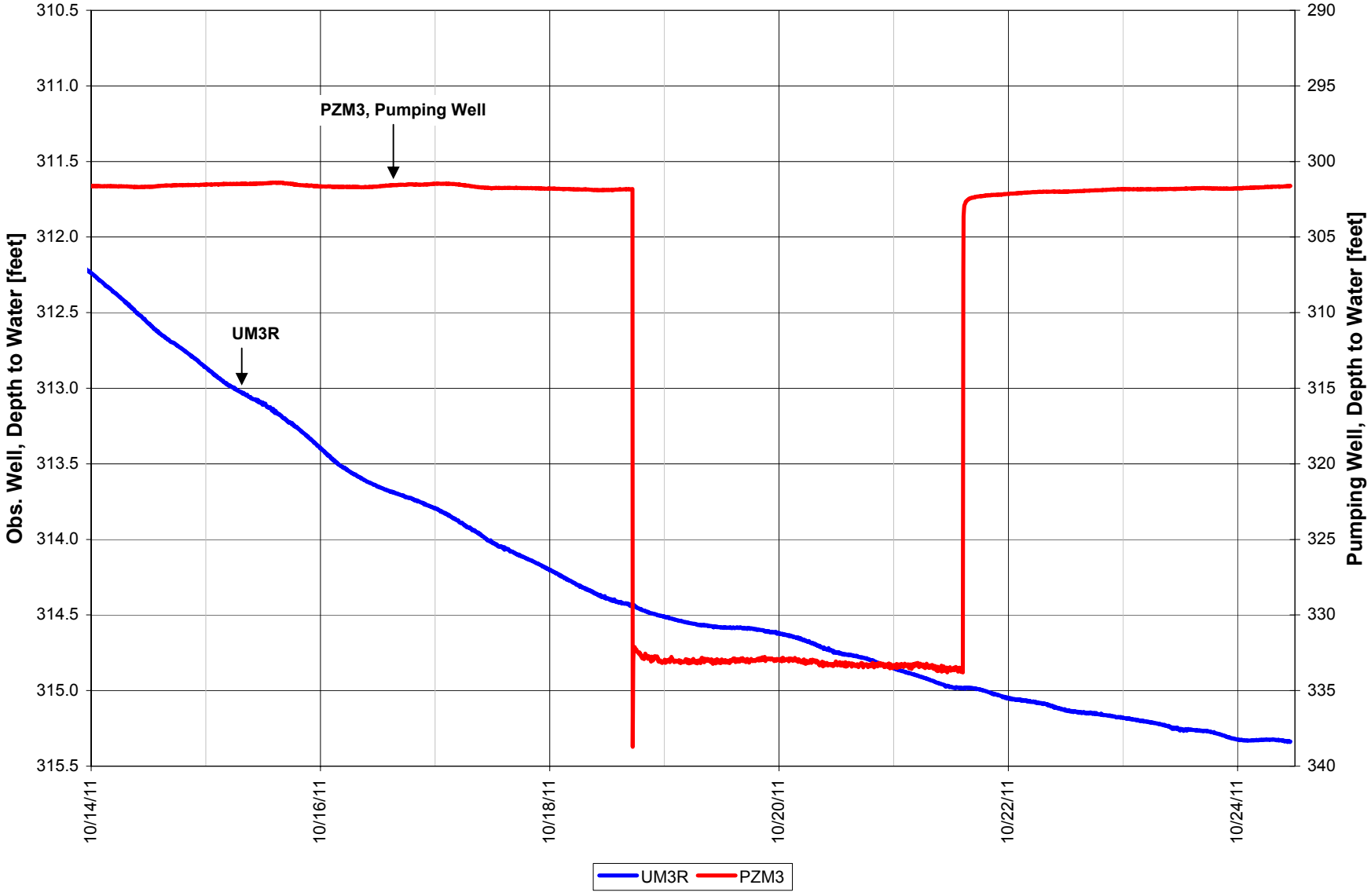
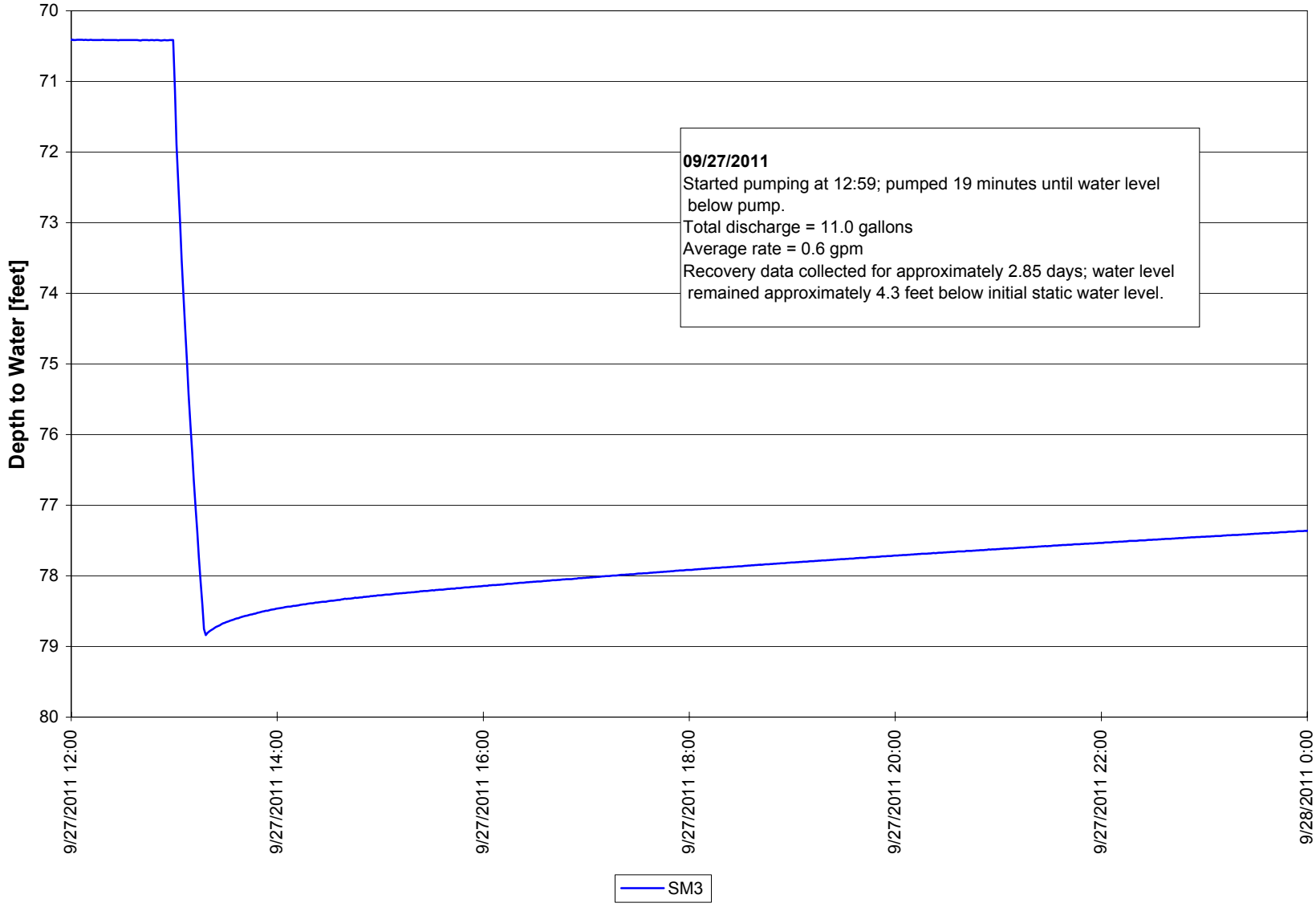
Figure 2.7B-30 Underlying Unit Observation Well vs. Pumping Well Water Level Data
PZM3 Pump Test, Reno Creek Project



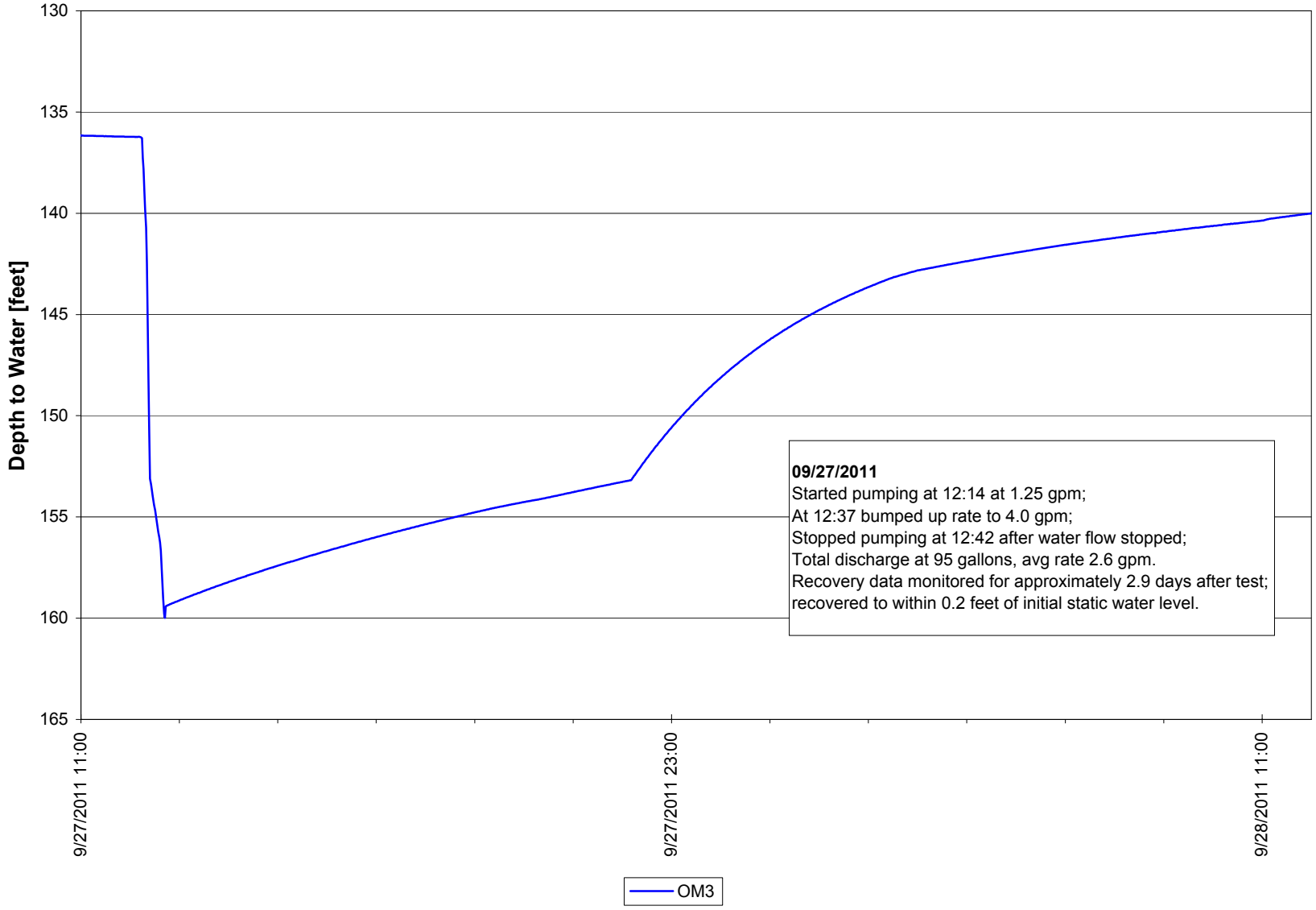
Petrotek

Figure 2.7B-31. SM3 Single-well Test Water Level Data
Reno Creek Project



Petrotek

Figure 2.7B-32. OM3 Single-well Test Water Level Data
Reno Creek Project



Petrotek

Figure 2.7B-33. UM3R Single-well Test Water Level Data
Reno Creek Project

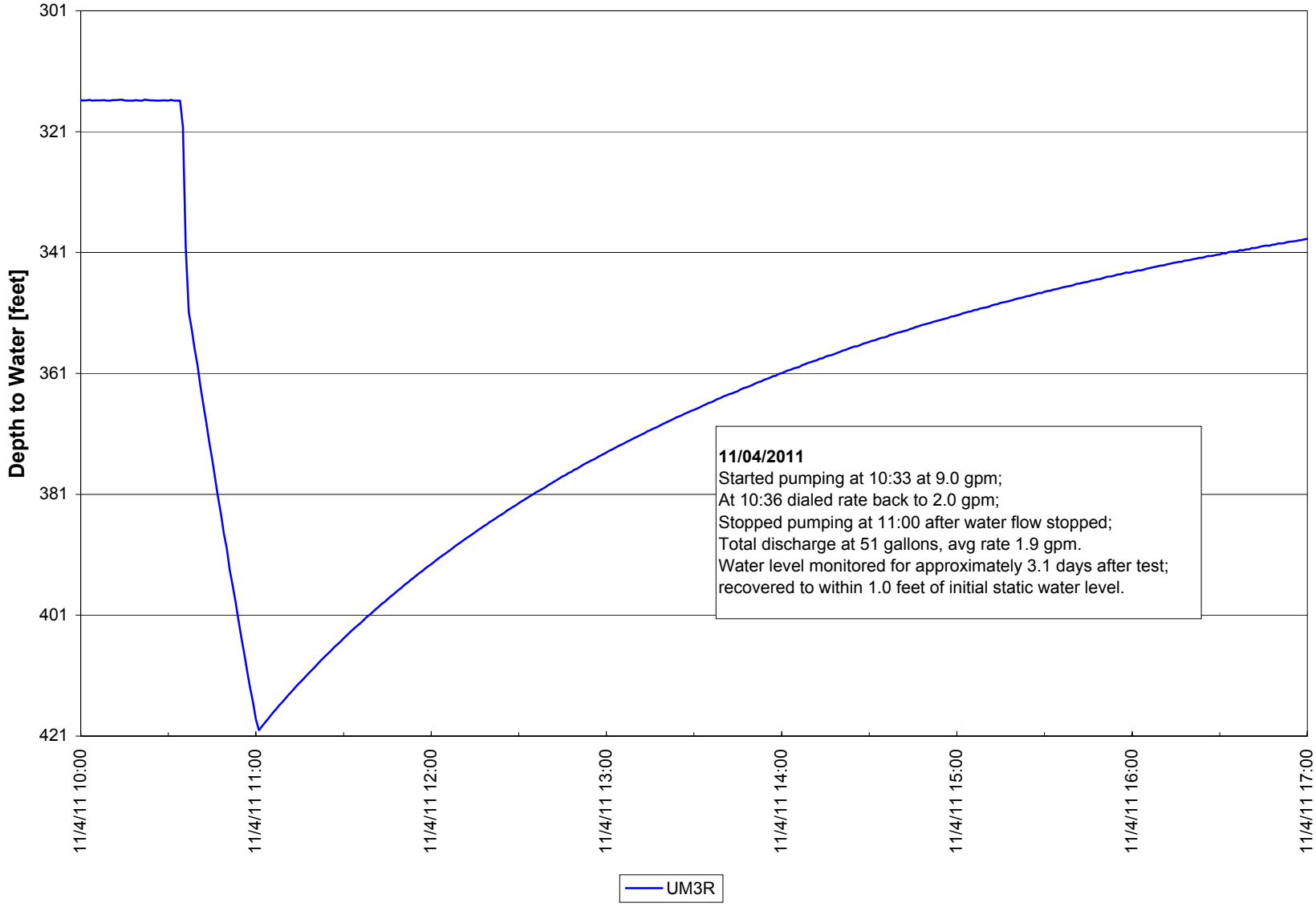


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Figure 2.7B-34. Example of Leaky Well
Well UM3 Water Level Data
Reno Creek Project

