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Motors Liquidation Company

Appendix E: Groundwater Potentiometric Surface Study

October 4, 2009

ARCADIS

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Appendix E: Groundwater Potentiometric Surface Study

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Date:
10/4/09

Table of Contents

Attachments

ARCADIS

Appendix E: Groundwater Potentiometric Surface Study

1. Introduction

As described in the work plan the purpose of the Groundwater Potentiometric Surface Study (Study) was to evaluate changes in groundwater potentiometric levels at the former Kokomo Plant 5 Facility in Kokomo, Indiana (Facility) that result from pumping at the Indiana American Water Company (IAWC) Northwest Well Field.

Based on data collected between 2005 and November 2008, the groundwater flow direction in all saturated units at the Facility has historically been interpreted as generally being from north to the south. In March of 2007 the Indiana American Water Company (IWAC) Northwest Well Field, which is located approximately 1.4 miles to the northwest of the Facility, started on-line operations (Drawing E-1A). Data collected in November 2008 and February 2009, indicated a possible divide in flow directions with groundwater in the S2 and S3U/B1 units having both northerly and southerly flow components. It was believed that this possible divide is the result of pumping from the S2 unit at the IWAC Northwest Well Field. Additionally, there are two operating high capacity (>70 gallons per minute) water wells are located approximately 2,000 feet northwest of the Facility (Moon Fabricating Corporation and Syndicate Sales, Inc Drawing E-1A) . .

As discussed in the work plan, nine data logging pressure transducers were placed in three nested monitoring wells parallel with the apparent flow directions (along a line trending from northwest to southeast). Data were collected for four weeks to evaluate the belief that the IWAC pumping was affecting groundwater flow in the S2 and S3U/B1 units at the Facility.

2. Methods

On August 5, 2009, ARCADIS personnel deployed pressure transducers (Level Troll® 500s) in three monitoring well nests (a total of nine monitoring wells):

- MW-0501-S1, MW-0501-S2, MW-0501-S3U;
- MW-0605-S1, MW-0605-S2, MW-0605-B1; and
- MW-0617-S1, MW-0617-S2 and MW-0617-B1

(Refer to highlighted monitoring wells on attached Drawing E-1b).

Precipitation events and barometric pressure changes were also recorded during the study (www.weather-kokomo.com provided by National Oceanic and Atmospheric

Administration (NOAA)). To measure barometric pressure changes, a baro troll® was placed at the facility.

The Study was divided into three tests: (1) August 5, 2009 (16:00pm) – August 17, 2009: collection of data under typical conditions, (2) August 17, 2009 from 12:00 to 2:00 am: collection of data coordinated with a shutdown from the IAWC Northwest Well Field, and (3) August 17, 2009 (2:00am)-September 3, 2009: collection of data under typical conditions.

The pressure transducers recorded elapsed time, pressure and height of water column above the transducer during all of the three tests. The datalogging pressure transducers and baro troll® were set to record at 5 minute intervals. The shutdown of the IAWC Northwest Well Field occurred on August 17, 2009 from 12:00 to 2:00 am. Approximately 11 hours before IAWC shut down the Northwest Well Field, the pressure transducers and baro troll® were set to record at one minute intervals. On August 18, 2009, the pressure transducers and baro troll® were reset to record at five minute intervals.

Depth to water was measured at each of the nine monitoring well during installation of the dataloggers. This data was used to calculate the potentiometric surface elevation to set the initial measuring point for the pressure transducer. The pressure transducer was lowered into the well to a depth approximately two feet from the bottom of the well (S1 wells) or, to a depth approximately 20 feet below the measured potentiometric surface (S2, S3 and B1 wells). All pressure transducers began recording data at the same time on August 5, 2009 (16:00 pm). A rope was used to attach each pressure transducer to the well cap and the well cap was sealed.

The pressure transducers were monitored on a weekly basis to verify that the transducers were operating correctly and collect water level measurements for transducer calibration. During these visits, depth to water was measured in each of the nine monitoring wells and the data for the previous week was downloaded onto a portable personal computer and/or handheld personal digital assistant.

3. Data Analysis

The data was plotted in a simple head versus time graph to identify any short duration changes and observed long term trends in the data.

3.1.1 Barometric Efficiency

The barometric efficiency of each well was calculated prior to graphing the data. Barometric efficiency was calculated as follows:

(Equation 1) $$BE = \frac{\Delta h}{\Delta(p_a / \lambda_w)} * 100\%$$

where:

BE = barometric efficiency

h = measurement of head

p_a = atmospheric pressure

λ_w = unit weight of water

Once the barometric efficiency of each well was calculated, the data for each well was corrected to remove the effects of barometric change. The correction was accomplished by solving Equation 1 for change in head and applying the change to the data:

(Equation 2) $$\Delta h = \frac{BE}{100\%} * \Delta(p_a / \lambda_w)$$

3.1.2 Potentiometric Surface Elevations

After data were corrected for barometric efficiency, the corrected data was plotted in a head versus time graph to identify changes in head that may be attributed to precipitation or pumping.

3.1.3 Horizontal Gradients

The corrected data were used to calculate the horizontal gradients between each S1 series, S2 series and S3/B1 series wells.

3.1.4 Vertical Gradients

The corrected data were used to calculate vertical gradients within each monitoring well nest. Vertical gradients were calculated from the S1 to the S2 wells, the S2 to B1 wells and the S1 to S3/B1 wells.

4. Conclusions

4.1.1 Potentiometric Surface Elevations

Potentiometric surface elevations for the S1, S2 and S3U/B1 units were graphed and are provided as Drawings E-2 through E-4, respectively. Potentiometric elevations for the well nest MW-0501, MW-0605 and MW-0617 are also graphed during the time of this study and provided as Drawing E-5 through E-7, respectively.

The IAWC Northwest Well Field removed the largest amount of water during the study from August 6 to 10, 2009 (1.495-1.886 millions of gallons per day). The S2 and S3U/B1 units at the Facility showed an average drawdown of approximately two feet (Drawings E-2 through E-6); and the S1 unit showed an average drawdown of approximately 0.5 feet from August 5 through August 11, 2009 (Drawings E-2 and E-5 through E-7). This drawdown in the S1, S2 and S3U/B1 units are interpreted to be a response to the water usage by the IAWC Northwest Well Field. Water usage data for the IAWC Northwest Well Field from August 1 through September 9, 2009 is provided in Table E-1. No water usage data was collected from Moon Fabricating Corporation and Syndicate Sales, Inc. Syndicate Sales, Inc. has two wells set in the B1 unit (in limestone) at 106 feet and 262 feet below ground surface (bgs). Moon Fabricating Corporation has one production well set within the B1 unit (limestone) to a depth of 234 feet bgs. Based on 2008 historical water usage records, the IAWC Northwest Well Field removed a magnitude of two times the volume of water compared to both Moon Fabricating Corporation and Syndicate Sales, Inc.

The IAWC Northwest Well Field removed the lowest amount of water during the study from August 19 to 20, 2009 (0.880-0.729 millions of gallons per day). On August 19 and 20, 2009, the S1 unit at the Facility showed a recharge response in the potentiometric surface elevation of approximately 0.2 to 0.3 feet of water (Drawings E-2 and E-5 through E-7); and the S2 and S3U/B1 units showed a recharge response in the potentiometric surface elevation of approximately 1.0 foot (Drawings E-3 through E-7). The recharge in the S1, S2 and S3U/B1 units were most likely influenced by the

IAWC Northwest Well Field decreased amount of water removal/pumping rates from August 19 and 20, 2009.

The relative response in the S2 and S3U/B1 units compared to the response of the S1 wells during the increased pumping from August 5-11, 2009 and decreased pumping on August 19 and 20, 2009 suggests that the clay boundary between the S1 and S2 units encountered at the Facility and at the IWAC Northwest Well Field is most likely continuous between the well field and the Facility.

