Cardno ENTRIX

Shaping the Future

Final Report

Rehabilitation of ASR Well (EXKR-1)

Kissimmee River ASR Pilot Site
Okeechobee, Florida

March 16, 2011

Project File No. 00061010.00

Prepared For: U.S. Army Corps of Engineers

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Contract No. W912EP-06-D-0015
Task Order 0003, Amendment 01

Prepared for

US Army Corps of Engineers

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Laboratory Analytical Report dated November 16, 2010

Chapter 1 INTRODUCTION

The Kissimmee River Aquifer Storage and Recovery (ASR) pilot well system was constructed in Okeechobee County Florida and is operated by the U.S. Army Corps of Engineers (USACE). The USACE is conducting operational testing of the pilot ASR system under the permit conditions of a Florida Department of Environmental Protection (FDEP) permit (File No. 200917-003-UC KR-ASR-1) issued by the agency's Underground Injection Control (UIC) Section. The regional location and a site location map are presented as Figure 1. The ASR well was constructed (by others) with a 24-inch outside-diameter steel casing installed to the top of the target-storage interval extending from 562 to 875 feet below land surface (bls) in the upper Floridan Aquifer. A generalized site layout for the completed ASR pilot-well facility is presented as Figure 2. A diagram modified from the well construction detail (November 2004) is presented as Figure 3. The USACE operates the ASR pilot facility to recharge, store, and recover treated (ultra-violet light disinfection) surface water from the Kissimmee River. During future operation, the recovered water will be used to help maintain water levels in Lake Okeechobee and its tributaries during the dry season. During the injection (recharge) phase of the first test cycle (Cycle Test #1), the wellhead pressure at the ASR well gradually increased as the recharge progressed, resulting in higher pumping pressures and a lower than desired recharge rate. The most likely potential causes of the increased wellhead pressure were believed to be the growth of organic biofilms along the well casing and well bore and/or calcium carbonate deposits near the well bore.

In August 2008, Cardno ENTRIX (then: ENTRIX, Inc.) was authorized by the USACE (under Contract W912EP-06-D-0015, Task Order 0003) to evaluate ASR well performance, and design a rehabilitation program to improve the performance of the ASR well. The goal of the rehabilitation program was to decrease well/wellhead pressures during recharge and allow for design flow rates during the recharge and recovery cycles of the ASR system. The USACE requested the rehabilitation program be developed such that it was not necessary to remove the pumping equipment from the ASR well. The general approach used by Cardno ENTRIX for the ASR well-rehabilitation program is to introduce hydrochloric acid into the well prior to the wellhead during recharge, then use the existing pumping system and Kissimmee River water to dilute the hydrochloric acid solution, creating a low concentration, high-volume acid treatment through the entire well casing and borehole. This process is commonly referred to as a "bull heading" application, and is most commonly used to suppress flow by pumping high fluid-weight material into a well. Because the acidic solution is diluted as it enters the well, there is no danger of pump corrosion, and little to no gas is generated in the process as the solution enters the open-hole section of the well.

This report describes the work scope performed by Cardno ENTRIX through November 2010, including the first rehabilitation mobilization in October 2009 (Event #1), and the second rehabilitation mobilization in November 2010. This report also presents the ASR well rehabilitation results, and provides recommendations for future well rehabilitation, if needed. Short-duration capacity tests were completed both before acidation (sometimes referred to as "acidization") and following post-acidation development, using the existing

intake pump and well pump, respectively. A comparison of the preliminary test data to the post-acidation test data made specific conclusions about the effectiveness of the program possible. Two full-scale acidation events were performed. The first acidation was conducted in October 2009, during the "Storage" phase of Cycle-Test #2.

Chapter 2 REHABILITATION EVENTS

2.1 Rehabilitation Event #1

Cardno ENTRIX first conducted preliminary acid-calibration testing to determine the appropriate mixture of the acid and surface water for the rehabilitation process. The results of the testing indicated that either 2,000 gallons of a 28-percent hydrochloric acid solution, or 1,500 gallons of a 36-percent hydrochloric acid solution could be employed to effectively reduce the recharge water pH to between 2.5 to 3.0 units.

2.1.1 Equipment Setup

Cardno ENTRIX retained a subcontractor to deliver 1,575 gallons of 36-percent hydrochloric acid solution in a 3,000-gallon storage tank to the site. The tank was positioned adjacent to the concrete well pad inside a secondary-containment system consisting of a polyethylene enclosure. The secondary-containment enclosure had a capacity of 1.5 times the volume of acid stored in the tank.

The existing ASR well's pumping system required no modification in order to complete the acidation. The main intake line from the Kissimmee River to the ASR wellhead was equipped with a sampling tap, which is located just upstream of the ultraviolet-radiation disinfection cylinders. The tap was temporarily modified for the work scope with a threaded-pipe adapter to serve as the injection port for the acid solution.

2.1.2 Preliminary Capacity/Pumping Test

On October 12, 2009, a representative of the USACE site operator (R2T, Inc.) performed a pre-acidation (specific-capacity) pumping test on the ASR well to evaluate the well performance. Specific capacity is a measure of well yield per unit of drawdown. Well yield was measured in gallons per minute (gpm) and drawdown was measured in feet (ft), with specific capacity expressed in units of gallons per minute per foot of drawdown (gpm/ft). The static potentiometric (water) level in the ASR well was 150.50 feet above the down-hole water-level transducer. The water-level transducer is located approximately 7 feet above the well pad, and the transducer is installed to approximately 128 feet below the well pad. The potentiometric head is estimated from the transducer measurement and the wellhead pressure-gauge reading in pounds per square inch (psi), after correction to a freshwater-equivalent water level in feet above the transducer

(using 2.31 feet per psi). A water level of 150.05 feet above the transducer is equal to 22.5 feet above the well pad.

At approximately 09:00 hours, the operator (R2T, Inc.) began pumping from the ASR well to the onsite ponds (Figure 2) at a rate of approximately 3,500 gpm. The R2T operator continued pumping at this rate until approximately 10:30 hours. Water-level data were recorded at 15-minute intervals during the test. The water-level data recorded during the preliminary specific-capacity test are presented on Table 1. Analysis of the drawdown data indicates that the ASR pilot well had a specific capacity of approximately 38 gpm/ft at a flow rate of 3,500 gpm, as presented on Figure 4.a.

2.1.3 Rehabilitation Procedures

On October 13, 2009, Cardno ENTRIX initiated the acidation. The acid injection utilized a diaphragm chemical-feed pump (having a maximum pumping rate of 65 gallons per hour), and a removable (PVC) piping assembly that connected the pump to the sample/injection port. Water from the Kissimmee River was injected while the acid solution was pumped to "bull head" the river water into the formation. Kissimmee River water was withdrawn from the river intake in the same manner as done during ASR recharge. The injection rate of the river water dilutant was regulated by the R2T operator using the ASR system's control valves. The injection rate of the acid solution was controlled by the diaphragm pump.

An on-site, Cardno ENTRIX technician field-analyzed the quality of the injected surface water during the acidation and the data were utilized to adjust the acid-addition rate and maintain the desired pH between 2.5 and 3.5 pH units. During the acidation procedure, Cardno ENTRIX utilized a second sampling tap, which is located downstream of the point of acid injection (at the ASR wellhead), to collect water samples and periodically assess the effect of the acid addition on the injected water. Water samples from the ASR wellhead were analyzed for pH, specific conductance, and dissolved chloride concentration. A summary of injected water-quality results from the acidation procedure is presented as Table 2.

2.1.4 Storage and Control of Recovered Water

The acidation process was terminated on October 15, 2009. At 11:20 hours on October 16, 2009, the R2T operator began the recovery of residual acidation water from the ASR well at a pumping rate of 3,500 gpm. The National Pollution Discharge Elimination System (NPDES) permit for the facility requires that the recovered groundwater be tested before discharge to the Kissimmee River. The recovered water initially was directed to the on-site storage ponds to ensure the water quality of the recovered water met the surface discharge requirement of the facility under the NPDES permit. During recovery, samples of the discharged water and from the storage ponds were analyzed for pH, turbidity, and for

dissolved-chloride concentrations. A condition of the NPDES permit is that turbidity of the recovered water shall not exceed 29 nephelometric turbidity units (NTU) above the baseline value. The baseline turbidity was 7.8 NTU; therefore, in order to discharge to the river, the turbidity of the recovered residual-acidation water had to be less than 36 NTU. At the onset of recovery, the turbidity value was 400 NTU, and the field-analyzed chloride concentration was 140 milligrams per liter (mg/l). After two hours of recovery, the turbidity had decreased to 117 NTU and the chloride concentration had decreased to 80 mg/l. Based on storage limitations, recovery to the ponds was terminated at 13:30 hours on October 16, 2009. Recovered water was stored in the onsite ponds for two days before being discharged to the Kissimmee River on October 18, 2009. Prior to discharge, the turbidity was analyzed at 7.0 NTU. On October 19, 2009, the turbidity of the stored water was measured at 3.5 NTU (1000 hours).

2.1.5 Recharge and Recovery Volumes for Acidation

The estimated volume of water utilized to treat the ASR well, and the volume recovered following the treatment are estimated:

Estimated Total Volume Recharged for Acidation	4.58 M gallons
Estimated Total Volume Recovered after Acidation	3.66 M gallons

A summary of the water-level and pumping data is provided on Table 3. The flow recording equipment collects flow data at 15-minute intervals, and if pumping or recharge is discontinued between data scans, the interim volume is not included in the totalized flow.

2.2 Rehabilitation Event #2

The second rehabilitation event was conducted during the storage phase of Cycle Test #3. On November 1, 2010, an acid storage tank and pumping equipment were delivered and assembled. The same acid storage and injection assembly was used to duplicate the procedures conducted in October 2009. At 08:35 hours on November 2, 2010, recharge was initiated by the R2T, Inc., well operator at an injection rate of 3,500 gpm. Acidation then was initiated by ENTRIX at approximately 09:00 hours using 36-percent hydrochloric acid solution and the chemical feed pump (having a maximum pumping rate of 65 gallons per hour). High-volume recharge and acidation continued until 18:00 hours. On November 3, 2010, ENTRIX and the R2T operator resumed acidation at 07:00 hours and 3,500 gpm and continued until 17:30 hours. On November 4, 2010, ENTRIX and the operator resumed acidation at 07:30 hours and 3,500 gpm and continued until 12:40 hours. The acid tank was rinsed with potable water and that water was then pumped to the ASR well using the chemical feed pump. The acidation process was terminated on November 4, 2010. An estimated 5,530,000 gallons of river water and 1,600 gallons of acid were used during the second dilute acidation event.

2.2.1 Rehabilitation Procedures

Cardno ENTRIX initiated the acidation using the same diaphragm pump and a removable PVC piping assembly that connected the pump to the sample/injection port. Water from the Kissimmee River was injected while the acid solution was pumped to "bull head" the river water into the formation. Kissimmee River water was withdrawn from the river intake in the same manner as done during ASR recharge. The injection rate of the river water dilutant was again regulated by the R2T operator using the ASR system's control valves. The injection rate of the acid solution was controlled by the diaphragm pump.

An on-site, Cardno ENTRIX technician field-analyzed the quality of the injected surface water during the acidation and the data were utilized to adjust the acid-addition rate and maintain the desired pH between 2.5 and 3.5 pH units. Water samples from the ASR wellhead were analyzed for pH, specific conductance, and dissolved chloride concentration. A summary of injected water-quality results from the acidation procedure is presented as Table 2.

2.2.2 Storage and Control of Recovered Water

The R2T operator began the recovery phase of the second rehabilitation event on November 5, 2010 with discharge directed to the onsite backwash solids pond. Recovery proceeded from 10:03 hours at 3,500 gpm for 2 hours and 23 minutes.

In accordance with the NPDES permit for the facility, the recovered groundwater was sampled at the ASR wellhead and tested before discharge to the Kissimmee River. The recovered water was directed to the on-site storage ponds to ensure the water quality of the recovered water met the surface discharge requirement of the facility under the NPDES permit. During recovery, samples of the discharged water and from the storage ponds were analyzed for pH, turbidity, and for dissolved-chloride concentrations. A condition of the NPDES permit is that turbidity of the recovered water shall not exceed 29 NTU above the baseline value.

The initial turbidity value at 10:10 hours on November 5, 2010 was measured by the onsite Cardno ENTRIX technician at 67 NTU. By 10:20 hours, the turbidity value of the recovered water was 15 NTU, and the value by the end of the pumping on November 5, 2010 was 5 NTU. Chloride concentrations remained below 180 mg/l and specific conductance was measured below 700 microsiemens per centimeter (uS/cm) during the initial recovery. Based on storage limitations, recovery was terminated on November 5, 2010 (at 12:26 hours) after recovery of approximately 500,500 gallons.

On Monday, November 8, 2010, the R2T, Inc., operator resumed recovery at a pumping rate of 3,500 gpm (at 09:55 hours) and continued at that rate until 14:00 hours (for a recovery of about 857,500 gallons). The R2T, Inc., operator then allowed artesian flow after 14:00 hours and continued (with direct pass through of pond system to the outfall structure) until 10:00 hours on November 9, 2010

(recovery of approximately additional 2,832,000 gallons). The operator then resumed pumping at a rate of 3,500 gpm until 16:00 hours, for recovery of an additional 1,260,000 gallons. The total estimated volume recovered by 16:00 hours on November 9, 2010 was 5,450,000 gallons.

2.2.3 Recharge and Recovery Volumes for Acidation

The estimated volume of water utilized to treat the ASR well, and the volume recovered following the treatment are estimated:

Estimated Total Volume Recharged for Acidation	5.53 M gallons
Estimated Total Volume Recovered after Acidation	5.45 M gallons

A summary of the water-level and pumping data is provided on Table 4. The above field-estimated volumes compare well to the metered 15-minute average flow volumes recorded by the onsite data acquisition system. The flow recording collects flow at 15-minute intervals, and as mentioned above, if pumping or recharge is discontinued between data scans, the interim volume is not included in the totalized flow. Based on the onsite data-acquisition system records (summarized in Table 4), total recharge volume during acidation was approximately 5.51 M gallons and total recovered volume following the acidation event was 5.31 M gallons.

Chapter 3 POST-REHABILITATION TESTING

3.1 Post-Acidation Specific Capacity – Rehabilitation Event #1

October 16, 2009, the R2T, Inc., operator conducted a specific-capacity test to quantify the effectiveness of the rehabilitation. The water level of the ASR well was measured at 151.39 feet above the water-level transducer (or 23.39 feet above the well pad). At approximately 11:00 hours, the R2T, Inc., site operator began pumping from the ASR well to the pond at a flow rate of approximately 3,500 gpm. Pumping continued at this rate until approximately 1315 hours. Water-level data were recorded at 15-minute intervals during the pumping test (for 2 hours and 15 minutes). Table **1** presents the results of the pre- and post-rehabilitation, specific-capacity tests. Analysis of the drawdown data indicates that at a pumped rate of 3,500 gpm, the ASR well had a specific capacity of approximately 61 gpm/ft after the rehabilitation process. A graph showing the specific capacity of the ASR well before and after the rehabilitation event is presented as Figure 4.a.

3.2 Post-Acidation Specific Capacity – Rehabilitation Event #2

On November 8, 2010, the R2T, Inc., operator conducted a specific-capacity test to quantify the effectiveness of the rehabilitation. At 09:45 hours, the water level of the ASR well was recorded at 151.35 feet above the water-level transducer (or 23.35 feet above the well pad). At approximately 09:45 hours, the R2T, Inc., site operator began pumping from the ASR well to the pond at a flow rate of approximately 3,460 gpm. Pumping continued at this rate until approximately 11:35 hours. Water-level data were recorded at 15-minute intervals during the pumping test (for 2 hours). Table **1** presents the results of the pre- and post-rehabilitation, specific-capacity tests. Analysis of the drawdown data indicates that at a pumped rate of 3,500 gpm, the ASR well had a specific capacity of approximately 138 gpm/ft after the rehabilitation process. A graph showing the specific capacity of the ASR well before and after the 2010 rehabilitation event is presented as Figure 4.b.

Chapter 4 WATER QUALITY RESULTS

4.1 Water Samples from October 2009 – Rehabilitation Event #1

At 12:36 hours on October 19, 2009, Cardno ENTRIX collected water samples of the recovered ASR well water for analysis of NPDES permit-required parameters and other selected parameters, and the samples were shipped to Jupiter Laboratories, Inc. Analytical laboratory results indicate the quality of the recovered residual water was in conformance with Class II surface water-quality criteria prior to discharge. Exhibit A includes the results in the analytical laboratory report dated November 4, 2009.