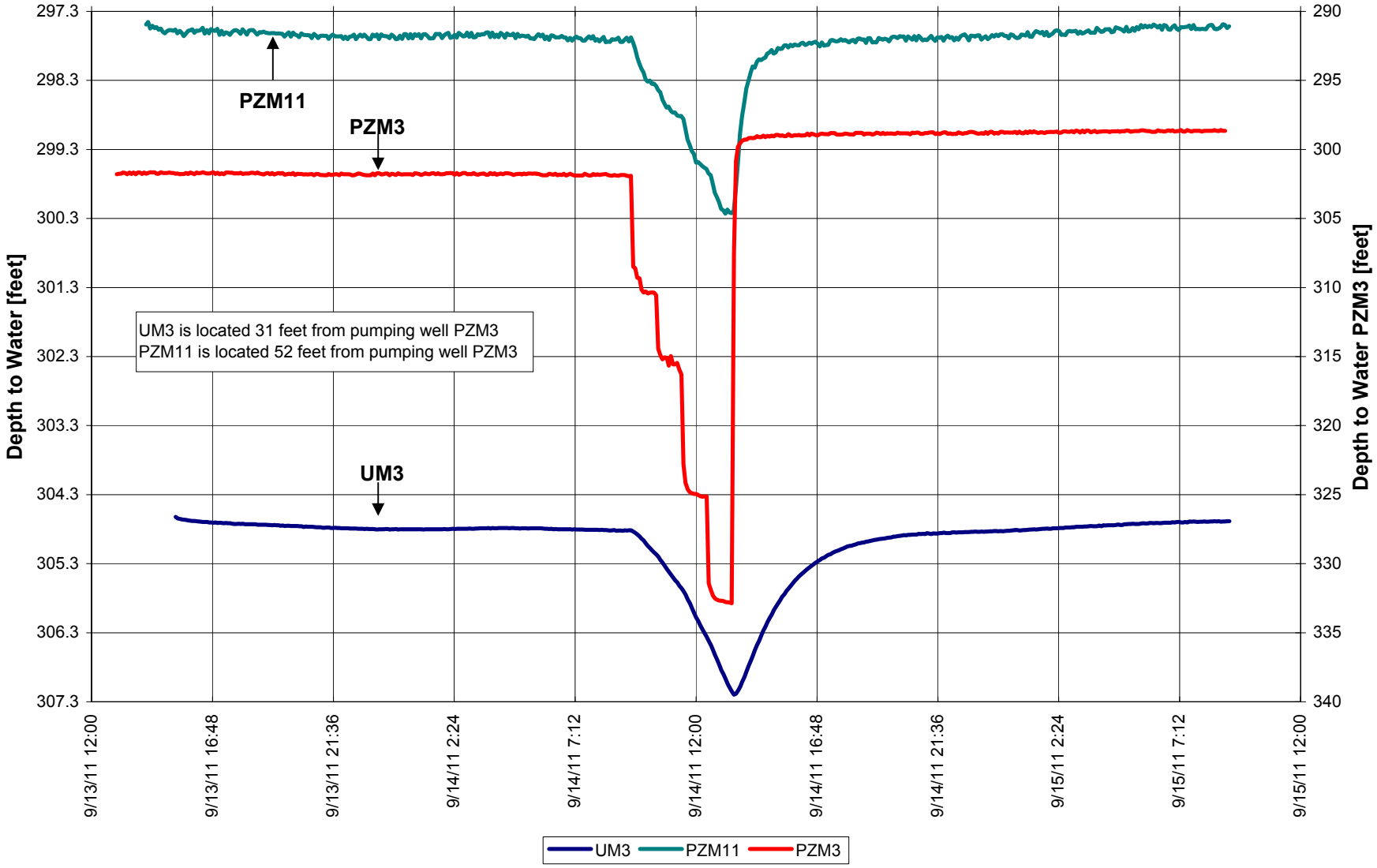

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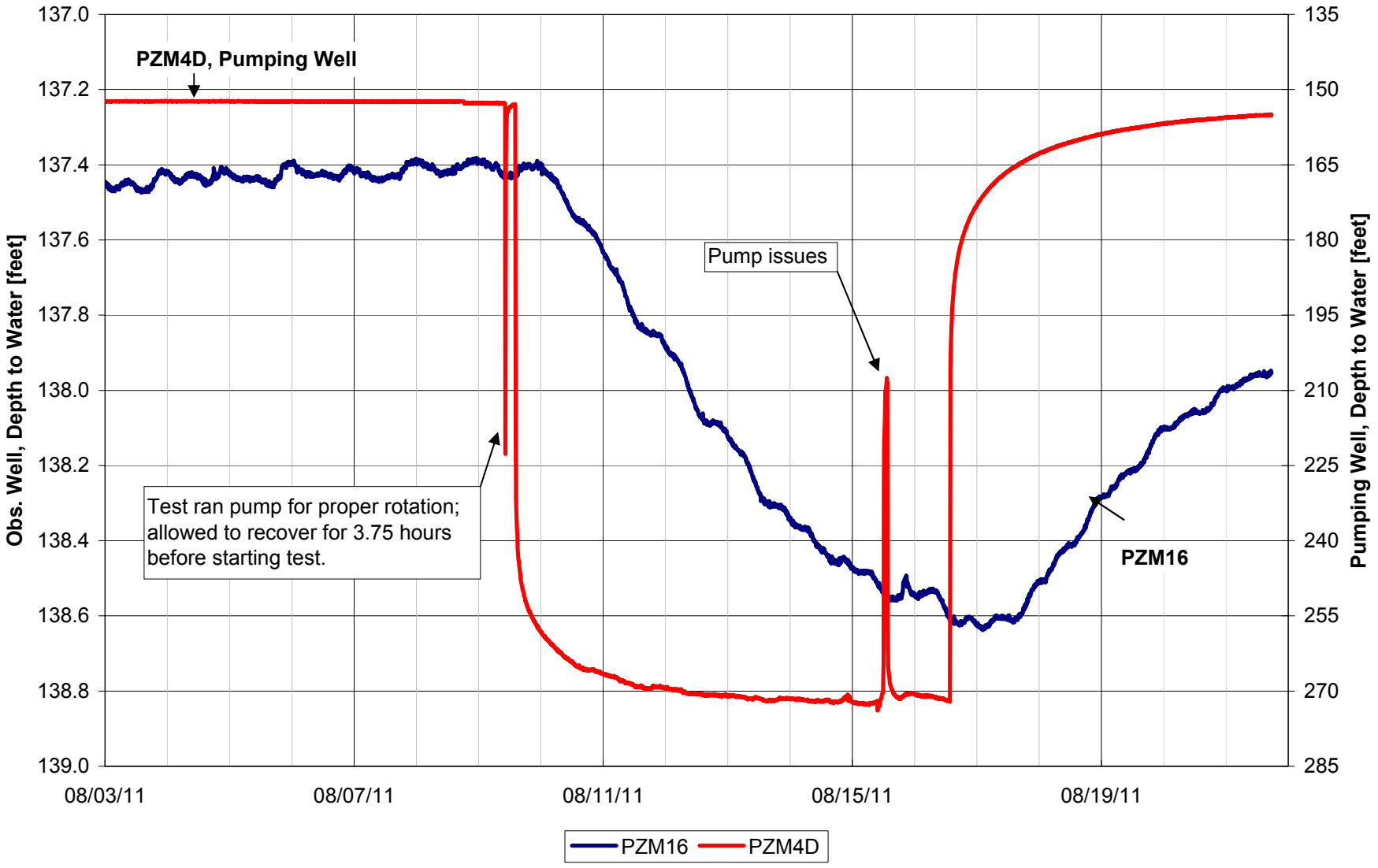
Figure 2.7B-35. Production Zone Observation Well vs. Pumping Well Water Level, Well PZM16, PZM4D Pump Test Reno Creek Project



Petrotek

Figure 2.7B-36. Production Zone Observation Well vs. Pumping Well Water Level
Well PZM15, PZM4D Pump Test
Reno Creek Project

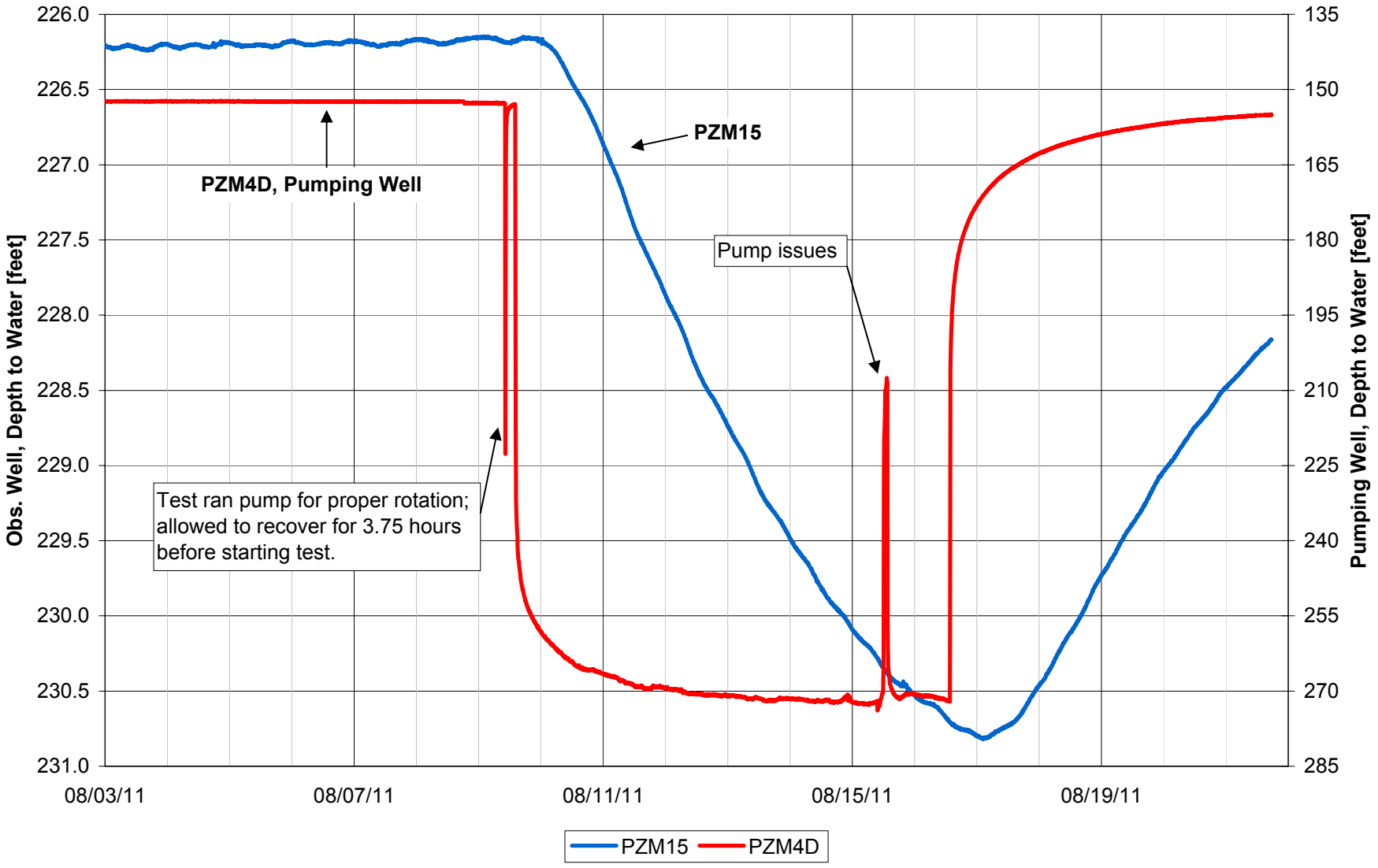


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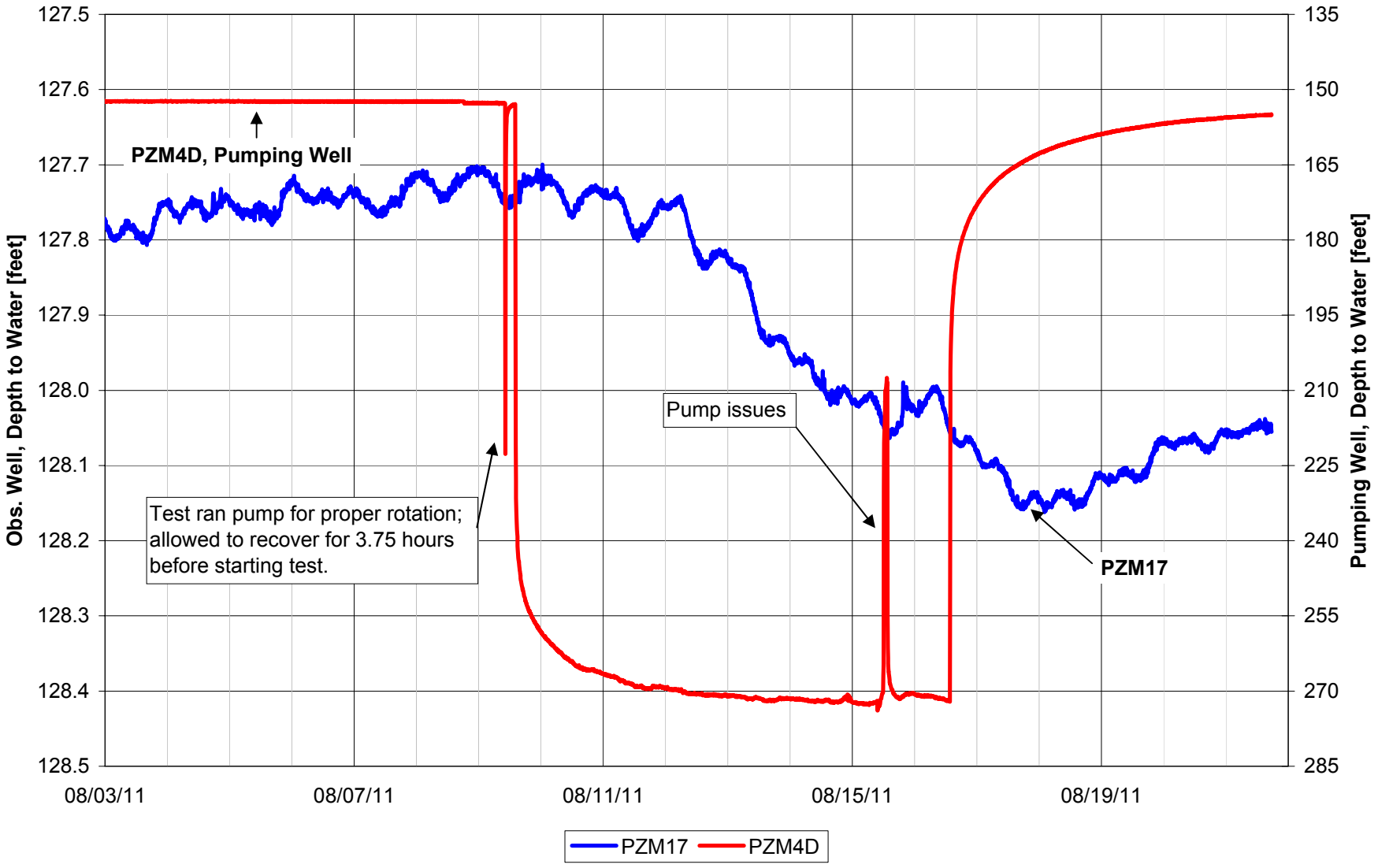
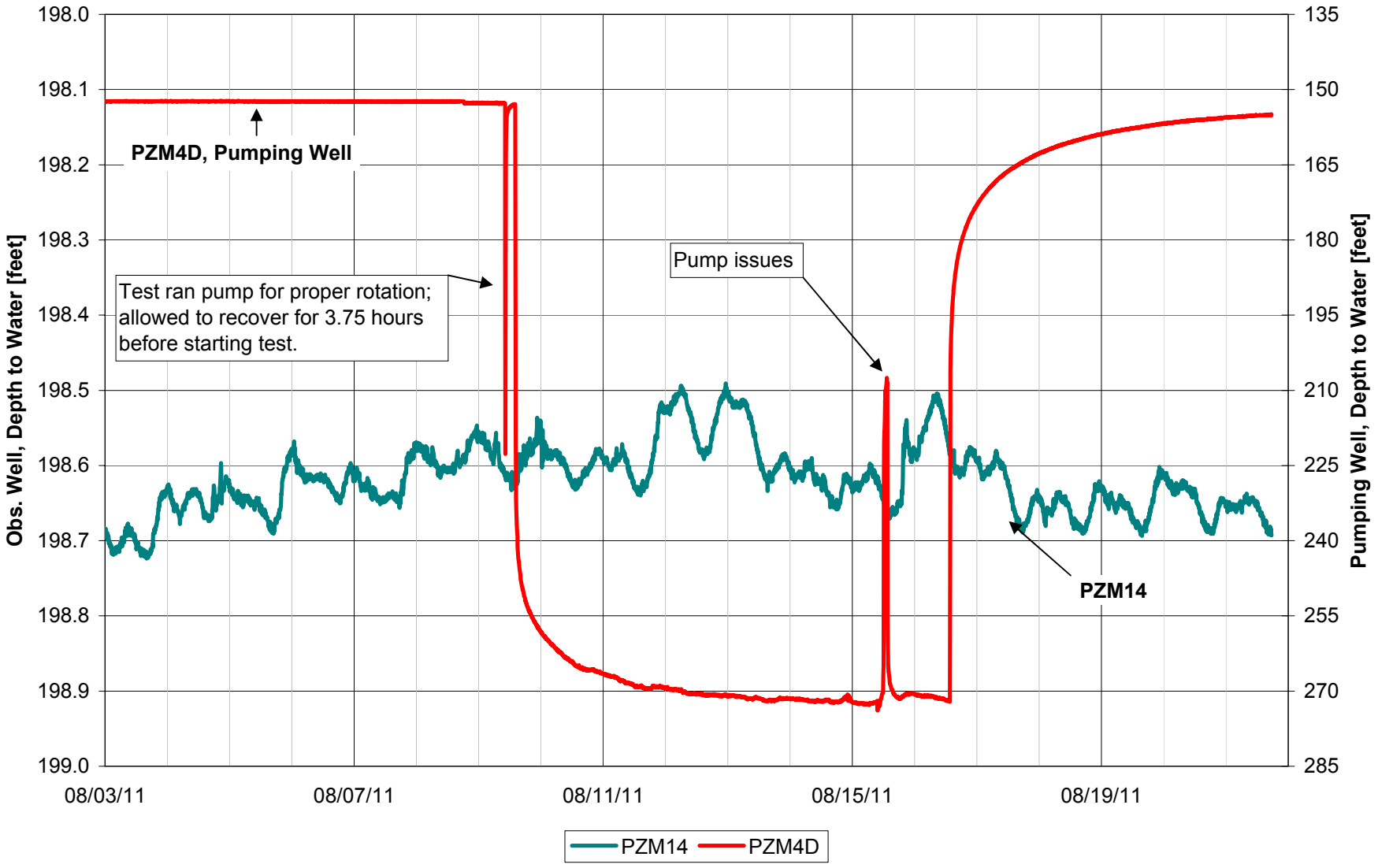
Figure 2.7B-37. Production Zone Observation Well vs. Pumping Well Water Level
Well PZM17, PZM4D Pump Test
Reno Creek Project



Petrotek

Figure 2.7B-38. Production Zone Observation Well vs. Pumping Well Water Level
Well PZM14, PZM4D Pump Test
Reno Creek Project



Petrotek

Figure 2.7B-39. Upper Production Zone Observation Well vs. Pumping Well Water Level
Well PZM4, PZM4D Pump Test
Reno Creek Project