Drawings E-8 through E-10 showed potentiometric surface elevations in the well nests MW-0501, MW-0605 and MW-0617, respectively during the time the IWAC Northwest Well Field was shutdown. The S2 and S3U/B1 units all experienced a recharge in groundwater elevation of approximately 0.5 feet at approximately at 6:00 am (six hours after initial shutdown of IWAC Northwest Well Field).

For the purposes of this study, significant precipitation events were identified in this report as greater than 0.25 inches of water. There were a total of four significant precipitation events that occurred on August: 17 (0.29 inches), 19 (0.94 inches), 20 (0.30 inches) and 28 (0.56 inches). The precipitation data during this study is provided in Appendix E-1. Drawings E-2 through E-7 showed a recharge of groundwater elevation of approximately 0.5 feet during August 19 and 20; however, it is unlikely that this precipitation contributed to the recharge response because of the significantly thick clay layer that separates the S1 and S2 units. Additionally, the total amount of precipitation received on August 17-20 (1.53 inches) would result in less than 0.5 feet of recharge within the basin, as was observed in groundwater elevation changes in the monitoring wells.

4.1.2 Horizontal Gradients and Flow Direction

Horizontal gradient was calculated for all well pairs and is summarized along with groundwater flow direction in Table E-2. During the Study, the S1 unit groundwater flow direction was to the south (Drawing E-2); and the groundwater flow direction in the S2 and S3U/B1 was generally to the north (Drawing E-4). Groundwater flow direction in the S2 unit was more variable from MW-0501-S2 to MW-0605-S2 and shifted to the south during a six hour period on August 20 (Drawing E-3).

4.1.3 Vertical Gradients

Vertical gradient was calculated for each well nest and is summarized in Table E-3. During the Study, a downward vertical gradient existed between the S1 and S2 and the S1 and S3U/B1 units across the Facility, however, the vertical gradient between the S2 and S3U/B1 units across the Facility were more variable. Monitoring well nest MW-0501, had a relative downward vertical gradient in the S2 to S3 units; and MW-0617 nest showed an upward vertical gradient from the B1 to S2 units throughout the entire Study. Monitoring well nest MW-0605, showed a downward vertical gradient from S2 to B1 units from August 5 through August 11, and an upward vertical gradient from B1 to S2 units from August 12 through September 3, 3009.

4.1.4 Conclusions

The S2 and the S3/B1 units appear to be influenced by pumping from the IWAC Northwest Well Field, while the S1 unit appears to be only slightly influenced. The relative difference between the influence the S2 and S3/B1 units compared to the S1 unit experienced from the IWAC Northwest Well Field pumping suggest that the clay unit dividing the S1 and S2 units is continuous from the IWAC Northwest Well Field to and beyond the Facility. Pumping from Moon Fabricating Corporation and Syndicate Sales, Inc. do not appear to be contributing to the groundwater flow direction divides observed in the S2 and S3U/B1 units because of the smaller water removal volumes compared to IWAC Northwest Well Field.

During the time the Study was performed, groundwater flow direction and horizontal gradient in the S1 unit was to the south and in the S3/B1 unit was to the north. Groundwater flow direction and horizontal gradient in the S2 unit was variable during the Study and was influenced by the IWAC Northwest Well Field pumping.

A downward vertical gradient was found from the S1 to the S2 and S1 to the S3/B1 units. The vertical gradient from the S2 to the B2 units was more variable during the Study and is influenced by the IWAC Northwest Well Field pumping.

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Attachment E-1

Precipitation Records

MONTHLY CLIMATOLOGICAL SUMMARY for AUG. 2009

NAME: Home CITY: Kokomo STATE: IN
ELEV: 793 ft LAT: 40° 30' 00" N LONG: 86° 12' 00" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	67.9	79.5	1:50p	56.7	6:45a	2.1	4.9	0.03	0.2	13.0	12:50p	SSE
2	67.6	78.7	3:55p	59.0	11:40p	1.3	3.9	0.06	0.2	10.0	3:20p	NW
3	69.3	81.1	4:25p	55.3	4:10a	2.7	7.0	0.00	1.4	17.0	4:50p	SSE
4	71.2	82.1	12:10p	65.9	11:25p	0.0	6.2	0.13	0.4	16.0	12:55p	S
5	72.0	83.0	3:25p	62.3	11:55p	0.1	7.1	0.01	0.2	9.0	5:30p	NNE
6	67.1	80.8	3:20p	53.0	6:50a	3.6	5.7	0.00	0.1	7.0	12:50p	NNE
7	66.8	76.6	3:20p	54.8	6:15a	2.9	4.6	0.00	0.4	10.0	3:25p	S
8	76.5	88.1	3:35p	67.0	3:20a	0.0	11.5	0.00	1.4	18.0	4:20p	SSE
9	80.8	91.5	2:30p	72.4	6:50a	0.0	15.8	0.00	0.7	16.0	2:00p	SSE
10	79.3	89.9	4:05p	72.4	7:20a	0.0	14.3	0.00	0.3	10.0	3:40a	SSE
11	74.9	88.4	4:40p	63.8	12:00m	0.0	9.9	0.00	0.3	14.0	5:30p	N
12	68.3	83.5	3:50p	57.7	6:20a	2.4	5.6	0.00	0.1	9.0	1:20p	N
13	71.0	86.3	3:10p	56.4	7:15a	2.0	8.0	0.00	0.3	10.0	1:10p	SSE
14	72.5	88.4	4:25p	58.9	6:50a	1.4	8.9	0.00	0.2	7.0	3:00p	SSE
15	73.9	86.4	4:30p	59.0	6:25a	1.2	10.0	0.00	0.6	13.0	5:05p	S
16	79.7	89.9	1:35p	71.2	5:30a	0.0	14.7	0.00	1.3	17.0	4:10p	S
17	77.8	86.2	2:20p	69.8	11:35p	0.0	12.8	0.29	1.2	18.0	2:00p	SSE
18	31.7	81.5	3:30p	-90.0	5:05a	39.8	6.9	0.01	0.1	7.0	11:55a	NW
19	72.2	82.8	5:05p	65.2	9:00p	0.0	7.2	0.94	1.1	14.0	5:35p	S
20	71.3	79.4	2:35p	65.1	2:00a	0.0	6.3	0.30	1.1	19.0	1:10p	SSE
21	68.0	78.7	4:30p	60.2	7:25a	1.2	4.2	0.02	0.5	14.0	12:40a	SSE
22	61.8	67.1	3:25p	58.6	1:40a	3.3	0.1	0.02	0.5	14.0	5:05p	N
23	62.1	70.7	3:05p	54.5	2:35a	4.3	1.4	0.00	0.0	5.0	12:35p	NNE
24	62.9	78.9	2:25p	-90.0	9:20a	6.4	4.4	0.00	0.1	5.0	1:40p	S
25	67.7	81.7	3:45p	54.2	7:20a	3.2	5.8	0.00	0.4	10.0	2:05p	SSE
26	65.3	83.1	3:00p	-90.0	9:10a	6.6	6.9	0.00	0.1	7.0	11:30a	NW
27	69.7	79.5	4:30p	63.4	4:55a	0.2	5.0	0.00	0.4	12.0	11:00p	ESE
28	65.8	71.7	2:00p	63.1	6:50a	0.5	1.2	0.56	0.3	12.0	12:55a	E
29	-4.1	71.5	3:15p	-90.0	12:10a	69.7	1.1	0.00	0.4	9.0	2:50p	NW
30	58.9	68.7	3:40p	50.2	5:40a	6.6	0.4	0.01	0.6	13.0	12:00p	N
31	57.0	69.8	3:55p	44.5	7:15a	8.8	0.9	0.00	0.0	7.0	1:40p	ESE
	66.0	91.5	9	-90.0	18	170.3	202.7	2.38	0.5	19.0	20	SSE

Max >= 90.0: 1
Max <= 32.0: 0
Min <= 32.0: 4
Min <=   0.0: 4
Max Rain: 0.94 ON 08/19/09
Days of Rain: 9 (>.01 in) 5 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for SEP. 2009

