GW - 039

ANNUAL MONITORING REPORT

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GW039

FINAL

SAN JUAN RIVER PLANT
2002 ANNUAL REPORT

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TABLE OF CONTENTS

		PAGE NO.
EXECUTIVE SUMMARY		ES-1
1.0	INTRODUCTION	1-1
2.0	PROJECT HISTORY	2-1
3.0	SUMMARY OF 2002 ACTIVITIES	3-1
3.1	Site-Wide Groundwater Monitoring Program	3-1
3.2	Hydrocarbon Remediation	3-2
4.0	DISCUSSION OF RESULTS	4-1
4.1	Site-Wide Groundwater Monitoring Results	4-1
4.2	Hydrocarbon Remediation Results	4-2
5.0	CONCLUSIONS AND RECOMMENDATIONS	5-1
5.1	Site-Wide Groundwater Monitoring Program	5-1
5.2	Hydrocarbon Remediation Program	5-1
6.0	REFERENCES	R-1

APPENDICES

APPENDIX A	2002 Documentation of Field Activities
APPENDIX B	2002 Laboratory Reports

TABLE OF CONTENTS
(continued)

LIST OF TABLES

(Tables follow at the end of their respective section)

TABLE NO.	TITLE
4-1	Summary of 2002 Analytical Results and Field Data

LIST OF FIGURES

FIGURE NO.	TITLE	follows section no.
1	Site Location Map	1
2	San Juan River Plant Site Layout Map	1
3	BTEX Concentration and Groundwater Elevation vs. Time for MW-5	4
4	BTEX Concentration and Groundwater Elevation vs. Time for MW-8	4
5	BTEX Concentration and Groundwater Elevation vs. Time for MW-9	4
6	Benzene Isoconcentration Map – August 2002	4
7	Groundwater Elevation Map – August 2002	4
8	Groundwater Elevation Map – November 2002	4
9	TDS Isoconcentration Map – August 2002	4
10	Sulfate Isoconcentration Map – August 2002	4

LIST OF ACRONYMS

µg/l	micrograms per liter
cy	cubic yards
mg/kg	milligrams per kilogram
AESE	A.E. Schmidt Environmental
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
EPNG	El Paso Natural Gas Company
NMOCD	New Mexico Oil Conservation Division
NMWQCC	New Mexico Water Quality Control Commission
O&M	operations and maintenance
ORC	oxygen-releasing compound
SJRP	San Juan River Plant
TDS	total dissolved solids
WGP	Western Gas Processors, Ltd.

EXECUTIVE SUMMARY

The San Juan River Plant is located in San Juan County, near Kirtland, New Mexico. The plant is used to process natural gas collected from production wells located in the San Juan Basin of New Mexico and southern Utah. Closure of evaporation ponds, pits, and other potential source areas within the San Juan River Plant occurred in 1992 through 1995. Groundwater monitoring has been performed at the site since 1995.

El Paso Natural Gas is aggressively pursuing active groundwater remediation (air sparging and chemical oxygen enhancement) of dissolved-phase hydrocarbons in the vicinity of MW-8 and MW-9. Based on past soil and soil gas investigations, the dissolved-phase hydrocarbons are associated with limited soil contamination. Dissolved-phase hydrocarbons have not been observed in groundwater in other areas of the site.

Groundwater sampling conducted at the San Juan River Plant during 2002 suggests that the air sparging activities are continuing to reduce dissolved-phase hydrocarbon concentrations in the vicinity of MW-9. Benzene analytical results for this well ranged from 48 µg/l in February 2002 to 1.4 µg/l in May. Benzene concentrations in this well during 2001 ranged from 53 µg/l to 22 µg/l.

Benzene concentrations in monitoring well MW-8 also continued to decline as a result of chemical oxygen enhancement using magnesium peroxide socks within this well. Benzene concentrations in MW-8 ranged from a high concentration of 200 µg/l during May to approximately 0.8 µg/l in August.

The New Mexico Oil Conservation Division requested monitoring of metals and inorganic parameters in all on-site monitoring wells as part of the current site-wide groundwater monitoring program. Although some of these analytes exceeded standards at the plant and may be related to past practices, some parameters are believed to occur naturally at elevated levels, do not appear to extend off site and are not associated with potential receptors. Past closure activities have addressed any on-going sources of these parameters to groundwater. Regionally, this area is associated with elevated total dissolved solids and associated inorganic parameters.

Because remediation efforts at monitoring wells MW-8 and MW-9 have been effective at rapidly reducing benzene concentrations in these areas, it is recommended that the remediation systems continue to operate until quarterly sampling results indicate compliance with standards. The systems will then be taken off-line and quarterly closure monitoring will be initiated.

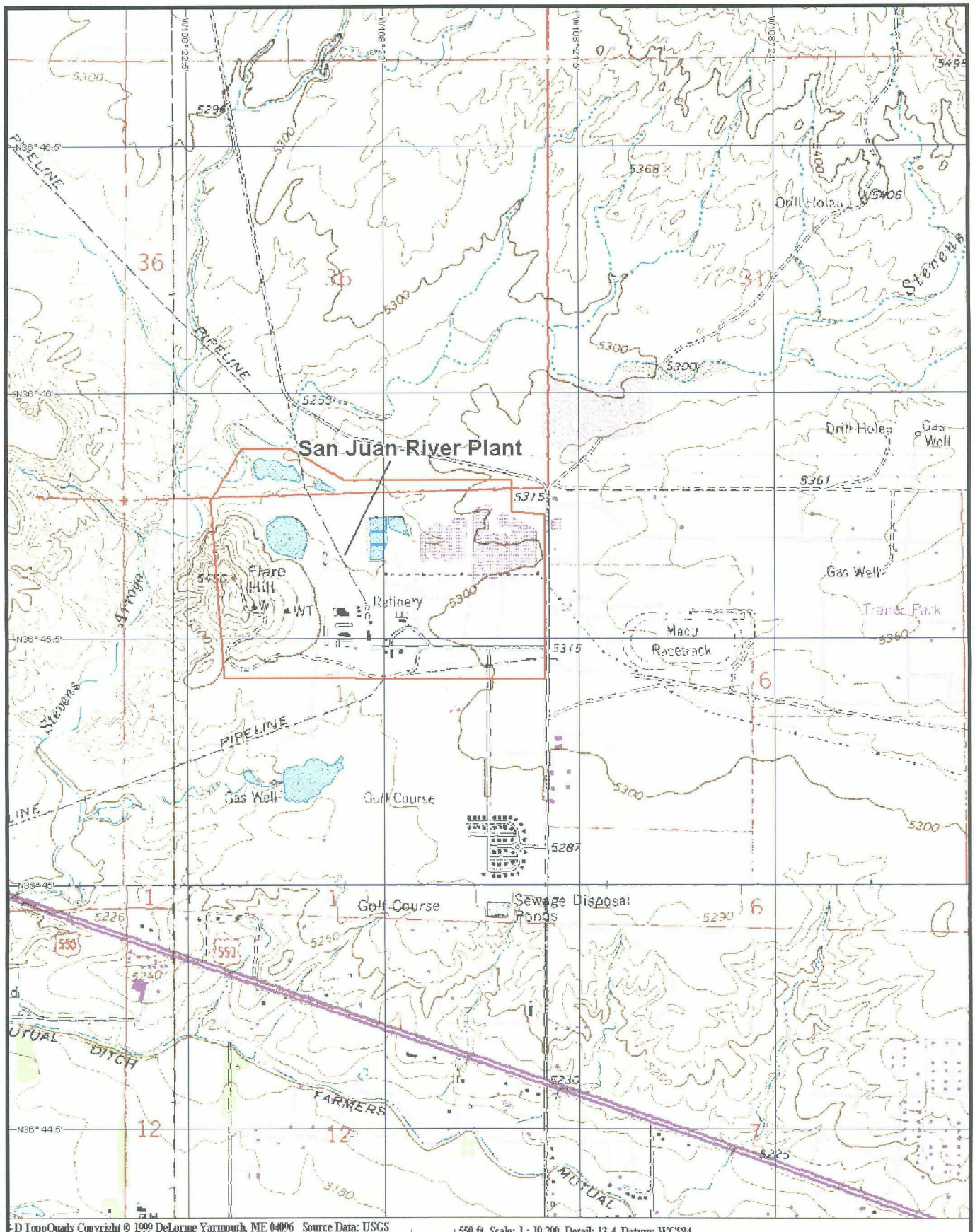
1.0 INTRODUCTION

This annual report has been prepared on behalf of El Paso Natural Gas Company (EPNG) to present a summary of physical activities performed and analytical data collected at the San Juan River Plant (SJRP) during 2002. This site is located in San Juan County Section 1, Township 29N, Range 15W, near Kirtland, New Mexico, as shown on Figure 1.