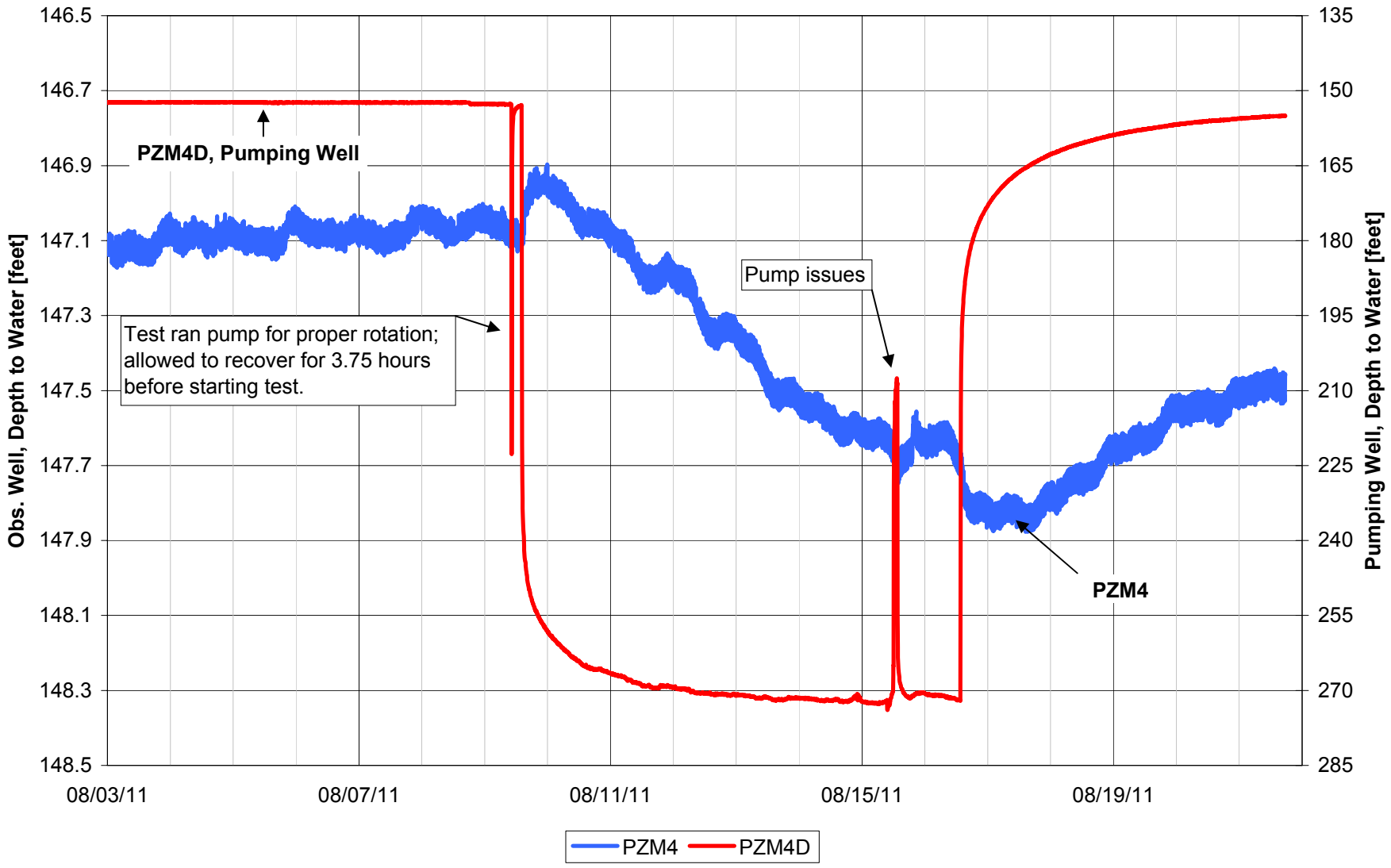


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Figure 2.7B-40. Overlying Aquifer Observation Well vs. Pumping Well Water Level
Well OM4, PZM4D Pump Test
Reno Creek Project

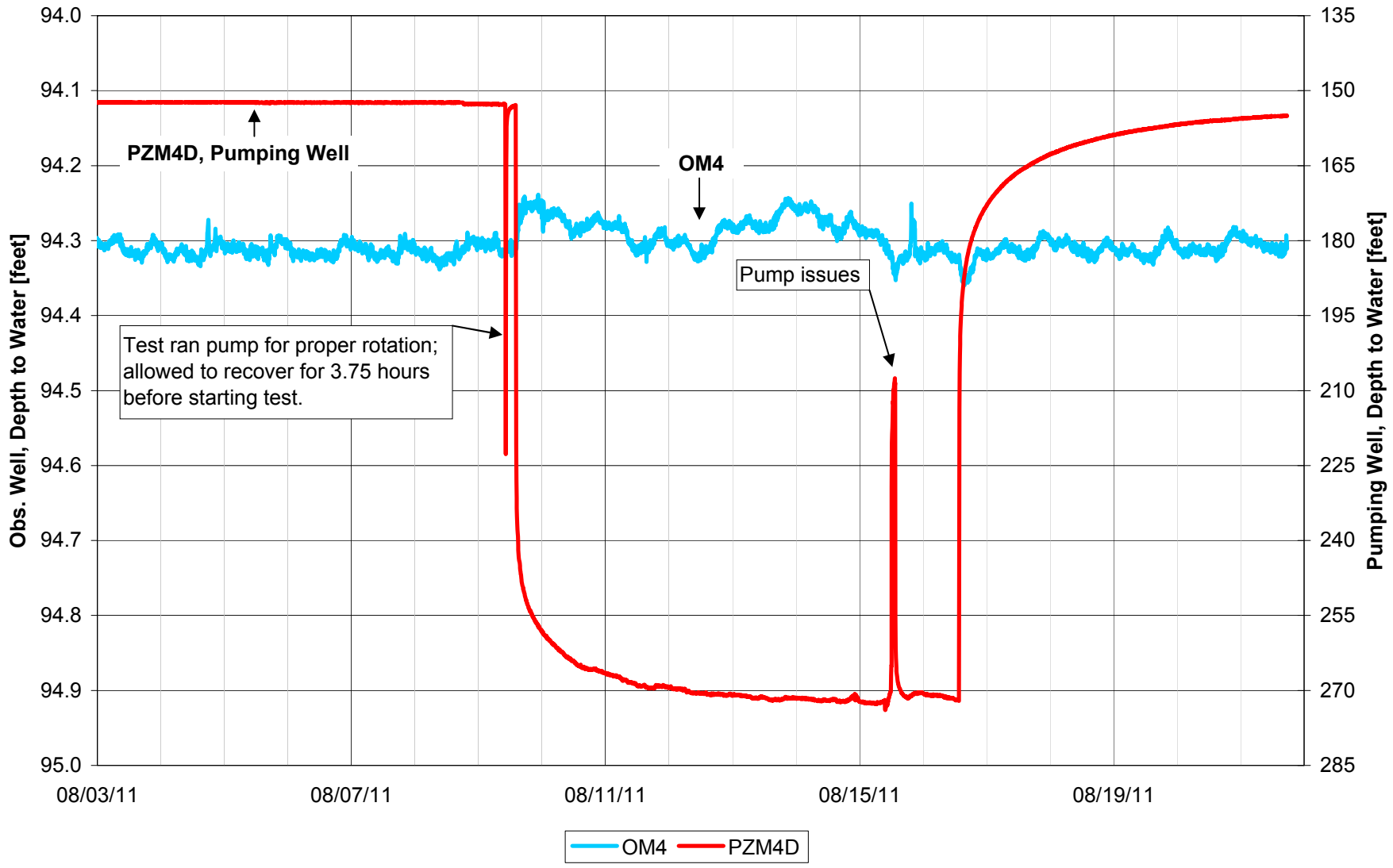

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Figure 2.7B-41. Upper and Lower Felix Coal Piezometers vs. Pumping Well Water Level
Piezometers OAM4S and OAM4D, PZM4D Pump Test
Reno Creek Project

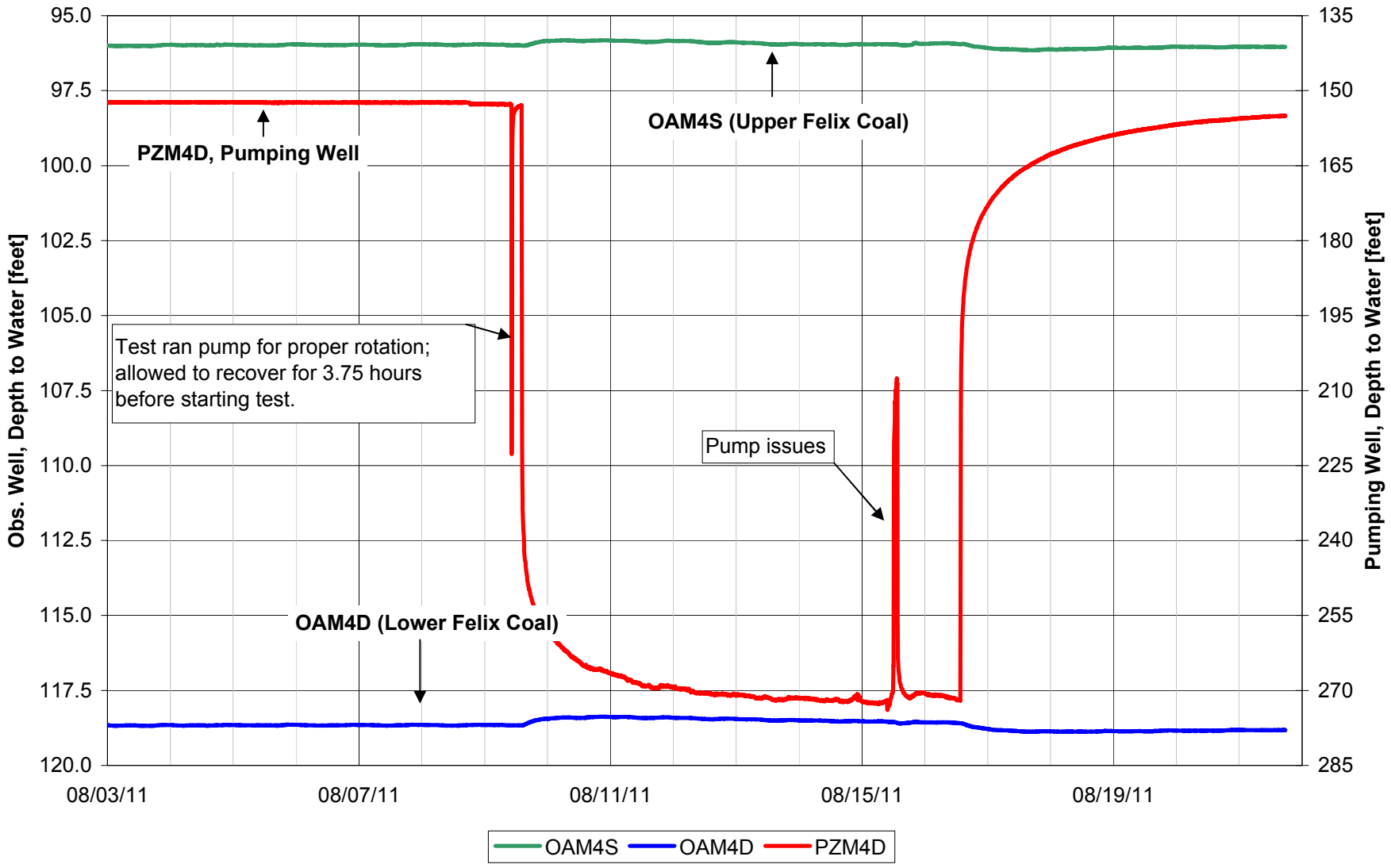

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Figure 2.7B-42. Underlying Unit Observation Well vs. Pumping Well Water Level
Well UM4, PZM4D Pump Test
Reno Creek Project

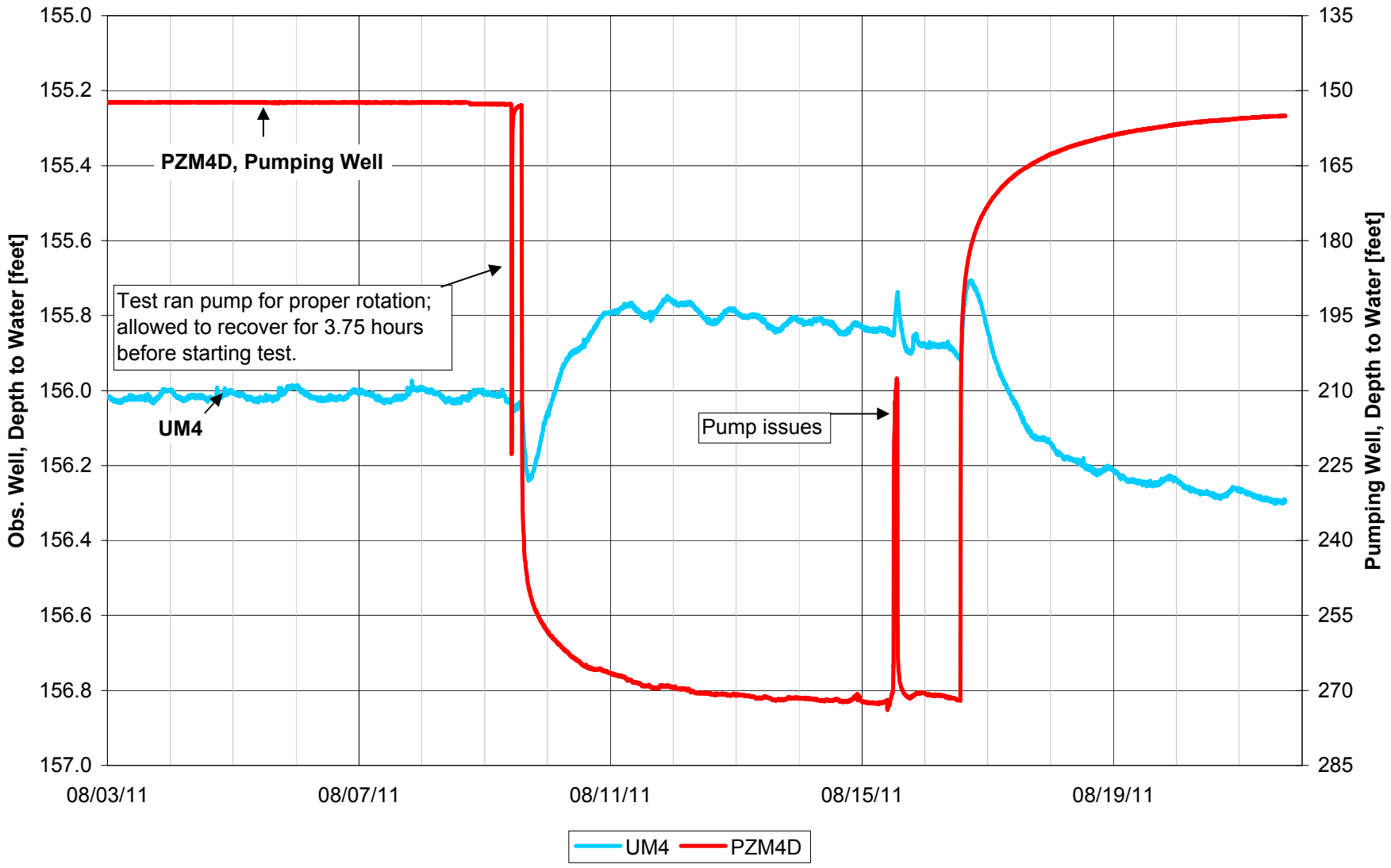

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Figure 2.7B-43. OM4 Single-well Test Water Level Data
Reno Creek Project

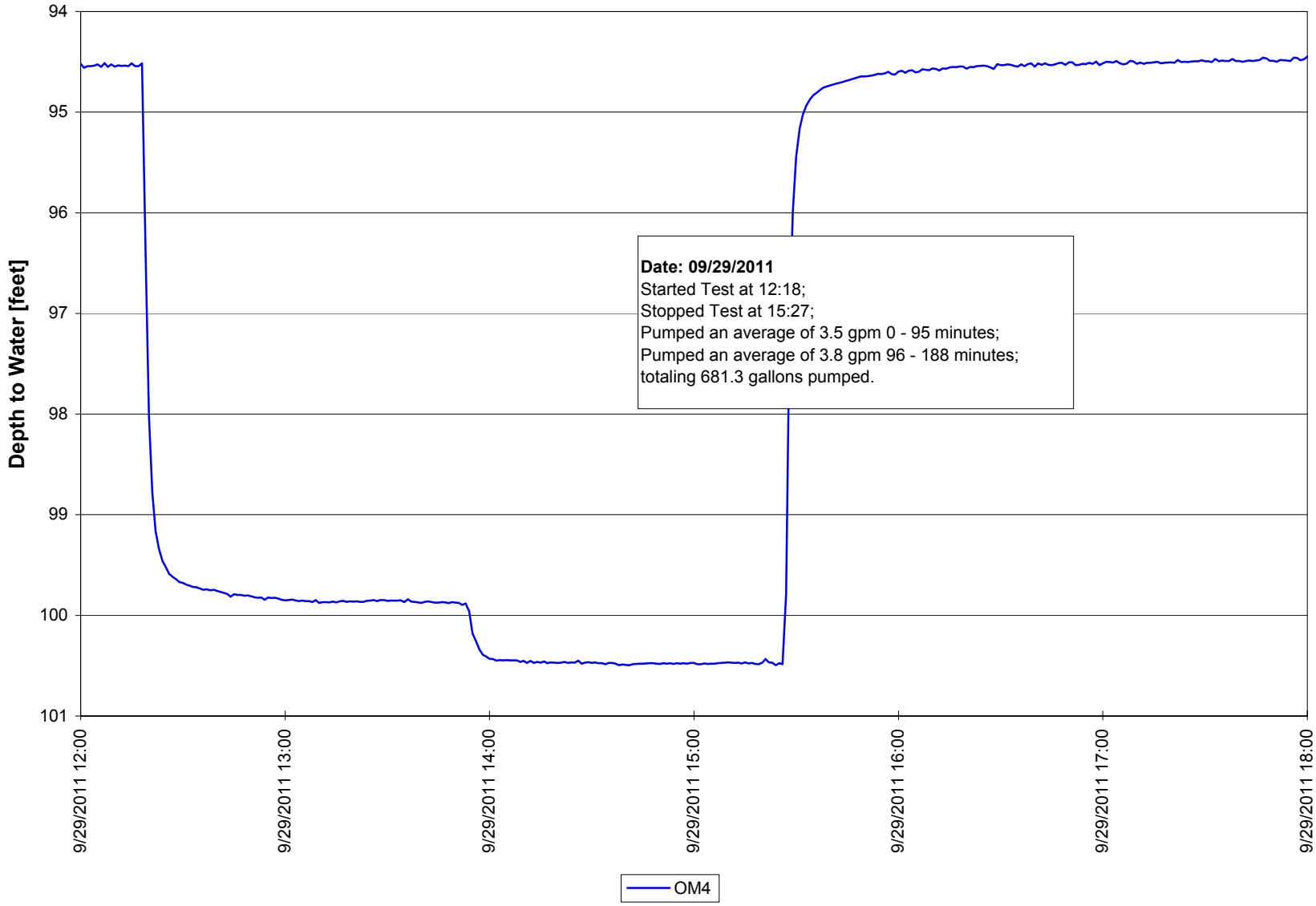

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Figure 2.7B-44. UM4 Single-well Test Water Level Data
Reno Creek Project