4.2 Water Samples from November 2011 – Rehabilitation Event #2

At 12:00 hours on November 8, 2010, Cardno ENTRIX collected water samples of the recovered ASR well water for analysis of NPDES permit-required parameters and other selected parameters, and the samples were shipped to Jupiter Laboratories, Inc. Analytical laboratory results indicate the quality of the recovered residual water was in conformance with Class II surface water-quality criteria prior to discharge. Exhibit A includes the analytical laboratory report dated November 16, 2010.

Chapter 5 RESULTS AND CONCLUSIONS

Cardno ENTRIX completed a well rehabilitation program designed to dissolve the organics and/or calcium carbonate deposits in the well bore and to improve the capacity of the ASR well. This program involved injecting a weak solution of hydrochloric acid into the ASR well.

During Rehabilitation Event #1, a total of 4.55 million gallons of raw river water combined with 1,575 gallons of hydrochloric acid was injected into the ASR well over the course of 3 days. The results from previous rehabilitation in March 2004 (by South Florida Water Management District) are compared to the results of these rehabilitation events (before and after) and are presented on Figure 5.

Pre-acidation and post-acidation specific-capacity tests were conducted by the R2T, Inc., well operator to quantify the effectiveness of the rehabilitation process. Prior to acidation, the specific capacity of the ASR well was calculated at approximately 38 gpm/ft, at a flow rate of 5.0 million gallons per day (mgd). After acidation, the specific capacity of the ASR well was calculated at approximately 61 gpm/ft, at a flow rate of 5.0 mgd (Table 1). Therefore, the rehabilitation techniques performed in October 2009 improved the specific capacity of the well by approximately 60.5 percent.

During Rehabilitation Event #2, a total of 5.53 million gallons of raw river water combined with 1,600 gallons of hydrochloric acid was injected into the ASR well over the course of 2.5 days. The results from previous rehabilitation in March 2009 (by ENTRIX) are compared to the results of this second rehabilitation event (before and after) and are presented on Figure 5. A pre-acidation data evaluation was compared to a post-acidation specific-capacity test by the R2T, Inc., well operator to quantify the effectiveness of the rehabilitation process. Prior to acidation, the specific capacity of the ASR well was calculated at approximately 60 gpm/ft, at a flow rate of 5.0 mgd, using data acquired at the end of the Cycle #2 recovery period (Table 1). After acidation, the specific capacity of the ASR well was calculated at approximately 138 gpm/ft, at a flow rate of 5.0 mgd. Therefore, the rehabilitation techniques performed in October 2010 improved the specific capacity of the well by approximately 130 percent.

5.1 Recommendations

The results of the pre- and post-acidation capacity tests indicate that the rehabilitation process was successful. Cardno ENTRIX recommends that this rehabilitation process be repeated in the event that the specific capacity of the ASR well declines below a value of 45 gpm/ft (for a comparative pumping rate of 5.0 mgd or less). Using the process described above, acidation can be performed during a storage cycle, or toward the end of a typical recharge cycle, as warranted.

TABLES

Table 1. Pre- and Post-Rehabilitation Pumping Test Data (Rehabilitation Events in 2009 and 2010)

Rehabilitation Event #1

Pre-Acidization Pumping Test

Date	Time (hours)	Water Level (feet above transducer)	Flow Rate (mgd)	Flow Rate (gmp)	Drawdown (feet)	Specific Capacity (gpm/ft)
10/12/2009	0845	150.50	0.00	0	0.00	
10/12/2009	0900	63.07	5.04	3,500	87.43	40.03
10/12/2009	0915	61.67	5.04	3,500	88.83	39.40
10/12/2009	0930	60.32	5.04	3,500	90.18	38.81
10/12/2009	0945	60.19	5.04	3,500	90.31	38.76
10/12/2009	1000	59.47	5.04	3,500	91.03	38.45
10/12/2009	1015	59.05	5.04	3,500	91.45	38.27

Post-Acidization Pumping Test

Date	Time (hours)	Water Level (feet above transducer)	Flow Rate (mgd)	Flow Rate (gmp)	Drawdown (feet)	Specific Capacity (gpm/ft)
10/16/2009	1100	151.39	0.00	0	0	
10/16/2009	1130	99.07	5.03	3,495	52.33	66.80
10/16/2009	1145	97.84	5.01	3,483	53.55	65.03
10/16/2009	1200	97.21	4.99	3,468	54.19	64.01
10/16/2009	1215	96.91	5.00	3,470	54.48	63.68
10/16/2009	1230	96.40	4.99	3,467	54.99	63.06
10/16/2009	1245	94.71	5.02	3,489	56.68	61.54
10/16/2009	1300	94.37	5.04	3,502	57.02	61.42
10/16/2009	1315	94.75	5.02	3,487	56.64	61.56

Rehabilitation Event #2

2010 Pre-Acidization Pumping Data (End of Cycle Test #2 Recovery)

Date	Time (hours)	Water Level (feet above transducer)	Flow Rate (mgd)	Flow Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/ft)
1/2/2010	09:45	87.65	5.03	3,491	56.47	61.82
1/2/2010	10:00	88.11	5.01	3,482	56.01	62.17
1/2/2010	10:15	87.73	4.99	3,463	56.39	61.42
1/2/2010	10:30					
1/2/2010	10:45	87.90	4.99	3,464	56.22	61.62
1/2/2010	11:00	87.10	4.99	3,465	57.02	60.77
1/2/2010	11:30	144.12	0.00	0	0.00	

2010 Post-Acidization Pumping Test

Date	Time (hours)	Water Level (feet above transducer)	Flow Rate (mgd)	Flow Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/ft)
11/8/2010	09:45	151.35	0.00	0	0	
11/8/2010	10:00	129.80	5.20	3,611	21.55	167.56
11/8/2010	10:15	127.95	5.15	3,576	23.40	152.84
11/8/2010	10:30	128.41	5.00	3,472	22.94	151.36
11/8/2010	10:45	127.60	4.98	3,455	23.75	145.47
11/8/2010	11:00	127.37	5.00	3,472	23.98	144.80
11/8/2010	11:15	126.68	4.98	3,461	24.67	140.30
11/8/2010	11:30	126.77	5.00	3,472	24.58	141.23
11/8/2010	11:45	126.31	4.98	3,460	25.04	138.20

Notes:

In 2010, the specific capacity at 5.0 mgd prior to acidization was approximately 61 gpm/ft

In 2010, the specific capacity at 5.0 mgd after acidization was approximately 130 gpm/ft+

The most recent acidization increased the specific capacity by more than 100%

Table 2. Water Quality and Flow Data Recorded During ASR Well Rehabilitation Events

Summary for Rehabilitation Event #1

Date	Time (hours)	Flow Rate (gpm)	pH	Dissolved Chloride (mg/l)	Specific Conductance (µS/cm)	Line Pressure (psi)	Comments
10/13/09	0845	2,100	6.9	52	-	30	Started injecting acid
10/13/09	0846	0	-	-	-	-	Small leak in acid line. Stopped pumping.
10/13/09	1055	2,100	3.3	100	-	30	Resumed injecting acid
10/13/09	1115	2,100	3.0	120	-	30	
10/13/09	1125	2,100	2.9	140	-	30	
10/13/09	1126						
10/13/09	1245	2,100	3.0	120	-	29	
10/13/09	1300	2,100	3.0	120	-	29	
10/13/09	1330	2,100	2.9	120	-	29	
10/13/09	1500	2,100	2.8	130	-	29	
10/13/09	1700	2,100	2.8	140	-	29	
10/13/09	1900	2,100	2.8	140	-	29	Stopped injecting acid
10/14/09	0600	2,200	3.2	140	-	27	Started injecting acid
10/14/09	0800	2,200	2.8	140	-	27	
10/14/09	0805	3,000	3.0	120	-	39	Increased acid injection rate and well flow rate
10/14/09	0900	3,000	2.9	120	-	39	
10/14/09	1200	3,000	2.9	140	-	39	
10/14/09	1315	2,500	2.7	160	830	34	Decreased well flow rate
10/14/09	1500	2,500	2.6	160	870	33	
10/14/09	1600	2,500	2.6	160	870	31	
10/14/09	1715	2,500	2.7	220	805	31	
10/14/09	1745	2,500	2.7	200	815	31	
10/14/09	1945	2,500	2.7	180	815	31	Stopped injecting acid
10/15/09	0630	2,800	2.8	140	715	33	Started injecting acid
10/15/09	0800	2,800	2.7	160	900	33	
10/15/09	1000	2,800	2.7	240	880	33	
10/15/09	1200	2,800	2.6	200	900	33	
10/15/09	1205	3,500	2.6	100	730	41	Increased well flow rate
10/15/09	1300	3,500	2.6	140	880	41	
10/15/09	1425	3,500	2.6	140	850	41	Stopped injecting acid

Water samples for field water-quality analysis were collected at ASR wellhead
Total raw water injected = 4.58 million gallons
Total acid injected = 1,575 gallons

Table 2. Water Quality and Flow Data Recorded During ASR Well Rehabilitation Events

Summary for Rehabilitation Event #2

Date	Time (hours)	Flow Rate (gpm)	pH	Dissolved Chloride (mg/l)	Specific Conductance (µS/cm)	Line Pressure (psi)	Comments
11/02/10	0835	3,500	6.8	86	321	-	Started injecting water
11/02/10	0900	3,500	2.8	800	1,143	-	Set acid pump at 52 GPH.
11/02/10	1000	3,500	2.6	3,000	1,288	-	Set pump at 65 GPH.
11/02/10	1100	3,500	2.9	900	1,111	-	Set pump at 52 GPH.
11/02/10	1200	3,500	2.6	1,200	1,219	-	Set pump at 62 GPH
11/02/10	1300	3,500	2.6		1,210	-	
11/02/10	1400	3,500	2.6	1,000	1,215	-	
11/02/10	1500	3,500	2.8	850	951	-	Set pump to 26 GPH
11/02/10	1600	3,500	2.9	700	782	-	Set pump to 16.25 GPH
11/02/10	1700	3,500	2.7	-	983	-	Set pump to 26 GPH
11/02/10	1800	3,500	2.7	-	971	-	
11/02/10	1830	3,500	2.7	-	974	-	Stopped injecting acid
11/03/10	0700	3,500	2.8	-	1,003	-	Started injecting acid at 26 GPH
11/03/10	0800	3,500	2.8	-	891	-	Set pump to 16.25 GPH
11/03/10	0900	3,500	2.9	-	777	-	
11/03/10	1000	3,500	2.9	-	765	-	
11/03/10	1100	3,500	2.9	-	960	-	Set pump to 22.75 GPH
11/03/10	1200	3,500	2.7	-	1,148	-	Set pump to 39 GPH
11/03/10	1300	3,500	2.7	-	1,133	-	
11/03/10	1400	3,500	2.6	-	1,235	-	Set pump at 52 GPH.
11/03/10	1500	3,500	2.7	-	1,239	-	
11/03/10	1600	3,500	2.7	-	1,247	-	
11/03/10	1700	3,500	2.6	-	1,260		
11/03/10	1730	3,500	2.6	-	1,259		
11/04/10	0730	3,500	-	-	-	-	Started injecting acid at 26 GPH
11/04/10	0800	3,500	2.8	200	869	-	
11/04/10	0830	3,500	2.6	220	1,157	-	Set pump to 39 GPH
11/04/10	0900	3,500	2.6	240	1,248	-	Set pump at 52 GPH.
11/04/10	1000	3,500	2.6	240	1,236	-	Set pump at 65 GPH (100%).
11/04/10	1100	3,500	2.6	240	1,240	-	
11/04/10	1200	3,500	2.6	240	1,220	-	Stopped injecting acid

Water samples for field water-quality analysis were collected at ASR wellhead
Total raw water injected = 5.53 million gallons
Total acid injected = 1,600 gallons

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/12/09 8:00	150.29	0.000	0	0.000		Shut in
10/12/09 8:15		0.000	0	0.000		Shut in
10/12/09 8:30	150.42	0.000	0	0.000		Shut in
10/12/09 8:45	150.50	0.000	0	0.000		Static Water Level
10/12/09 9:00	63.07	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 9:15	61.67	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 9:30	60.32	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 9:45	60.19	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 10:00	59.47	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 10:15	59.05	5.040	0	5.040	52,500	Pre-acidization pump test
10/12/09 10:30		0.000	0	0.000		Stopped pump test @ 1025 hours
10/12/09 10:45	147.42	0.000	0	0.000		Shut in
10/12/09 11:00	148.18	0.000	0	0.000		Shut in
10/12/09 11:15		0.000	0	0.000		Shut in
10/12/09 11:30		0.000	0	0.000		Shut in
10/12/09 11:45		0.000	0	0.000		Shut in
10/12/09 12:00		0.000	0	0.000		Shut in
10/12/09 12:15		0.000	0	0.000		Shut in
10/12/09 12:30		0.000	0	0.000		Shut in
10/12/09 12:45		0.000	0	0.000		Shut in
10/12/09 13:00		0.000	0	0.000		Shut in
10/12/09 13:15		0.000	0	0.000		Shut in
10/12/09 13:30		0.000	0	0.000		Shut in
10/12/09 13:45		0.000	0	0.000		Shut in
10/12/09 14:00		0.000	0	0.000		Shut in
10/12/09 14:15		0.000	0	0.000		Shut in
10/12/09 14:30		0.000	0	0.000		Shut in
10/12/09 14:45		0.000	0	0.000		Shut in
10/12/09 15:00		0.000	0	0.000		Shut in
10/12/09 15:15		0.000	0	0.000		Shut in
10/12/09 15:30		0.000	0	0.000		Shut in
10/12/09 15:45		0.000	0	0.000		Shut in
10/12/09 16:00		0.000	0	0.000		Shut in
10/12/09 16:15		0.000	0	0.000		Shut in
10/12/09 16:30		0.000	0	0.000		Shut in
10/12/09 16:45		0.000	0	0.000		Shut in
10/12/09 17:00		0.000	0	0.000		Shut in
10/12/09 17:15		0.000	0	0.000		Shut in
10/12/09 17:30		0.000	0	0.000		Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/12/09 17:45		0.000	0	0.000		Shut in
10/12/09 18:00		0.000	0	0.000		Shut in
10/12/09 18:15		0.000	0	0.000		Shut in
10/12/09 18:30		0.000	0	0.000		Shut in
10/12/09 18:45		0.000	0	0.000		Shut in
10/12/09 19:00		0.000	0	0.000		Shut in
10/12/09 19:15		0.000	0	0.000		Shut in
10/12/09 19:30		0.000	0	0.000		Shut in
10/12/09 19:45		0.000	0	0.000		Shut in
10/12/09 20:00		0.000	0	0.000		Shut in
10/12/09 20:15		0.000	0	0.000		Shut in
10/12/09 20:30		0.000	0	0.000		Shut in
10/12/09 20:45		0.000	0	0.000		Shut in
10/12/09 21:00		0.000	0	0.000		Shut in
10/12/09 21:15		0.000	0	0.000		Shut in
10/12/09 21:30		0.000	0	0.000		Shut in
10/12/09 21:45		0.000	0	0.000		Shut in
10/12/09 22:00		0.000	0	0.000		Shut in
10/12/09 22:15		0.000	0	0.000		Shut in
10/12/09 22:30		0.000	0	0.000		Shut in
10/12/09 22:45		0.000	0	0.000		Shut in
10/12/09 23:00		0.000	0	0.000		Shut in
10/12/09 23:15		0.000	0	0.000		Shut in
10/12/09 23:30		0.000	0	0.000		Shut in
10/12/09 23:45		0.000	0	0.000		Shut in
10/13/09 0:00		0.000	0	0.000		Shut in
10/13/09 0:15		0.000	0	0.000		Shut in
10/13/09 0:30		0.000	0	0.000		Shut in
10/13/09 0:45		0.000	0	0.000		Shut in
10/13/09 1:00		0.000	0	0.000		Shut in
10/13/09 1:15		0.000	0	0.000		Shut in
10/13/09 1:30		0.000	0	0.000		Shut in
10/13/09 1:45		0.000	0	0.000		Shut in
10/13/09 2:00		0.000	0	0.000		Shut in
10/13/09 2:15		0.000	0	0.000		Shut in
10/13/09 2:30		0.000	0	0.000		Shut in
10/13/09 2:45		0.000	0	0.000		Shut in
10/13/09 3:00		0.000	0	0.000		Shut in
10/13/09 3:15		0.000	0	0.000		Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/13/09 3:30		0.000	0	0.000		Shut in
10/13/09 3:45		0.000	0	0.000		Shut in
10/13/09 4:00		0.000	0	0.000		Shut in
10/13/09 4:15		0.000	0	0.000		Shut in
10/13/09 4:30		0.000	0	0.000		Shut in
10/13/09 4:45		0.000	0	0.000		Shut in
10/13/09 5:00		0.000	0	0.000		Shut in
10/13/09 5:15		0.000	0	0.000		Shut in
10/13/09 5:30		0.000	0	0.000		Shut in
10/13/09 5:45		0.000	0	0.000		Shut in
10/13/09 6:00		0.000	0	0.000		Shut in
10/13/09 6:15		0.000	0	0.000		Shut in
10/13/09 6:30		0.000	0	0.000		Shut in
10/13/09 6:45		0.000	0	0.000		Shut in
10/13/09 7:00		0.000	0	0.000		Shut in
10/13/09 7:15		0.000	0	0.000		Shut in
10/13/09 7:30		0.000	0	0.000		Shut in
10/13/09 7:45		0.000	0	0.000		Shut in
10/13/09 8:00		0.000	0	0.000		Shut in
10/13/09 8:15		0.000	0	0.000		Shut in
10/13/09 8:30		0.000	0	0.000		Shut in
10/13/09 8:45		0.000	0	0.000		Shut in
10/13/09 9:00		0.000	0	0.000		Shut in
10/13/09 9:15		0.000	0	0.000		Shut in
10/13/09 9:30		0.000	0	0.000		Shut in
10/13/09 9:45		0.000	0	0.000		Shut in
10/13/09 10:00		0.000	0	0.000	0	Shut in
10/13/09 10:15		0.000	0	0.000	0	Shut in
10/13/09 10:30	150.67	0.000	0	0.000	0	Shut in
10/13/09 10:45	150.63	0.000	0	0.000	0	Shut in
10/13/09 11:00	184.39	3.100	32,290	0.000	0	Start Rehab. Started pumping acid @ 1055 hours.
10/13/09 11:15	186.29	3.103	32,321	0.000	0	Injecting acid
10/13/09 11:30	151.94	0.000	0	0.000	0	Stopped injecting acid @ 1125 hours.
10/13/09 11:45	151.22	0.000	0	0.000	0	Shut in
10/13/09 12:00	93.86	0.000	0	3.984	41,499	Recovered water for samples
10/13/09 12:15	104.02	0.000	0	3.656	38,085	Recovering
10/13/09 12:30	148.77	0.000	0	0.020	205	Recovering