EPNG is aggressively conducting active groundwater remediation of dissolved-phase hydrocarbons in the vicinity of monitoring wells MW-8 and MW-9. Remedial actions currently operating at the SJRP include air sparging and in-situ oxygen enhancement of groundwater through use of oxygen-releasing compound (ORC). In addition to the active remediation activities, a site-wide groundwater sampling program is administered at this site.

Site Description. The San Juan River Plant was previously owned by El Paso Natural Gas Company, but has been owned and operated by Western Gas Processors, Ltd (WGP) since June 1992. The plant is used to process natural gas collected from production wells located in the San Juan Basin of New Mexico and southern Utah. The SJRP is a 630-acre facility that has contained gas processing facilities, two raw water ponds (now closed), three wastewater evaporation ponds (now closed), a sulfur recovery plant, water and hydrocarbon tanks, a pigging station, flare pits, and several 16- to 24-inch diameter natural gas pipelines that cross the facility. Figure 2 presents a detailed site map of the SJRP. Closure of the evaporation ponds, pits, and other potential contaminant source areas was completed during 1992 through 1995. Groundwater has been monitored at this site since 1995.

Report Organization. This report is organized into six sections and supporting appendices. Section 2.0 provides a discussion of the SJRP project history, Section 3.0 includes summary of field activities conducted at the SJRP during 2002, and Section 4.0 provides a discussion of results. Conclusions and recommendations are provided in Section 5.0, and references are listed in Section 5.0.

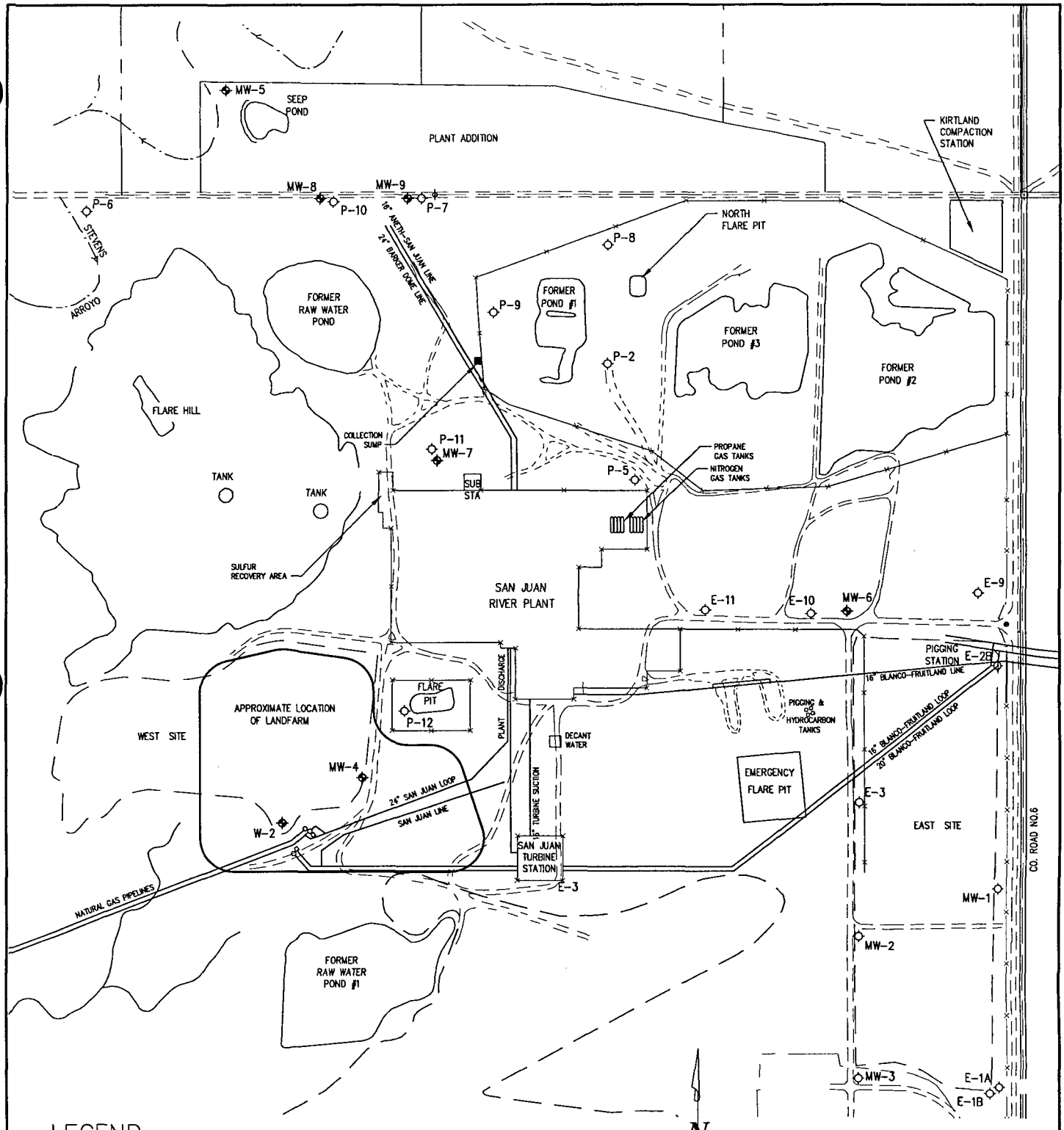


SAN JUAN RIVER PLANT
SITE LOCATION MAP

EL PASO FIELD SERVICES

FIGURE 1

El paso 4270097.001804.ai SLC



SITE LAYOUT MAP
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 2

SJRP ANREPORT

2.0 PROJECT HISTORY

The SJRP was previously owned by EPNG, but was sold to the current operator, WGP, on June 19, 1992. Investigation and remediation activities conducted at the SJRP have included the following components:

- Several investigations were conducted at the San Juan River Plant between 1985 and 1995. As a result, 24 monitoring wells were installed at various locations at the plant.

- The north and south flare pits were closed in 1992 after removing 18,200 cubic yards (cy) and 3,520 cy of contaminated material, respectively.

- The former wastewater evaporation ponds were closed during 1995 and early 1996. The pit and pond closure activities included capping the ponds with compacted, low-permeability soils.

- El Paso Natural Gas abandoned 17 monitoring wells, upgraded two wells, installed five new monitoring wells, and conducted a soil gas investigation during the summer of 1995. Results of the soil gas investigation indicated shallow hydrocarbon contamination near monitoring wells MW-8 and MW-9.

- El Paso Natural Gas submitted a groundwater remediation work plan to the NMOCD in January 2001 to address elevated benzene in monitoring wells MW-8 and MW-9, and received approval to begin remedial actions on June 4, 2001. The work plan included provisions to install an air sparging system with two sparge wells; one injection point located within 10 feet of each monitoring well.

- The sparge system air injection wells (SW-8 and SW-9) were installed on October 30, 2001. Both wells were developed on November 12, 2001.

- A pre-pilot sparge test was conducted at both wells on November 13, 2001. Results from this test indicated good communication between SW-9 and MW-9, but poor communication between MW-8 and SW-8.

- Because of poor communication between MW-8 and SW-8, an ORC sock consisting of magnesium peroxide and manufactured by Regenesis Inc. was recommended for remediation in this area. The ORC sock was installed in MW-8 on November 14, 2001.

- The sparge pilot test was also initiated on November 14, 2001. With the exception of a 48-hour shut-down prior to the four-week sampling event on December 26, 2001, the sparge system operated continuously from November 14, 2001 to January 18, 2002. The sparge pilot test culminated with a sampling event on January 25, 2002. An additional sampling event was performed on February 21, 2002 to evaluate the potential for contaminant concentration rebound following a four-week shutdown.

- From February 2002 through December 2002 site activities included continued operation and maintenance of the sparge system and site-wide annual groundwater monitoring.

Details regarding the sparge system pilot test and sampling conducted during 2001 are presented in the *2001 Annual Report for San Juan River Plant* (MWH, 2002).

3.0 SUMMARY OF 2002 ACTIVITIES

The current environmental program at the San Juan River Plant consists of dissolved-phase hydrocarbon remediation (air sparging and chemical oxygen enhancement) and site-wide groundwater monitoring as specified by the New Mexico Oil Conservation Division (NMOCD). The following section details site activities conducted at the San Juan River Plant during 2002.

3.1 SITE-WIDE GROUNDWATER MONITORING PROGRAM

The site-wide groundwater monitoring program included the following components during 2002:

- All seven active monitoring wells (W-2, MW-4 through MW-9) were sampled annually on August 15, 2002 for benzene, toluene, ethylbenzene, and xylenes (BTEX), NMWQCC trace metals, total dissolved solids (TDS), alkalinity, chloride, and sulfate. Due to improper preservation of the alkalinity, anion, and TDS samples, each monitoring well was re-sampled on August 21, 2002 for these parameters.