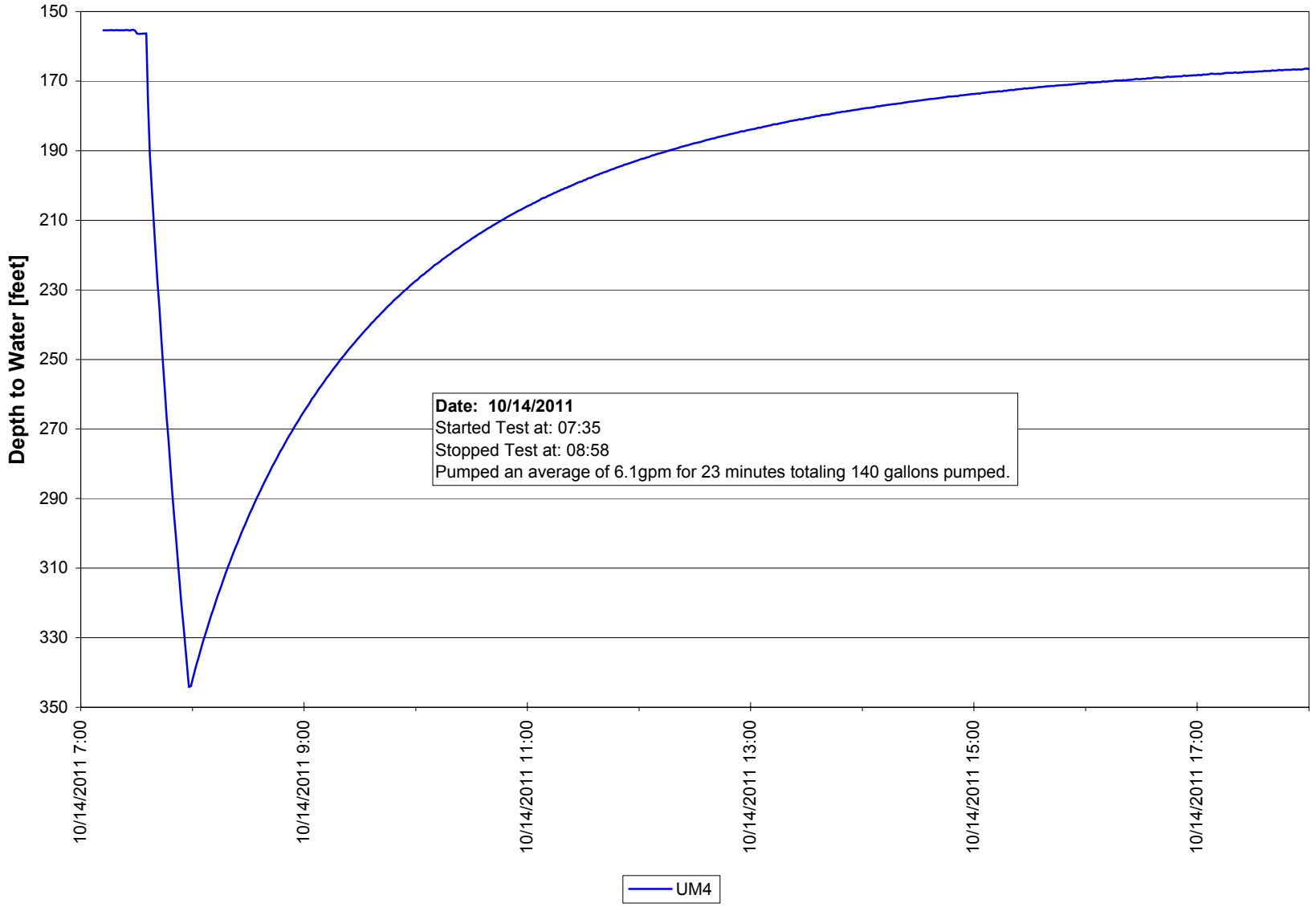

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Figure 2.7B-45. Production Zone Observation Wells vs. Pumping Well Water Level Data, Wells PZM18, PZM19, PZM20, PZM5 Pump Test Reno Creek Project

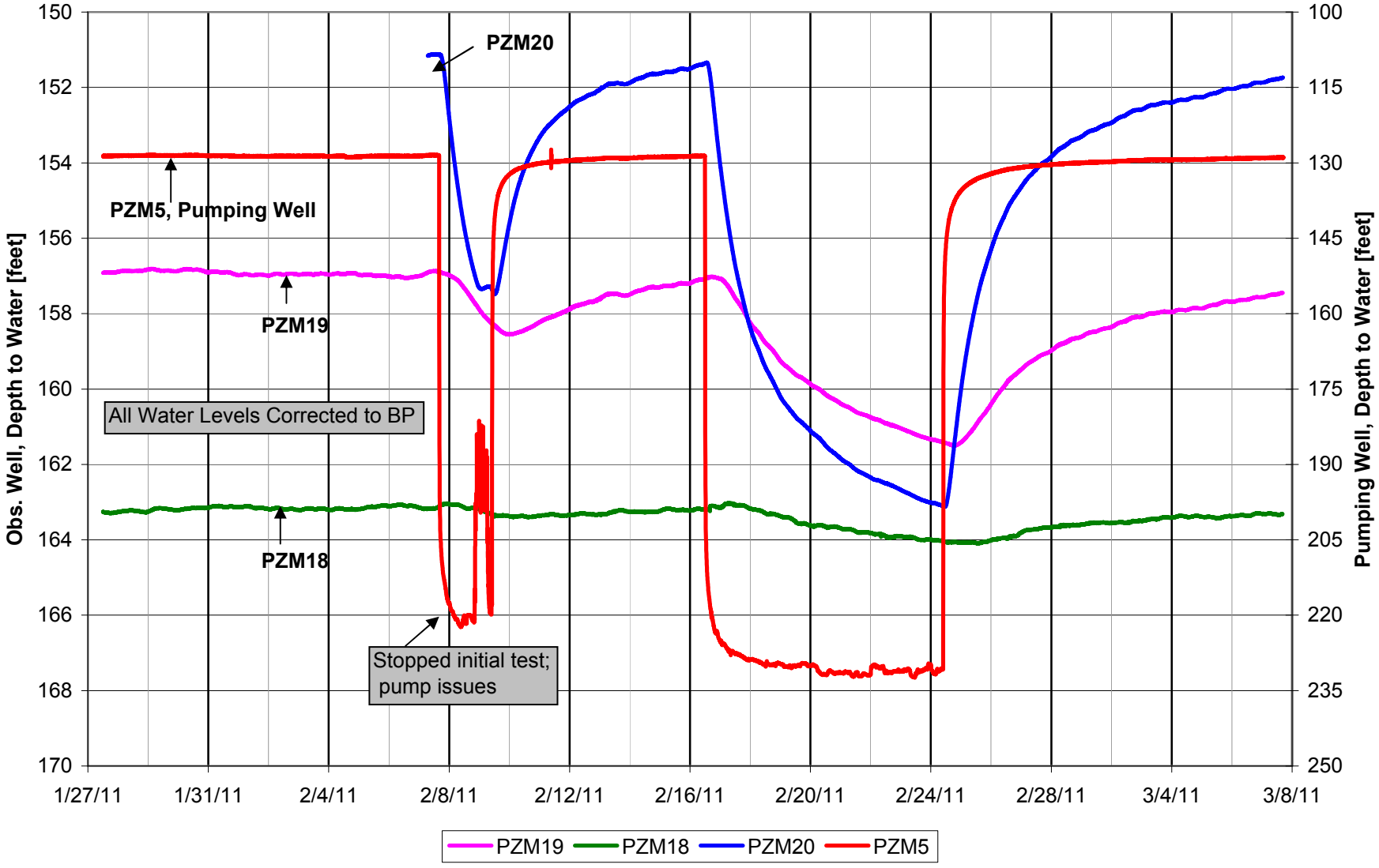

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Figure 2.7B-46. Production Zone Observation Wells vs. Pumping Well Water Level Data, Wells PZM6 and BLM ANCVSS, PZM5 Pump Test
Reno Creek Project

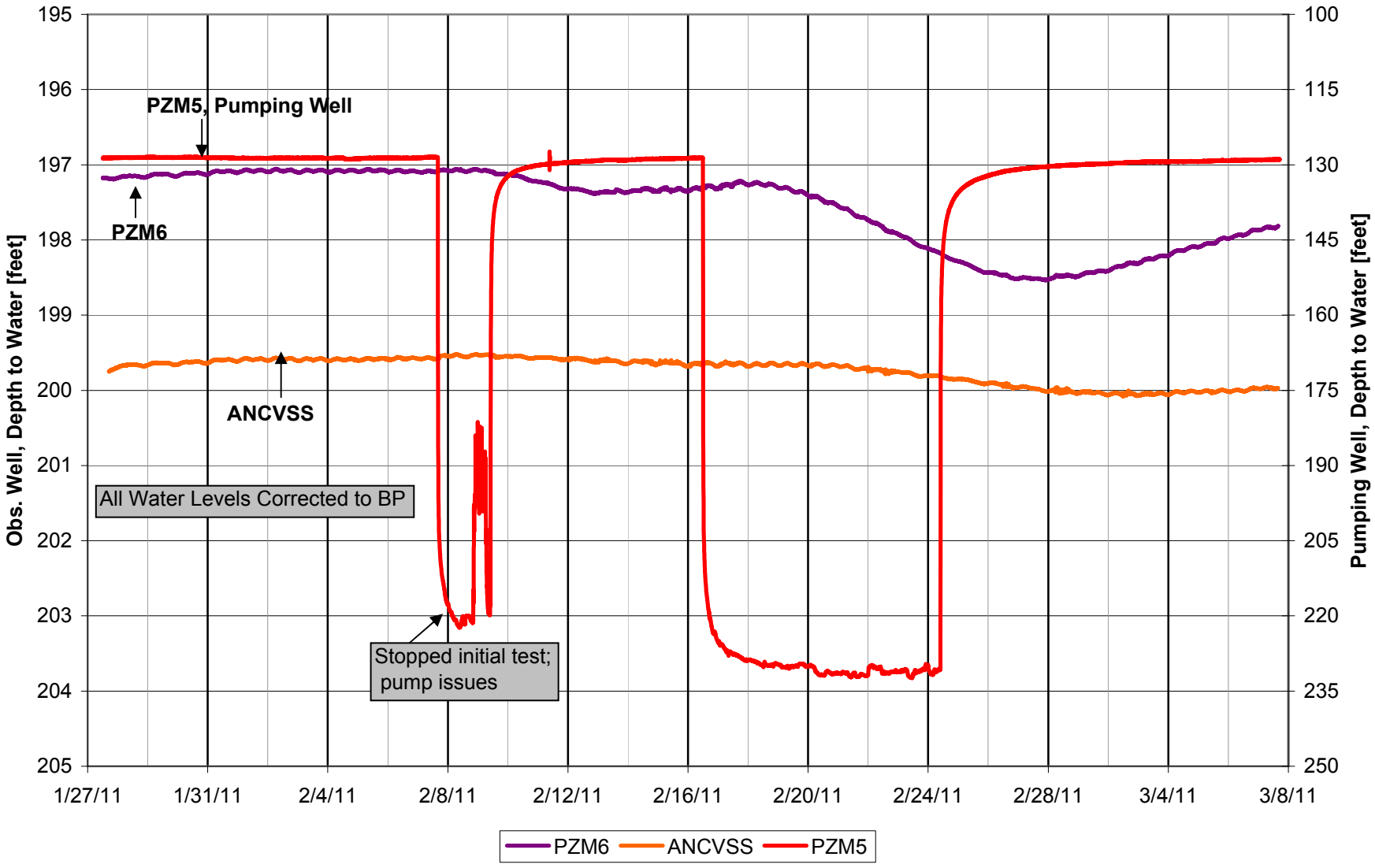

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Figure 2.7B-47. Shallow Water Table Unit Well vs. Pumping Well Water Level Data, Well SM5, PZM5 Pump Test Reno Creek Project

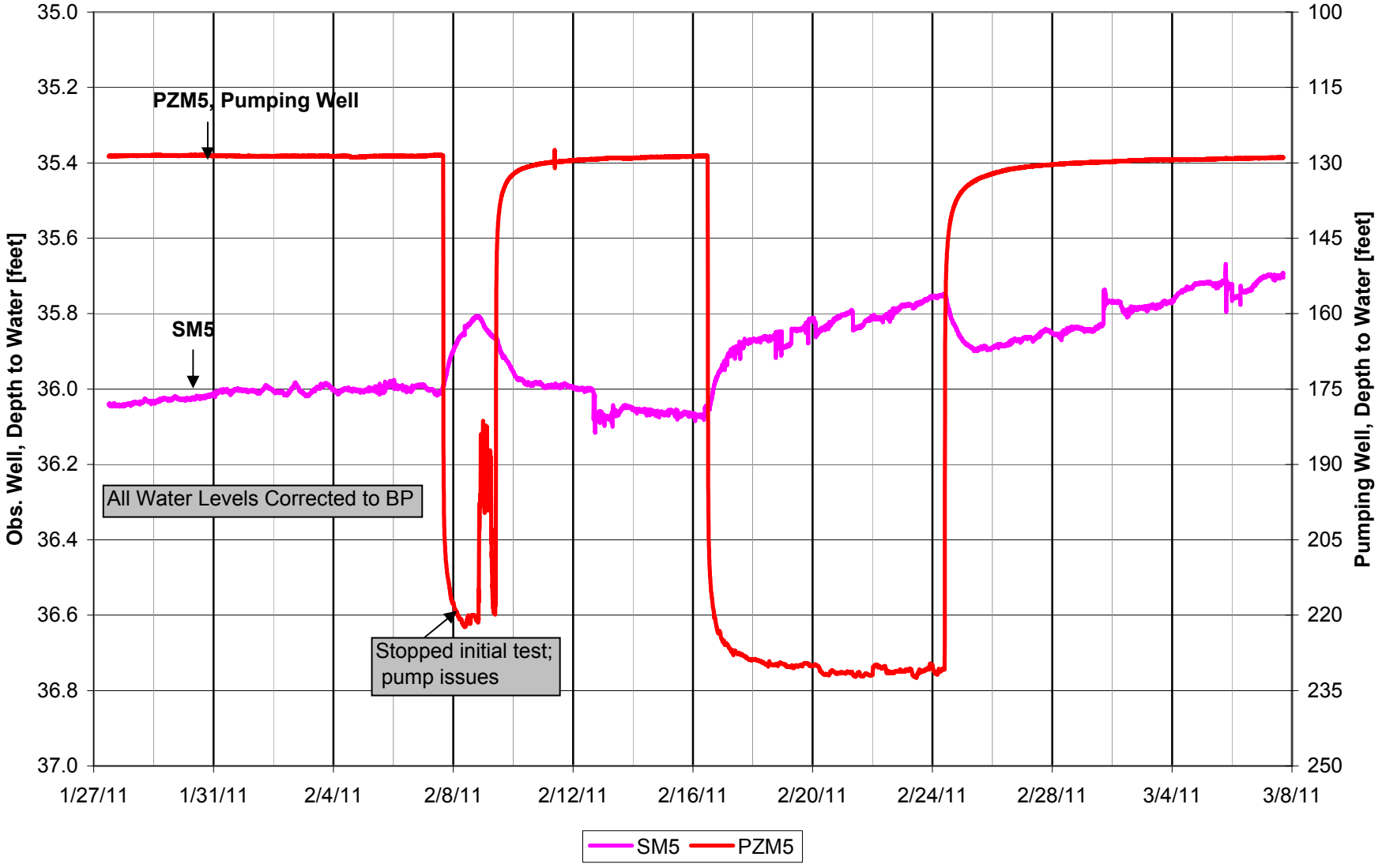

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Figure 2.7B-48. Overlying Aquifer Observation Well vs. Pumping Well Water Level Data, Well OM5, PZM5 Pump Test
Reno Creek Project

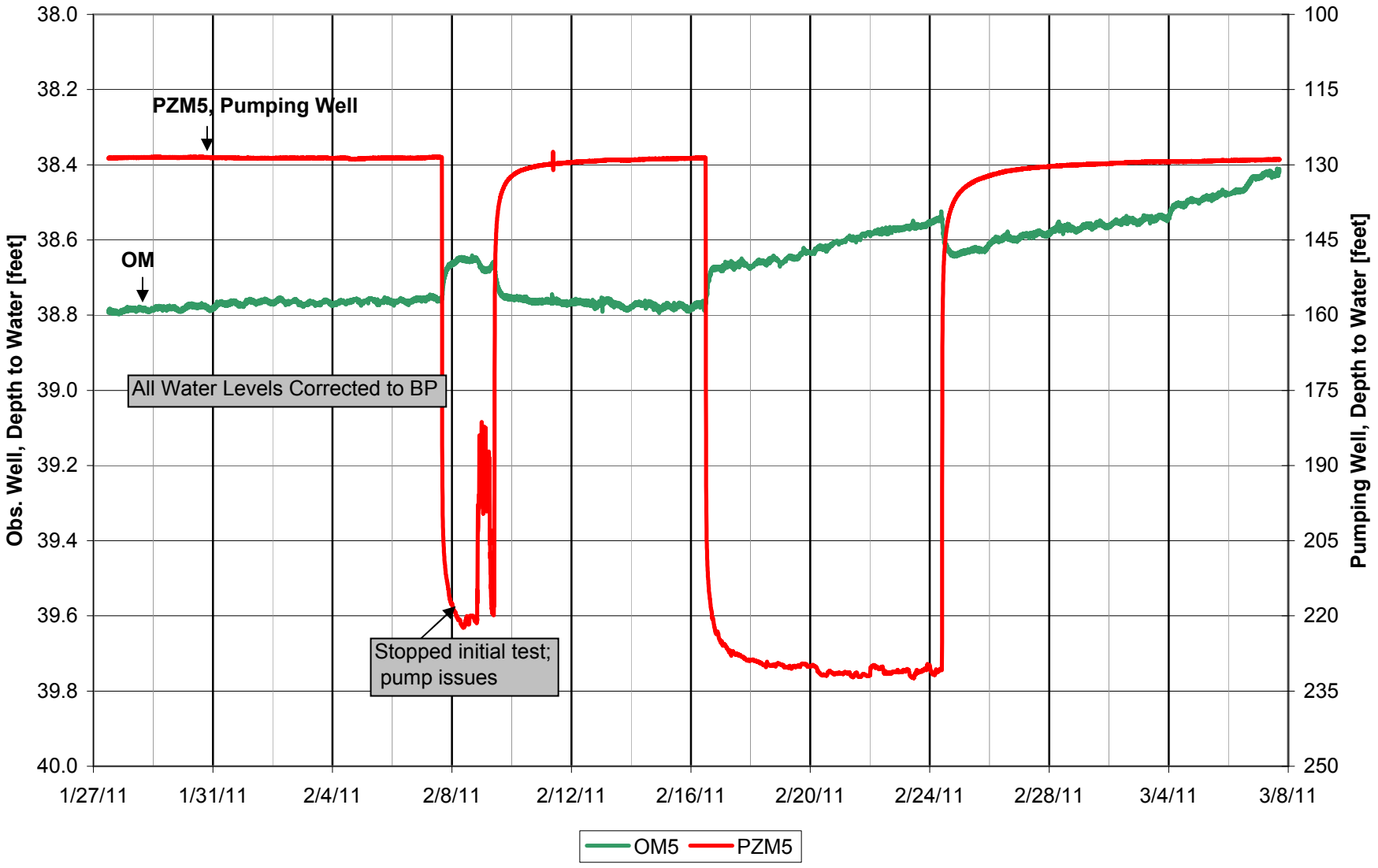

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Figure 2.7B-49. Underlying Unit Observation Well vs. Pumping Well Water Level Data, Well UM5, PZM5 Pump Test Reno Creek Project