NAME: Home CITY: Kokomo STATE: IN
ELEV: 793 ft LAT: 40° 30' 00" N LONG: 86° 12' 00" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	59.0	72.2	3:55p	46.0	7:30a	7.6	1.6	0.00	0.3	13.0	2:45p	ENE
2	62.7	77.2	4:25p	48.5	7:15a	5.6	3.4	0.00	0.3	12.0	12:15p	ESE
3	66.2	79.9	3:05p	53.1	7:50a	3.6	4.8	0.00	0.3	11.0	1:25p	ESE
4	66.2	80.9	4:10p	53.7	7:05a	3.6	4.9	0.00	0.2	9.0	12:30p	ESE
5	67.9	80.5	2:55p	55.1	6:00a	2.7	5.6	0.00	0.2	11.0	6:50p	ESE
6	66.8	72.5	5:45p	62.1	8:45a	0.5	2.3	0.00	0.3	9.0	1:25a	ESE
7	66.0	73.6	3:55p	58.4	7:00a	1.7	2.7	0.00	0.3	14.0	12:05p	ENE
8	65.5	75.5	3:10p	59.5	1:05a	2.0	2.5	0.00	0.1	7.0	11:45a	NNE
9	34.8	77.7	5:00p	-90.0	6:20a	33.4	3.7	0.02	0.3	10.0	12:40p	E
10	69.7	80.0	4:45p	60.8	7:55a	0.8	5.5	0.00	0.6	14.0	1:55p	ESE
11	68.3	79.7	4:10p	58.3	7:45a	1.6	4.9	0.00	0.5	13.0	1:05p	ESE
12	64.8	76.1	4:10p	52.8	8:00a	3.4	3.1	0.00	0.2	13.0	2:40p	ESE
13	63.7	78.9	4:05p	49.7	7:45a	5.5	4.1	0.00	0.1	11.0	1:50p	N
14	67.1	83.2	2:40p	52.0	7:35a	4.3	6.4	0.00	0.1	9.0	2:20p	ESE
15	69.4	83.8	3:50p	54.9	7:30a	2.8	7.2	0.00	0.1	9.0	8:40p	NNE
16	65.8	75.3	2:45p	61.6	7:55a	0.7	1.2	0.00	1.0	16.0	10:20a	ENE
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
	64.0	83.8	15	-90.0	9	79.8	63.9	0.02	0.3	16.0	16	ESE

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 1
Min <=   0.0: 1
Max Rain: 0.02 ON 09/09/09
Days of Rain: 1 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

Table E-1: Indiana Water Company Northwest Well Field Usage Data for August and September 2009, General Motors Corporation, Potentiometric Surface Study, Former GM Delco Plant 5, RCRA Facility Investigation Data Report, Kokomo, Indiana

	AUGUST 2009	
DATE	RAW WATER	SYSTEM DELIVERY
8/1/2009	1.540	1.509
8/2/2009	1.755	1.615
8/3/2009	1.878	1.773
8/4/2009	1.410	1.262
8/5/2009	0.980	0.765
8/6/2009	1.495	1.413
8/7/2009	1.686	1.598
8/8/2009	1.856	1.773
8/9/2009	1.886	1.817
8/10/2009	1.886	1.839
8/11/2009	1.356	1.333
8/12/2009	1.010	0.797
8/13/2009	1.041	0.950
8/14/2009	1.141	0.982
8/15/2009	1.052	0.976
8/16/2009	1.087	0.869
8/17/2009	0.999	1.029
8/18/2009	1.038	0.920
8/19/2009	0.880	0.759
8/20/2009	0.729	0.558
8/21/2009	1.014	0.919
8/22/2009	0.992	0.909
8/23/2009	0.964	0.854
8/24/2009	0.958	0.849
8/25/2009	0.980	0.975
8/26/2009	0.968	0.795
8/27/2009	0.983	0.934
8/28/2009	0.981	0.894
8/29/2009	0.953	0.817
8/30/2009	0.952	0.874
8/31/2009	0.975	0.846
SYSTEM TOTAL:	37.425	34.203
SYSTEM AVG.:	1.207	1.103

	SEPTEMBER 2009	
DATE	RAW WATER	SYSTEM DELIVERY
9/1/2009	0.953	0.957
9/2/2009	0.952	0.980
9/3/2009	0.980	0.887
9/4/2009	0.955	0.915
9/5/2009	0.973	0.849
9/6/2009	0.855	0.864
9/7/2009	1.024	0.955
9/8/2009	0.981	0.908
9/9/2009	0.971	0.828
SYSTEM TOTAL:	8.644	8.143
SYSTEM AVG.:	0.960	0.905

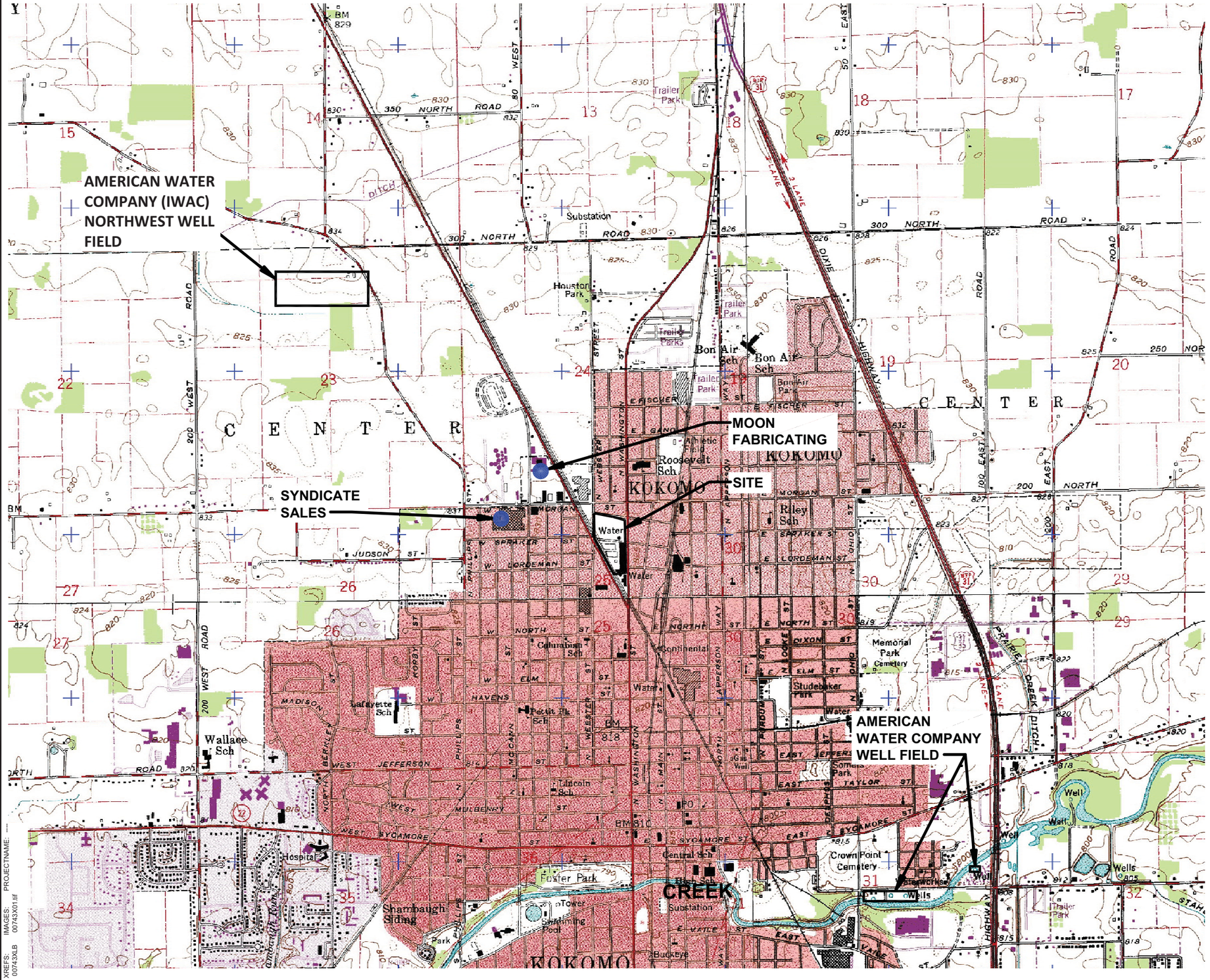
Note: All Data is in "Millions of Gallons"