- Remediation monitoring wells MW-8 and MW-9 were scheduled to be sampled on a quarterly basis to evaluate the effectiveness of the sparge system operation. Monitoring wells MW-5, MW-8, and MW-9 were sampled in conjunction with the sparge pilot test in January. MW-9 was sampled again in February as part of the pilot test to evaluate the potential for contaminant rebound. Subsequent quarterly monitoring samples for BTEX analysis were collected in May, August, and November 2002.

- Groundwater elevation measurements were collected at each well immediately prior to each sampling event. A complete round of water elevation measurements were collected during August and November 2002.

All 2002 groundwater monitoring data were collected by AE Schmidt Environmental (AESE). Laboratory analyses for samples collected between January 2002 and June 2002 were provided by Pinnacle Laboratories located in Albuquerque, NM. Analyses performed between June 2002 and December 2002 were provided by APCL Laboratories of Chino, California.

3.2 HYDROCARBON REMEDIATION

Dissolved-phase hydrocarbon remediation activities at the SJRP include air sparging at SW-9 and oxygen enhancement using ORC socks in MW-8. The following paragraphs describe activities associated with these remedial systems.

Air Sparge System. The existing air sparging system was designed to provide additional oxygen to the groundwater in the vicinity of monitoring well MW-9. As described earlier, this sparge system was subject to a 12-week pilot test that culminated with contaminant rebound sampling during February 2002. The system continued to operate on an 8-hour per day, seven days per week schedule for the remainder of 2002 with the exception of the following shut-down periods:

- April 18, 2002 through April 19, 2002 for system repair.
- May 29, 2002 through August 4, 2002 for site modifications by the current plant operator, WGP.
- August 16, 2002 through September 13, 2002 for repairs to the system electrical supply.

The sparge system was also shut down for one day during scheduled sample events in January, February, May, August, and November 2002.

Bi-weekly operation and maintenance (O&M) site visits to the air sparge system were conducted to monitor the pressure and flow rates at each injection point, and perform any required repairs to the system.

ORC Enhancement. As described earlier, ORC socks were installed at MW-8 on November 14, 2001. To assess the effectiveness of the ORC, dissolved oxygen measurements were collected in MW-8 during January, May and November 2002 after removing the socks for 24 hours.

4.0 DISCUSSION OF RESULTS

This section describes the results of activities conducted at the San Juan River Plant during 2002.

4.1 SITE-WIDE GROUNDWATER MONITORING RESULTS

BTEX Sampling Results. BTEX results from samples collected during 2002 are presented in Table 4-1. During 2002, only benzene concentrations were identified above New Mexico Water Quality Control Commission (NMWQCC) standards at monitoring wells MW-8 (200 µg/l during May) and MW-9 (13 µg/l during November). Benzene concentrations in MW-8 ranged from 200 µg/l in May to 0.8 µg/l in August. Benzene concentrations in MW-9 ranged from 48 µg/l in February to 1.4 µg/l in May. Concentration versus time graphs for monitoring wells MW-5, MW-8, and MW-9 are presented in Figures 3 through 5, respectively. Figure 6 presents a benzene isoconcentration map based on samples collected during August 2002. Documentation of field activities and laboratory reports are presented in Appendix A and Appendix B, respectively.

Groundwater Elevation Monitoring. Full rounds of groundwater elevation monitoring were performed during August and November 2002. In general, groundwater flows radially outward from the rise on which the SJRP is located. Groundwater levels in the north plant area are higher and hydraulic gradients are flatter as groundwater flows towards the north and northwest. Groundwater elevation measurements in the south area of the site indicate that the maximum groundwater elevations occur in the vicinity of MW-6 located in the east-central portion of the plant. Groundwater beneath the southern portion of the plant generally flows to the southeast. The steepest hydraulic gradients at the SJRP occur towards the southwest of the site. Groundwater elevation maps for data collected during August and November 2002 are presented in Figures 7 and 8, respectively. Field documentation for monitoring activities are presented in Appendix A.

Inorganic Sampling Results. Results for inorganic samples collected during 2002 are presented in Table 4-1. Elevated concentrations of some inorganic constituents, including TDS and sulfate, were detected in various wells that may be associated with past practices. However, these constituents are likely naturally elevated. There are no downgradient users of the groundwater. Past closure activities have addressed any site-related sources of these parameters to groundwater. Regionally, this area is known to contain elevated TDS and associated inorganic parameters. Isoconcentration maps presenting TDS and sulfate concentrations for samples collected during August 2002 are shown on Figures 9 and 10, respectively. Documentation of field activities and laboratory reports are presented in Appendix A and Appendix B, respectively.

4.2 HYDROCARBON REMEDIATION RESULTS

As discussed previously and presented in Table 4-1, only benzene concentrations remain above NMWQCC standards in the monitoring wells associated with active hydrocarbon remediation (MW-8 and MW-9). Based on these data, the following observations were made regarding the efficacy of in-situ oxygenation:

- Benzene concentrations in MW-8 continued to decline during 2002 from a high concentration of 200 µg/l during May to approximately 0.8 µg/l in August. Dissolved oxygen concentrations in this well ranged from 8.9 mg/l to approximately 7.3 mg/l indicating that there is adequate oxygen available to support natural attenuation processes.

- Benzene concentrations in MW-9 also continued to decline as a result of air sparging efforts. Benzene results for this well ranged from 48 µg/l in February to 1.4 µg/l in May as compared with a benzene concentration range of 53 µg/l to 22 µg/l measured during 2001.

TABLE 4-1

SUMMARY OF 2002 ANALYTICAL RESULTS AND FIELD DATA
SAN JUAN RIVER PLANT
(Page 1 of 1)