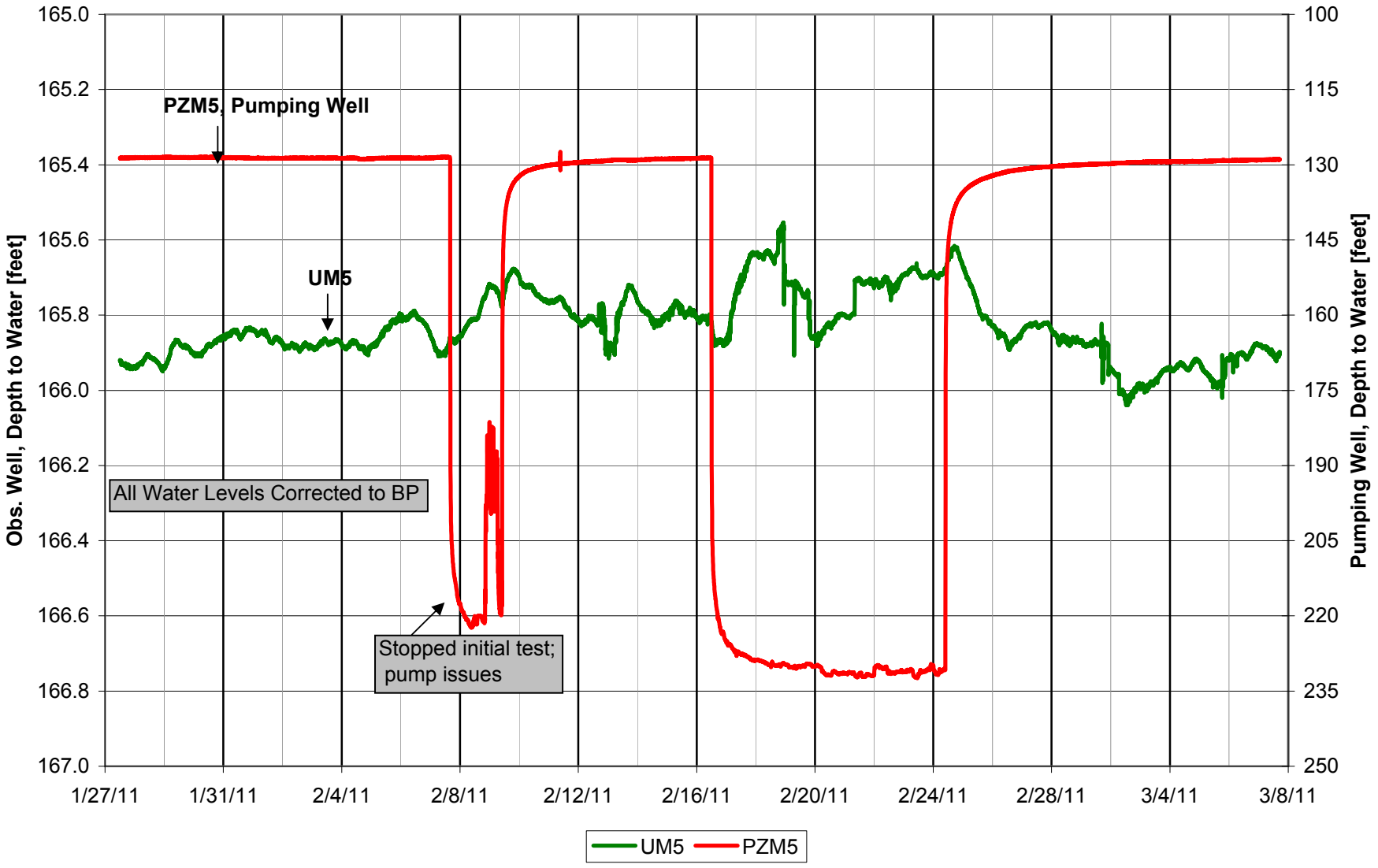

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Figure 2.7B-50. Underlying Unit Observation Well vs. Pumping Well Water Level Data, Well UM6, PZM5 Pump Test Reno Creek Project

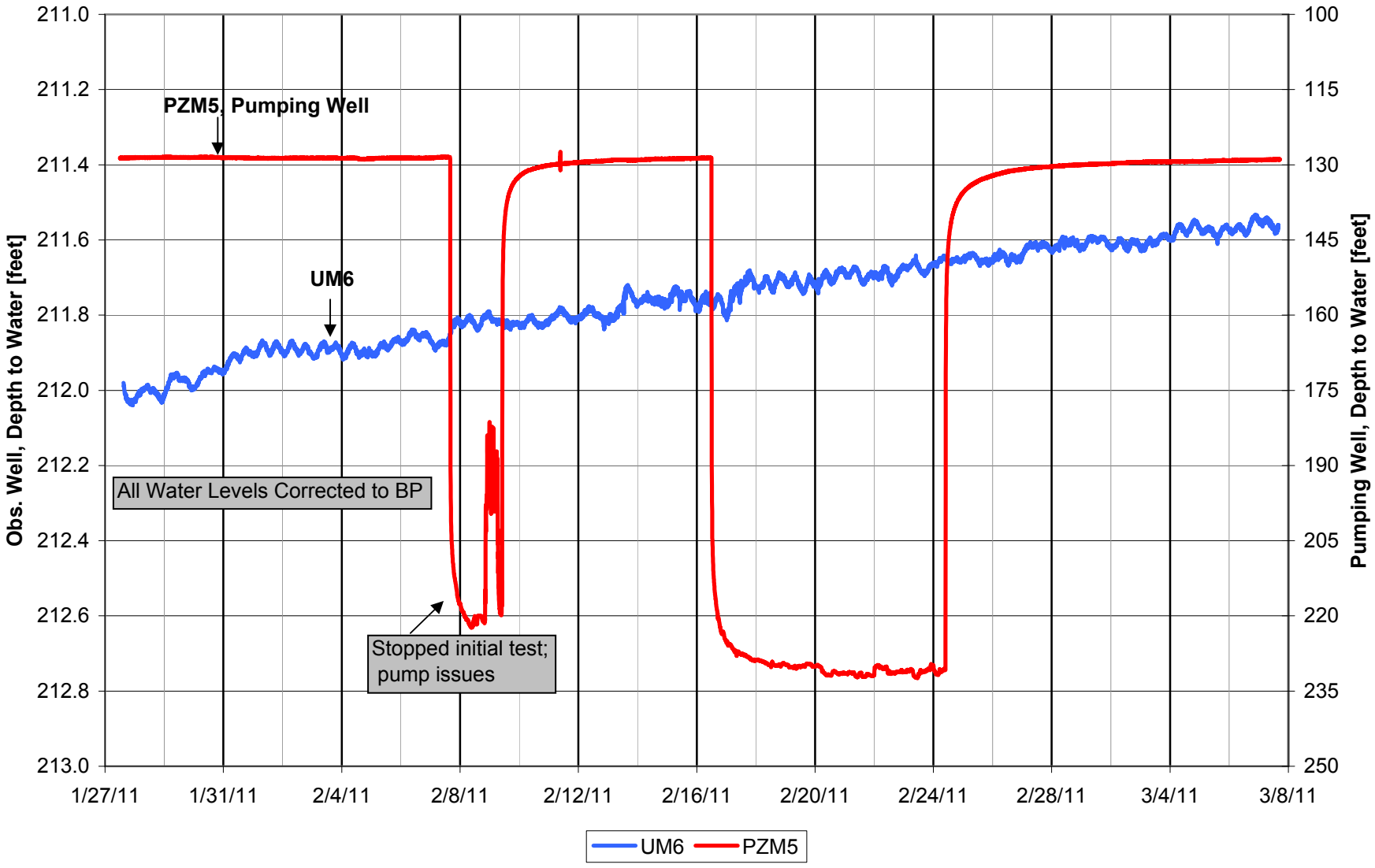

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Figure 2.7.B-51. SM5 Single-well Test Water Level Data
Reno Creek Project

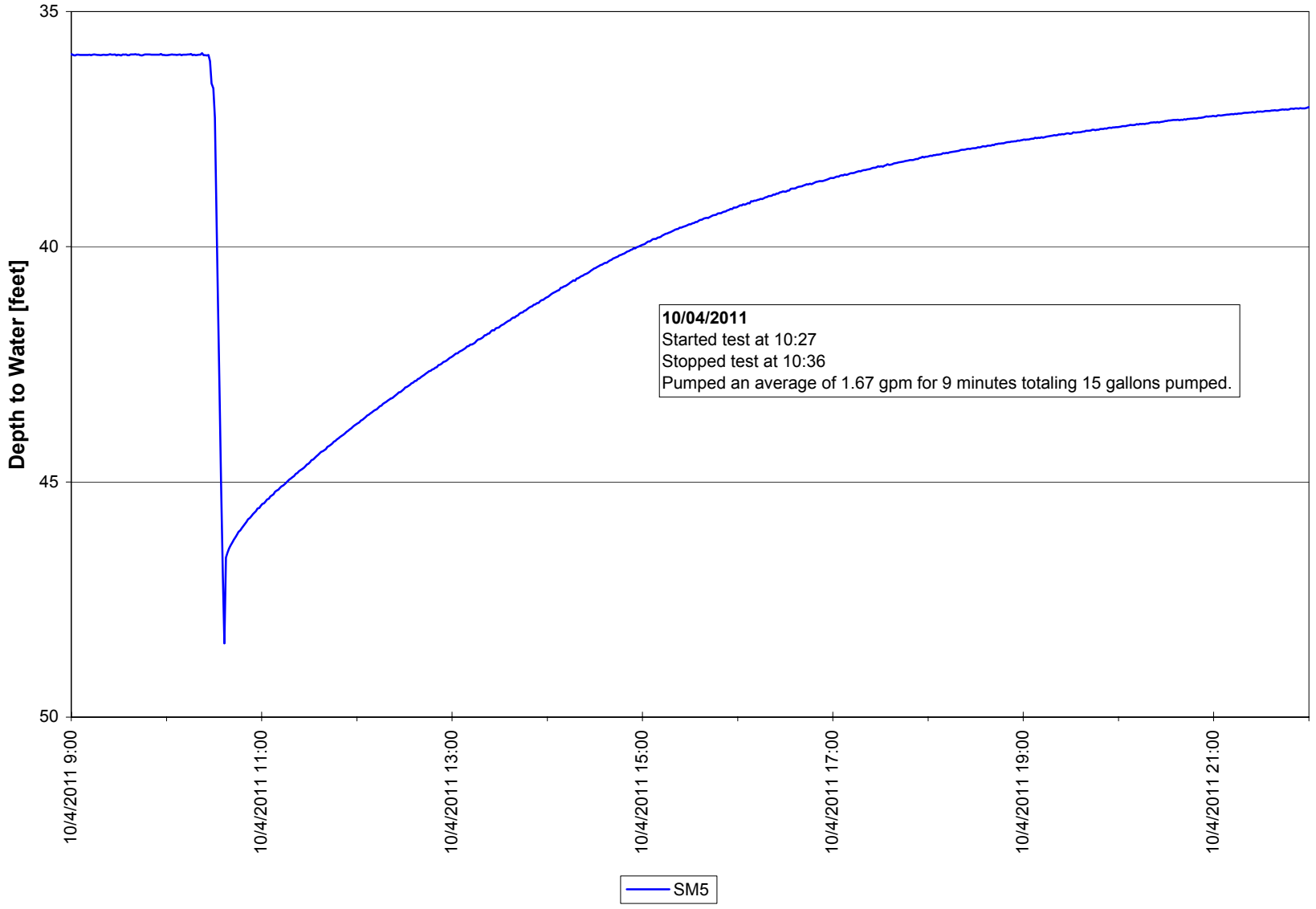

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Figure 2.7.B-52. OM5 Single-well Test Water Level Data
Reno Creek Project

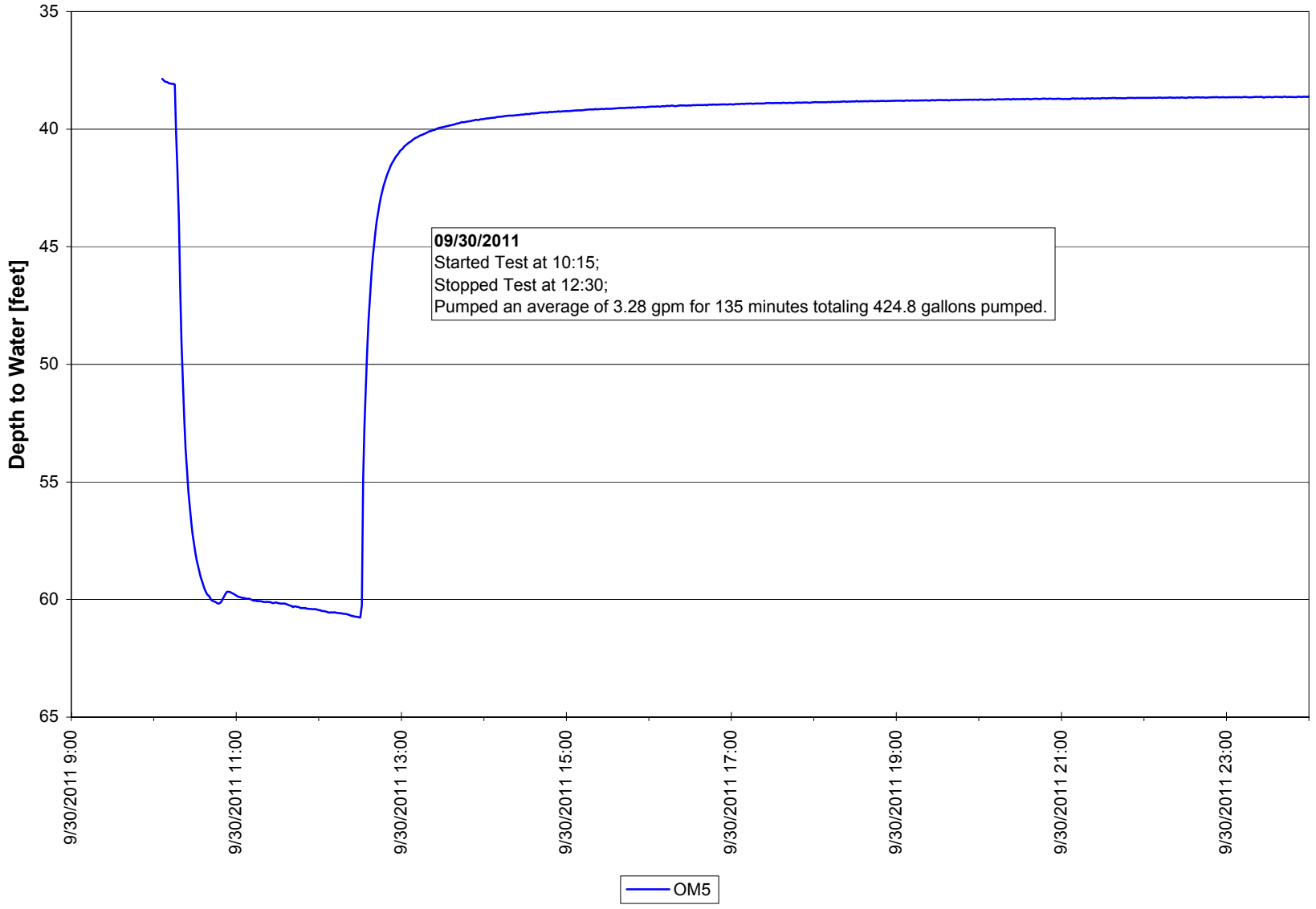

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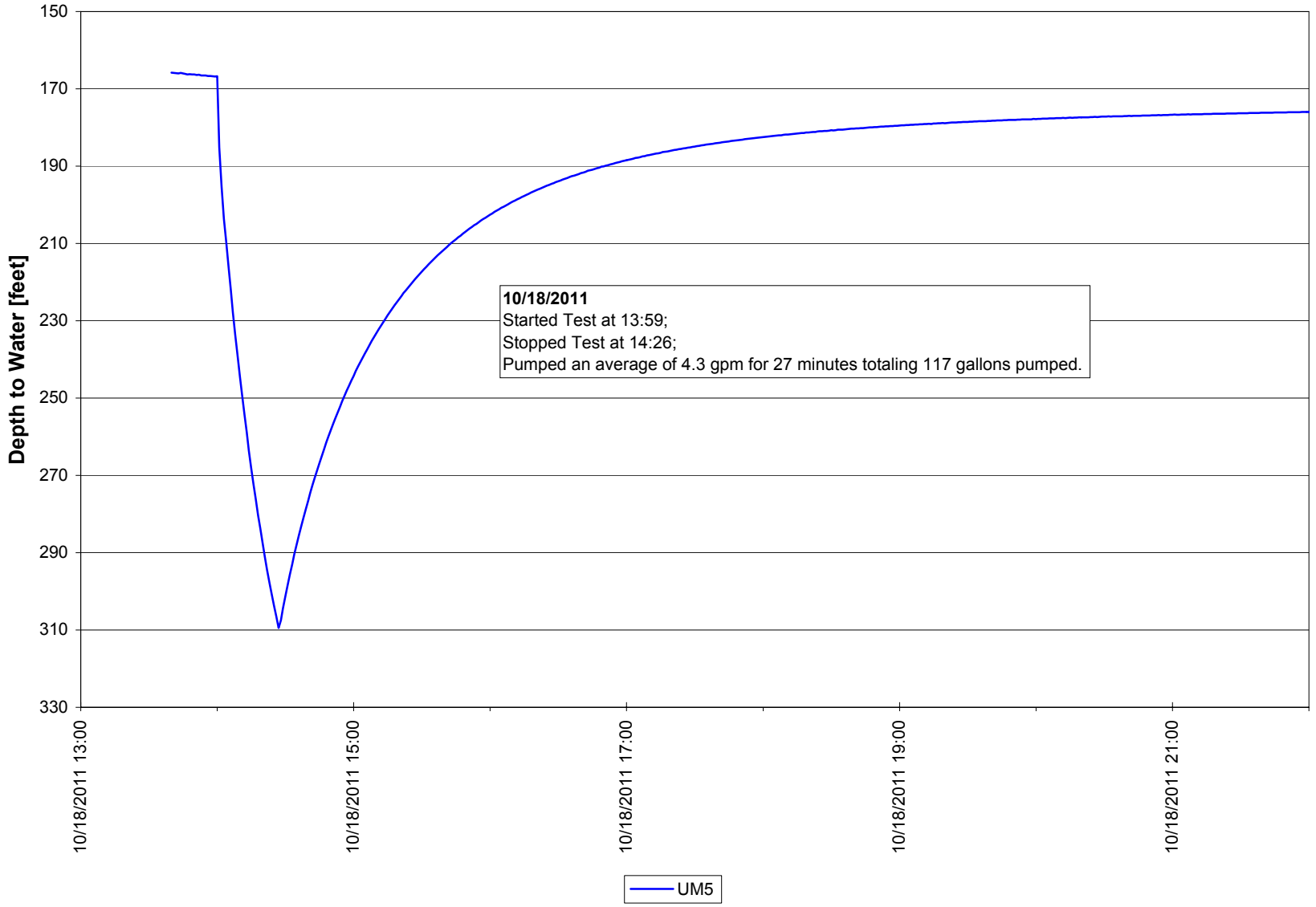
Figure 2.7.B-53. UM5 Single-well Test Water Level Data
Reno Creek Project