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/13/09 12:45	181.47	3.096	32,255	0.000	0	Started injecting acid @ 1245 hours
10/13/09 13:00	184.22	3.139	32,695	0.000	0	Injecting acid
10/13/09 13:15	184.43	3.135	32,655	0.000	0	Injecting acid
10/13/09 13:30		3.133	32,633	0.000	0	Injecting acid
10/13/09 13:45	184.85	3.126	32,562	0.000	0	Injecting acid
10/13/09 14:00	185.40	3.138	32,691	0.000	0	Injecting acid
10/13/09 14:15	185.23	3.108	32,370	0.000	0	Injecting acid
10/13/09 14:30		3.123	32,531	0.000	0	Injecting acid
10/13/09 14:45	185.49	3.095	32,241	0.000	0	Injecting acid
10/13/09 15:00	185.36	3.123	32,526	0.000	0	Injecting acid
10/13/09 15:15	185.32	3.122	32,522	0.000	0	Injecting acid
10/13/09 15:30	185.36	3.129	32,597	0.000	0	Injecting acid
10/13/09 15:45	185.44	3.107	32,366	0.000	0	Injecting acid
10/13/09 16:00	185.02	3.105	32,344	0.000	0	Injecting acid
10/13/09 16:15	185.11	3.128	32,584	0.000	0	Injecting acid
10/13/09 16:30	185.23	3.108	32,375	0.000	0	Injecting acid
10/13/09 16:45	185.15	3.119	32,491	0.000	0	Injecting acid
10/13/09 17:00	185.11	3.144	32,753	0.000	0	Injecting acid
10/13/09 17:15	185.44	3.126	32,566	0.000	0	Injecting acid
10/13/09 17:30	185.02	3.110	32,397	0.000	0	Injecting acid
10/13/09 17:45	185.27	3.117	32,468	0.000	0	Injecting acid
10/13/09 18:00	185.40	3.123	32,531	0.000	0	Injecting acid
10/13/09 18:15	185.15	3.122	32,522	0.000	0	Injecting acid
10/13/09 18:30	184.89	3.101	32,304	0.000	0	Injecting acid
10/13/09 18:45	184.94	3.131	32,611	0.000	0	Injecting acid
10/13/09 19:00		3.127	32,571	0.000	0	Injecting acid
10/13/09 19:15	185.02	3.129	32,597	0.000	0	Injecting acid
10/13/09 19:30		3.142	32,726	0.000	0	Injecting acid
10/13/09 19:45	151.01	0.000	0	0.980	10,206	Stopped injecting acid @ 1945 hours
10/13/09 20:00	148.73	0.000	0	1.072	11,167	It appears that the valve may have been left slightly open
10/13/09 20:15	148.18	0.000	0	1.039	10,820	and the well flowed under artesion pressure throughout
10/13/09 20:30	147.71	0.000	0	1.033	10,758	the night.
10/13/09 20:45	147.59	0.000	0	1.013	10,557	
10/13/09 21:00	147.46	0.000	0	1.022	10,651	

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/13/09 21:15	147.16	0.000	0	1.013	10,557	
10/13/09 21:30	147.20	0.000	0	0.998	10,397	
10/13/09 21:45	146.91	0.000	0	0.997	10,388	
10/13/09 22:00	150.46	0.000	0	0.188	1,963	
10/13/09 22:15	150.93	0.000	0	0.161	1,678	
10/13/09 22:30	150.84	0.000	0	0.157	1,633	
10/13/09 22:45	150.88	0.000	0	0.148	1,544	
10/13/09 23:00		0.000	0	0.149	1,553	
10/13/09 23:15	150.93	0.000	0	0.145	1,513	
10/13/09 23:30	150.72	0.000	0	0.147	1,536	
10/13/09 23:45	150.63	0.000	0	0.143	1,487	
10/14/09 0:00	150.84	0.000	0	0.148	1,544	
10/14/09 0:15	150.84	0.000	0	0.154	1,607	
10/14/09 0:30	150.67	0.000	0	0.148	1,544	
10/14/09 0:45	150.63	0.000	0	0.156	1,629	
10/14/09 1:00	150.72	0.000	0	0.152	1,580	
10/14/09 1:15	150.59	0.000	0	0.150	1,567	
10/14/09 1:30	150.55	0.000	0	0.155	1,611	
10/14/09 1:45	150.67	0.000	0	0.156	1,620	
10/14/09 2:00	150.55	0.000	0	0.150	1,563	
10/14/09 2:15	150.50	0.000	0	0.158	1,647	
10/14/09 2:30	150.72	0.000	0	0.154	1,602	
10/14/09 2:45	150.55	0.000	0	0.156	1,625	
10/14/09 3:00	150.67	0.000	0	0.155	1,616	
10/14/09 3:15		0.000	0	0.159	1,656	
10/14/09 3:30		0.000	0	0.158	1,647	
10/14/09 3:45	150.46	0.000	0	0.156	1,629	
10/14/09 4:00	150.50	0.000	0	0.155	1,611	
10/14/09 4:15	150.33	0.000	0	0.162	1,691	
10/14/09 4:30	150.63	0.000	0	0.155	1,611	
10/14/09 4:45	150.50	0.000	0	0.158	1,642	
10/14/09 5:00	150.59	0.000	0	0.159	1,651	

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/14/09 5:15	150.42	0.000	0	0.154	1,602	
10/14/09 5:30	150.55	0.000	0	0.158	1,647	
10/14/09 5:45	150.42	0.000	0	0.159	1,656	
10/14/09 6:00		0.000	0	0.159	1,651	
10/14/09 6:15	180.28	3.145	32,762	0.000	0	Started injecting acid @ 0600 hours
10/14/09 6:30	181.34	3.119	32,491	0.000	0	Injecting acid
10/14/09 6:45	181.51	3.000	31,250	0.000	0	Injecting acid
10/14/09 7:00	181.68	3.108	32,370	0.000	0	Injecting acid
10/14/09 7:15	181.97	3.111	32,410	0.000	0	Injecting acid
10/14/09 7:30	182.02	3.096	32,246	0.000	0	Injecting acid
10/14/09 7:45	182.27	3.101	32,304	0.000	0	Injecting acid
10/14/09 8:00	202.66	4.255	44,325	0.000	0	Injecting acid
10/14/09 8:15	204.31	4.267	44,445	0.000	0	Injecting acid
10/14/09 8:30	204.56	4.279	44,570	0.000	0	Injecting acid
10/14/09 8:45	204.69	4.265	44,432	0.000	0	Injecting acid
10/14/09 9:00	204.56	4.265	44,423	0.000	0	Injecting acid
10/14/09 9:15	204.82	4.254	44,312	0.000	0	Injecting acid
10/14/09 9:30	204.69	4.264	44,414	0.000	0	Injecting acid
10/14/09 9:45	204.22	4.247	44,241	0.000	0	Injecting acid
10/14/09 10:00	204.35	4.240	44,169	0.000	0	Injecting acid
10/14/09 10:15	204.48	4.260	44,374	0.000	0	Injecting acid
10/14/09 10:30	204.35	4.258	44,352	0.000	0	Injecting acid
10/14/09 10:45	204.73	4.260	44,378	0.000	0	Injecting acid
10/14/09 11:00	204.65	4.271	44,485	0.000	0	Injecting acid
10/14/09 11:15	204.52	4.250	44,272	0.000	0	Injecting acid
10/14/09 11:30	204.56	4.228	44,040	0.000	0	Injecting acid
10/14/09 11:45	204.52	4.248	44,254	0.000	0	Injecting acid
10/14/09 12:00		4.252	44,294	0.000	0	Injecting acid
10/14/09 12:15	204.65	4.268	44,459	0.000	0	Injecting acid
10/14/09 12:30	204.52	4.283	44,614	0.000	0	Injecting acid
10/14/09 12:45	204.35	4.288	44,663	0.000	0	Injecting acid
10/14/09 13:00	204.06	4.246	44,227	0.000	0	Injecting acid

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/14/09 13:15	189.76	3.490	36,354	0.000	0	Injecting acid
10/14/09 13:30	190.69	3.554	37,021	0.000	0	Injecting acid
10/14/09 13:45	191.07	3.555	37,035	0.000	0	Injecting acid
10/14/09 14:00	190.69	3.569	37,173	0.000	0	Injecting acid
10/14/09 14:15	190.35	3.543	36,910	0.000	0	Injecting acid
10/14/09 14:30	190.69	3.567	37,159	0.000	0	Injecting acid
10/14/09 14:45	190.27	3.586	37,355	0.000	0	Injecting acid
10/14/09 15:00	190.35	3.604	37,538	0.000	0	Injecting acid
10/14/09 15:15	190.27	3.590	37,395	0.000	0	Injecting acid
10/14/09 15:30	189.84	3.579	37,284	0.000	0	Injecting acid
10/14/09 15:45	189.72	3.581	37,297	0.000	0	Injecting acid
10/14/09 16:00	189.50	3.568	37,164	0.000	0	Injecting acid
10/14/09 16:15	190.05	3.581	37,302	0.000	0	Injecting acid
10/14/09 16:30	189.38	3.582	37,315	0.000	0	Injecting acid
10/14/09 16:45		3.593	37,422	0.000	0	Injecting acid
10/14/09 17:00		3.594	37,435	0.000	0	Injecting acid
10/14/09 17:15	189.08	3.581	37,297	0.000	0	Injecting acid
10/14/09 17:30	188.87	3.587	37,369	0.000	0	Injecting acid
10/14/09 17:45	188.95	3.577	37,257	0.000	0	Injecting acid
10/14/09 18:00	189.08	3.596	37,462	0.000	0	Injecting acid
10/14/09 18:15	188.62	3.595	37,444	0.000	0	Injecting acid
10/14/09 18:30	188.79	3.597	37,471	0.000	0	Injecting acid
10/14/09 18:45	188.57	3.581	37,297	0.000	0	Injecting acid
10/14/09 19:00	188.45	3.588	37,377	0.000	0	Injecting acid
10/14/09 19:15	188.40	3.599	37,489	0.000	0	Injecting acid
10/14/09 19:30	188.24	3.579	37,279	0.000	0	Injecting acid
10/14/09 19:45	188.07	3.593	37,422	0.000	0	Stopped injecting acid @ 1945 hours
10/14/09 20:00	155.20	0.000	0	0.000	0	Shut in
10/14/09 20:15	154.31	0.000	0	0.000	0	Shut in
10/14/09 20:30	154.01	0.000	0	0.000	0	Shut in
10/14/09 20:45	153.46	0.000	0	0.000	0	Shut in
10/14/09 21:00	153.30	0.000	0	0.000	0	Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/14/09 21:15	153.08	0.000	0	0.000	0	Shut in
10/14/09 21:30	152.75	0.000	0	0.000	0	Shut in
10/14/09 21:45		0.000	0	0.000	0	Shut in
10/14/09 22:00	152.53	0.000	0	0.000	0	Shut in
10/14/09 22:15	152.32	0.000	0	0.000	0	Shut in
10/14/09 22:30	152.36	0.000	0	0.000	0	Shut in
10/14/09 22:45	152.24	0.000	0	0.000	0	Shut in
10/14/09 23:00	151.90	0.000	0	0.000	0	Shut in
10/14/09 23:15	151.86	0.000	0	0.000	0	Shut in
10/14/09 23:30	151.81	0.000	0	0.000	0	Shut in
10/14/09 23:45	151.90	0.000	0	0.000	0	Shut in
10/15/09 0:00	151.56	0.000	0	0.000	0	Shut in
10/15/09 0:15	151.65	0.000	0	0.000	0	Shut in
10/15/09 0:30	151.69	0.000	0	0.000	0	Shut in
10/15/09 0:45	151.43	0.000	0	0.000	0	Shut in
10/15/09 1:00	151.35	0.000	0	0.000	0	Shut in
10/15/09 1:15		0.000	0	0.000	0	Shut in
10/15/09 1:30	151.52	0.000	0	0.000	0	Shut in
10/15/09 1:45	151.43	0.000	0	0.000	0	Shut in
10/15/09 2:00	151.35	0.000	0	0.000	0	Shut in
10/15/09 2:15		0.000	0	0.000	0	Shut in
10/15/09 2:30	151.39	0.000	0	0.000	0	Shut in
10/15/09 2:45	151.43	0.000	0	0.000	0	Shut in
10/15/09 3:00	151.22	0.000	0	0.000	0	Shut in
10/15/09 3:15	151.27	0.000	0	0.000	0	Shut in
10/15/09 3:30	151.35	0.000	0	0.000	0	Shut in
10/15/09 3:45	151.05	0.000	0	0.000	0	Shut in
10/15/09 4:00	151.22	0.000	0	0.000	0	Shut in
10/15/09 4:15	151.14	0.000	0	0.000	0	Shut in
10/15/09 4:30	151.10	0.000	0	0.000	0	Shut in
10/15/09 4:45	151.18	0.000	0	0.000	0	Shut in
10/15/09 5:00		0.000	0	0.000	0	Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/15/09 5:15	151.05	0.000	0	0.000	0	Shut in
10/15/09 5:30		0.000	0	0.000	0	Shut in
10/15/09 5:45	151.22	0.000	0	0.000	0	Shut in
10/15/09 6:00	151.01	0.000	0	0.000	0	Shut in
10/15/09 6:15	151.05	0.000	0	0.000	0	Shut in
10/15/09 6:30	151.01	0.000	0	0.000	0	Started injecting acid @ 0630 hours
10/15/09 6:45	190.65	4.063	42,327	0.000	0	Injecting acid
10/15/09 7:00	191.87	4.089	42,589	0.000	0	Injecting acid
10/15/09 7:15	192.25	4.071	42,402	0.000	0	Injecting acid
10/15/09 7:30	192.21	4.053	42,220	0.000	0	Injecting acid
10/15/09 7:45	192.80	4.066	42,349	0.000	0	Injecting acid
10/15/09 8:00	192.72	4.048	42,162	0.000	0	Injecting acid
10/15/09 8:15	193.14	4.068	42,376	0.000	0	Injecting acid
10/15/09 8:30	193.10	4.069	42,384	0.000	0	Injecting acid
10/15/09 8:45	193.35	4.062	42,309	0.000	0	Injecting acid
10/15/09 9:00	193.06	4.069	42,384	0.000	0	Injecting acid
10/15/09 9:15		4.053	42,220	0.000	0	Injecting acid
10/15/09 9:30	193.18	4.061	42,300	0.000	0	Injecting acid
10/15/09 9:45	193.48	4.068	42,371	0.000	0	Injecting acid
10/15/09 10:00	193.23	4.060	42,287	0.000	0	Injecting acid
10/15/09 10:15	193.06	4.068	42,376	0.000	0	Injecting acid
10/15/09 10:30	193.14	4.072	42,420	0.000	0	Injecting acid
10/15/09 10:45		4.076	42,456	0.000	0	Injecting acid
10/15/09 11:00	193.27	4.064	42,336	0.000	0	Injecting acid
10/15/09 11:15	192.93	4.062	42,309	0.000	0	Injecting acid
10/15/09 11:30	192.89	4.067	42,362	0.000	0	Injecting acid
10/15/09 11:45	192.85	4.040	42,086	0.000	0	Injecting acid
10/15/09 12:00	207.48	4.926	51,313	0.000	0	Injecting acid
10/15/09 12:15	207.82	4.917	51,219	0.000	0	Injecting acid
10/15/09 12:30	208.03	4.917	51,215	0.000	0	Injecting acid
10/15/09 12:45	208.24	4.963	51,696	0.000	0	Injecting acid
10/15/09 13:00	208.37	4.957	51,638	0.000	0	Injecting acid
10/15/09 13:15	208.24	4.956	51,629	0.000	0	Injecting acid
10/15/09 13:30	188.57	3.772	39,291	0.000	0	Injecting acid