Parameter	NMWQCC Standard	Units	W-2		MW-4		MW-5			MW-6		MW-7		MW-8				MW-9					
			8/15/2002	8/21/2002	8/15/2002	8/21/2002	1/25/2002	8/15/2002	8/21/2002	8/15/2002	8/21/2002	8/15/2002	8/21/2002	1/25/2002	5/23/2002	8/15/2002	8/21/2002	11/12/2002	1/25/2002	2/21/2002	5/23/2002	8/15/2002	8/21/2002	11/12/2002
TOC Elevation	NE	feet, msl	5280.11	5280.11	5283.08	5283.08	5257.44	5257.44	5257.44	5304.84	5304.84	5293.13	5293.13	5259.94	5259.94	5259.94	5259.94	5259.94	5260.97	5260.97	5260.97	5260.97	5260.97	5260.97
Depth to Water	NE	feet	57.55	57.26	52.93	53.00	17.73	18.61	18.68	31.50	31.57	27.07	27.47	12.35	12.32	12.90	11.86	11.31	7.27	7.16	5.34	6.93	7.13	5.68
Groundwater Elevation	NE	feet, msl	5222.56	5222.85	5230.15	5230.08	5239.71	5238.83	5238.76	5273.34	5273.27	5266.07	5265.66	5247.59	5247.62	5247.04	5248.08	5248.63	5253.70	5253.81	5255.63	5254.05	5253.85	5255.29
Volatile Organic Constituents																								
Benzene	10	µg/l	1.4	NA	0.8	NA	<0.5	0.4	NA	0.3	NA	0.4	NA	**110**	**200**	0.8	NA	3.0	**22.0**	**48.0**	1.4	**11.7**	NA	**13.0**
Toluene	750	µg/l	0.4	NA	<0.5	NA	<0.5	<0.5	NA	<0.5	NA	0.4	NA	<0.5	<2.5	<0.5	NA	0.4	<0.5	<0.5	<0.5	<0.5	NA	0.3
Ethylbenzene	750	µg/l	0.8	NA	1.1	NA	<0.5	<0.5	NA	<0.5	NA	0.9	NA	2.3	7.9	4.4	NA	2.4	4.4	7.4	<0.5	2.1	NA	2.4
TotalXylenes	620	µg/l	1.0	NA	0.9	NA	<1.0	1.0	NA	0.9	NA	1.0	NA	9.8	17	7.3	NA	2.8	3.0	4.5	<1.0	0.9	NA	1.0
Metals																								
Aluminum	5000	µg/l	1130	NA	1370	NA	NA	2700	NA	**13600**	NA	3210	NA	NA	NA	508	NA	NA	NA	NA	NA	***8900***	NA	NA
Arsenic	100	µg/l	4.9	NA	20.7	NA	NA	10.6	NA	7.8	NA	7.2	NA	NA	NA	23.8	NA	NA	NA	NA	NA	8.8	NA	NA
Barium	1000	µg/l	32.7	NA	27.1	NA	NA	17.5	NA	13.9	NA	44.1	NA	NA	NA	29	NA	NA	NA	NA	NA	11.9	NA	NA
Cadmium	10	µg/l	0.79	NA	1.2	NA	NA	0.46	NA	**10.9**	NA	1.3	NA	NA	NA	<2	NA	NA	NA	NA	NA	8.4	NA	NA
Calcium	NE	µg/l	402000	NA	210000	NA	NA	361000	NA	388000	NA	416000	NA	NA	NA	67200	NA	NA	310	NA	NA	358000	NA	NA
Chromium	50	µg/l	5.6	NA	10.2	NA	NA	5	NA	30.3	NA	8.1	NA	NA	NA	***1080***	NA	NA	NA	NA	NA	7.8	NA	NA
Cobalt	50	µg/l	3.5	NA	**191**	NA	NA	12.7	NA	**200**	NA	11.6	NA	NA	NA	7	NA	NA	NA	NA	NA	183	NA	NA
Copper	1000	µg/l	116	NA	158	NA	NA	14	NA	43.4	NA	23.7	NA	NA	NA	14	NA	NA	NA	NA	NA	51.2	NA	NA
Iron	1000	µg/l	**1760**	NA	**6500**	NA	NA	**3380**	NA	986	NA	**4240**	NA	NA	NA	**6890**	NA	NA	0.2	NA	NA	**849**	NA	NA
Lead	50	µg/l	3.1	NA	11.3	NA	NA	4.8	NA	<5	NA	<5	NA	NA	NA	<5	NA	NA	NA	NA	NA	<5	NA	NA
Magnesium	NE	µg/l	*108000*	NA	*80100*	NA	NA	*168000*	NA	*311600*	NA	*173000*	NA	NA	NA	465000	NA	NA	310	NA	NA	258000	NA	NA
Manganese	200	µg/l	**216**	NA	**6080**	NA	NA	**3260**	NA	**6550**	NA	**4570**	NA	NA	NA	162	NA	NA	8	NA	NA	**6470**	NA	NA
Mercury	2	µg/l	0.12	NA	0.61	NA	NA	0.077	NA	0.095	NA	0.092	NA	NA	NA	0.07	NA	NA	NA	NA	NA	0.13	NA	NA
Molybdenum	1000	µg/l	2.8	NA	2.7	NA	NA	<5	NA	<5	NA	2.1	NA	NA	NA	56.8	NA	NA	NA	NA	NA	<5	NA	NA
Nickel	200	µg/l	7.5	NA	**261**	NA	NA	49.3	NA	**727**	NA	26.7	NA	NA	NA	**251**	NA	NA	23	NA	NA	**295**	NA	NA
Potassium	NE	µg/l	13400	NA	8990	NA	NA	30900	NA	29100	NA	26800	NA	NA	NA	62900	NA	NA	NA	NA	NA	25600	NA	NA
Selenium	50	µg/l	**108**	NA	3.4	NA	NA	3.2	NA	**304**	NA	11.4	NA	NA	NA	2.2	NA	NA	NA	NA	NA	6.7	NA	NA
Silver	50	µg/l	2.8	NA	1.7	NA	NA	2.6	NA	4	NA	3.4	NA	NA	NA	<10	NA	NA	NA	NA	NA	2.9	NA	NA
Sodium	NE	µg/l	1350000	NA	1040000	NA	NA	5980000	NA	4080000	NA	4810000	NA	NA	NA	4720000	NA	NA	5200	NA	NA	4490000	NA	NA
Zinc	10000	µg/l	73.3	NA	241	NA	NA	49	NA	612	NA	68	NA	NA	NA	14.5	NA	NA	NA	NA	NA	516	NA	NA
Inorganics																								
Alkalinity - Total	NE	mg/l	NA	170	NA	874	NA	NA	459	NA	145	NA	900	NA	NA	NA	4420	NA	<1	NA	NA	NA	<4	NA
Chloride	250	mg/l	NA	**296**	NA	234	NA	NA	**331**	NA	**1040**	NA	**367**	NA	NA	NA	3.18	NA	**740**	NA	NA	NA	**673**	NA
Sulfate	600	mg/l	NA	**3380**	NA	**1790**	NA	NA	**14400**	NA	**8300**	NA	**11000**	NA	NA	NA	**5450**	NA	**11000**	NA	NA	NA	**11600**	NA
Total Dissolved Solids	1000	mg/l	NA	**5690**	NA	**4060**	NA	NA	**20300**	NA	**14900**	NA	**17500**	NA	NA	NA	**31200**	NA	**18000**	NA	NA	NA	**17200**	NA
Field Tests																								
Field pH	6 - 9	pH units	6.15	NA	6.82	NA	6.49	5.14	NA	5.75	NA	6.55	NA	8.29	8.7	8.11	NA	6.18	4.58	6.39	4.39	8.11	NA	4.04
Field Conductivity	NE	microsiemens	4760	NA	3780	NA	<20	12070	NA	10610	NA	12270	NA	<10	8920	12350	NA	>19000	<10	11860	12410	12350	NA	10860
Field Temperature	NE	degrees Celsius	18.9	NA	18.9	NA	10	14.3	NA	17.9	NA	19.1	NA	12.1	13.2	17.9	NA	15.3	10	11.3	16.9	17.9	NA	12
Field Dissolved Oxygen	NE	*mg/l*	NA	NA	NA	NA	1.19	NA	NA	NA	NA	NA	NA	8.45	8.9	NA	NA	7.27	4.41	2.23	4.6	NA	NA	3.05

µg/l - micrograms per liter
mg/l - milligrams per liter
msl - mean sea level
NA - not analyzed
NE - Not Established
TOC - top of casing

Constituents appearing bold shown exceedance for at least one sample obtained in during 2002.

Figure 3
BTEX Concentration and Groundwater Elevation vs. Time
San Juan River Plant
MW-5

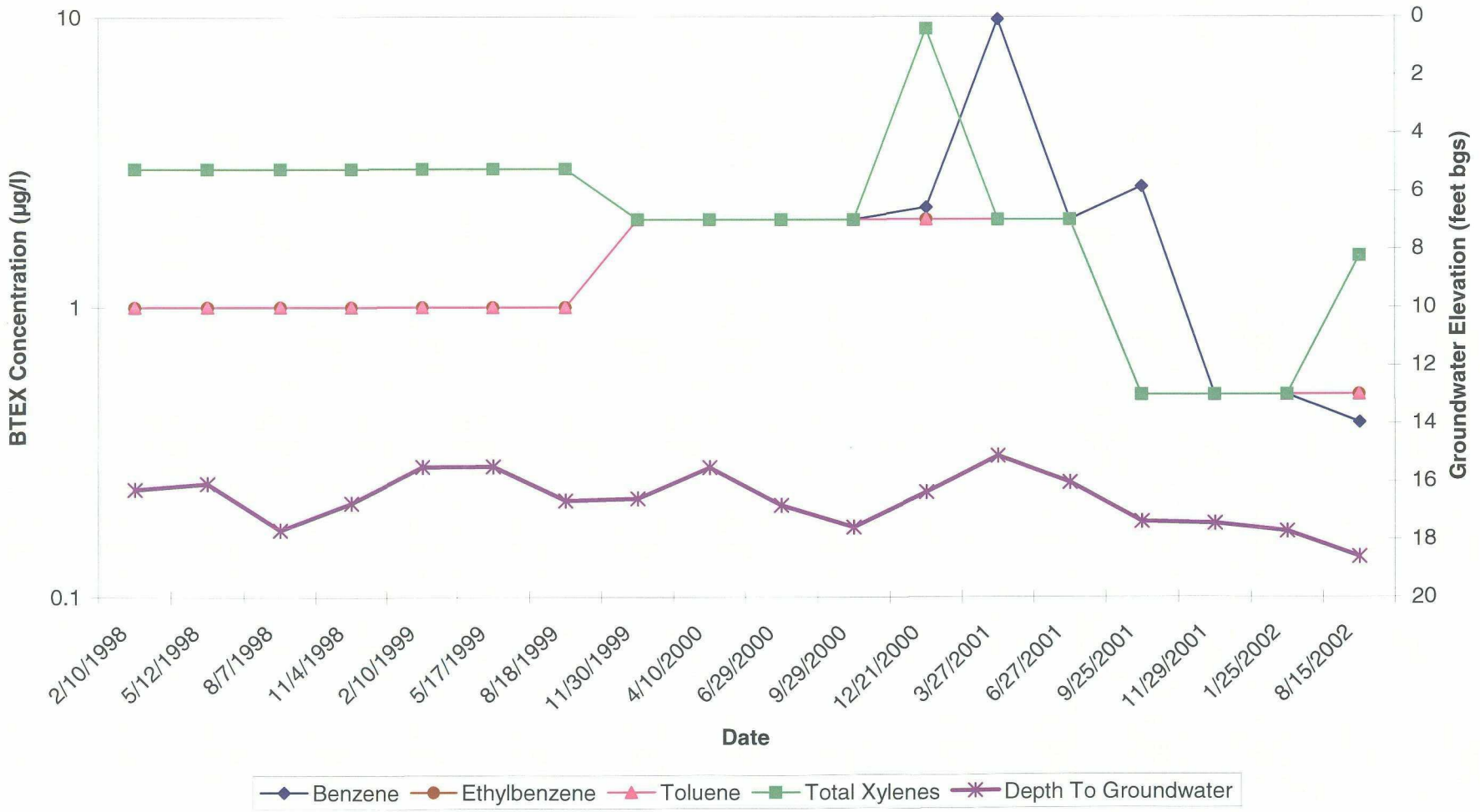


Figure 4
BTEX Concentration and Groundwater Elevation vs. Time
San Juan River Plant
MW-8