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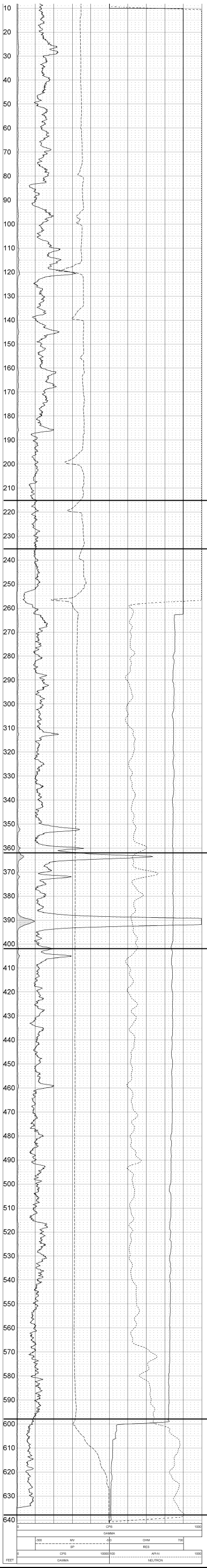
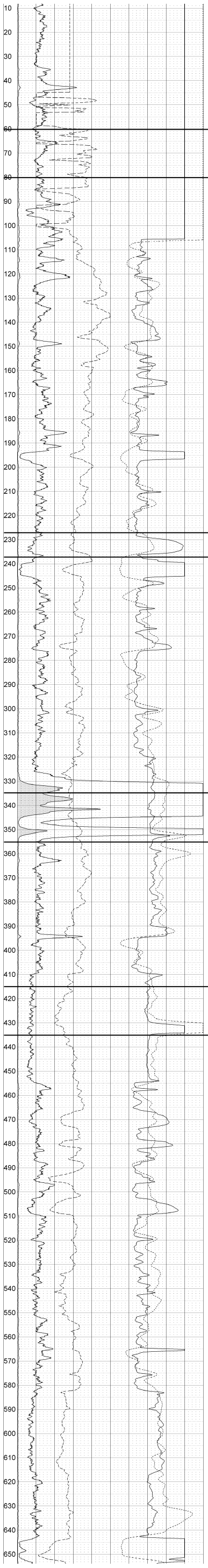
ANCSS
(Shallow Sand)

RC0006
Strat Hole





ANCVVSS Completion Interval
(Overlying Aquifer)

ANCVSS Completion Interval
(Production Zone Aquifer)

ANCSS Completion Interval

SM6 Completion Interval
(Shallow Unit)

OM6 Completion Interval
(Overlying Aquifer)

PZM6 Completion Interval
(Production Zone Aquifer)

UM6 Completion Interval
(Underlying Unit)

AUC LLC
THE RENO CREEK PROJECT

Figure 2.7B-54
Completion Intervals
BLM All Night Creek (ANC) Well Cluster

Scale: See Log Scale	Date: December 2011	
AUC_RC_NRC_Fig_2.7B-54.ai	By: KRS	Checked: AAP

Petrotek
10288 West Chatfield Ave., Suite 201
Littleton, Colorado 80127-4239 USA
303-290-9414
www.petrotek.com

Figure 2.7B-55. BLM All Night Creek Water Level Data
Big George Coal (ANCC)

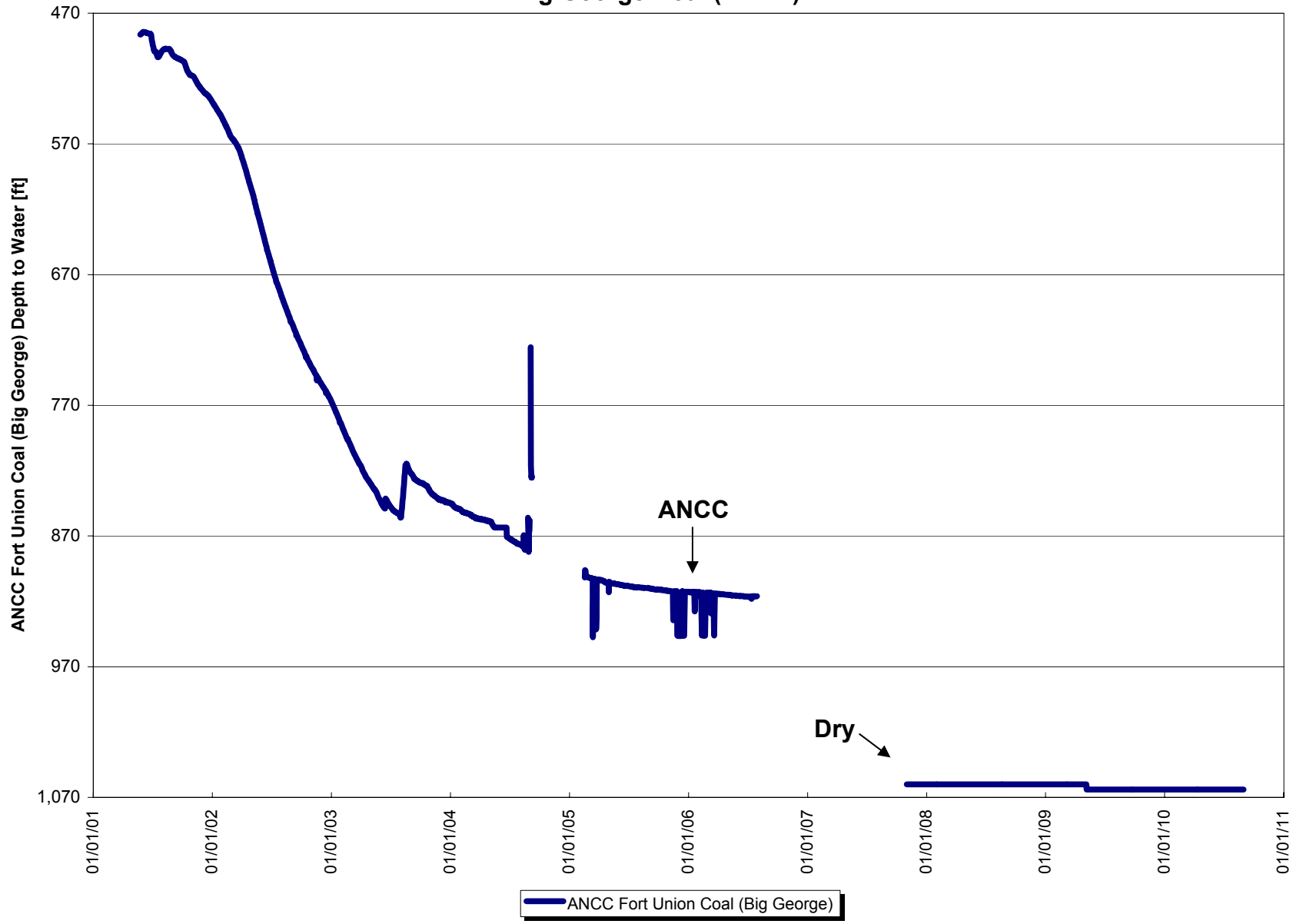


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Figure 2.7B-56. BLM All Night Creek Water Level Data
Wasatch Sand and Shallow Wasatch Sand (ANCS & ANCSS)

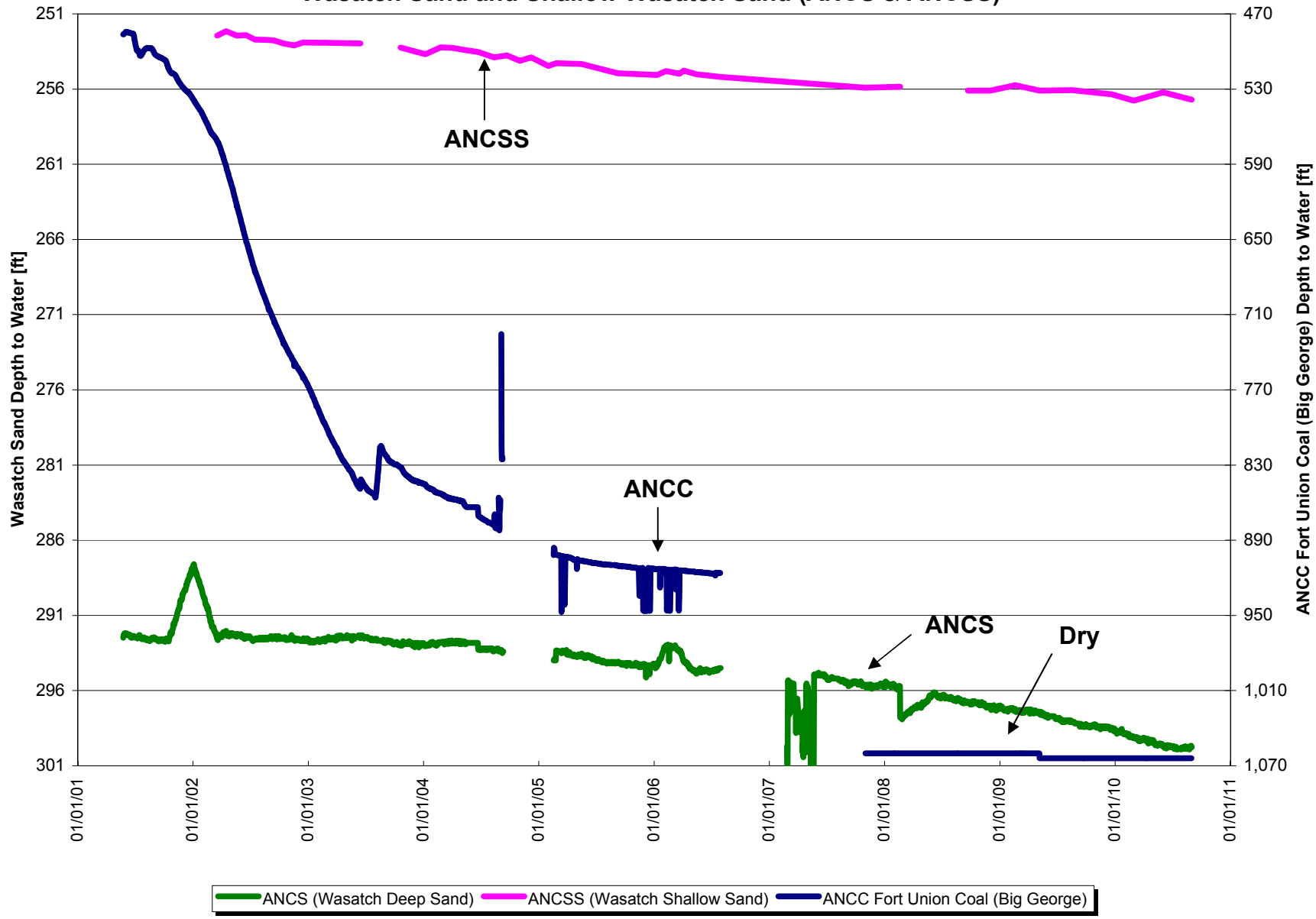

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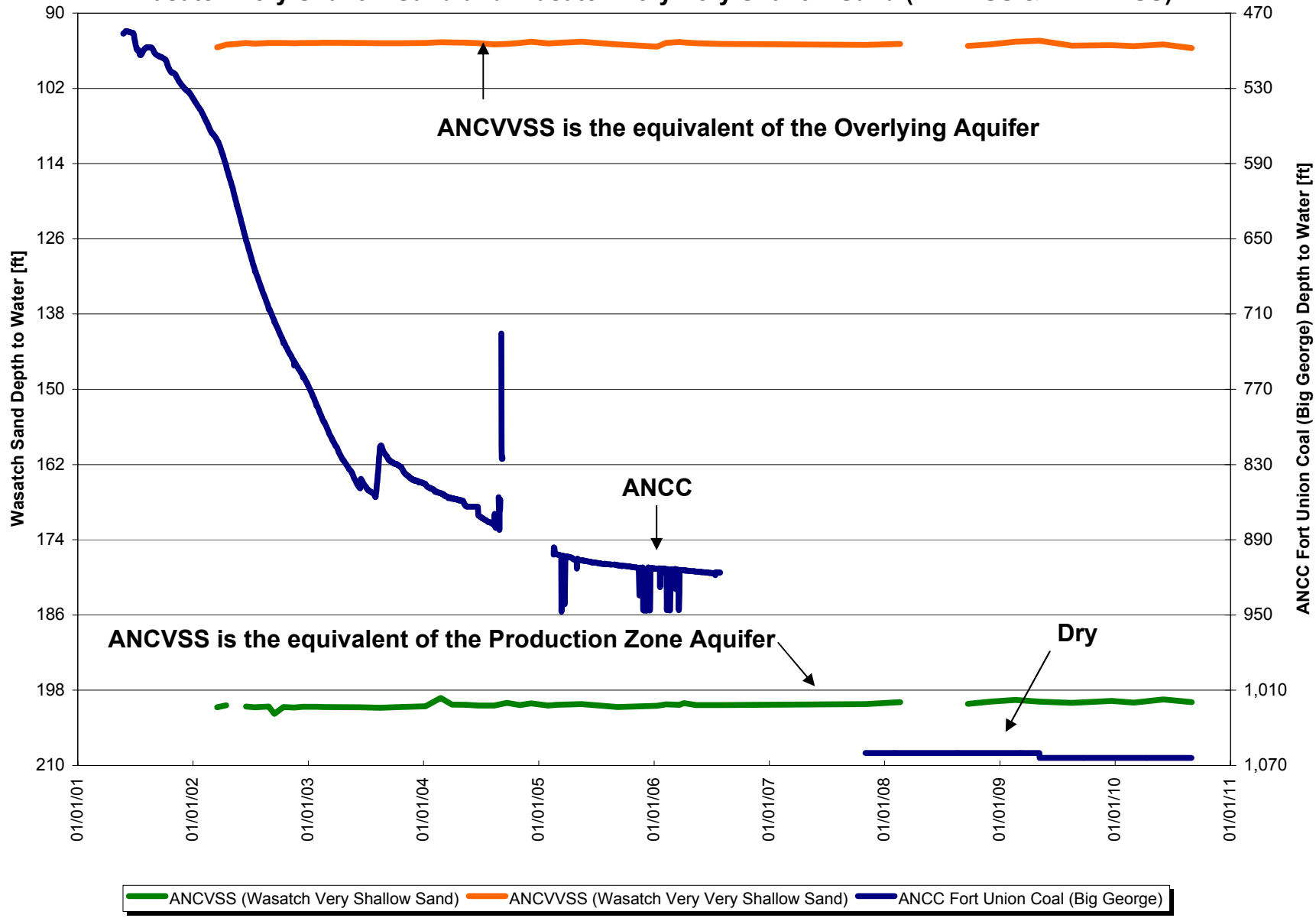
Figure 2.7B-57. BLM All Night Creek Water Level Data
Wasatch Very Shallow Sand and Wasatch Very Very Shallow Sand (ANCVSS & ANCVVSS)



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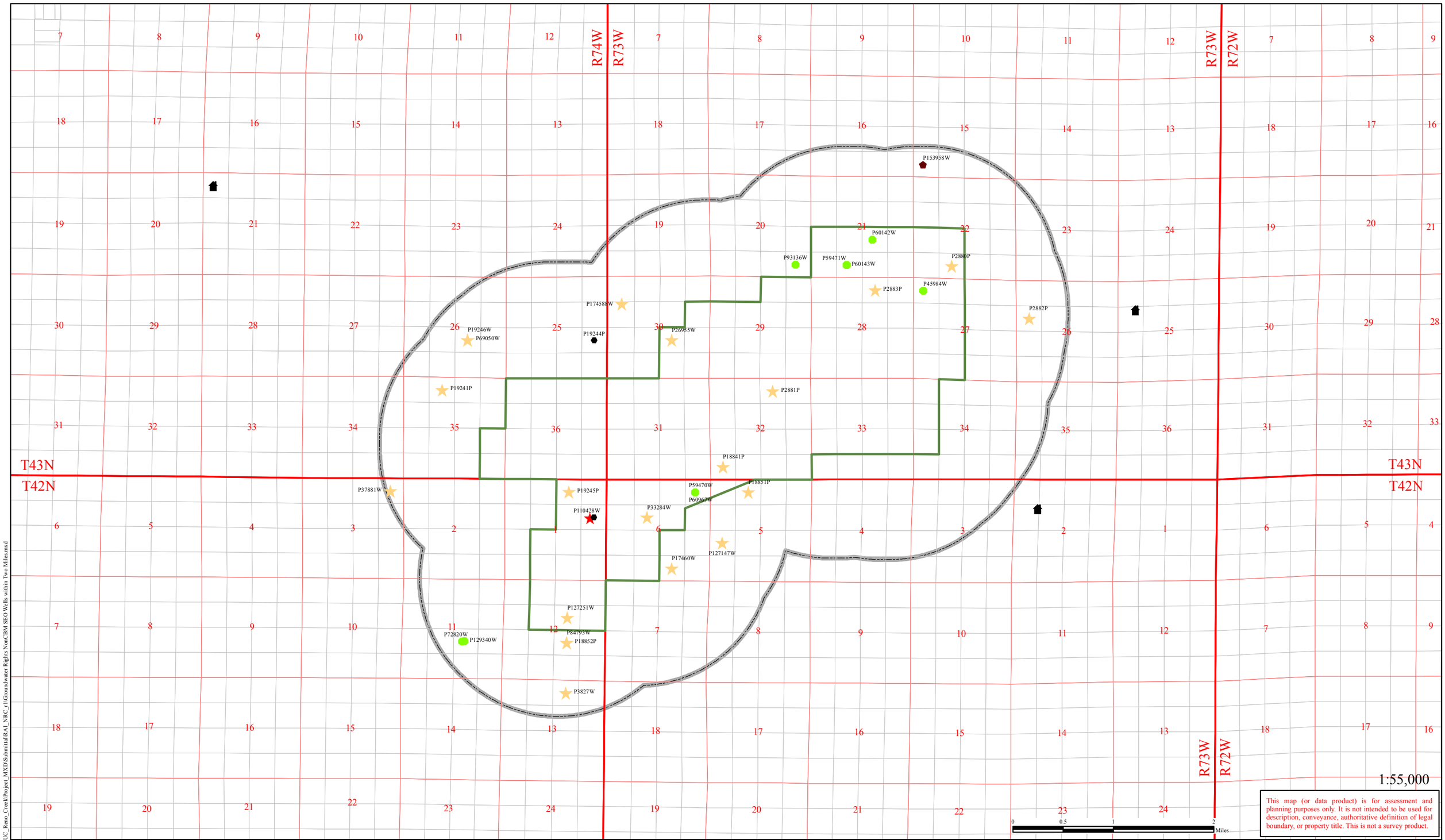


This map (or data product) is for assessment and planning purposes only. It is not intended to be used for description, conveyance, authoritative definition of legal boundary, or property title. This is not a survey product.