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/15/09 13:45	208.58	4.997	52,052	0.000	0	Injecting acid
10/15/09 14:00	208.96	5.013	52,216	0.000	0	Injecting acid
10/15/09 14:15	208.92	5.036	52,457	0.000	0	Injecting acid
10/15/09 14:30	209.39	5.017	52,256	0.000	0	Injecting acid
10/15/09 14:45	156.68	0.000	0	0.010	102	End Rehab .Stopped injecting acid @ 1435 hours
10/15/09 15:00	155.28	0.000	0	0.007	76	Shut in
10/15/09 15:15	154.69	0.000	0	0.007	71	Shut in
10/15/09 15:30	154.27	0.000	0	0.000	0	Shut in
10/15/09 15:45	153.72	0.000	0	0.006	62	Shut in
10/15/09 16:00	153.38	0.000	0	0.003	36	Shut in
10/15/09 16:15	153.30	0.000	0	0.002	22	Shut in
10/15/09 16:30	153.08	0.000	0	0.001	13	Shut in
10/15/09 16:45	152.79	0.000	0	0.000	0	Shut in
10/15/09 17:00	152.66	0.000	0	0.001	9	Shut in
10/15/09 17:15	152.45	0.000	0	0.000	0	Shut in
10/15/09 17:30	152.32	0.000	0	0.000	0	Shut in
10/15/09 17:45	152.36	0.000	0	0.000	0	Shut in
10/15/09 18:00	152.03	0.000	0	0.002	22	Shut in
10/15/09 18:15	152.07	0.000	0	0.000	0	Shut in
10/15/09 18:30		0.000	0	0.000	0	Shut in
10/15/09 18:45	151.81	0.000	0	0.000	0	Shut in
10/15/09 19:00	151.69	0.000	0	0.000	0	Shut in
10/15/09 19:15	151.77	0.000	0	0.000	0	Shut in
10/15/09 19:30		0.000	0	0.000	0	Shut in
10/15/09 19:45	151.69	0.000	0	0.000	0	Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/15/09 20:00	151.48	0.000	0	0.000	0	Shut in
10/15/09 20:15	151.43	0.000	0	0.000	0	Shut in
10/15/09 20:30	151.35	0.000	0	0.000	0	Shut in
10/15/09 20:45		0.000	0	0.000	0	Shut in
10/15/09 21:00	151.39	0.000	0	0.000	0	Shut in
10/15/09 21:15	151.22	0.000	0	0.000	0	Shut in
10/15/09 21:30	151.18	0.000	0	0.000	0	Shut in
10/15/09 21:45	151.35	0.000	0	0.000	0	Shut in
10/15/09 22:00	151.22	0.000	0	0.000	0	Shut in
10/15/09 22:15		0.000	0	0.000	0	Shut in
10/15/09 22:30		0.000	0	0.000	0	Shut in
10/15/09 22:45	151.05	0.000	0	0.000	0	Shut in
10/15/09 23:00		0.000	0	0.000	0	Shut in
10/15/09 23:15	151.14	0.000	0	0.000	0	Shut in
10/15/09 23:30		0.000	0	0.000	0	Shut in
10/15/09 23:45	150.97	0.000	0	0.000	0	Shut in
10/16/09 0:00	151.10	0.000	0	0.000	0	Shut in
10/16/09 0:15	150.93	0.000	0	0.000	0	Shut in
10/16/09 0:30	150.97	0.000	0	0.000	0	Shut in
10/16/09 0:45	151.01	0.000	0	0.000	0	Shut in
10/16/09 1:00	150.93	0.000	0	0.000	0	Shut in
10/16/09 1:15	150.84	0.000	0	0.000	0	Shut in
10/16/09 1:30		0.000	0	0.000	0	Shut in
10/16/09 1:45	150.88	0.000	0	0.000	0	Shut in
10/16/09 2:00	150.93	0.000	0	0.000	0	Shut in
10/16/09 2:15	150.97	0.000	0	0.000	0	Shut in
10/16/09 2:30	150.80	0.000	0	0.000	0	Shut in
10/16/09 2:45	150.97	0.000	0	0.000	0	Shut in
10/16/09 3:00	150.80	0.000	0	0.000	0	Shut in
10/16/09 3:15	151.01	0.000	0	0.000	0	Shut in
10/16/09 3:30	150.93	0.000	0	0.000	0	Shut in
10/16/09 3:45		0.000	0	0.000	0	Shut in
10/16/09 4:00	150.97	0.000	0	0.000	0	Shut in

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/16/09 4:15	150.88	0.000	0	0.000	0	Shut in
10/16/09 4:30	150.84	0.000	0	0.000	0	Shut in
10/16/09 4:45	150.76	0.000	0	0.000	0	Shut in
10/16/09 5:00	150.88	0.000	0	0.000	0	Shut in
10/16/09 5:15	150.72	0.000	0	0.000	0	Shut in
10/16/09 5:30		0.000	0	0.000	0	Shut in
10/16/09 5:45	150.84	0.000	0	0.000	0	Shut in
10/16/09 6:00	150.88	0.000	0	0.000	0	Shut in
10/16/09 6:15	150.59	0.000	0	0.000	0	Shut in
10/16/09 6:30	150.84	0.000	0	0.000	0	Shut in
10/16/09 6:45	150.93	0.000	0	0.000	0	Shut in
10/16/09 7:00	150.76	0.000	0	0.000	0	Shut in
10/16/09 7:15	150.72	0.000	0	0.000	0	Shut in
10/16/09 7:30		0.000	0	0.000	0	Shut in
10/16/09 7:45	150.67	0.000	0	0.000	0	Shut in
10/16/09 8:00	150.80	0.000	0	0.000	0	Shut in
10/16/09 8:15	150.59	0.000	0	0.000	0	Shut in
10/16/09 8:30	150.72	0.000	0	0.000	0	Shut in
10/16/09 8:45	150.76	0.000	0	0.000	0	Shut in
10/16/09 9:00	150.80	0.000	0	0.000	0	Shut in
10/16/09 9:15	150.72	0.000	0	0.000	0	Shut in
10/16/09 9:30	209.05	5.485	57,134	0.000	0	Shut in
10/16/09 9:45	147.97	0.000	0	1.231	12,827	Shut in
10/16/09 10:00	189.08	4.283	44,614	0.000	0	Shut in
10/16/09 10:15	190.39	4.259	44,370	0.000	0	Shut in
10/16/09 10:30	152.36	0.000	0	0.000	0	Shut in
10/16/09 10:45	151.69	0.000	0	0.009	89	Shut in
10/16/09 11:00	151.39	0.000	0	0.000	0	Static Water Level

Table 3. Summary of Water Level and Pumping Data for Rehabilitation Event #1

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
10/16/09 11:15	142.30	0.000	0	2.001	20,847	Post-acidization pump test
10/16/09 11:30	99.07	0.000	0	5.033	52,430	Post-acidization pump test
10/16/09 11:45	97.84	0.000	0	5.015	52,238	Post-acidization pump test
10/16/09 12:00	97.21	0.000	0	4.994	52,025	Post-acidization pump test
10/16/09 12:15	96.91	0.000	0	4.996	52,043	Post-acidization pump test
10/16/09 12:30	96.40	0.000	0	4.993	52,011	Post-acidization pump test
10/16/09 12:45	94.71	0.000	0	5.023	52,328	Post-acidization pump test
10/16/09 13:00	94.37	0.000	0	5.044	52,537	Post-acidization pump test
10/16/09 13:15	94.75	0.000	0	5.021	52,305	Post-acidization pump test
10/16/09 13:30	95.09	0.000	0	5.006	52,149	Post-acidization pump test
10/16/09 13:45	146.32	0.000	0	0.000	0	Shut in
10/16/09 14:00	147.50	0.000	0	0.000	0	Shut in
10/16/09 14:15	148.30	0.000	0	0.000	0	Shut in
10/16/09 14:30	148.73	0.000	0	0.000	0	Shut in
10/16/09 14:45	149.15	0.000	0	0.000	0	Shut in
10/16/09 15:00	149.15	0.000	0	0.000	0	Shut in

Approximately 4,584,997 gallons of water and 1,575 gallons of acid were injected during the rehabilitation process for Rehabilitation Event #1

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/2/10 8:30	151.14	5.043	0	0.000	0	Started injecting acid @ 0845 hours
11/2/10 8:45	175.12	5.097	52,528		0	Injecting acid
11/2/10 9:00	177.79	5.070	53,093		0	Injecting acid
11/2/10 9:15	178.42	5.073	52,817		0	Injecting acid
11/2/10 9:30	179.27	5.070	52,844		0	Injecting acid
11/2/10 9:45	179.69	5.071	52,817		0	Injecting acid
11/2/10 10:00	179.48	5.065	52,822		0	Injecting acid
11/2/10 10:15	179.82	5.079	52,759		0	Injecting acid
11/2/10 10:45	180.96	5.072	52,911		0	Injecting acid
11/2/10 11:00	180.41	5.082	52,830		0	Injecting acid
11/2/10 11:15	180.58	5.061	52,933		0	Injecting acid
11/2/10 11:30	180.83	5.078	52,715		0	Injecting acid
11/2/10 11:45	181.09	5.065	52,893		0	Injecting acid
11/2/10 12:00	181.17	5.041	52,759		0	Injecting acid
11/2/10 12:15	181.34	5.053	52,510		0	Injecting acid
11/2/10 12:30	180.96	5.055	52,639		0	Injecting acid
11/2/10 12:45	181.21	5.039	52,661		0	Injecting acid
11/2/10 13:00	181.81	5.051	52,488		0	Injecting acid
11/2/10 13:15	181.55	5.021	52,617		0	Injecting acid
11/2/10 13:30	181.64	5.054	52,305		0	Injecting acid
11/2/10 13:45	182.06	5.048	52,644		0	Injecting acid
11/2/10 14:00	181.97	5.055	52,581		0	Injecting acid
11/2/10 14:15	181.76	5.063	52,661		0	Injecting acid
11/2/10 14:30	182.57	5.075	52,737		0	Injecting acid
11/2/10 14:45	181.89	5.076	52,862		0	Injecting acid
11/2/10 15:00	182.65	5.034	52,875		0	Injecting acid
11/2/10 15:15	181.89	5.037	52,434		0	Injecting acid
11/2/10 15:30	181.64	5.046	52,470		0	Injecting acid
11/2/10 15:45	182.57	5.043	52,559		0	Injecting acid
11/2/10 16:00	183.16	5.067	52,528		0	Injecting acid
11/2/10 16:15	181.89	5.077	52,777		0	Injecting acid
11/2/10 16:30	182.02	5.052	52,888		0	Injecting acid
11/2/10 16:45	181.64	5.004	52,626		0	Injecting acid

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/2/10 17:00	182.36	5.020	52,127		0	Injecting acid
11/2/10 17:15	183.20	4.997	52,292		0	Injecting acid
11/2/10 17:30	182.36	5.027	52,052		0	Injecting acid
11/2/10 17:45	182.19	5.067	52,368		0	Injecting acid
11/2/10 18:00	182.14	5.004	52,786		0	Injecting acid
11/2/10 18:15	182.69	5.023	52,127		0	Injecting acid
11/2/10 18:30	182.02	5.034	52,319		0	Injecting acid
11/2/10 18:45	158.58	0.000	52,439		0	Shut in
11/2/10 19:00	157.48		0		0	Shut in
11/2/10 19:15	156.47		0		0	Shut in
11/2/10 19:30	155.75		0		0	Shut in
11/2/10 19:45	155.41		0		0	Shut in
11/2/10 20:00	154.90		0		0	Shut in
11/2/10 20:15	154.56		0		0	Shut in
11/2/10 20:30	154.44		0		0	Shut in
11/2/10 20:45	154.06		0		0	Shut in
11/2/10 21:00	153.97		0		0	Shut in
11/2/10 21:15	153.63		0		0	Shut in
11/2/10 21:30	153.59		0		0	Shut in
11/2/10 22:00	153.42		0		0	Shut in
11/2/10 22:15	153.30		0		0	Shut in
11/2/10 22:30	153.08		0		0	Shut in
11/2/10 22:45	152.75		0		0	Shut in
11/2/10 23:00	152.79		0		0	Shut in
11/2/10 23:15	152.53		0		0	Shut in
11/2/10 23:30	152.62		0		0	Shut in
11/2/10 23:45	152.70		0		0	Shut in

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/3/10 0:00	152.83		0		0	Shut in
11/3/10 0:15	152.70		0		0	Shut in
11/3/10 0:30	152.36		0		0	Shut in
11/3/10 0:45	152.24		0		0	Shut in
11/3/10 1:00	152.15		0		0	Shut in
11/3/10 1:15	152.11		0		0	Shut in
11/3/10 1:30	152.28		0		0	Shut in
11/3/10 1:45	152.24		0		0	Shut in
11/3/10 2:00	152.32		0		0	Shut in
11/3/10 2:15	151.94		0		0	Shut in
11/3/10 2:30	152.11		0		0	Shut in
11/3/10 2:45	152.03		0		0	Shut in
11/3/10 3:15	151.81		0		0	Shut in
11/3/10 3:30	152.03		0		0	Shut in
11/3/10 3:45	152.24		0		0	Shut in
11/3/10 4:00	152.03		0		0	Shut in
11/3/10 4:15	151.90		0		0	Shut in
11/3/10 4:30	152.15		0		0	Shut in
11/3/10 4:45	151.73		0		0	Shut in
11/3/10 5:30	151.90		0		0	Shut in
11/3/10 5:45	151.65		0		0	Shut in
11/3/10 6:00	152.15		0		0	Shut in
11/3/10 6:15	151.65		0		0	Shut in
11/3/10 6:45	151.81		0		0	Shut in
11/3/10 7:00	173.22	5.029	52,385		0	Injecting acid
11/3/10 7:15	176.01	5.087	52,986		0	Injecting acid
11/3/10 7:30	177.41	5.106	53,186		0	Injecting acid
11/3/10 7:45	178.17	5.082	52,942		0	Injecting acid
11/3/10 8:00	178.25	5.097	53,093		0	Injecting acid
11/3/10 8:15	178.46	5.076	52,879		0	Injecting acid