Table E-2: Calculated Average Horizontal Gradient in S1, S2 and S3U/B1 unitsAcross the Facility, General Motors Corporation, Potentiometric Surface Study, Former GM Delco Plant 5, RCRA Facility Investigation Data Report, Kokomo, Indiana

	Monitoring Well							
	MW-0501-S1 to MW-0605-S1	**MW-0605-S1 to MW-0617-S1**	**MW-0501-S2 to MW-0605-S2**	**MW-0501-S2 to MW-0605-S2**	**MW-0501-S2 to MW-0605-S2**	**MW-0605-S2 to MW-0617-S2**	**MW-0501-S3U to MW-0605-B1**	**MW-0605-B1 to MW-0617-B1**
Date/Time	August 5-September 3	August 5-September 3	August 5-August 20 (6:20am)	August 20 6:20am - 1:00pm	August 20 (1:00pm) September 3	August 5-September 3	August 5-September 3	August 5-September 3
Average Horizontal Gradient (ft/ft)	0.0009	0.0013	0.0006	0.00006	0.0001	0.0001	0.0009	0.0004
Groundwater Flow Direction	South	South	North	South	North	North	North	North

Table E-3: Calculated Average Vertical Gradient Between S1 and S2 and S1 and S3U/B1 Units, General Motors Corporation, Potentiometric Surface Study, Former GM Delco Plant 5, RCRA Facility Investigation Data Report, Kokomo, Indiana

	Vertical Gradient from S1 to S2 units			Vertical Gradient from S2 to S3/B1 units				Vertical Gradient from S1 to B1 units		
	MW-0501-S1 to MW-0501-S2	**MW-0605-S1 to MW-0605-S2**	**MW-0617-S1 to MW-0617-S2**	**MW-0501-S2 to MW-0501-S3U**	**MW-0605-S2 to MW-0605-B1**	**MW-0605-S2 to MW-0605-B1**	**MW-0617-S2 to MW-0617-B1**	**MW-0501-S1 to MW-0501-S3U**	**MW-0605-S1 to MW-0605-B1**	**MW-0617-S1 to MW-0617-B1**
Date/Time	August 5-September 3	August 5-September 3	August 5-September 3	August 5-September 3	August 5-August 11	August 12-September 3	August 5-September 3	August 5-September 3	August 5-September 3	August 5-September 3
Average Vertical Gradient (ft/ft)	0.099	0.116	0.085	0.007	0.0004	0.0011	0.005	0.068	0.061	0.045
Direction	Down	Down	Down	Down	Down	Up	Up	Down	Down	Down



LEGEND:

LOCATION OF KNOWN SIGNIFICANT WATER USERS

NOTE:

1. SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP.

0 2000' 4000'

GRAPHIC SCALE

MOTORS LIQUIDATION COMPANY
KOKOMO, INDIANA
GROUNDWATER POTENTIOMETRIC SURFACE STUDY

PUBLIC WATER SUPPLY WELLS MAP

ARCADIS

DRAWING **E-1A**

CITY: SYRACUSE DIV/GROUP: 141 DB: GMS LD: GMS PM:(Reqd) LYRON=*;OFF=*REF
G:\ENVCAD\SYRACUSE\ACTIN\00743\100\20000\DWG\00743N02.dwg LAYOUT: E-1A SAVED: 10/2/2009 3:51 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: C-LB-PDF-CONV PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 10/2/2009 3:52 PM BY: STOWELL, GARY
XREFS: 00743XLB IMAGES: 00743X01.tif PROJECTNAME: ---

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XREFS: IMAGES: PROJECTNAME: ----
arcadis_address&RCADIS Color Logo.JPG

N

100 0 100

Approximate Scale In Feet

LEGEND

MW-0501-P1/I2 Monitoring Well Screened In Discontinuous Unit
P1 denotes screened interval is in a perched zone above Unit S1
I2 denotes screened interval is a sand unit between Units S1 and S2

MW-0501-S1 Monitoring Well Screened In Unit S1

MW-0501-S2 Monitoring Well Screened In Unit S2

MW-0501-B1 Monitoring Well Screened In Unit B1

MW-0501-2U RFI Phase IV Proposed Monitoring Well
(B1a designation denotes ~40 to 50 foot of seperation between the bottom of the B1 screened interval and top of the B1a screened interval.)

Pre-RFI Soil Boring Locations

Monitoring Well used for Potentiometric Surface Study

RESTAURANT PARKING

ASPHALT

GP-21

FORMER WATER TANK

FORMER PUMP HOUSE

MW-0501-S1
MW-0501-P1
MW-0501-S3U
MW-0501-S2

SPRAKER STREET

AOI 2

SB-6 SB-1 SB-2 SB-3 SB-4
GP-18
ASPHALT
MW-0103-S1U
GP-19

AOI 7

MW-0509-I2
MW-0509-S1
GP-20

MW-0618-S1

VACATED ROBINSON STREET

MW-0623-S1

GRASS

FORMER NORTH MANUFACTURING BUILDING

MW-0622-S2
MW-0622-S1
GP-15
SB-7
MW-0620-S1
MW-0619-S1
GP-16
MW-0102-S1U
GP-17

MW-0704-S1

MW-0605-S2
MW-0621-S1

AOI 3

GRASS
MW-0605-B1
MW-0605-S1

FORMER EAST MANUFACTURING BUILDING

MW-0505-B1
MW-0505-S2
MW-0505-S1

AOI 5

FORMER OIL HOUSE

AOI 4

SB-8
GP-10
P6
MW-0502-S1
GP-9
MW-0101-I2
P1 P7
MW-0101-S1U
P4
P8
P9
GP-13
MW-0517-I2
MW-0517-S1
GP-14

MW-0606-S1
MW-0606-S2

MW-0516-S1
MW-0516-S2
SB-10
P2
SB-11
P5
GP-6
GP-8
P3
CONC.
FORMER HAZARDOUS WASTE STORAGE

MW-0705-S1

MW-0612-S1

WASHINGTON STREET

LORDEMAN STREET

SB-9
GP-7
MW-0604-S1
MW-0604-S2

MW-0504-I2
MW-0504-S1
MW-0504-S2
GP-11
MW-0503-B1a
MW-0503-S2
MW-0503-S1
GP-12

SB-18

AOI 6

MW-0614-B1
MW-0614-S2
GP-1 GP-2 GP-3 GP-4 GP-5
MW-0506-I2
MW-0506-S2
MW-0506-S1
SB-19 SB-16 SB-17 SB-15 SB-13 SB-14 SB-12