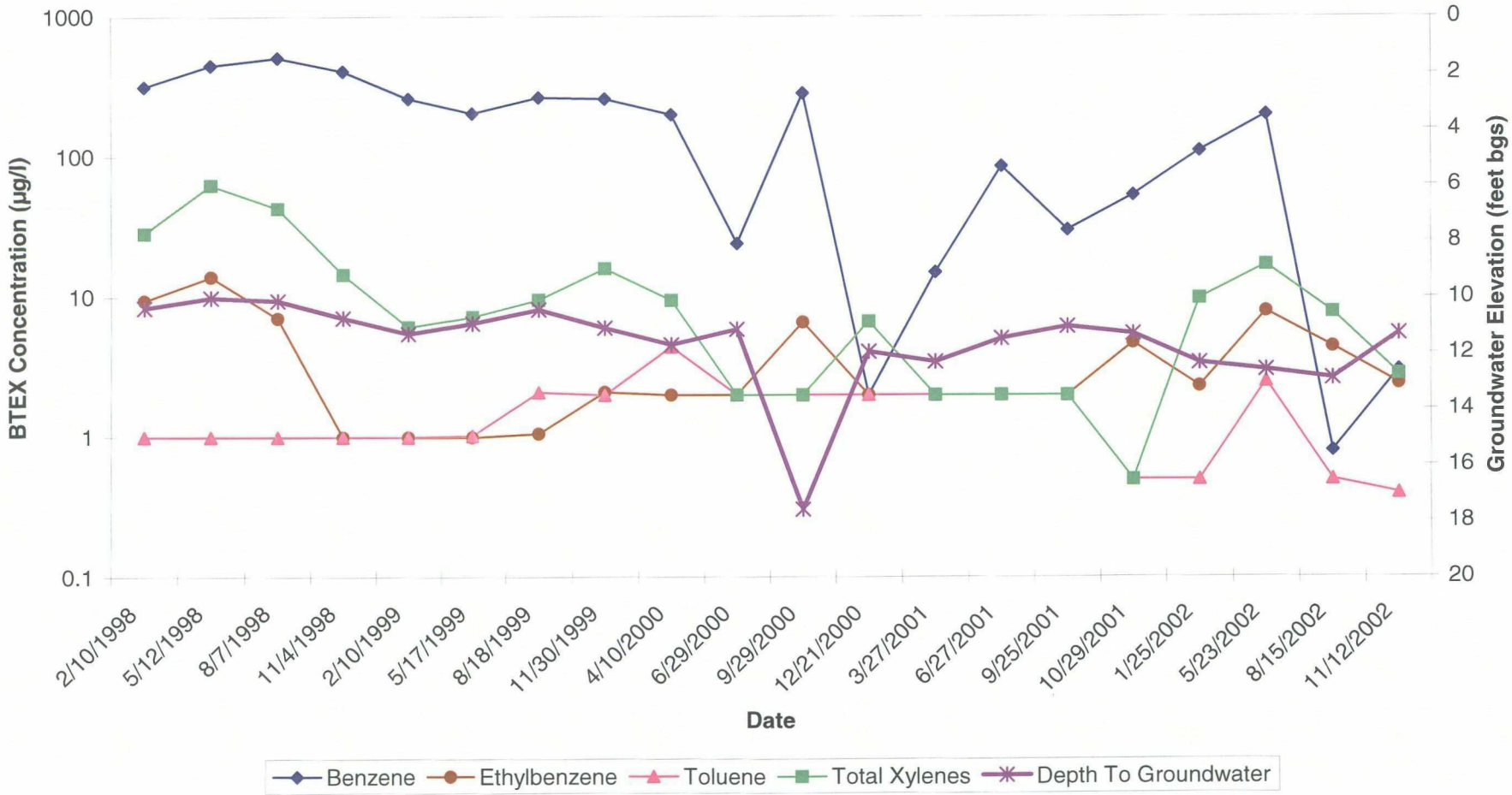
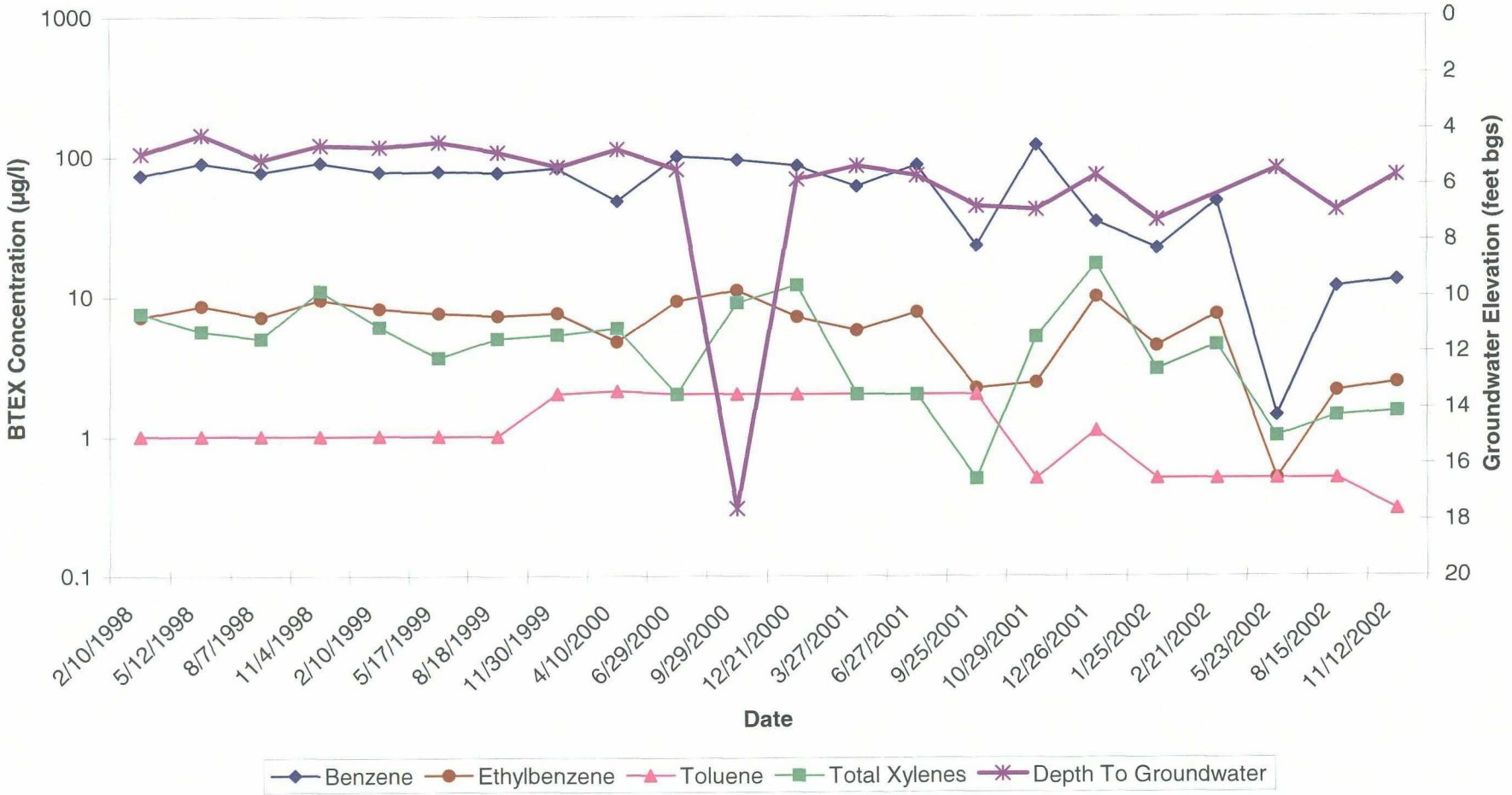
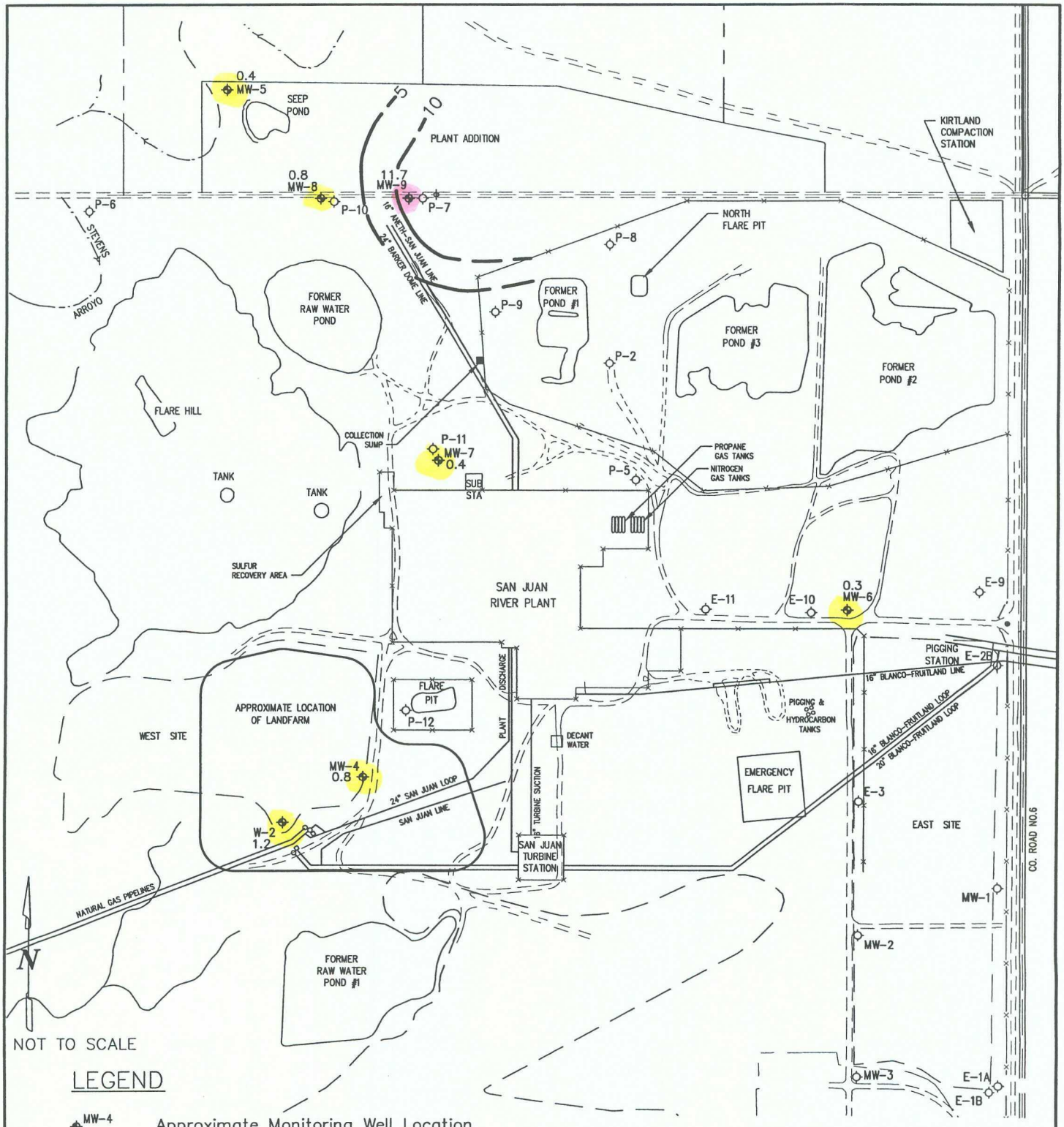