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/3/10 8:30	179.18	5.065	52,764		0	Injecting acid
11/3/10 8:45	179.23	5.083	52,951		0	Injecting acid
11/3/10 9:00	179.65	5.070	52,813		0	Injecting acid
11/3/10 9:15	179.39	5.063	52,737		0	Injecting acid
11/3/10 9:30	179.31	5.071	52,826		0	Injecting acid
11/3/10 9:45	180.41	5.077	52,888		0	Injecting acid
11/3/10 10:00	179.69	5.071	52,826		0	Injecting acid
11/3/10 10:15	180.16	5.024	52,336		0	Injecting acid
11/3/10 10:30	180.66	5.039	52,492		0	Injecting acid
11/3/10 10:45	180.28	5.076	52,871		0	Injecting acid
11/3/10 11:00	181.13	5.047	52,568		0	Injecting acid
11/3/10 11:15	181.38	5.040	52,497		0	Injecting acid
11/3/10 11:30	180.88	5.035	52,452		0	Injecting acid
11/3/10 11:45	181.34	5.065	52,759		0	Injecting acid
11/3/10 12:00	181.09	5.029	52,390		0	Injecting acid
11/3/10 12:15	181.34	5.070	52,813		0	Injecting acid
11/3/10 12:30	181.42	5.047	52,577		0	Injecting acid
11/3/10 12:45	181.55	5.027	52,363		0	Injecting acid
11/3/10 13:00	181.30	5.039	52,492		0	Injecting acid
11/3/10 13:15	181.55	5.068	52,795		0	Injecting acid
11/3/10 13:30	181.30	5.054	52,644		0	Injecting acid
11/3/10 13:45	181.76	5.019	52,279		0	Injecting acid
11/3/10 14:00	181.30	5.045	52,550		0	Injecting acid
11/3/10 14:15	181.89	5.060	52,706		0	Injecting acid
11/3/10 14:30	181.68	5.032	52,421		0	Injecting acid
11/3/10 14:45	182.14	5.067	52,781		0	Injecting acid
11/3/10 15:15	182.31	5.023	52,319		0	Injecting acid
11/3/10 15:30	158.75	5.034	52,439		0	Injecting acid
11/3/10 15:45	178.84	5.034	52,439		0	Injecting acid

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/3/10 16:00	180.83	4.955	51,615		0	Injecting acid
11/3/10 16:15	180.96	4.987	51,949		0	Injecting acid
11/3/10 16:30	180.24	4.996	52,043		0	Injecting acid
11/3/10 16:45	180.66	4.988	51,954		0	Injecting acid
11/3/10 17:00	180.49	4.989	51,967		0	Injecting acid
11/3/10 17:15	181.68	4.967	51,736		0	Injecting acid
11/3/10 17:30	181.13	5.017	52,256		0	Injecting acid
11/3/10 17:45	158.92	5.023	52,328		0	Injecting acid
11/3/10 18:00	157.23		0		0	Shut in
11/3/10 18:15	156.59		0		0	Shut in
11/3/10 18:30	156.21		0		0	Shut in
11/3/10 18:45	155.66		0		0	Shut in
11/3/10 19:00	155.41		0		0	Shut in
11/3/10 19:15	154.90		0		0	Shut in
11/3/10 19:30	154.48		0		0	Shut in
11/3/10 19:45	154.56		0		0	Shut in
11/3/10 20:00	154.14		0		0	Shut in
11/3/10 20:30	153.93		0		0	Shut in
11/3/10 20:45	153.59		0		0	Shut in
11/3/10 21:00	153.42		0		0	Shut in
11/3/10 21:15	153.55		0		0	Shut in
11/3/10 21:30	153.25		0		0	Shut in
11/3/10 21:45	153.08		0		0	Shut in
11/3/10 22:00	153.17		0		0	Shut in
11/3/10 22:15	153.13		0		0	Shut in
11/3/10 22:30	152.96		0		0	Shut in
11/3/10 22:45	152.62		0		0	Shut in
11/3/10 23:00	152.87		0		0	Shut in
11/3/10 23:15	152.75		0		0	Shut in
11/3/10 23:45	152.62		0		0	Shut in
11/4/10 0:00	152.53		0		0	Shut in

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/4/10 0:15	152.62		0		0	Shut in
11/4/10 0:30	152.28		0		0	Shut in
11/4/10 0:45	152.24		0		0	Shut in
11/4/10 1:00	152.15		0		0	Shut in
11/4/10 1:30	152.11		0		0	Shut in
11/4/10 1:45	152.36		0		0	Shut in
11/4/10 2:00	152.03		0		0	Shut in
11/4/10 2:15	152.07		0		0	Shut in
11/4/10 2:30	152.20		0		0	Shut in
11/4/10 2:45	152.15		0		0	Shut in
11/4/10 3:00	152.24		0		0	Shut in
11/4/10 3:15	152.07		0		0	Shut in
11/4/10 3:30	151.90		0		0	Shut in
11/4/10 3:45	152.20		0		0	Shut in
11/4/10 4:00	152.07		0		0	Shut in
11/4/10 4:15	151.81		0		0	Shut in
11/4/10 4:30	151.90		0		0	Shut in
11/4/10 5:00	152.07		0		0	Shut in
11/4/10 5:15	152.11		0		0	Shut in
11/4/10 5:30	152.03		0		0	Shut in
11/4/10 5:45	152.11		0		0	Shut in
11/4/10 6:00	151.90		0		0	Shut in
11/4/10 6:15	151.94		0		0	Shut in
11/4/10 6:30	152.11		0		0	Shut in
11/4/10 6:45	151.94		0		0	Shut in
11/4/10 7:00	152.03		0		0	Shut in
11/4/10 7:15	152.11		0		0	Shut in
11/4/10 7:30	151.01		0		0	Shut in
11/4/10 7:45	175.33	5.095	53,075		0	Injecting acid
11/4/10 8:00	175.88	5.099	53,120		0	Injecting acid
11/4/10 8:15	176.86	5.069	52,799		0	Injecting acid

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/4/10 8:30	177.58	5.067	52,781		0	Injecting acid
11/4/10 8:45	177.07	5.065	52,759		0	Injecting acid
11/4/10 9:00	178.04	5.039	52,488		0	Injecting acid
11/4/10 9:15	177.91	5.047	52,568		0	Injecting acid
11/4/10 9:30	179.06	5.055	52,661		0	Injecting acid
11/4/10 9:45	179.35	5.042	52,523		0	Injecting acid
11/4/10 10:00	178.80	5.075	52,866		0	Injecting acid
11/4/10 10:15	178.72	5.047	52,577		0	Injecting acid
11/4/10 10:30	179.31	5.019	52,283		0	Injecting acid
11/4/10 10:45	178.93	5.058	52,688		0	Injecting acid
11/4/10 11:00	179.73	5.052	52,621		0	Injecting acid
11/4/10 11:15	179.44	5.043	52,532		0	Injecting acid
11/4/10 11:30	179.90	5.038	52,483		0	Injecting acid
11/4/10 11:45	179.35	5.014	52,225		0	Injecting acid
11/4/10 12:00	180.16	5.031	52,403		0	Injecting acid
11/4/10 12:15	179.90	5.056	52,670		0	Injecting acid
11/4/10 12:30	180.16	5.063	52,737		0	Injecting acid
11/4/10 12:45	158.92	0.000	0		0	Shut in
11/4/10 13:00	170.76	3.828	39,870		0	Injecting acid
11/5/10 10:00	151.60		0		0	Shut in (Est. Recharge Volume: 5,456,924 gal.)
11/5/10 10:15	128.89	0.000	0	5.032	52,416	Recovery: Post-acidization pump test
11/5/10 10:30	128.59	0.000	0	5.014	52,225	Recovery
11/5/10 10:45	127.66	0.000	0	5.035	52,448	Recovery
11/5/10 11:00	126.86	0.000	0	5.014	52,230	Recovery

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/5/10 11:15	126.52	0.000	0	4.997	52,056	Recovery
11/5/10 11:30	126.39	0.000	0	4.988	51,954	Recovery
11/5/10 11:45	126.05	0.000	0	4.990	51,976	Recovery
11/5/10 12:30	146.44	0.000	0	0.000	0	Shut in
11/8/10 10:00	129.82	0.000	0	5.204	54,206	Pumping to pond
11/8/10 10:15	127.96	0.000	0	5.148	53,623	Recovery
11/8/10 10:30	128.42	0.000	0	5.001	52,096	Recovery
11/8/10 10:45	127.62	0.000	0	4.975	51,825	Recovery
11/8/10 11:00	127.37	0.000	0	5.002	52,101	Recovery
11/8/10 11:15	126.69	0.000	0	4.985	51,923	Recovery
11/8/10 11:30	126.77	0.000	0	4.999	52,074	Recovery
11/8/10 11:45	126.31	0.000	0	4.984	51,914	Recovery
11/8/10 12:00	125.72	0.000	0	4.989	51,967	Recovery
11/8/10 12:15	125.63	0.000	0	4.983	51,905	Recovery
11/8/10 12:30	125.76	0.000	0	5.005	52,136	Recovery
11/8/10 12:45	124.91	0.000	0	4.984	51,914	Recovery
11/8/10 13:00	125.25	0.000	0	4.994	52,020	Recovery
11/8/10 13:15	124.78	0.000	0	4.986	51,940	Recovery
11/8/10 13:30	124.49	0.000	0	4.963	51,696	Recovery
11/8/10 13:45	124.40	0.000	0	4.986	51,936	Recovery
11/8/10 14:00	135.02	0.000	0	3.554	37,026	Flowing to pond
11/8/10 14:15	134.89	0.000	0	3.416	35,584	Recovery
11/8/10 14:30	134.98	0.000	0	3.435	35,780	Recovery
11/8/10 15:00	135.87	0.000	0	3.438	35,815	Recovery
11/8/10 15:15	135.15	0.000	0	3.356	34,961	Recovery
11/8/10 15:30	134.85	0.000	0	3.427	35,699	Recovery
11/8/10 15:45	135.11	0.000	0	3.467	36,113	Recovery
11/8/10 16:00	135.19	0.000	0	3.441	35,846	Recovery

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/8/10 16:15	135.06	0.000	0	3.459	36,029	Recovery
11/8/10 16:30	135.15	0.000	0	3.469	36,136	Recovery
11/8/10 16:45	135.19	0.000	0	3.445	35,886	Recovery
11/8/10 17:00	135.23	0.000	0	3.483	36,278	Recovery
11/8/10 17:15	134.98	0.000	0	3.471	36,153	Recovery
11/8/10 17:30	135.02	0.000	0	3.465	36,096	Recovery
11/8/10 17:45	134.94	0.000	0	3.460	36,042	Recovery
11/8/10 18:00	134.81	0.000	0	3.453	35,971	Recovery
11/8/10 18:15	135.11	0.000	0	3.457	36,007	Recovery
11/8/10 18:30	135.02	0.000	0	3.444	35,873	Recovery
11/8/10 18:45	134.98	0.000	0	3.461	36,056	Recovery
11/8/10 19:00	135.23	0.000	0	3.458	36,020	Recovery
11/8/10 19:15	134.81	0.000	0	3.457	36,011	Recovery
11/8/10 19:30	134.98	0.000	0	3.430	35,731	Recovery
11/8/10 19:45	135.02	0.000	0	3.445	35,882	Recovery
11/8/10 20:00	134.77	0.000	0	3.450	35,935	Recovery
11/8/10 20:15	134.94	0.000	0	3.459	36,033	Recovery
11/8/10 20:30	135.06	0.000	0	3.437	35,802	Recovery
11/8/10 20:45	134.85	0.000	0	3.462	36,060	Recovery
11/8/10 21:00	134.98	0.000	0	3.441	35,842	Recovery
11/8/10 21:15	135.02	0.000	0	3.410	35,526	Recovery
11/8/10 21:30	134.81	0.000	0	3.448	35,918	Recovery
11/8/10 21:45	134.94	0.000	0	3.416	35,584	Recovery

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/8/10 22:00	135.11	0.000	0	3.431	35,740	Recovery
11/8/10 22:15	135.15	0.000	0	3.428	35,704	Recovery
11/8/10 22:30	134.77	0.000	0	3.461	36,051	Recovery
11/8/10 22:45	134.85	0.000	0	3.430	35,726	Recovery
11/8/10 23:00	135.11	0.000	0	3.423	35,659	Recovery
11/8/10 23:15	134.89	0.000	0	3.430	35,726	Recovery
11/8/10 23:30	135.11	0.000	0	3.429	35,717	Recovery
11/8/10 23:45	134.73	0.000	0	3.424	35,668	Recovery
11/9/10 0:00	135.02	0.000	0	3.435	35,780	Recovery
11/9/10 0:15	134.89	0.000	0	3.422	35,642	Recovery
11/9/10 0:30	134.94	0.000	0	3.428	35,704	Recovery
11/9/10 0:45	134.81	0.000	0	3.431	35,740	Recovery
11/9/10 1:00	135.06	0.000	0	3.417	35,593	Recovery
11/9/10 1:15	134.81	0.000	0	3.419	35,615	Recovery
11/9/10 1:30	134.60	0.000	0	3.424	35,668	Recovery
11/9/10 1:45	135.15	0.000	0	3.429	35,717	Recovery
11/9/10 2:00	135.06	0.000	0	3.425	35,682	Recovery
11/9/10 2:15	134.81	0.000	0	3.431	35,740	Recovery
11/9/10 2:30	134.85	0.000	0	3.429	35,717	Recovery
11/9/10 2:45	134.68	0.000	0	3.413	35,553	Recovery
11/9/10 3:00	134.94	0.000	0	3.431	35,740	Recovery
11/9/10 3:15	134.77	0.000	0	3.434	35,775	Recovery
11/9/10 3:30	134.85	0.000	0	3.424	35,664	Recovery
11/9/10 3:45	135.06	0.000	0	3.413	35,557	Recovery