MW-0608-S1
MW-0608-S2
MW-0608-B1

MW-0507-S1

MW-0617-S2
MW-0617-B1
MW-0617-S1

FORMER MIDWEST PLATING STONE PARKING

MW-0603-S1
MW-0603-B1
MW-0603-S2

MW-0602-S1
MW-0602-B1

MW-0616-B1a
MW-0616-B1
MW-0616-S1

MW-0615-I

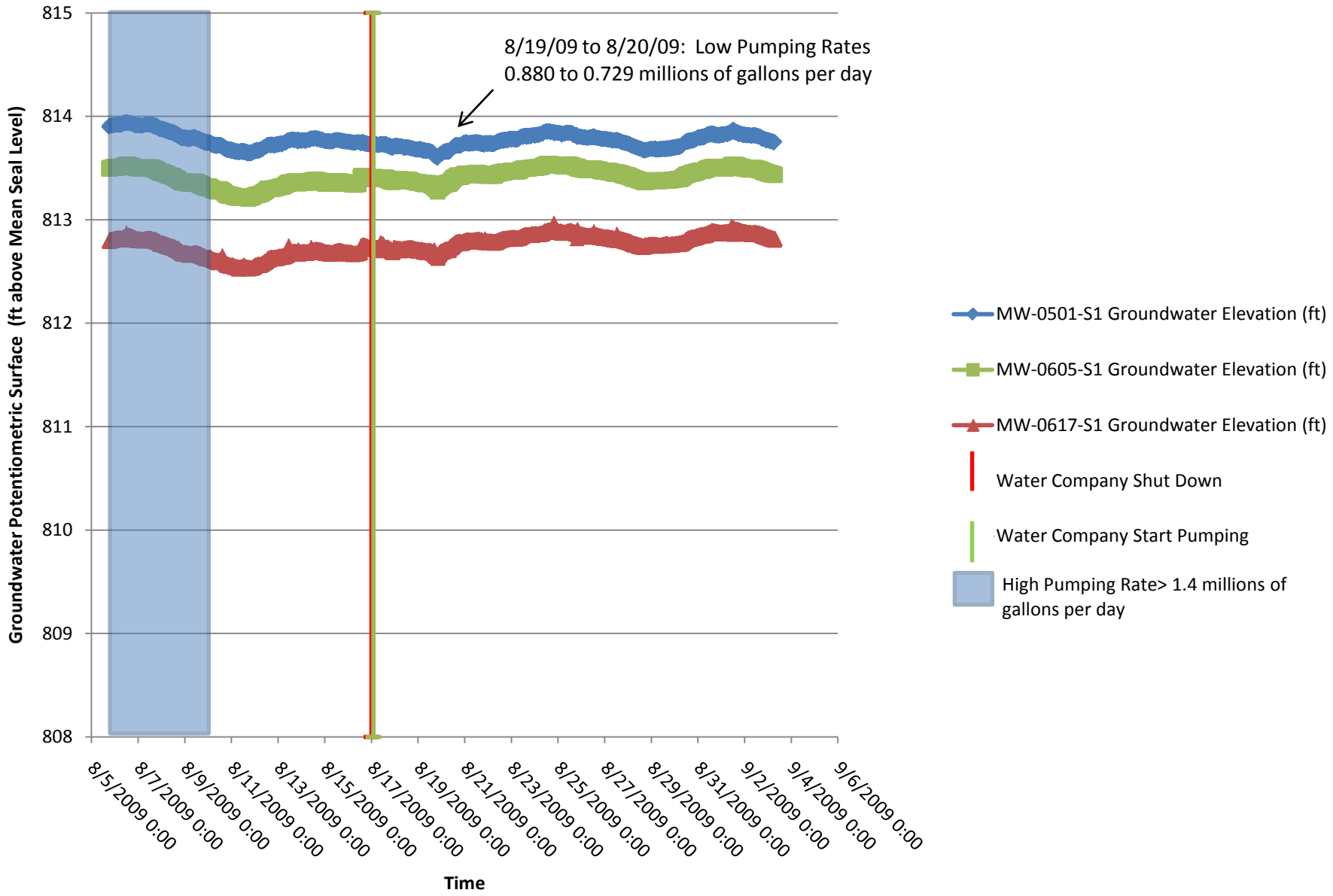
MOTORS LIQUIDATION COMPANY
KOKOMO, INDIANA
GROUNDWATER POTENTIOMETRIC SURFACE STUDY