Figure 5
BTEX Concentration and Groundwater Elevation vs. Time
San Juan River Plant
MW-9





LEGEND

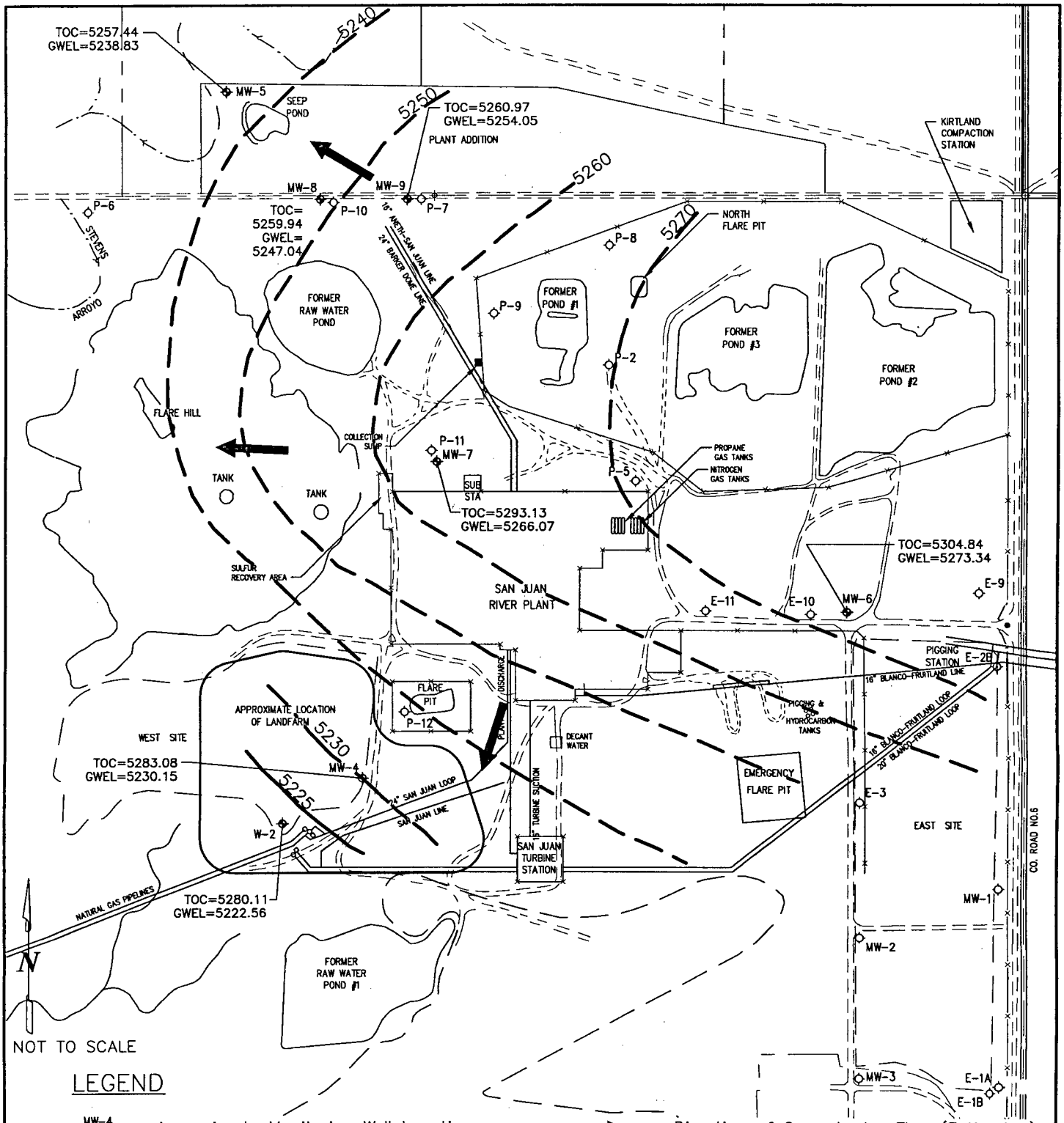
MW-4	Approximate Monitoring Well Location
E-3 MW-1 P-2	Approximate Abandoned Well Location
—10—	Benzene Isoconcentration (µg/L) (Estimated where dashed)
1.2	Benzene Concentration (µg/L)

BENZENE ISOCONCENTRATION MAP
AUGUST 2002
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 6