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

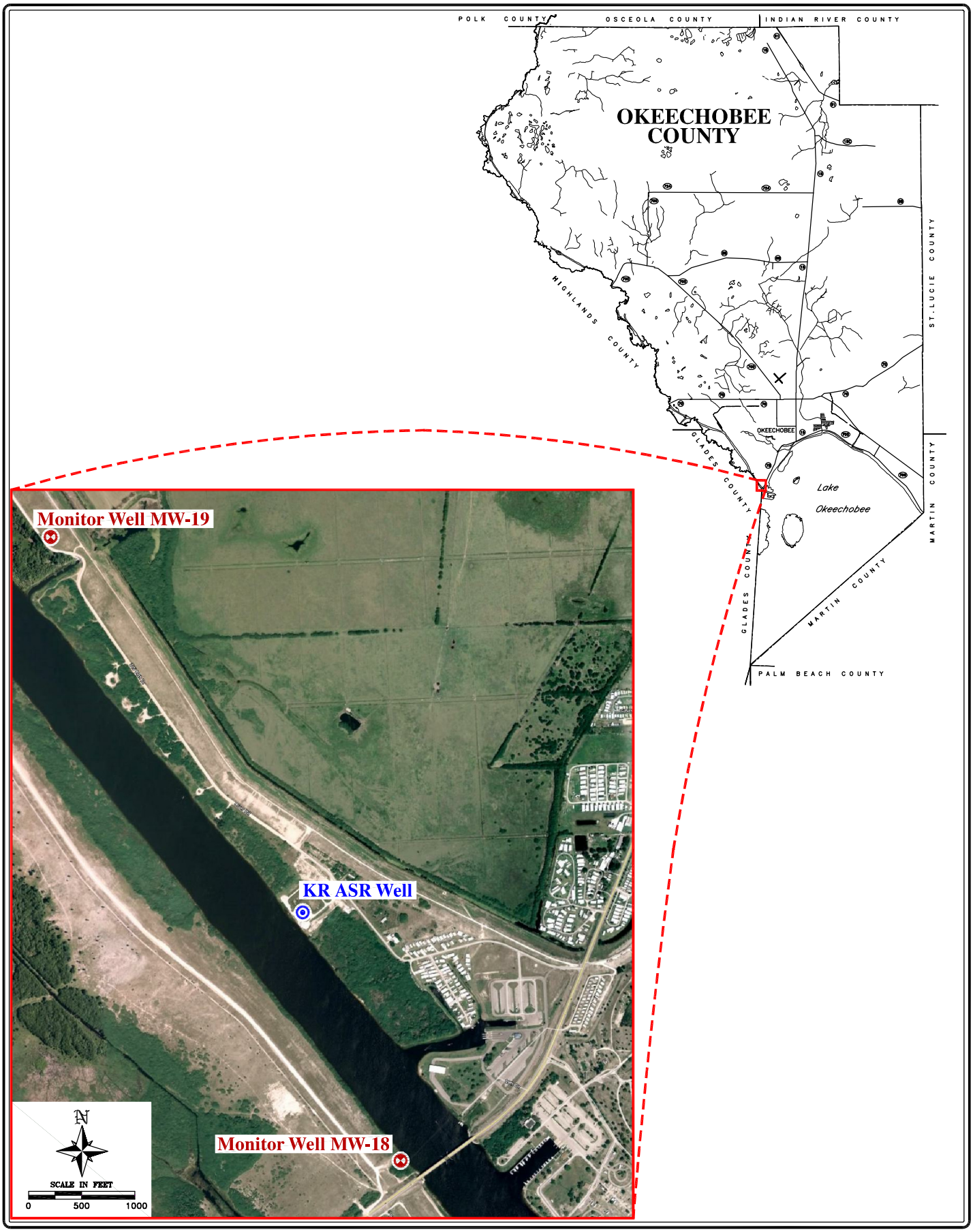
Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/9/10 4:00	134.81	0.000	0	3.411	35,530	Recovery
11/9/10 4:15	134.94	0.000	0	3.409	35,513	Recovery
11/9/10 4:30	134.85	0.000	0	3.421	35,633	Recovery
11/9/10 4:45	135.15	0.000	0	3.414	35,566	Recovery
11/9/10 5:00	134.81	0.000	0	3.424	35,664	Recovery
11/9/10 5:15	134.68	0.000	0	3.413	35,557	Recovery
11/9/10 5:30	134.77	0.000	0	3.415	35,575	Recovery
11/9/10 5:45	134.81	0.000	0	3.404	35,459	Recovery
11/9/10 6:00	135.06	0.000	0	3.387	35,277	Recovery
11/9/10 6:15	135.15	0.000	0	3.424	35,668	Recovery
11/9/10 6:30	134.89	0.000	0	3.414	35,566	Recovery
11/9/10 6:45	134.77	0.000	0	3.416	35,579	Recovery
11/9/10 7:00	135.06	0.000	0	3.405	35,473	Recovery
11/9/10 7:15	134.98	0.000	0	3.432	35,748	Recovery
11/9/10 7:30	134.89	0.000	0	3.416	35,579	Recovery
11/9/10 8:00	135.06	0.000	0	3.411	35,535	Recovery
11/9/10 8:15	134.73	0.000	0	3.419	35,619	Recovery
11/9/10 8:45	134.81	0.000	0	3.422	35,651	Recovery
11/9/10 9:15	134.60	0.000	0	3.415	35,575	Recovery
11/9/10 9:30	134.77	0.000	0	3.435	35,780	Recovery
11/9/10 10:00	139.72	0.000	0	3.439	35,820	Recovery
11/9/10 10:15	125.80	0.000	0	3.421	35,633	Recovery
11/9/10 10:30	125.08	0.000	0	3.423	35,655	Recovery
11/9/10 10:45	124.53	0.000	0	3.433	35,762	Recovery
11/9/10 11:00	124.28	0.000	0	2.421	25,218	Recovery
11/9/10 11:30	123.85	0.000	0	5.020	52,296	Pumping to pond

Table 4. Summary of Water Level and Pumping Data for Rehabilitation Event #2

Date	ASR Well Level (feet)	ASR Well Recharge Flow (mgd)	Gallons Recharged in 15 Minutes	ASR Well Recovery Flow (mgd)	Gallons Recovered in 15 Minutes	Comments
11/9/10 11:45	123.69	0.000	0	4.987	51,945	Recovery
11/9/10 12:00	123.64	0.000	0	5.001	52,096	Recovery
11/9/10 12:15	123.56	0.000	0	5.002	52,101	Recovery
11/9/10 12:30	122.97	0.000	0	4.983	51,909	Recovery
11/9/10 12:45	122.84	0.000	0	4.968	51,749	Recovery
11/9/10 13:00	122.92	0.000	0	4.984	51,914	Recovery
11/9/10 13:15	122.75	0.000	0	4.985	51,927	Recovery
11/9/10 13:30	123.18	0.000	0	4.994	52,025	Recovery
11/9/10 13:45	122.46	0.000	0	4.964	51,709	Recovery
11/9/10 14:00	122.88	0.000	0	5.014	52,234	Recovery
11/9/10 14:15	122.80	0.000	0	4.985	51,927	Recovery
11/9/10 14:30	122.25	0.000	0	5.024	52,336	Recovery
11/9/10 14:45	122.71	0.000	0	5.003	52,118	Recovery
11/9/10 15:00	122.42	0.000	0	5.019	52,283	Recovery
11/9/10 15:15	122.46	0.000	0	5.013	52,216	Recovery
11/9/10 15:30	122.54	0.000	0	4.988	51,954	Recovery
11/9/10 15:45	122.50	0.000	0	4.998	52,065	Recovery
11/9/10 16:00	122.46	0.000	0	5.016	52,252	**Estimated amount recovered using above data**
			0		0	**4,674,532**
			0	*4.988*	*51,954*	***Adjustment for 9 missing 15-minute periods above***
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	
			0	*4.988*	*51,954*	**Estimated Volume recovered using onsite data acquisition**
						5,142,114
				Estimated volume recovered using field recorded start/stop times: 5,450,000		

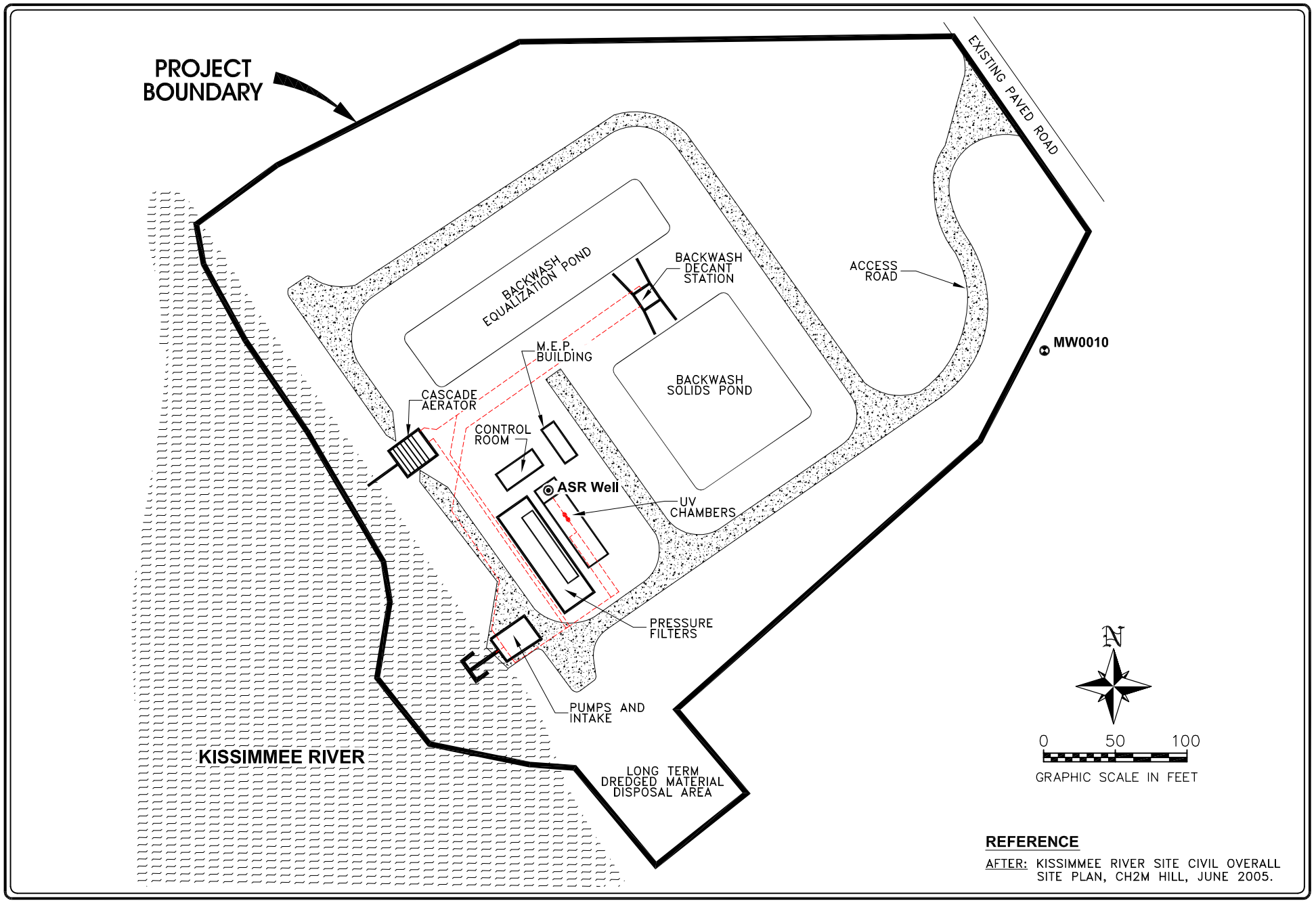
Approximately 5,456,924 gallons of water and 1,600 gallons of acid were injected during the rehabilitation process for Rehabilitation Event #2

FIGURES



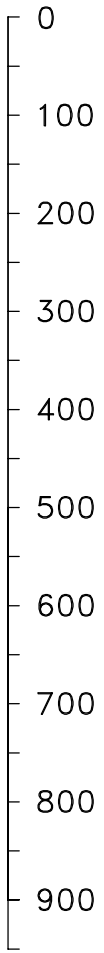
Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 02/15/11

FIGURE 1. SITE MAP.

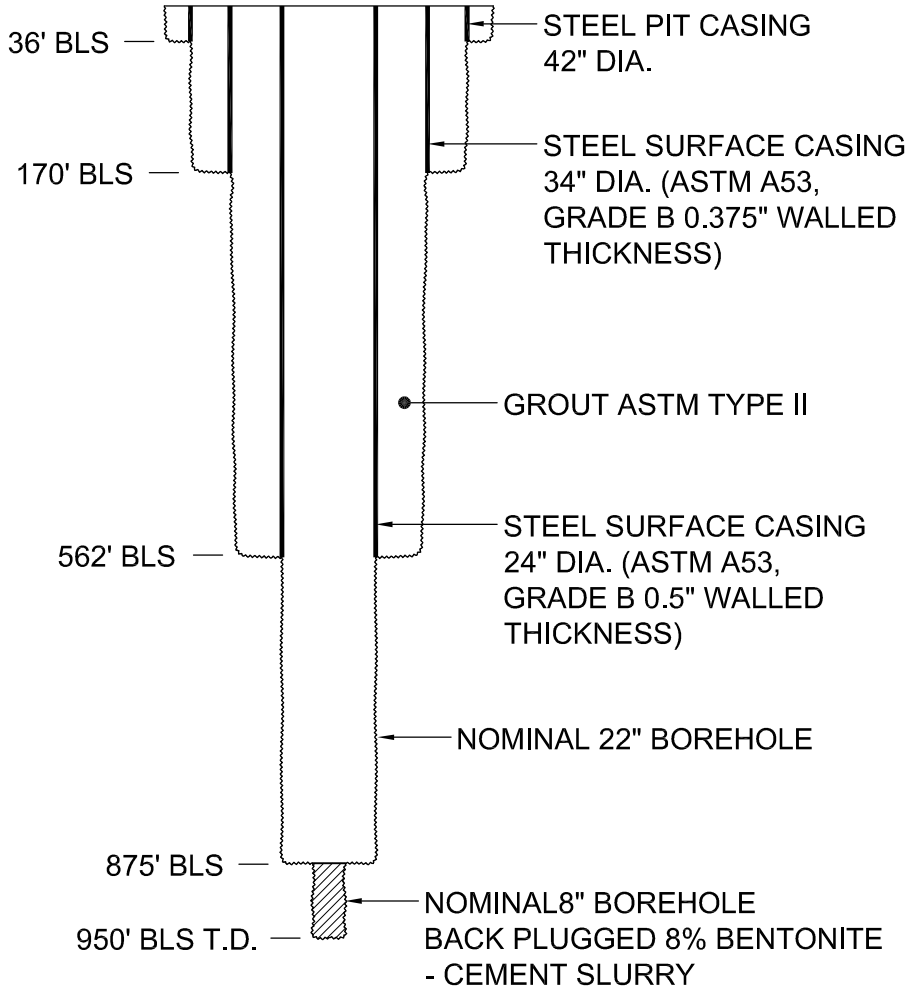


Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 02/15/11

FIGURE 2. SITE LAYOUT.



Lithology	*Series*	*Hydrogeologic Unit*
Limestone and Shells	Holocene - Pliocene	Surficial Aquifer System
Clay/Silt Mudstone	Oligocene - Miocene	Intermediate Confining Unit
Wackestone /Packstone	Eocene	Floridan Aquifer System

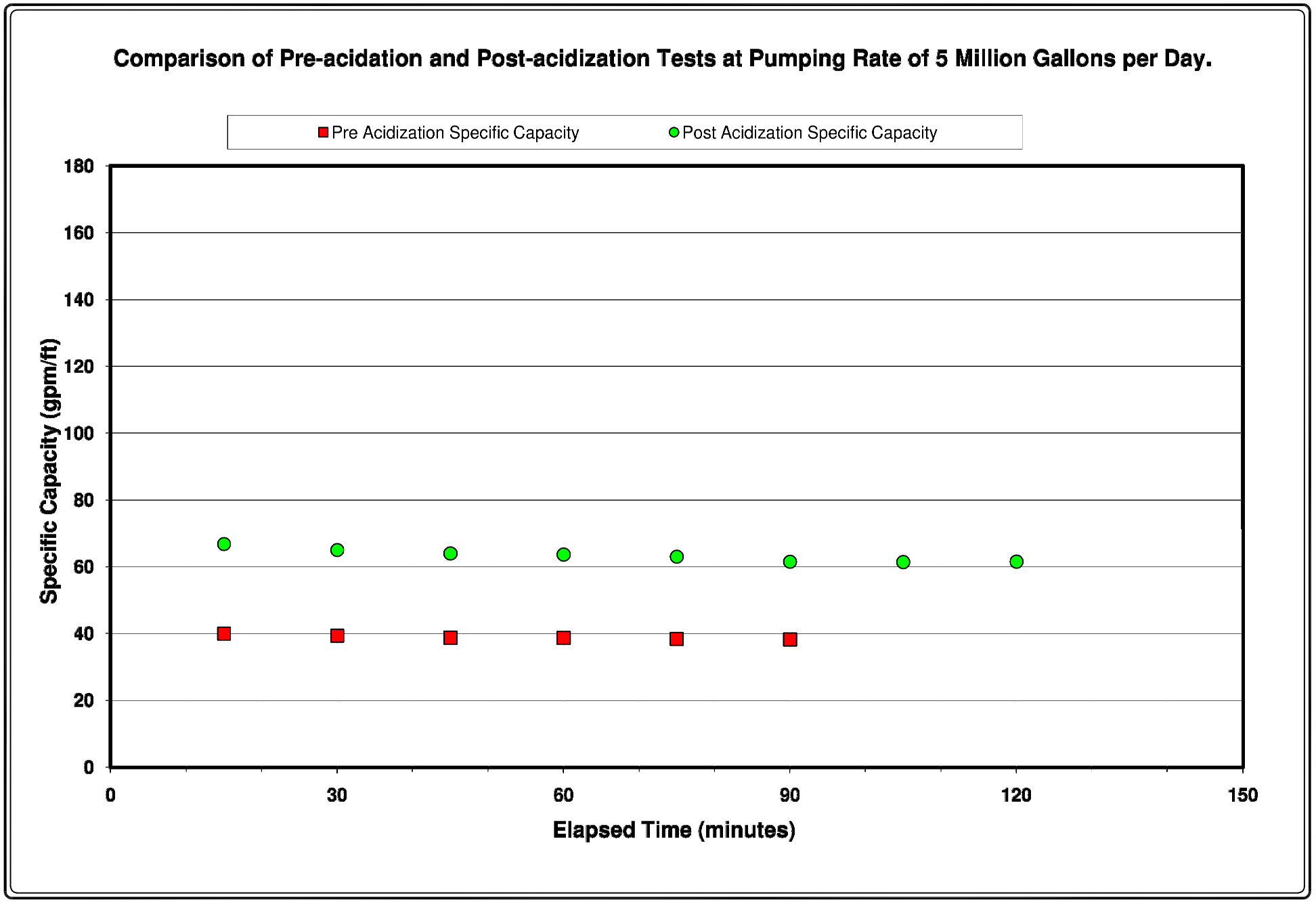


From: Lake Okeechobee Aquifer Storage and Recover (ASR) Pilot Project, USACE - In cooperation with the South Florida Water Management District, November 2004