SITE MAP

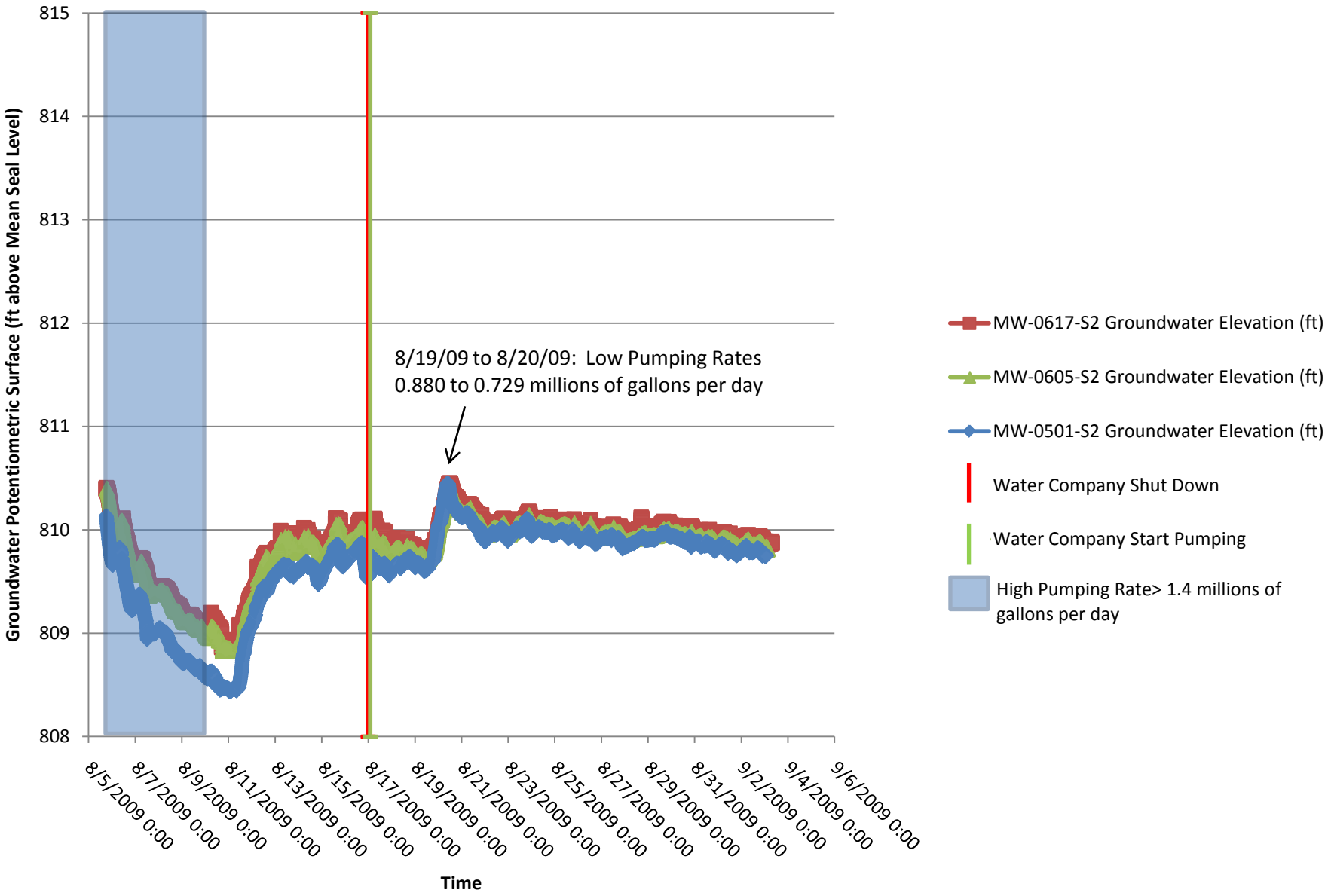
ARCADIS

DRAWING
E-1B

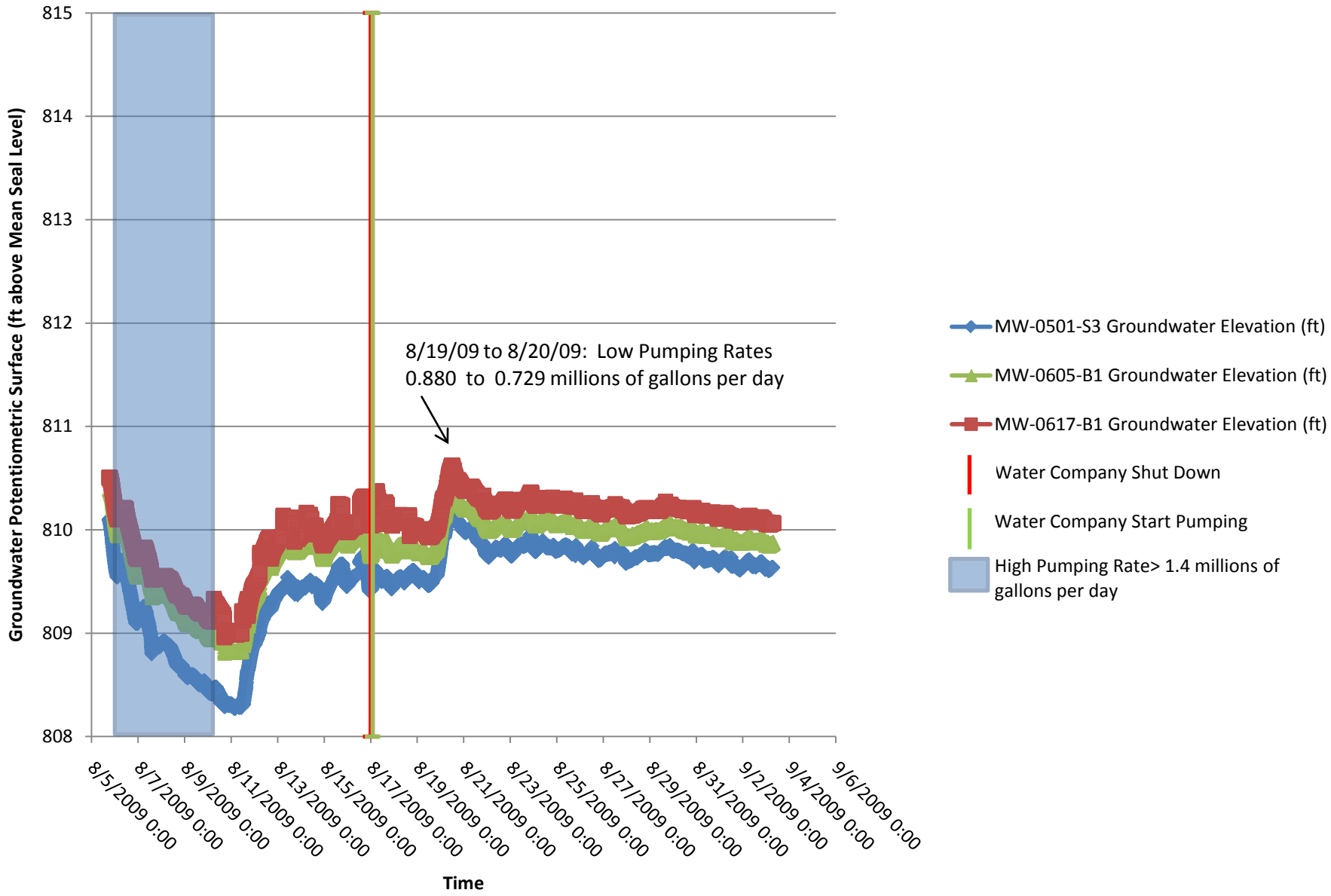
Drawing E-2. S1 Groundwater Potentiometric Surface



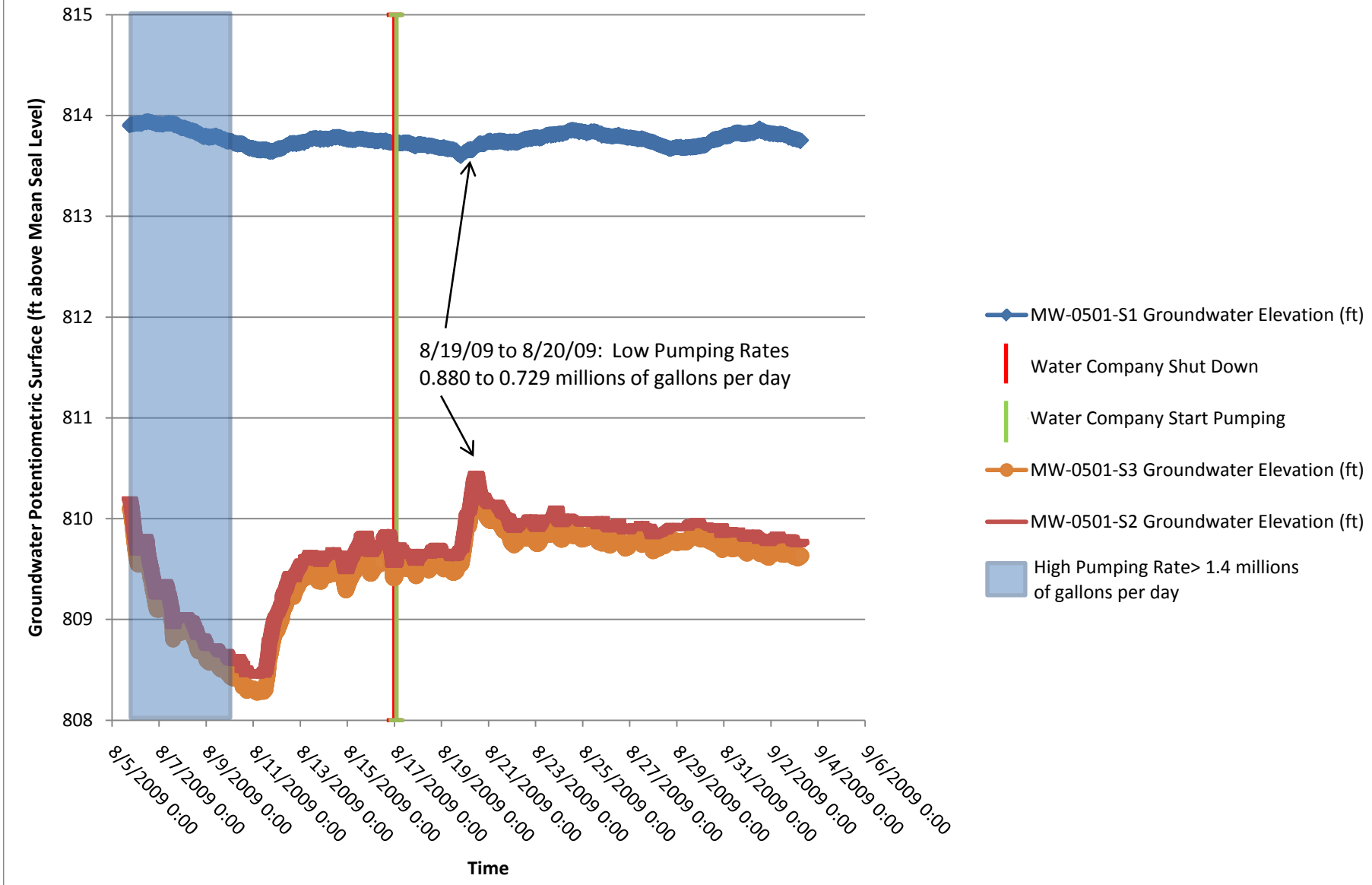
Drawing E-3. S2 Groundwater Potentiometric Surface