SJRP_02_ANREPORT



LEGEND

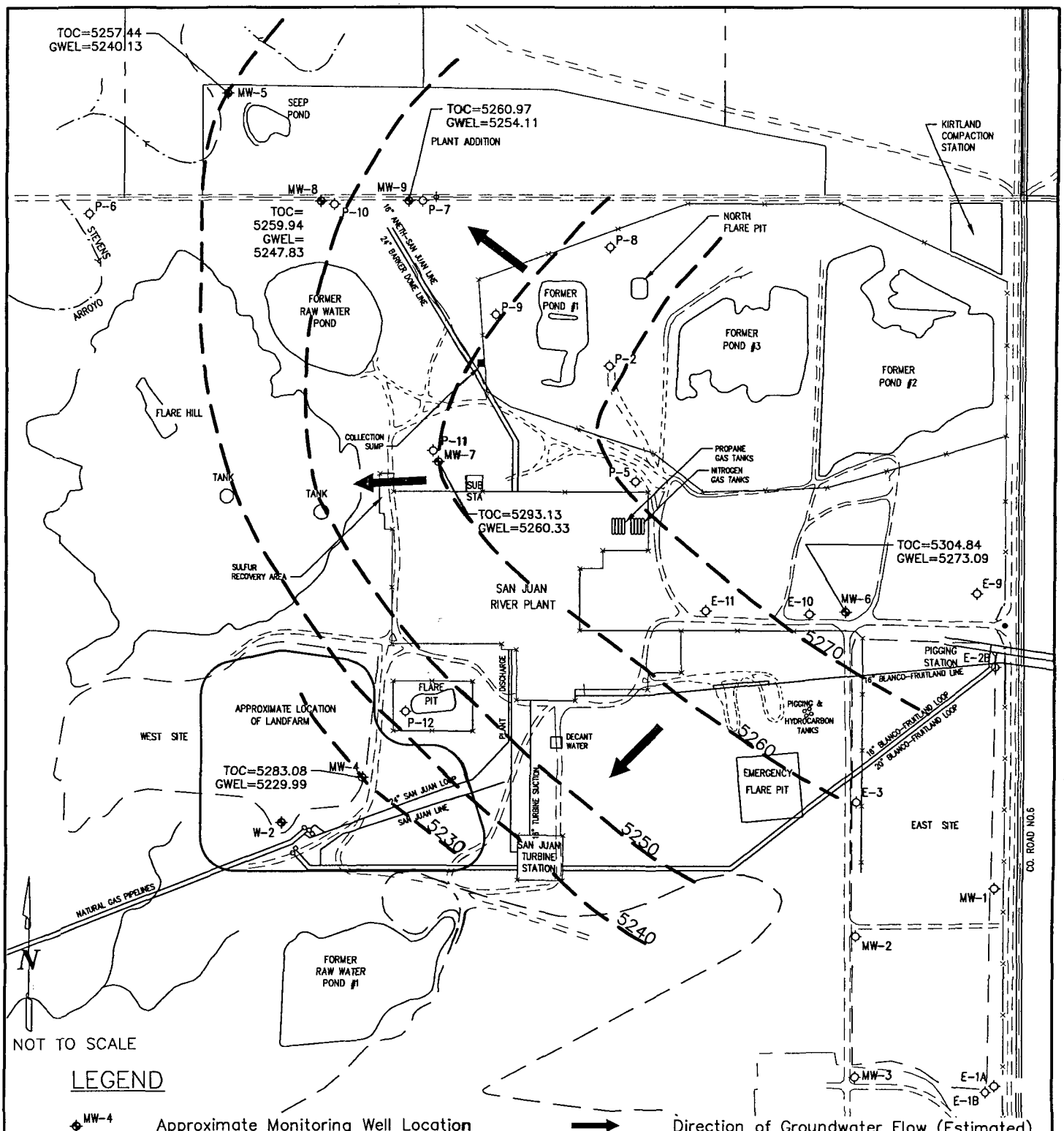
MW-4	Approximate Monitoring Well Location		Direction of Groundwater Flow (Estimated)
E-3 MW-1 P-2	Approximate Abandoned Well Location	GWEL	Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
5265	Potentiometric Surface (Approximate & Assumed Where Dashed)	TOC	Top of Casing

GROUNDWATER ELEVATION MAP
AUGUST 2002
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 7

SJRP_02-ANREPORT

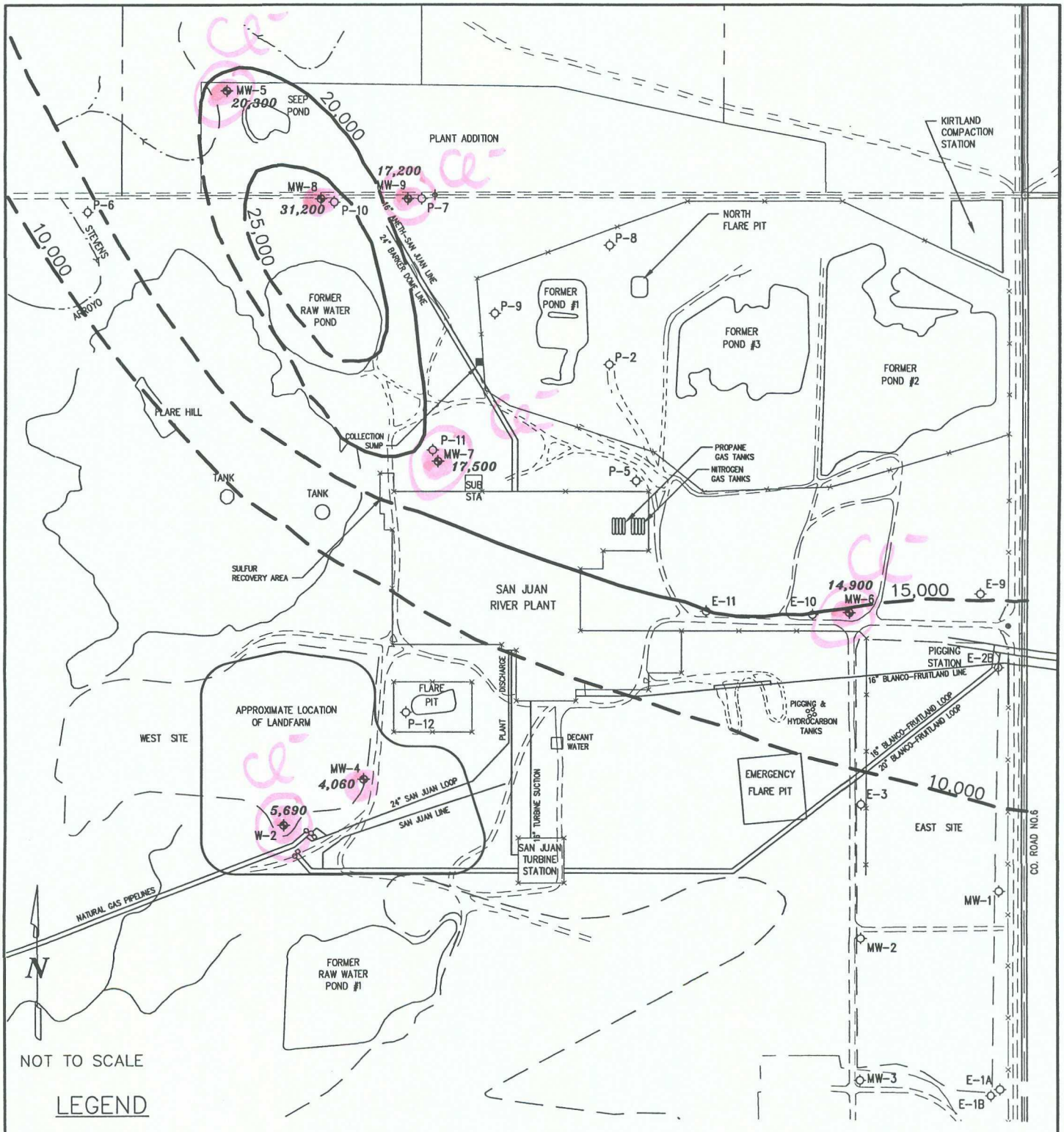


SJRP_02-ANREPORT

GROUNDWATER ELEVATION MAP
NOVEMBER 2002
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 8



NOT TO SCALE

LEGEND

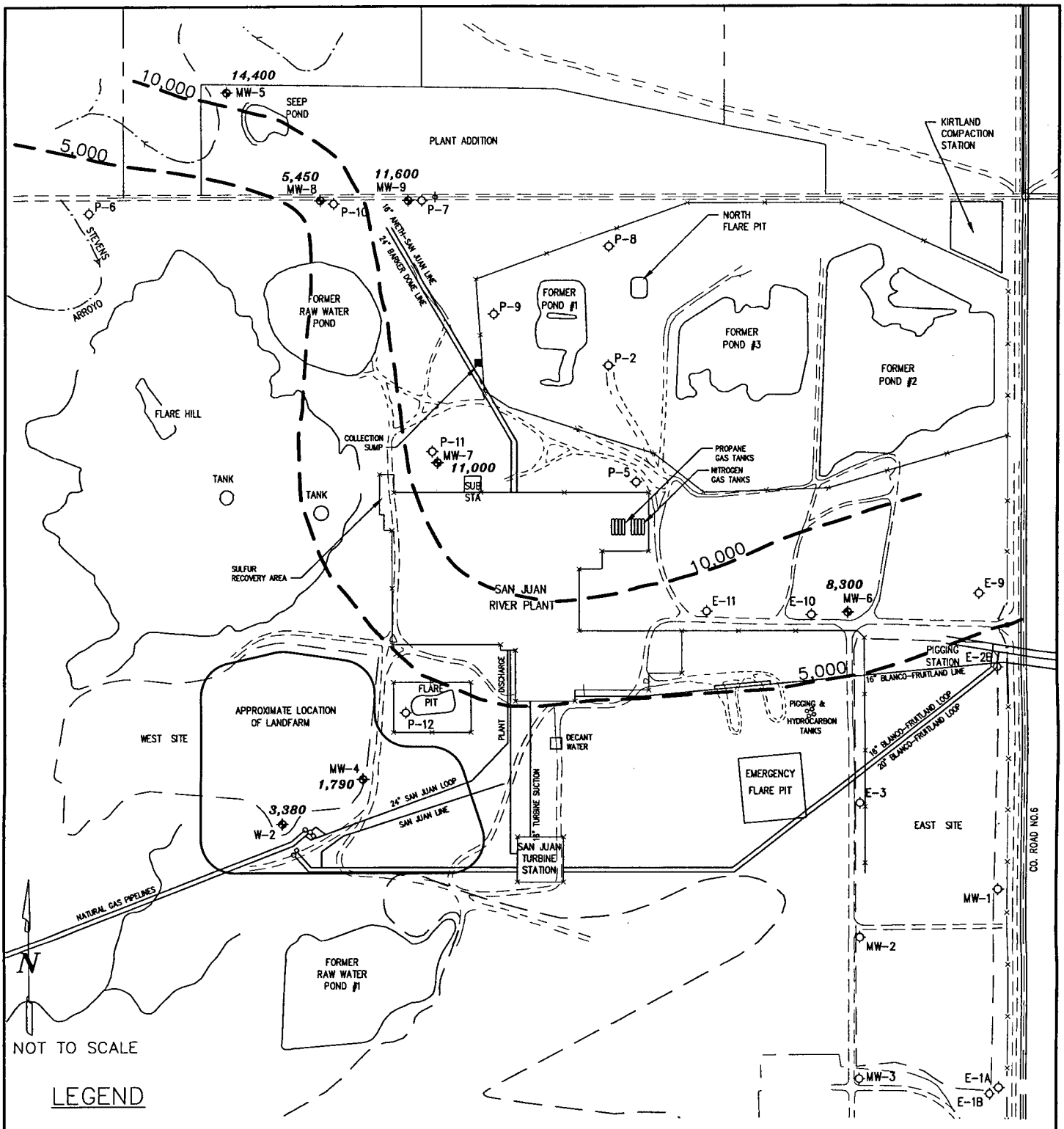
MW-4	Approximate Monitoring Well Location
E-3 MW-1 P-2	Approximate Abandoned Well Location
16,500	Total Dissolved Solids (mg/L)
10,000	Total Dissolved Solids Isoconcentration (mg/L) (Estimated where dashed)