BLS = BELOW LAND SURFACE

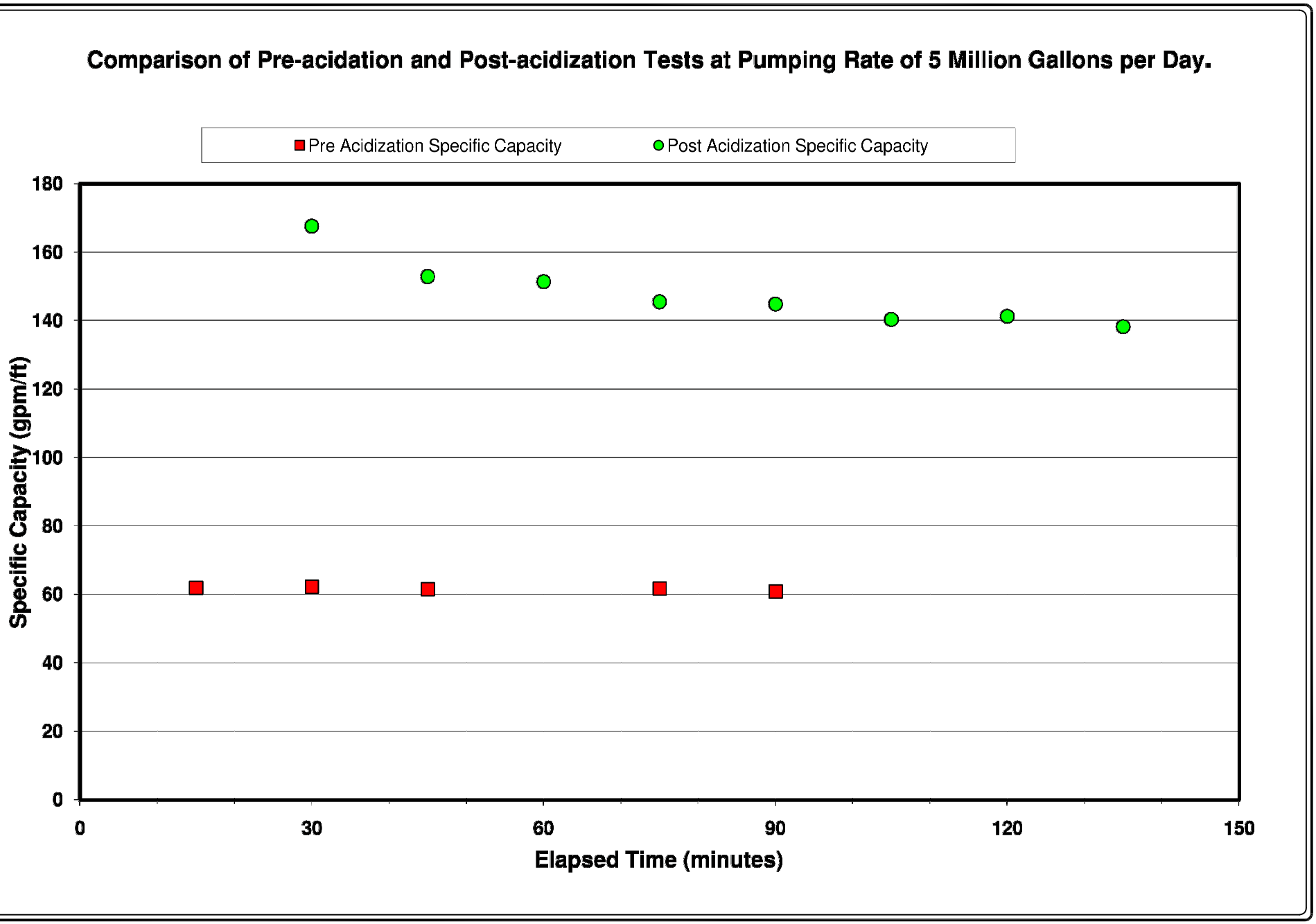
Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 02/15/11

FIGURE 3. WELL COMPLETION DIAGRAM.



Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 03/14/11

FIGURE 4A. SPECIFIC CAPACITY TESTS FOR 2009 REHABILITATION EVENT #1.



Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 03/14/11

FIGURE 4B. SPECIFIC CAPACITY TESTS FOR 2010 REHABILITATION EVENT #2.

SFWMD Borehole Specific Capacity: March 2004

Pre-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
800	50.66	15.79
950	65.65	14.47
1350	110.00	12.27

Post-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
2000	53.66	37.27
2500	76.60	32.64
3050	99.10	30.78
3450	118.10	29.21

ENTRIX Specific Capacity Test: October 2009

Pre-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
3500	87.43	40.03
3500	90.18	38.81
3500	91.45	38.27

Post-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
3493	52.33	66.75
3479	53.55	64.97
3500	57.02	61.38

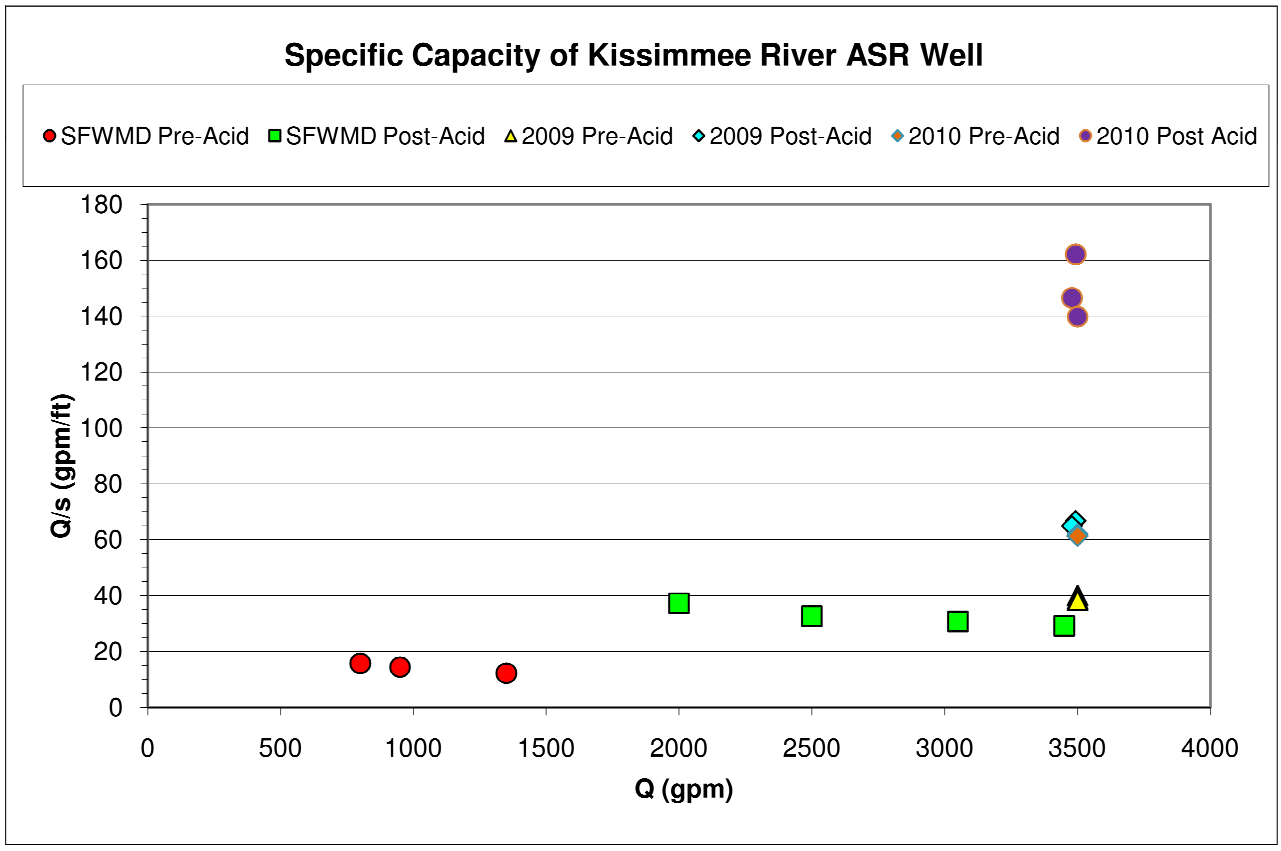
ENTRIX Specific Capacity Test: November 2010

Pre-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
3500	56.47	61.98
3500	56.39	62.07
3500	57.02	61.38

Post-Acidization Pumping Test

Q (gpm)	s (feet)	Q/s (gpm/ft)
3493	21.55	162.09
3479	23.75	146.49
3500	25.04	139.78



Cardno ENTRIX	PROJECT NAME: KISSIMMEE RIVER ASR WELL REHAB	DWG. NUMBER: 00061010mw1
	PROJECT NUMBER: 00061010	DATE: 03/14/11

FIGURE 5. COMPARISON OF SPECIFIC CAPACITY RESULTS.

Exhibit A

Laboratory Analytical Report dated November 4, 2009

Laboratory Analytical Report dated November 16, 2010

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118
www.jupiterlabs.com
clientservices@jupiterlabs.com

November 4, 2009

Mike Waldron
Entrix Water Solutions
1035 S. State Rd. 7 Ste 315-20
West Palm Beach, FL 33414

RE: LOG# 923879
Project ID: A.C.O.E.
COC# 23879

Dear Mike Waldron:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, October 22, 2009. Results reported herein conform to the most current NELAC standards, where applicable, unless indicated by * in the body of the report.

The enclosed Chain of Custody is a component of this package and should be retained with the package and incorporated therein.

Results for all solid matrices are reported in dry weight unless otherwise noted. Results for all liquid matrices are reported as received in the laboratory unless otherwise noted.

Samples are disposed of after 30 days of their receipt by the laboratory unless archiving is requested in writing. The laboratory maintains the right to charge storage fees for archived samples.

Certain analyses are subcontracted to outside NELAC certified laboratories, please see the Footnotes section of this report for NELAC certification numbers of laboratories used.

A Statement of Qualifiers is available upon request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ann McKewin for
Kacia Baldwin
kbaldwin@jupiterlabs.com

Enclosures

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

SAMPLE ANALYTE COUNT

LOG# 923879
Project ID: A.C.O.E.

Lab ID	Sample ID	Method	Analytes Reported
923879001	#3 metals	EPA 200.8 (Total)	22
923879002	#3 NO3	4500-NO3 H	1
923879003	#3 OP,Alk,SO4	EPA 310.2	1
		EPA 365.3 (Orthophosphate)	1
		EPA 9038	1
923879004	#3 Cl,F,NO2	4500-F D	1
		4500-NO2 B	1
		SM 4500-CL E	1
923879005	#3 Bromide	SW-846 9056	1
923879006	#3 UT Hg	EPA 1631E	1

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

SAMPLE SUMMARY

LOG# 923879
Project ID: A.C.O.E.

Lab ID	Sample ID	Matrix	Date Collected	Date Received
923879001	#3 metals	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45
923879002	#3 NO3	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45
923879003	#3 OP,Alk,SO4	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45
923879004	#3 Cl,F,NO2	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45
923879005	#3 Bromide	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45
923879006	#3 UT Hg	Aqueous Liquid	10/19/2009 12:36	10/22/2009 08:45

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879001** Date Received: 10/22/2009 Matrix: Aqueous Liquid
Sample ID: **#3 metals** Date Collected: 10/19/2009

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: EPA 200.8 Metals (W)			Preparation Method: EPA 200.2 mod. Analytical Method: EPA 200.8 (Total)								
Beryllium	U	ug/L	2.0	0.16	1	10/22/09	ZS	10/22/09	ZS		7440-41-7
Aluminum	52	ug/L	3.0	1.5	1	10/22/09	ZS	10/22/09	ZS		7429-90-5
Vanadium	2.0	ug/L	2.0	0.12	1	10/22/09	ZS	10/22/09	ZS		7440-62-2
Chromium	3.2	ug/L	2.0	0.038	1	10/22/09	ZS	10/22/09	ZS		7440-47-3
Manganese	15	ug/L	2.0	0.085	1	10/22/09	ZS	10/22/09	ZS		7439-96-5
Cobalt	U	ug/L	2.0	0.066	1	10/22/09	ZS	10/22/09	ZS		7440-48-4
Nickel	0.61i	ug/L	2.0	0.12	1	10/22/09	ZS	10/22/09	ZS		7440-02-0
Copper	0.48i	ug/L	2.0	0.20	1	10/22/09	ZS	10/22/09	ZS		7440-50-8
Zinc	49	ug/L	2.0	0.95	1	10/22/09	ZS	10/22/09	ZS		7440-66-6
Arsenic	9.7	ug/L	2.0	0.16	1	10/22/09	ZS	10/22/09	ZS		7440-38-2
Selenium	U	ug/L	2.0	0.47	1	10/22/09	ZS	10/22/09	ZS		7782-49-2
Silver	U	ug/L	2.0	0.070	1	10/22/09	ZS	10/22/09	ZS		7440-22-4
Cadmium	U	ug/L	2.0	0.091	1	10/22/09	ZS	10/22/09	ZS		7440-43-9
Antimony	U	ug/L	2.0	0.18	1	10/22/09	ZS	10/22/09	ZS		7440-36-0
Thallium	U	ug/L	2.0	0.10	1	10/22/09	ZS	10/22/09	ZS		7440-28-0
Lead	U	ug/L	2.0	0.12	1	10/22/09	ZS	10/22/09	ZS		7439-92-1
Sodium	14000	ug/L	700	350	100	10/22/09	ZS	10/22/09	ZS		7440-23-5
Magnesium	9200	ug/L	200	41	100	10/22/09	ZS	10/22/09	ZS		7439-95-4
Potassium	3500	ug/L	680	340	100	10/22/09	ZS	10/22/09	ZS		7440-09-7
Barium	350	ug/L	40	2.8	20	10/22/09	ZS	10/22/09	ZS		7440-39-3
Iron	1600	ug/L	400	200	20	10/22/09	ZS	10/22/09	ZS		7439-89-6
Calcium	33000	ug/L	9600	4800	200	10/22/09	ZS	10/22/09	ZS		7440-70-2

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879002** Date Received: 10/22/2009 Matrix: Aqueous Liquid
Sample ID: **#3 NO3** Date Collected: 10/19/2009

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: Nitrate by 4500-NO3 H (W)			Analytical Method: 4500-NO3 H								
Nitrate	U	mg/L	0.080	0.0400	1			11/03/09	BFM		

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
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ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879003**
Sample ID: **#3 OP,Alk,SO4**

Date Received: 10/22/2009
Date Collected: 10/19/2009

Matrix: Aqueous Liquid

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: Sulfate by EPA 9038 (W)			Analytical Method: EPA 9038								
Sulfate	17	mg/L	1.0	0.500	1			10/26/09	SS		14808-79-8
Analysis Desc: Orthophosphate, EPA 365.3 (W)			Analytical Method: EPA 365.3 (Orthophosphate)								
Orthophosphate	0.10	mg/L	0.010	0.00500	1			10/26/09	BFM	Q1	
Analysis Desc: Alkalinity, EPA 310.2 (W)			Analytical Method: EPA 310.2								
Alkalinity	140	mg/L	100	50.0	10			11/02/09	BFM		

FDOH# E86546

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Jupiter Environmental Laboratories, Inc.
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Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879004**
Sample ID: **#3 Cl,F,NO2**

Date Received: 10/22/2009
Date Collected: 10/19/2009

Matrix: Aqueous Liquid

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: Chloride by 4500-CL E (W)			Analytical Method: SM 4500-CL E								
Chloride	99	mg/L	10	5.00	10			10/26/09	BFM		16887-00-6
Analysis Desc: Fluoride by 4500-F D (W)			Analytical Method: 4500-F D								
Fluoride	0.50	mg/L	0.20	0.100	1			10/27/09	BFM		16984-48-8
Analysis Desc: Nitrite by 4500-NO2 B (W)			Analytical Method: 4500-NO2 B								
Nitrite	U	mg/L	0.080	0.0400	1			10/26/09	SS	Q1	

FDOH# E86546

CERTIFICATE OF ANALYSIS

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Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879005** Date Received: 10/22/2009 Matrix: Aqueous Liquid
Sample ID: **#3 Bromide** Date Collected: 10/19/2009

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: Bromide by EPA 9056 [REF] (W)			Analytical Method: SW-846 9056								
Bromide	1.1	mg/L	1.0	0.170	1			10/29/09	ESC		24959-67-9

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

LOG# 923879
Project ID: A.C.O.E.