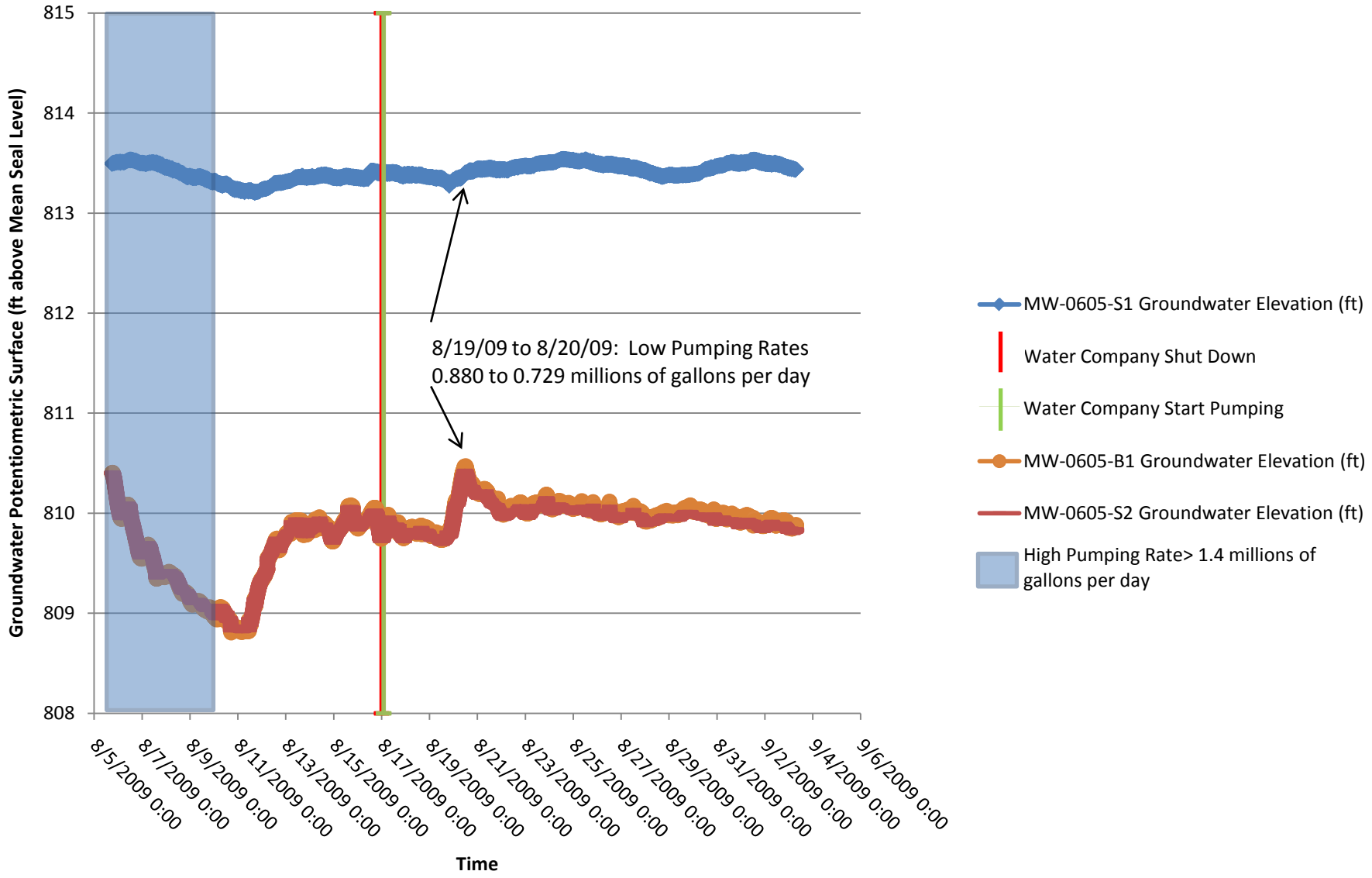
Drawing E-4. B1 Groundwater Potentiometric Surface



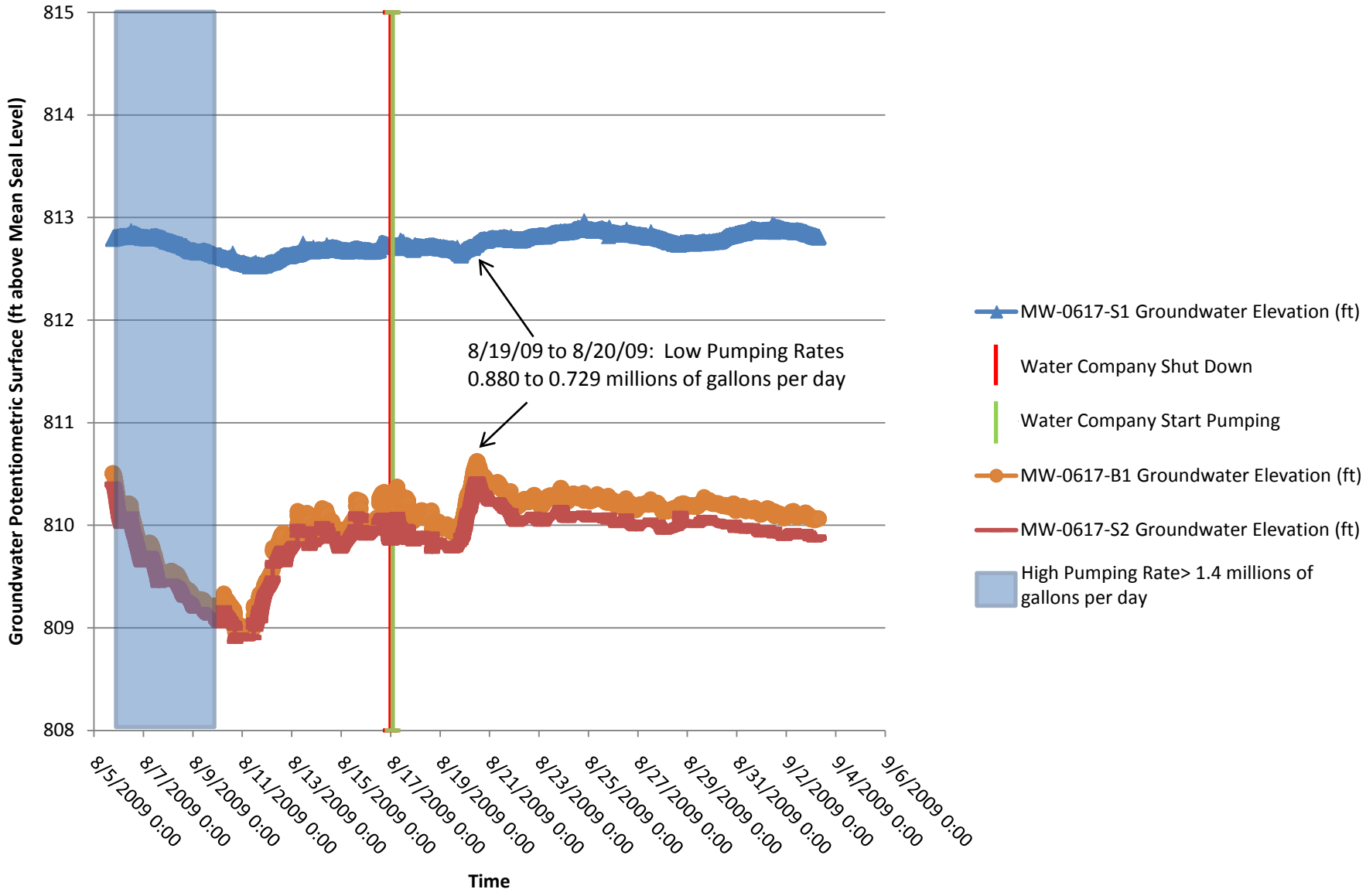
Drawing E-5. MW-0501 Monitoring Well Nest Groundwater Potentiometric Surface