Path: O:\WY_Projects\2010-100_AUC_Reno_Creek\Project_MXD\Submittal\RAI_NRC_r1\Groundwater Rights NonCBM SEO Wells within Two Miles.mxd

PREPARED FOR

AUC LLC
LAKEWOOD, CO

PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY

TREC, Inc.
Engineering & Environmental Management
900 Werner Court
Suite 150
Casper, WY 82601
Phone (307) 265-0696
Fax (307) 265-2498
www.treccorp.com

Legend

- Proposed Reno Creek Project Boundary
- Monitoring Well Ring Two Kilometer Buffer
- Central Processing Plant
- Residence

Wells Within Two Kilometers of Monitoring Well Rings (excluding CBM)

Uses

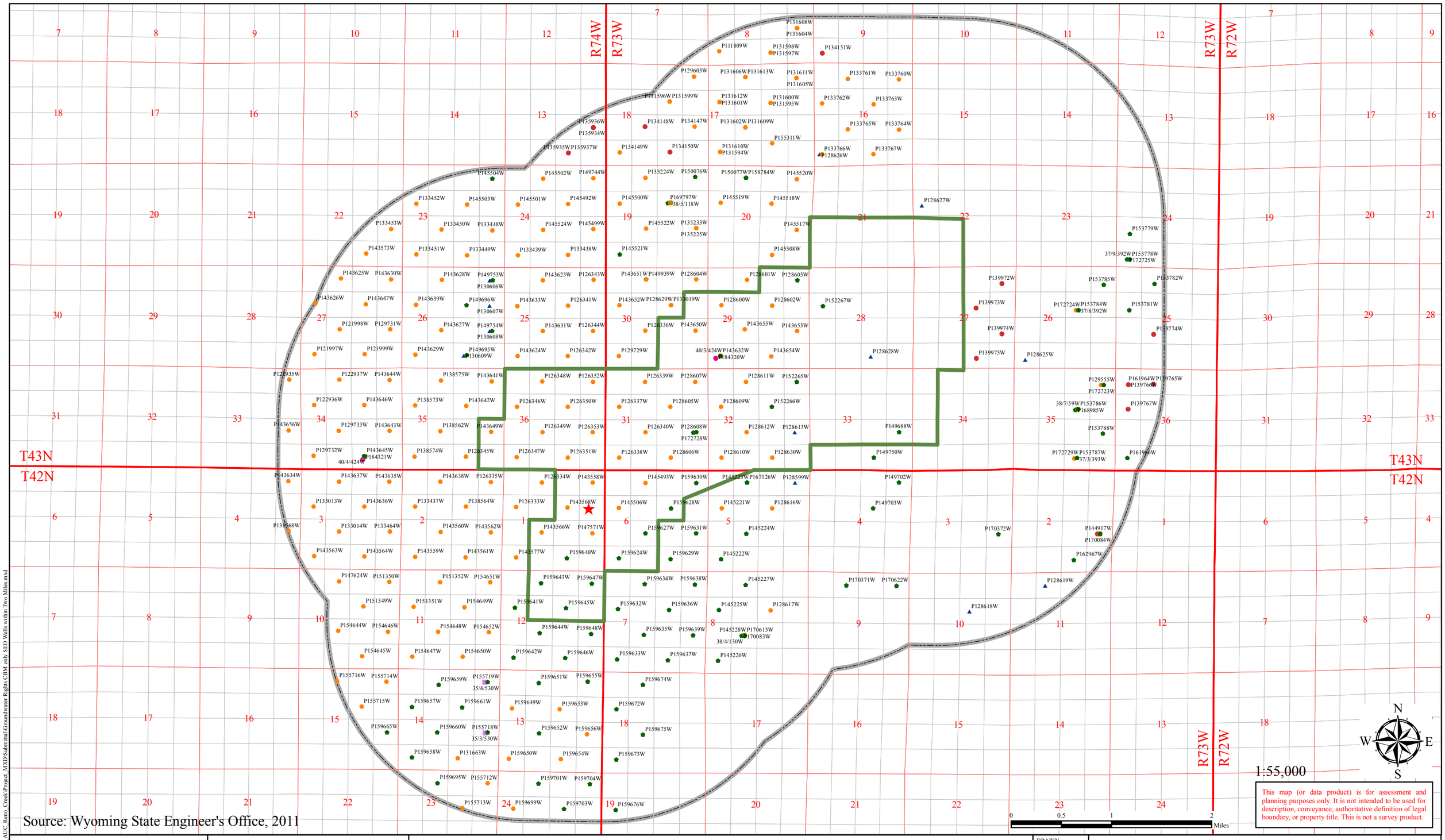
- Domestic
- Domestic; Stock
- Industrial; Miscellaneous
- Miscellaneous
- Stock

N W E S

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Groundwater Rights (excluding CBM, Oil and Gas) within Two Kilometers of the Proposed Reno Creek Project Area
Wellfield Monitoring Well Rings

REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft	RHK	09/02/11	
1	Final	RHK	12/14/11	2.7B-58
2	Revision	EGS	05/13/14	



Path: O:\WY Projects\2010-100 AUC Reno Creek\Project MXD\Submittal\Groundwater Rights CBM only SEO Wells within Two Miles.mxd

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www.treccorp.com

PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR AUC LLC
LAKEWOOD, CO

Legend

- Proposed Reno Creek Project Boundary
- Proposed Project Two Mile Buffer
- Central Processing Plant
- Township/Range
- Sections
- Quarter-Quarter
- P5200 Permit Number

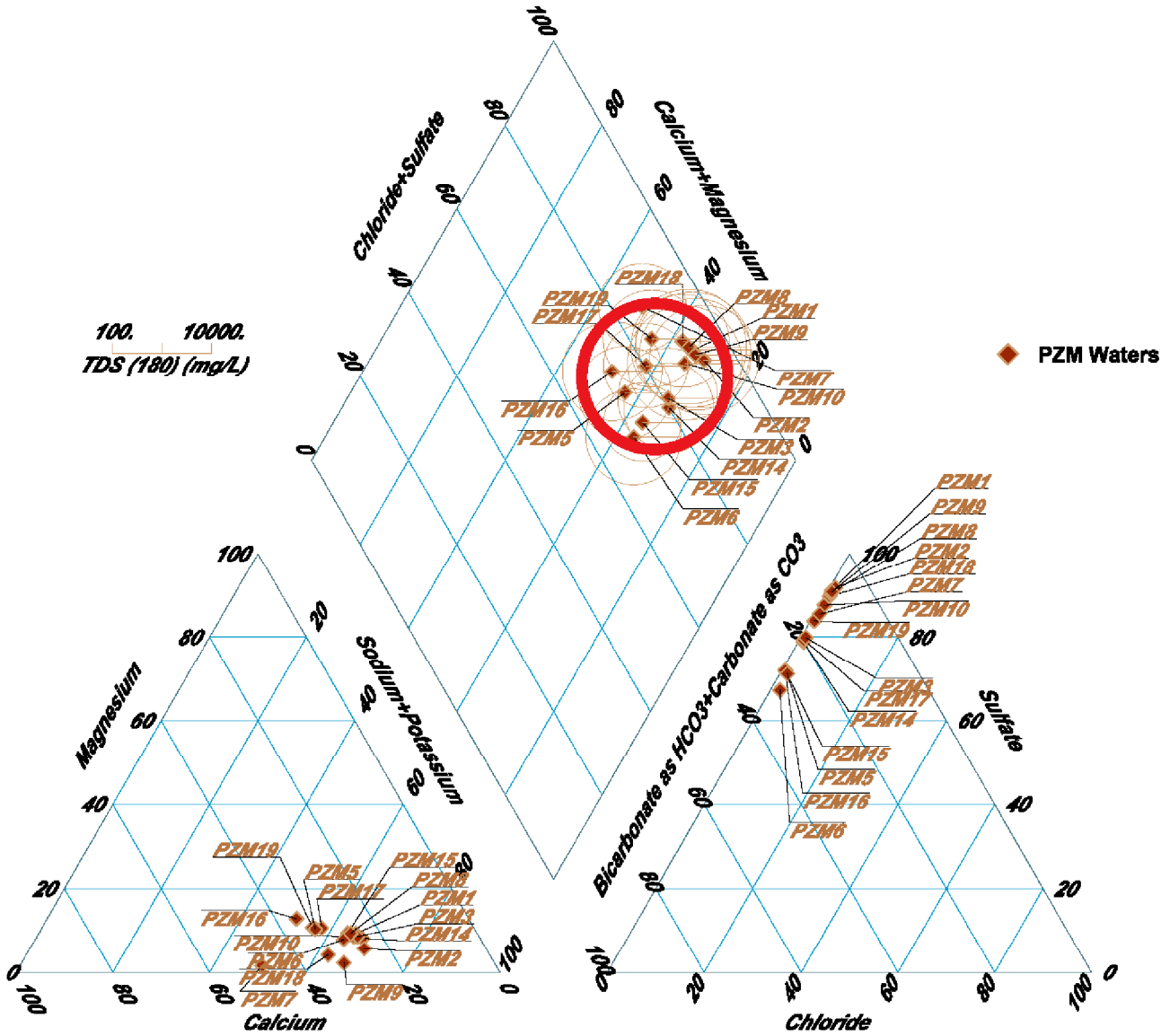
Coal-Bed Mathane Well - Status

- Cancelled
- Complete
- Good Standing Permitted Time Limits Extended
- Good Standing Incomplete
- Good Standing
- Incomplete
- Unadjudicated

DRAWN BY: RHK
CHECKED BY: RMD
APPROVED BY: JEY

Coal Bed Methane Wells within Two Miles of the Proposed Reno Creek Project Area

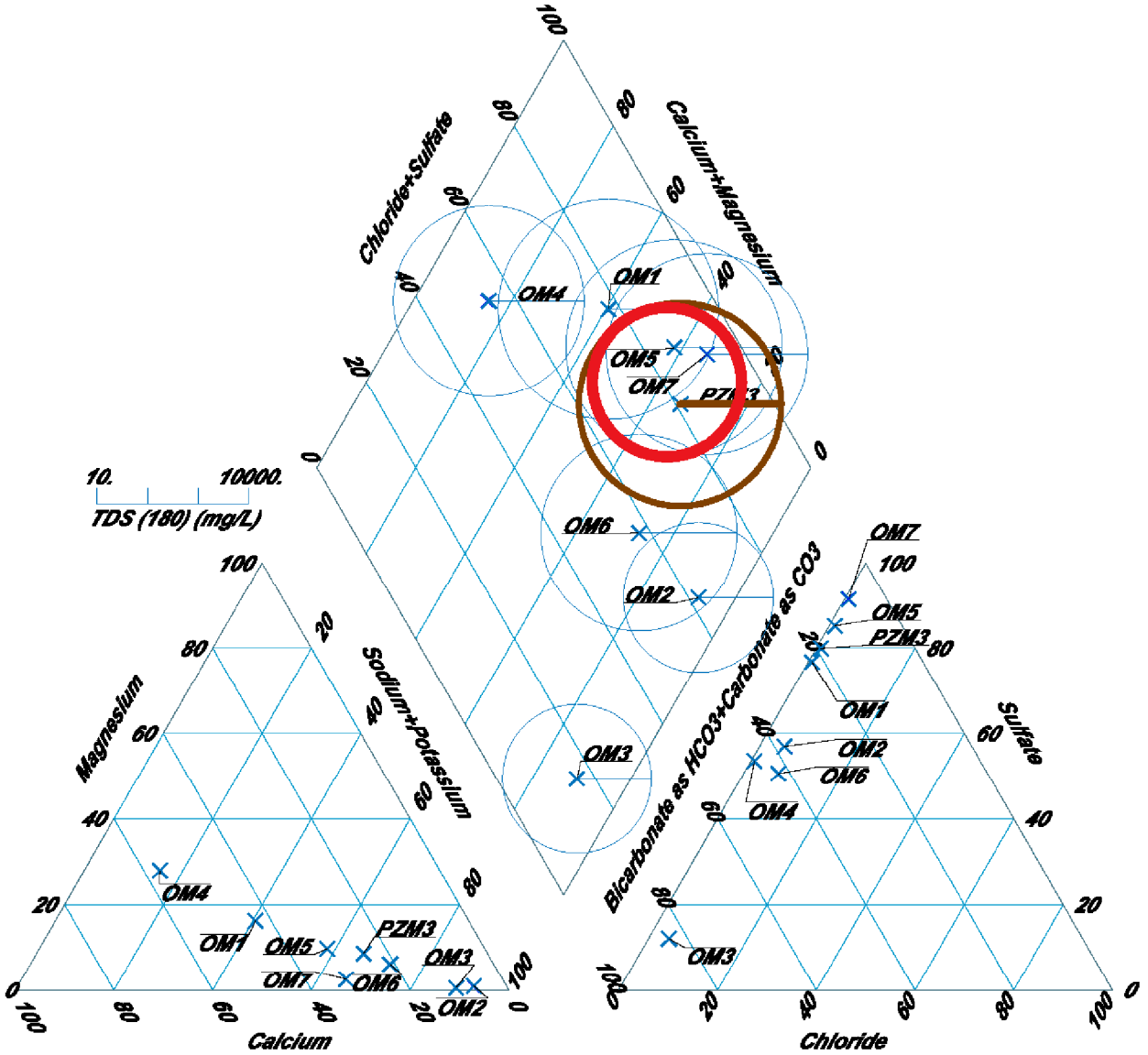
REV #	DESCRIPTION	BY	DATE	FIGURE
0	Draft	RHK	09/02/11	2.7B-59
1	Revised Draft for Review	RHK	10/17/11	
2	Final	RHK	01/03/12	



MGC MAHONEY GEOCHEMICAL CONSULTING	**PROPOSED RENO CREEK PROJECT** CAMPBELL COUNTY, WY PREPARED FOR: AUC LLC LAKEWOOD, CO	Piper Diagram PZM Waters	Drawn: JJM Checked: RHK Approved: RMD	**Figure 2.7B-60**	

Rev. #	Description	Date
0	Drawing received	07/26/2012
1		
2		

Path: O:\WY_Projects\2010-100_AUC_Reno_Creek\Project_MXD\Submittal\Plan_B\Mahoney\Piper PZM.mxd



MGC MAHONEY GEOCHEMICAL CONSULTING	**PROPOSED RENO CREEK PROJECT** CAMPBELL COUNTY, WY PREPARED FOR: AUC LLC LAKEWOOD, CO	Piper Diagram Comparison between the OM Aquifer and the PZ waters	Drawn: JJM Checked: RHK Approved: RMD	**Figure 2.7B-61**	