Lab ID: **923879006** Date Received: 10/22/2009 Matrix: Aqueous Liquid
Sample ID: **#3 UT Hg** Date Collected: 10/19/2009

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	By	Analyzed	By	Qual	CAS
Analysis Desc: EPA 1631E Ultra Trace Mercury (W)			Preparation Method: EPA 1631E Analytical Method: EPA 1631E								
Mercury	0.0024	ug/L	0.0010	0.00025	1	10/26/09	ZS	10/26/09	ZS		7439-97-6

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS QUALIFIERS

LOG# 923879
Project ID: A.C.O.E.

PARAMETER QUALIFIERS

Q1	Sample received past/too close to the accepted holding time.

PROJECT COMMENTS

923879	A reported value of U indicates that the compound was analyzed for but not detected above the MDL. A value flagged with an "i" flag indicates that the reported value is between the laboratory method detection limit and the practical quantitation limit. Report Limit = PQL

SUBCONTRACTOR NELAC CERTIFICATION

923879	ESC = E87487

FDOH# E86546

CERTIFICATE OF ANALYSIS

BAR CODE

Chain of Custody Record

LAB USE ONLY

J.E.L. Log # 923879

P.O. # _____

Quote# _____

Jupiter Environmental Laboratories

Company Name: ENTRIX

Address: 1035 S. State Rd. 7, Ste 315-20

City: Wellington State: FL Zip: 33414

Sampling Site Address:

Attn: Erin Fax/Email:

Project Name: A.C.O.E. Project #: 00061010.00

Sampler Name/Signature: Mike Weddon / [signature]

LAB ANALYSIS

#	Sample Label (Client ID)	Collected Date	Collected Time	Matrix Code*	# of Cont	Press Codes	EPA 200.8 TM ICP	EPA 300.0 (or equal)	Alk, EPA 310 / 08, 350, EPA 300.0	EPA 300.0 TM (or equal)	EPA 340.0 TM (or equal)	EPA 1631 TM	Field Filtered (Y/N)	Integrity OK (Y/N)	Comments
						Parameters	B	C	A	A	A	A			
1	#3 Metals	10/19/09	1236				1								RUSH 24-hr rush
2	#3 NO_3							1							Reg. turn
3	#3 OP, Alk, SO_4								1						Reg. turn
4	#3 Cl, F, NO_2									1					
5	#3 Bromide										1				
6	#3 UT Hg											1			
7															
8															
9															
10															

ORIGINAL

Matrix Codes*

S	Soil/Solid Sediment	SW	Surface Water
GW	Ground Water	SL	Sludge
WW	Waste Water	O	Other (Please Specify)
DW	Drinking Water		

Pres Codes**

A-	none	I-	Ice
B-	HNO_3	O-	Other
C-	H_2SO_4	M-	MeOH
D-	NaOH		
E-	HCl		

Relinquished by	Date	Time	Received by	Date	Time
[signature]	10/21/09	1113	[signature]	10/21	1113
[signature]	10.22.09	0845	SO	10.22.09	0845

QA/QC level with report

None ✓ 1 ___ 2 ___ 3 ___ See price guide for applicable fees

T.A.T. Request: ___ Standard ___ Rush

FDEP ___ SFWMD ___ Date Required ___

Temp Control: 4 °C

Jupiter Environmental Laboratories, Inc.
150 Old Dixie Highway, Jupiter, FL 33458

COC # 23879

Login Checklist

Cooler Unpacked/Checked by: SO Date: 10-22-09

Project ID: 923879

Cooler Check

Cooler ID	Cooler Temp (C)	# of Samples in Cooler	*Tracking #	Evidence Tape			
				Present?		Intact?	
				Yes	No	Yes	No
	4	6			✓		✓

Note: if the temperature of a cooler is above 6C or an evidence seal is damaged then identify the bottles in the affected cooler(s) on the sample discrepancy form.
*Write tracking number only if waybill copy cannot be placed in the folder

Condition of Containers:

Loose Caps: Yes_____ No ✓
If yes, fill out sample discrepancy form.

Broken Containers: Yes_____ No ✓
If yes, fill out sample discrepancy form.

Acid Preserved Samples: Are their pHs </=2 ?Yes ✓ No_____ N/A_____
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

Base Preserved Samples: Are their pHs >/=12 or 9 ?Yes_____ No_____ N/A ✓
(Cyanide >/= 12; Sulfide >/=9)
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

Are all samples in cooler on COC?: Yes ✓ No_____
If no, fill out sample discrepancy form.

Are all samples on COC in cooler?: Yes ✓ No_____
If no, fill out sample discrepancy form.

N/A = not Applicable

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Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118
www.jupiterlabs.com
clientservices@jupiterlabs.com

November 16, 2010

Mike Waldron
Cardno Entrix
3460 Fairlane Farms Rd, St. 8
33414

RE: LOG# 1026092
Project ID: USA COW ASR
COC# 26092

Dear Mike Waldron:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, November 09, 2010. Results reported herein conform to the most current NELAC standards, where applicable, unless indicated by * in the body of the report. The enclosed Chain of Custody is a component of this package and should be retained with the package and incorporated therein.

Results for all solid matrices are reported in dry weight unless otherwise noted. Results for all liquid matrices are reported as received in the laboratory unless otherwise noted. Results relate only to the samples received. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

Samples are disposed of after 30 days of their receipt by the laboratory unless extended storage is requested in writing. The laboratory maintains the right to charge storage fees for archived samples. This report will be archived for 5 years after which time it will be destroyed without further notice, unless prior arrangements have been made.

Certain analyses are subcontracted to outside NELAC certified laboratories, please see the Project Summary section of this report for NELAC certification numbers of laboratories used. A Statement of Qualifiers is available upon request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ann McKewin for
Kacia Baldwin
V.P. of Operations

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

SAMPLE ANALYTE COUNT

Workorder 1026092

Project ID: USA COW ASR

Lab ID	Sample ID	Method	Analytes Reported
1026092001	ASR	4500-F D	1
		Calc.	1
		EPA 1631E	1
		EPA 200.8 (Total)	23
		EPA 310.2	1
		EPA 365.3 (Orthophosphate)	1
		EPA 9038	1
		SM 4500-CL E	1
		SM 4500-NO2 B	1
		SM 4500-NO3 H	1
		EPA 300.0	1

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

SAMPLE SUMMARY

Workorder 1026092

Project ID: USA COW ASR

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1026092001	ASR	Aqueous Liquid	11/8/2010 12:00	11/9/2010 10:20

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

Workorder 1026092
Project ID: USA COW ASR

Lab ID: **1026092001** Date Received: 11/9/2010 10:20 Matrix: Aqueous Liquid
Sample ID: **ASR** Date Collected: 11/8/2010 12:00

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
Analysis Desc: Bromide by EPA 300.0 [REF] (W)						Analytical Method: EPA 300.0				
Bromide	U	mg/L	0.0090		1			11/10/2010 19:21	HBEL	
Analysis Desc: EPA 1631E Ultra Trace Mercury (W)						Preparation Method: EPA 1631E Analytical Method: EPA 1631E				
Mercury	0.0021	ug/L	0.0010	0.00025	1	11/14/2010 16:16	ZS	11/16/2010 10:17	ZS	
Analysis Desc: Chloride by 4500-CL E (W)						Preparation Method: Wet Chem Prep Analytical Method: SM 4500-CL E				
Chloride	110	mg/L	10	5.00	10	11/9/2010 13:52	BFM	11/9/2010 16:08	BFM	
Analysis Desc: EPA 9038 Sulfate (W)						Preparation Method: Wet Chem Prep Analytical Method: EPA 9038				
Sulfate	21	mg/L	1.0	0.500	1	11/9/2010 14:48	BFM	11/9/2010 15:07	BFM	
Analysis Desc: EPA 365.3 Orthophosphate (W)						Preparation Method: Wet Chem Prep Analytical Method: EPA 365.3 (Orthophosphate)				
Orthophosphate	0.12	mg/L	0.010	0.00500	1	11/9/2010 13:16	BFM	11/9/2010 16:02	BFM	
Analysis Desc: 4500F-D Fluoride (W)						Preparation Method: Wet Chem Prep Analytical Method: 4500-F D				
Fluoride	0.55	mg/L	0.20	0.100	1	11/9/2010 16:57	BFM	11/9/2010 17:06	BFM	J4
Analysis Desc: Alkalinity, EPA 310.2 (W)						Preparation Method: Wet Chem Prep Analytical Method: EPA 310.2				
Alkalinity	110	mg/L	100	50.0	10	11/11/2010 11:44	BFM	11/11/2010 12:41	BFM	
Analysis Desc: 4500NO3-H Nitrate+Nitrite (W)						Preparation Method: Wet Chem Prep Analytical Method: SM 4500-NO3 H				
Nitrite-Nitrate	U	mg/L	0.080	0.0400	1	11/11/2010 10:26	BFM	11/11/2010 10:27	BFM	
Analysis Desc: 4500NO2-B Nitrite (W)						Preparation Method: Wet Chem Prep Analytical Method: SM 4500-NO2 B				
Nitrite	U	mg/L	0.080	0.0400	1	11/9/2010 15:59	BFM	11/9/2010 16:25	BFM	
Analysis Desc: Nitrate (Calc.) (W)						Analytical Method: Calc.				
Nitrate	U	mg/L	0.080	0.0400	1			11/11/2010 13:45	BFM	

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

ANALYTICAL RESULTS

Workorder 1026092

Project ID: USA COW ASR

Lab ID: **1026092001** Date Received: 11/9/2010 10:20 Matrix: Aqueous Liquid

Sample ID: **ASR** Date Collected: 11/8/2010 12:00

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
Analysis Desc: EPA 200.8 Total TAL Metals (W)						Preparation Method: EPA 200.2 mod.				
						Analytical Method: EPA 200.8 (Total)				
Beryllium	U	ug/L	8.0	0.26	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Aluminum	14	ug/L	12	0.54	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Copper	U	ug/L	8.0	0.14	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Vanadium	U	ug/L	8.0	0.18	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Chromium	U	ug/L	8.0	0.27	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Manganese	36	ug/L	8.0	0.11	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Cobalt	U	ug/L	8.0	0.15	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Nickel	2.3i	ug/L	8.0	0.24	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Zinc	2.5i	ug/L	8.0	0.28	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Arsenic	33	ug/L	8.0	0.65	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Selenium	U	ug/L	8.0	2.1	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Silver	U	ug/L	8.0	0.40	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	J3a
Cadmium	U	ug/L	8.0	0.28	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Antimony	U	ug/L	8.0	0.95	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Barium	190	ug/L	8.0	0.30	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Mercury	U	ug/L	8.0	0.73	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Thallium	U	ug/L	8.0	0.21	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Lead	U	ug/L	8.0	0.12	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Sodium	6400	ug/L	40	2.5	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Magnesium	7900	ug/L	8.0	0.55	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Potassium	2900	ug/L	40	22	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Calcium	8300	ug/L	40	4.4	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	
Iron	1900	ug/L	40	9.4	4	11/10/2010 16:13	ZS	11/11/2010 10:24	ZS	

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ANALYTICAL RESULTS QUALIFIERS

Workorder 1026092

Project ID: USA COW ASR

PARAMETER QUALIFIERS

J3a	The reported value failed to meet the established quality control criteria. LCS value skewed high. Target analyte was not detected in associated samples.
J4	MS/MSD recovery exceeded control limits due to matrix interference. LCS/LCSD recovery was within acceptable range.

PROJECT COMMENTS

1026092	A reported value of U indicates that the compound was analyzed for but not detected above the MDL. A value flagged with an "i" flag indicates that the reported value is between the laboratory method detection limit and the practical quantitation limit.

SUBCONTRACTOR NELAC CERTIFICATION

1026092	HBEL = E96080

FDOH# E86546

CERTIFICATE OF ANALYSIS

Jupiter
Environmental Laboratories, Inc.

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(561) 575-0030 • FAX (561) 575-4118 • clientservices@jupiterlabs.com

J.E.L. Log # 10200927
P.O. #
Quote #

Company Name: CARDNO ENTRIX
Address: 3460 FAIRLANE FARMS RD, STE 8
City: WELLINGTON State: FL Zip: 33414
Sampling Site Address: 4000 99th St. OKEECHOBEE, FL
Attn: MIKE WALDRON MIKE.WALDRON@CARDNO
Project Name: USA COE ASR Project #: 00061010.00
Sampler Name/Signature: STEVE KOHLMEIER

LAB ANALYSIS

Requested Turnaround Time
Note: Rush requests subject to acceptance by the laboratory
___ Standard
___ Expedited
Due ___/___/___

#	Sample Label (Client ID)	Collected Date	Collected Time	Matrix Code*	# of Cont	Pres Codes	Parameters: TAL Metals (EPA 200.8) Ba, Be, Fe, Co, Sb, Tl, Pb / Na, Mg, Be, Al, V, Cr, Mn, Co, Ni, Cu, Zn, Mo, As, Se, Ag, Cd	Nitrate (SM 4500 NO3 H)	Bromide (EPA 300.1)	Chromium VI by (EPA 1031 E)	Nitrite (SM 4500 NO2 B)	Sulfate (EPA 9038)	ORP (EPA 3065.3)	Chloride (SM 4500 Cl E)	Fluoride (SM 4500 F C)	Alkalinity (EPA 310.2)	Hex. Chromium (EPA 7196)	TH (EPA 150.1)	TDC (SM 5310 B)	Base/Neutrals (EPA 8270)	Field Filtered (Y/N)	Comments
1	ASR	11-8-10	1200p	GW	9		✓	✓	✓	✓	✓	✓	✓	✓	✓	*					* CALL MIKE WALDRON BEFORE ANALYSES
2																					
3																					
4																					
5																					
6																					① Not needed per Mike Waldron KB 11/9/10
7																					
8																					
9																					
0																					

Matrix Codes*
S Soil/Solid Sediment; SW Surface Water; GW Ground Water; SL Sludge; WW Waste Water; O Other (Please Specify); DW Drinking Water

Pres Codes
A- none; I- Ice; B- HNO_3; O- Other; C- H_2SO_4; M- MeOH; D- NaOH; N- $Na_2S_2O_3$; E- HCl; Z- ZnAc

Relinquished by	Date	Time	Received by	Date	Time
				11-5-10	100p
	11-8-10	400p		11.9.10	1020

QA/QC level with report
None ___1___2___3___ See price guide for applicable fees

FDEP Dry Cleaning ❑ FDEP UST Pre-Approval ❑
SFWMD ❑ ADaPT ❑ DOT ❑

Temp Control: 4 °C

Page ___ of ___

20092

Login Checklist

Cooler Unpacked/Checked by: SO Date: 11.09.10

Project ID: 1020092

Cooler Check

Cooler ID	Cooler Temp (C)	# of Samples in Cooler	*Tracking #	Evidence Tape			
				Present?		Intact?	
				Yes	No	Yes	No
	4	1		✓		✓	

Note: if the temperature of a cooler is above 6C or an evidence seal is damaged then identify the bottles in the affected cooler(s) on the sample discrepancy form.
*Write tracking number only if waybill copy cannot be placed in the folder

Condition of Containers:

Loose Caps: Yes_____ No ✓
If yes, fill out sample discrepancy form.

Broken Containers: Yes_____ No ✓
If yes, fill out sample discrepancy form.

Acid Preserved Samples: Are their pHs </=2 ?Yes ✓ No_____ N/A_____
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

Base Preserved Samples: Are their pHs >/=12 or 9 ?Yes_____ No_____ N/A ✓
(Cyanide >/= 12; Sulfide >/=9)
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

Are all samples in cooler on COC?: Yes ✓ No_____
If no, fill out sample discrepancy form.

Are all samples on COC in cooler?: Yes ✓ No_____
If no, fill out sample discrepancy form.

N/A = not Applicable

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