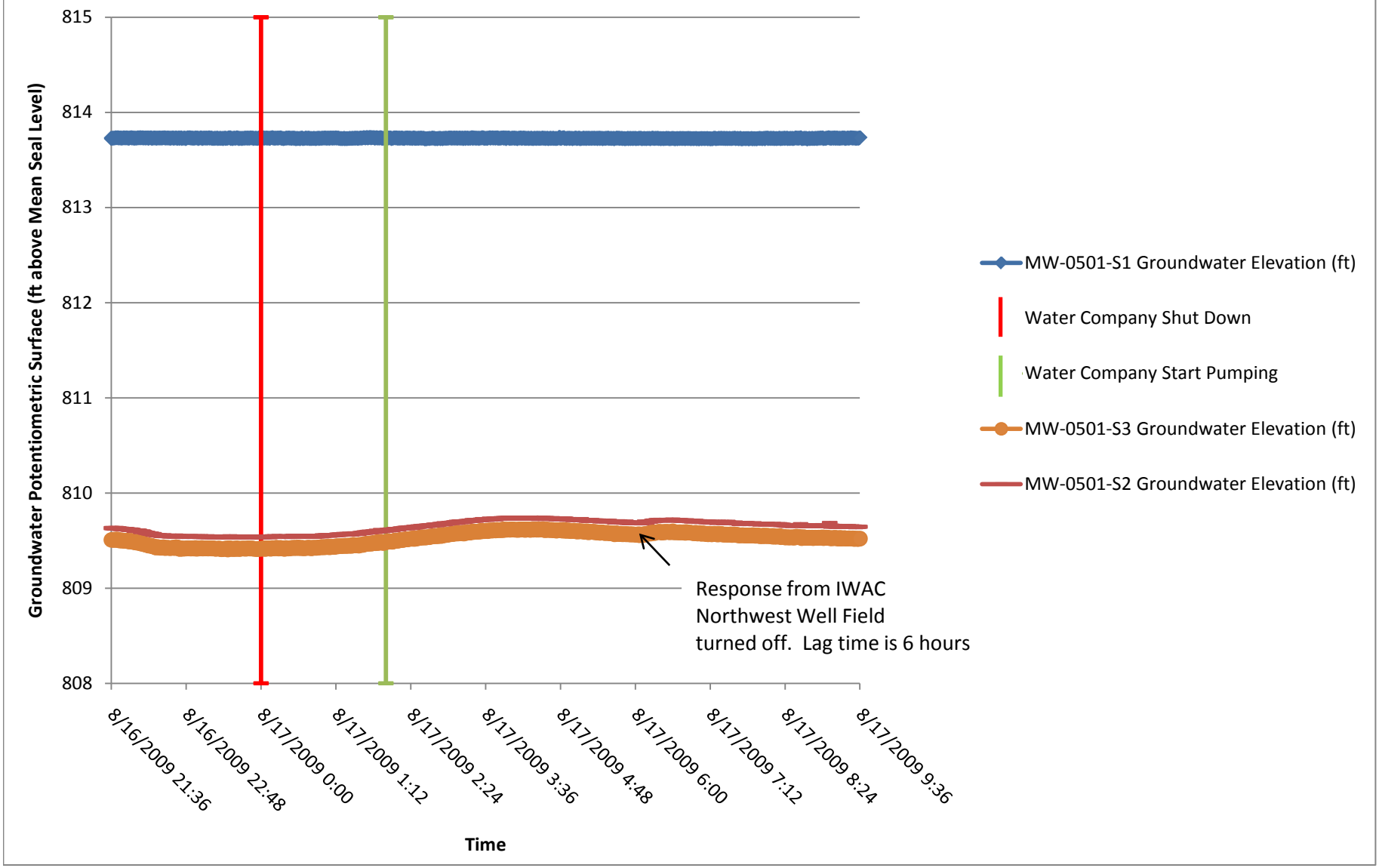
Drawing E-6. MW-0605 Monitoring Well Nest Groundwater Potentiometric Surface



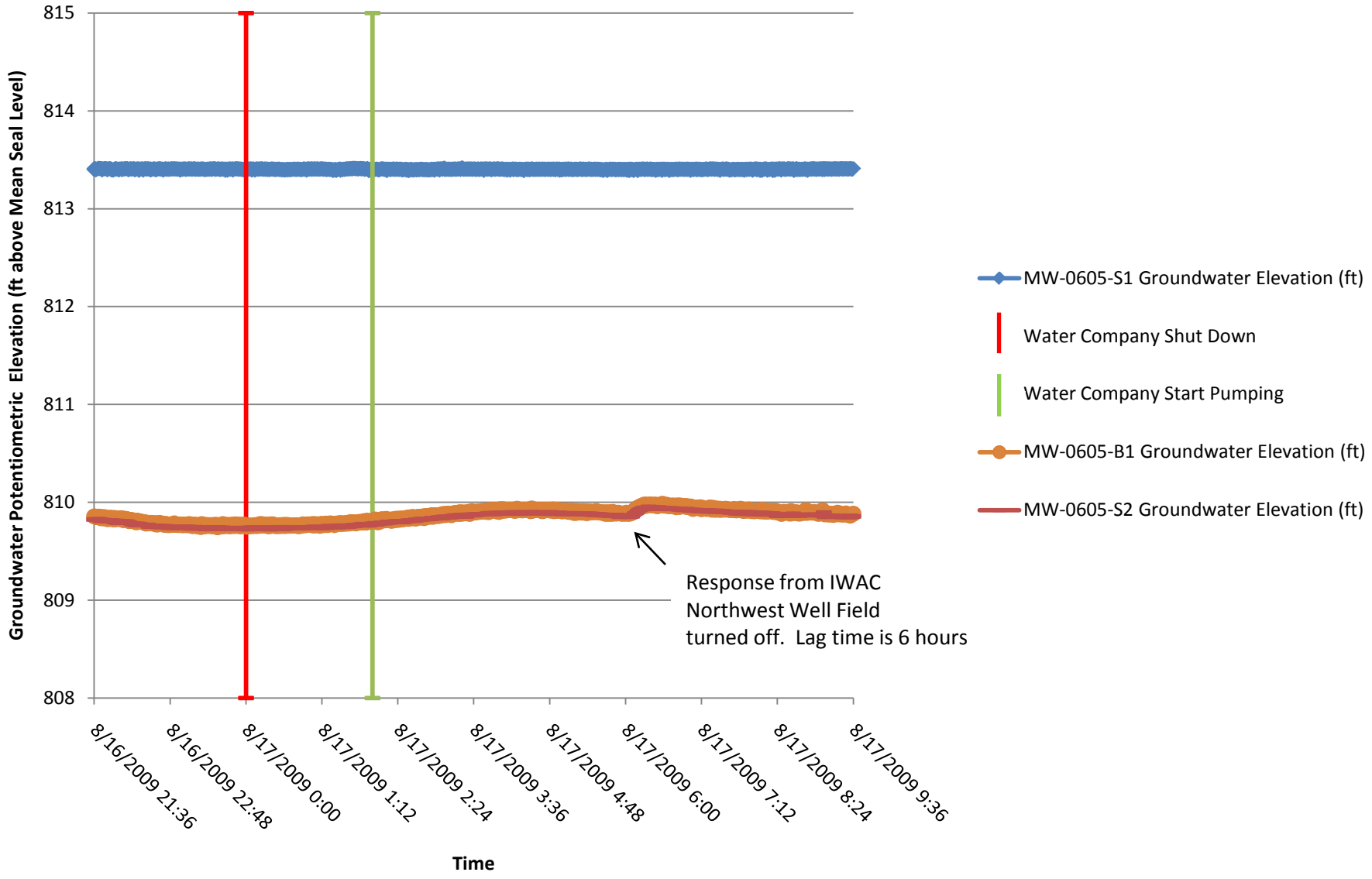
Drawing E-7. MW-0617 Monitoring Well Nest Groundwater Potentiometric Surface



Drawing E-8. MW-0501 Monitoring Well Nest Groundwater Potentiometric Surface During IWAC Northwest Well Field Shutdown



Drawing E-9. MW-0605 Monitoring Well Nest Groundwater Potentiometric Elevation During IWAC Northwest Well Field Shutdown



Drawing E-10. MW-0617 Monitoring Well Nest Groundwater Potentiometric Surface During IWAC Northwest Well Field Shutdown