Rev. #	Description	Date
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2		

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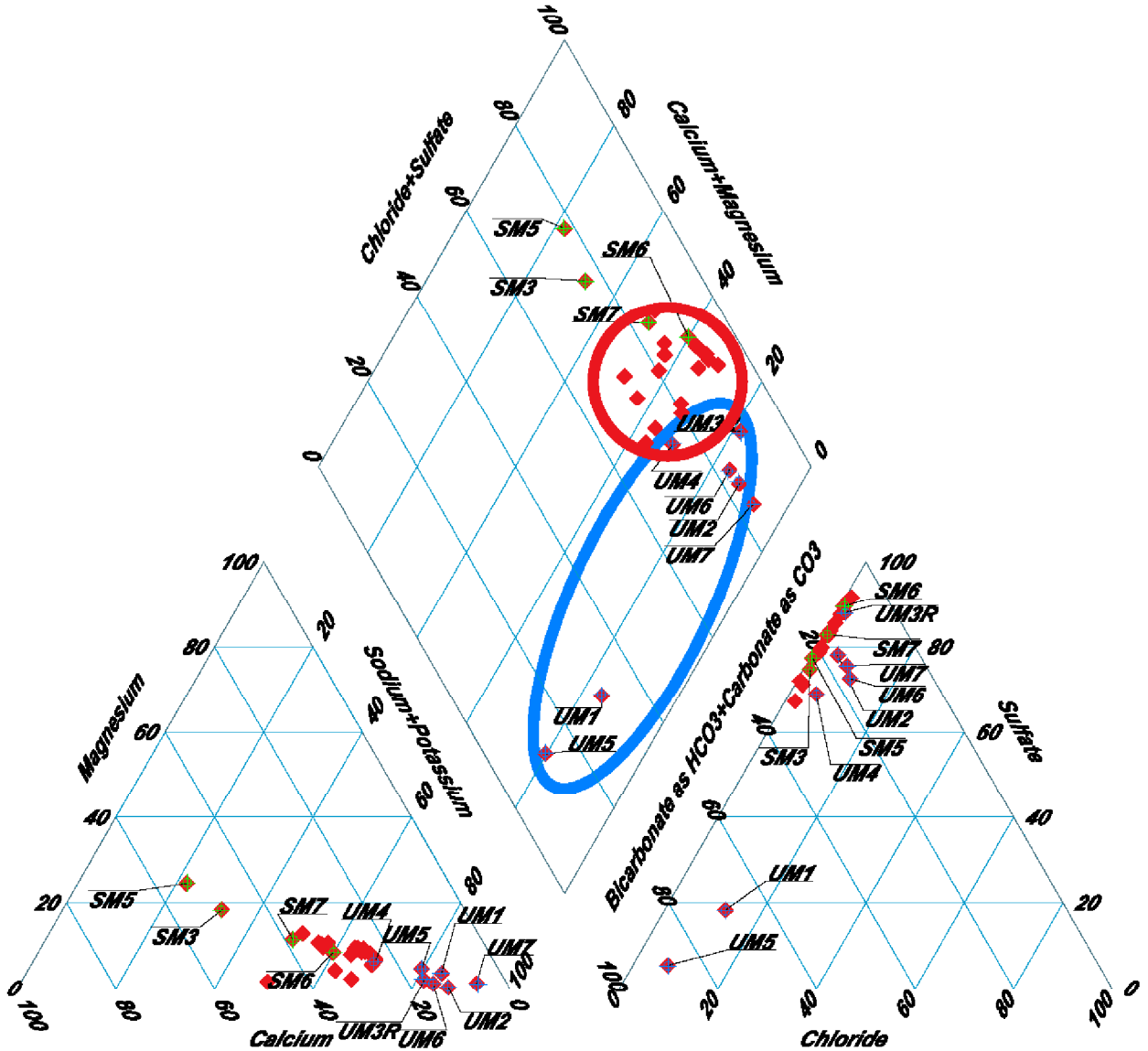

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MGC MAHONEY GEOCHEMICAL CONSULTING

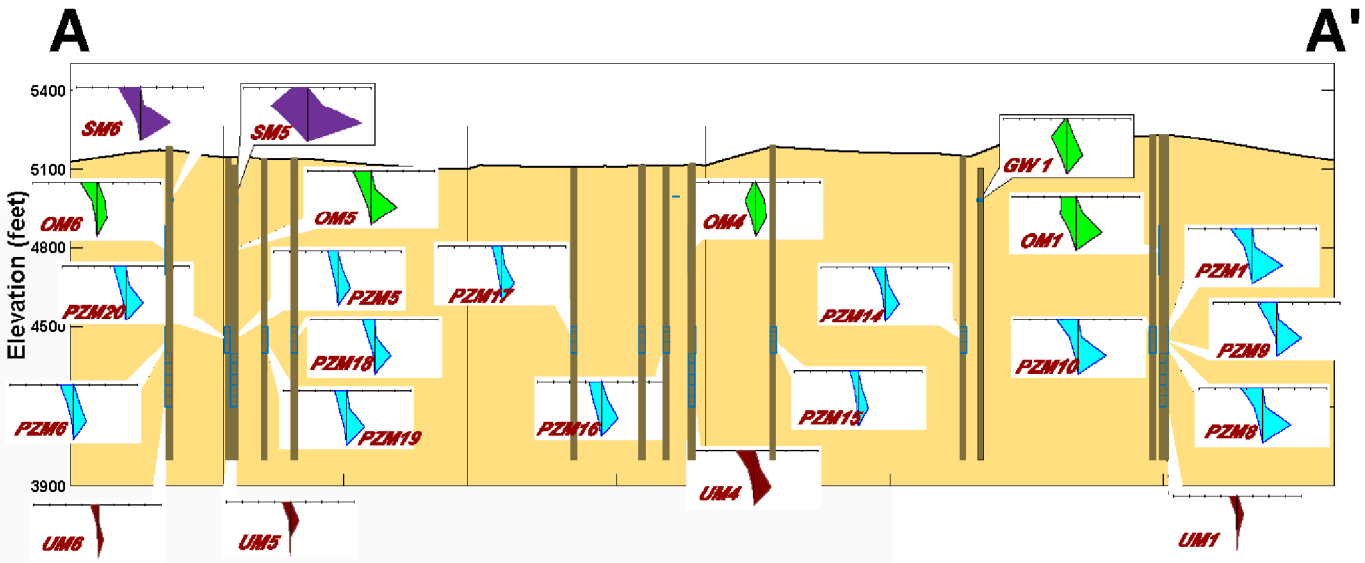
PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR: AUC LLC
LAKEWOOD, CO

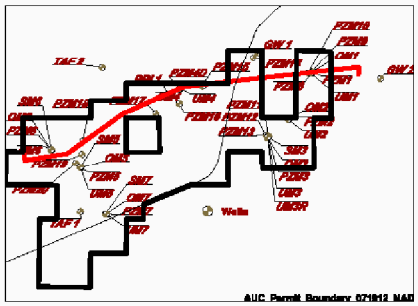
Piper Diagram
Comparing waters from the UM and SM units to PZ waters

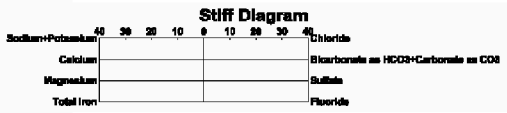
Drawn: JJM
Checked: RHK
Approved: RMD

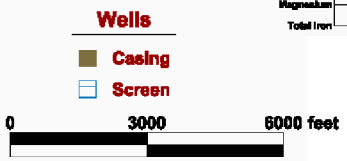
Figure 2.7B-62

Rev. #	Description	Date
0	Drawing received	07/26/2012
1		
2		









Screen locations reflect relative position of different units

Path: O:\WY_Projects\2010-100_AUC_Reno_Creek\Project_MXD\Submittal\Plan_B\Mahoney\StiffCross Section.mxd

MGC MAHONEY GEOCHEMICAL CONSULTING

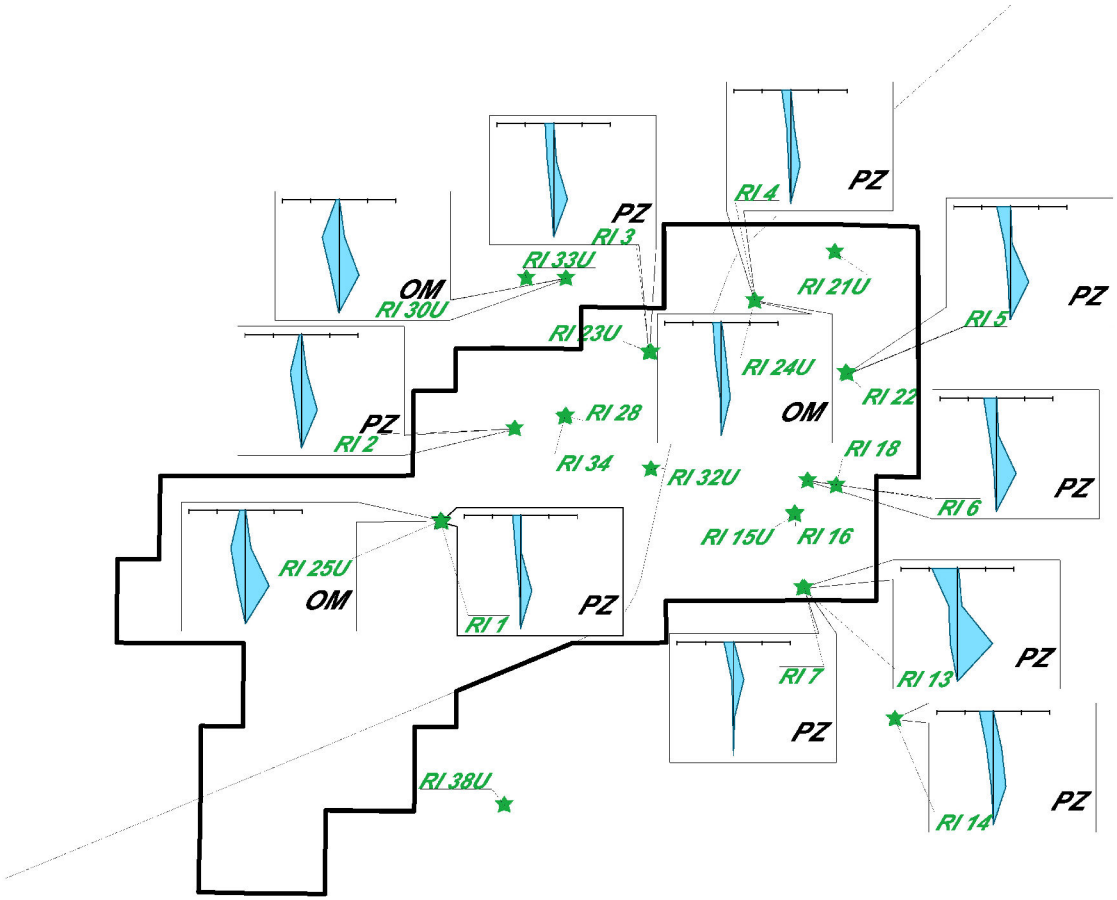
PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR: AUC LLC
LAKEWOOD, CO

Cross Section with Stiff Diagrams

Drawn: JJM
Checked: RHK
Approved: RMD

Figure 2.7B-63

Rev. #	Description	Date
0	Drawing received	07/26/2012
1		
2		



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MAHONEY GEOCHEMICAL CONSULTING

PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR: AUC LLC
LAKEWOOD, CO

Historical Well Locations with Stiff Diagrams
(1978 - 1993)

Drawn: JJM
Checked: RHK
Approved: RMD

Figure 2.7B-64

Rev. #	Description	Date
0	Drawing received	07/26/2012
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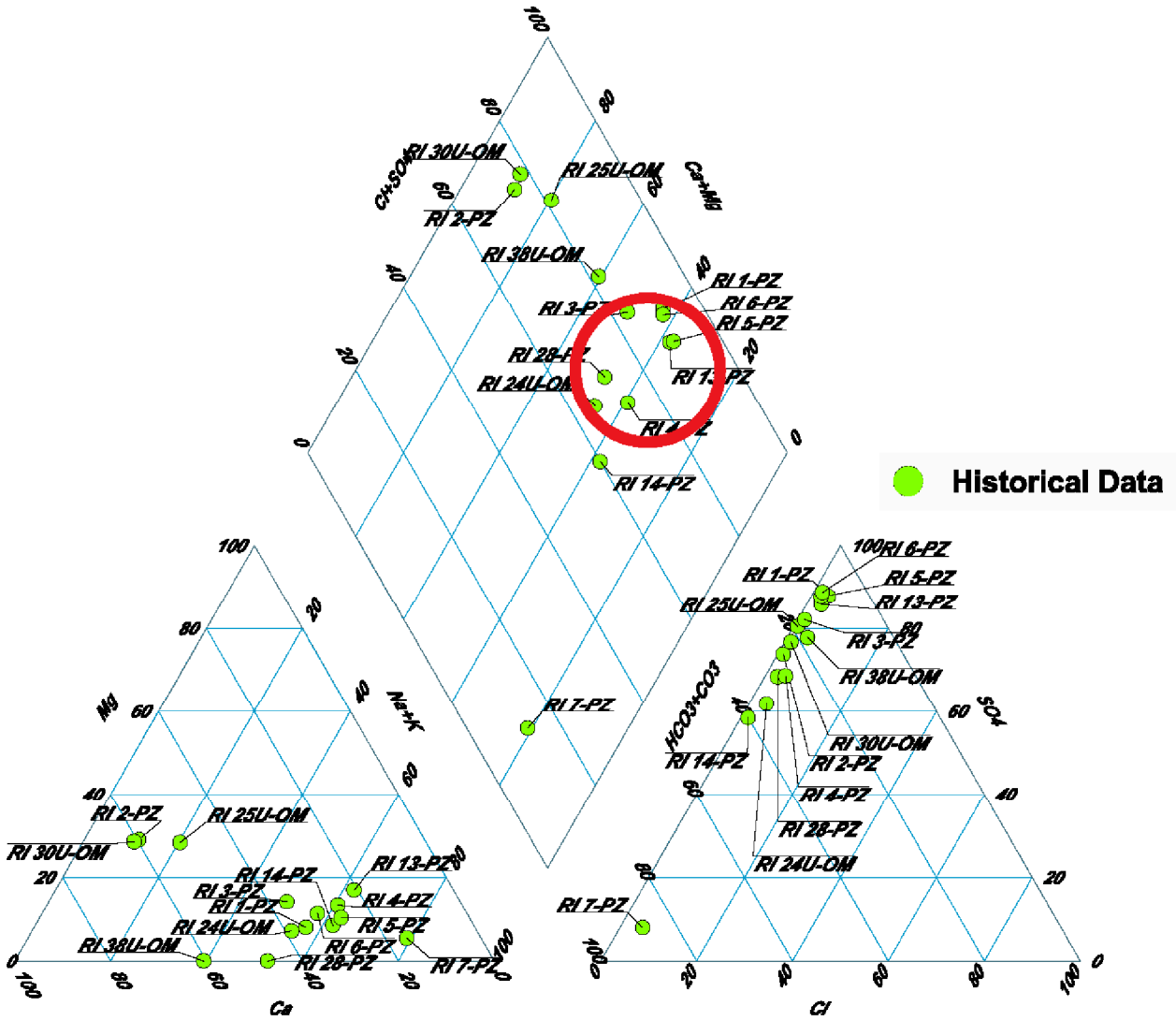

Well names that include a U (such as RI 24U) represent Overlying Aquifer (OM)

MGC MAHONEY GEOCHEMICAL CONSULTING	**PROPOSED RENO CREEK PROJECT** CAMPBELL COUNTY, WY PREPARED FOR: AUC LLC LAKEWOOD, CO	Piper Diagram Historical Well Data	Drawn: JJM Checked: RHK Approved: RMD	**Figure 2.7B-65**	

Rev. #	Description	Date
0	Drawing received	07/26/2012
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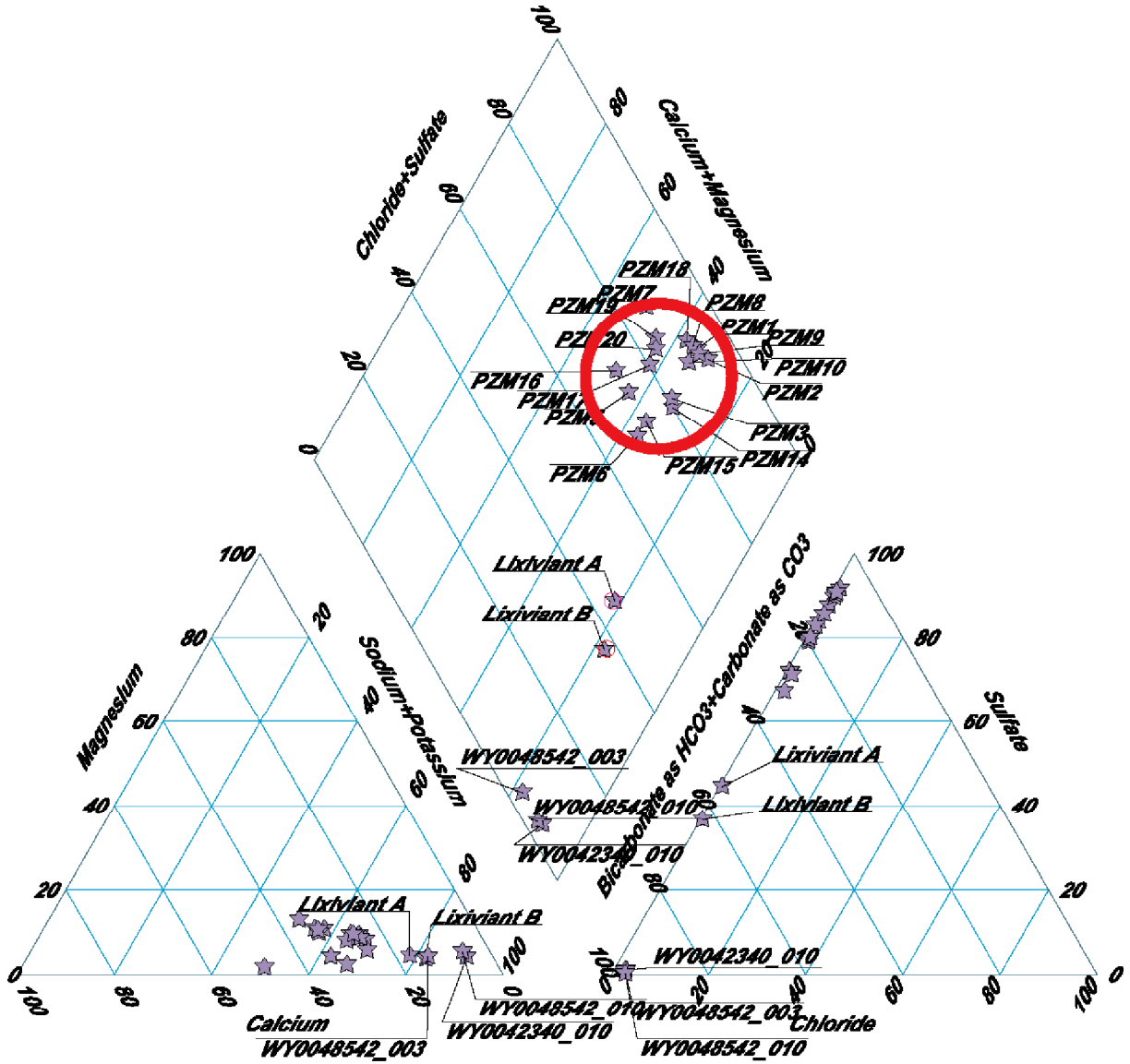

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MAHONEY GEOCHEMICAL CONSULTING

PROPOSED RENO CREEK PROJECT
CAMPBELL COUNTY, WY
PREPARED FOR: AUC LLC
LAKEWOOD, CO

Piper Diagram
Relationships between PZ waters, anticipated range of Lixiviant compositions and CBM waters

Drawn: JJM
Checked: RHK
Approved: RMD

Figure 2.7B-66

Rev. #	Description	Date
0	Drawing received	07/26/2012
1		
2		