TDS ISOCONCENTRATION MAP
AUGUST 2002
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 9

SJRP_02-ANREPORT



LEGEND

- MW-4 — Approximate Monitoring Well Location
- E-3, MW-1, P-2 — Approximate Abandoned Well Location
- 3,600 — Sulfate Concentration in ppm
- —10— — Sulfate Isoconcentration (ppm) (Estimated)

SULFATE ISOCONCENTRATION MAP
AUGUST 2002
SAN JUAN RIVER PLANT

EL PASO NATURAL GAS

FIGURE 10

SJR_02_ANREPORT

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are provided based on the information presented in this report.

5.1 SITE-WIDE GROUNDWATER MONITORING PROGRAM

Groundwater sampling performed as part of the site-wide groundwater monitoring at SJRP resulted in the following conclusions and recommendations:

- Groundwater flows radially away from the rise on which SJRP is located. In the north plant area, groundwater flow is towards the north and northwest; in the south plant area groundwater flow is primarily towards the south and southwest.

- Benzene concentrations in the monitoring wells containing dissolved-phase hydrocarbon contamination (MW-8 and MW-9) continue to decline as a result of active remediation efforts. Both monitoring wells had at least one sampling event during 2002 that indicated concentrations were below NMWQCC standards.

- Inorganic constituents were measured above NMWQCC standards during the August 2002 sampling event. While, in some cases, the elevated concentrations of TDS and sulfate may reflect past practices, it is likely that some elevated concentrations are naturally occurring.

- It is recommended that the site-wide groundwater monitoring program continue on an annual basis.

5.2 HYDROCARBON REMEDIATION PROGRAM

The following conclusions and recommendations are provided regarding the hydrocarbon remediation performed near MW-8 and MW-9 at the north end of the site:

- Air sparging activities near monitoring well MW-9 continued to reduce benzene concentrations during 2002. Benzene results for this well were below NMWQCC standards during May, and were only slightly above the standards during August and November.

- It is recommended that air sparging continue at MW-9 until quarterly sampling results reflect compliance with NMWQCC standards, the sparge system will then be turned off for approximately 8 weeks and groundwater samples will be collected from MW-9 to assess the potential for a rebound in concentration. If laboratory analysis indicate no rebound in BTEX concentrations in MW-9, the sparge system will remain off and quarterly closure monitoring will be initiated.

- In-situ oxygenation efforts at monitoring well MW-8 significantly reduced benzene concentrations from a low of 110 µg/l in 2001 to approximately 0.8 µg/l in August 2002. Dissolved oxygen concentrations indicate that there is sufficient oxygen to support natural attenuation processes.

- If quarterly analytical results for samples continue to indicate BTEX concentrations below NMWQCC standards in MW-8, the ORC socks will be removed and quarterly closure monitoring will be initiated.

6.0 REFERENCES

AE Schmidt Environmental, 2002, *Air Sparge Pilot Test Data, San Juan River Plant, Kirtland, NM,* prepared for Montgomery Watson Harza, Inc., Albuquerque, New Mexico, February 2002.

El Paso Energy Corporation, November 27, 2001, Electronic communication from Mr. Scott Pope (EPNG) to Mr. William Olson, New Mexico Oil Conservation Division, *Proposal to install an Oxygen Release Compound (ORC) sock for oxygenation of MW-8 in lieu of sparging,* documenting conversation between the parties on November 26, 2001.

El Paso Energy Corporation, September 19, 2001, Letter to Mr. William Olson, New Mexico Oil Conservation Division, *Revised Work Plan for Groundwater Remediation for the San Juan River Plant.*

El Paso Energy Corporation, January 24, 2001, Letter to Mr. William Olson, New Mexico Oil Conservation Division, RE: *Work Plan for Groundwater Remediation and 2000 Groundwater Sample Results for the San Juan River Plant.*

El Paso Energy, November 19, 1992, *Summary of Analytical Data from the San Juan River Plant:* Memorandum from N.K. Prince, Environmental Affairs, to S. D. Miller

New Mexico Oil Conservation Division, October 13, 1999. Letter from NMOCD requiring annual groundwater sampling.

New Mexico Oil Conservation Division, June 4, 2001, Letter to Mr. Scott Pope, El Paso Energy Corporation, Case #GW039R, *Groundwater Monitoring Results and Remediation Work Plan,* San Juan River Plant, Kirtland, New Mexico.

Philip Services Corporation, 2000, San Juan River Plant: *Groundwater Remediation Work Plan, Prepared for El Paso Natural Gas,* Farmington, New Mexico, December 2000.

Philip Environmental, 1998, *Summary of Investigations at the San Juan River Plant, Kirtland, New Mexico,* prepared for El Paso Natural Gas Company, Farmington, New Mexico, June 1998.

Philip Environmental, 1995, *Soil-Gas and Soil Survey, San Juan River Plant, Kirtland, New Mexico,* prepared for El Paso Natural Gas Company, Farmington, New Mexico, August 1995.

APPENDIX A

2002 DOCUMENTATION OF FIELD ACTIVITIES

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project No: 220013
Project Manager: Delbert Belcis
Date: 12/27/02
Client Company: MWH
Site Name: San Juan River Plant - Kirtland

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-9	1030	6.64	—	21.92	—	—	

COMMENTS: Compressor running o.k. Repair on PVC + flow gauge o.k.

1.5 psi on guage / hose connected to high pressure. - pressure in well.
10.56 D.O.
14.3° C temp

Signature: Delbert Belcis
Date: 12/27/02

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-4 Development ☐ Sampling ☐ Field Parameters

Project Manager Ashley Lowe Date 11-12-02 Start Time 11:39 Weather 45, Sunny

Depth to Water 53.095 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 3.815 Well Dia. 4"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☐ Sabilization of Indicator Parameters ☐ Other 1 casing volume

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.16 x 3.8	0.6		

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
11:39	6.23	719,000	13.3		3.10		0.75	dark brown, silty

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate

COMMENTS:

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☑ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

Sample ID _____ Sample Time _____ BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB _____

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-5 Development ☐ Sampling ☐ Field Parameters

Project Manager Ashley Lowe Date 11-12-02 Start Time 12:54 Weather 45°, Sunny

Depth to Water 17.31 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 14.5 Well Dia. 4" TD 31.89

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☐ Sabilization of Indicator Parameters ☐ Other 1 casing volume

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 14.5	9.5		

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
12:59	6.18	>19,000	15.3		0.97		9.5	

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate

COMMENTS:

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

Sample ID _____ Sample Time _____ BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB _____

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-10 Development ☐ Sampling ☐ Field Parameters

Project Manager Ashley Lowe Date 11-12-02 Start Time 12:26 Weather 45, Sunny

Depth to Water 31.755 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 10.38 Well Dia. 4" TD 42.13

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☐ Sabilization of Indicator Parameters ☐ Other 1 well casing vol

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 10.38	6.7		

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
12:26	4.87	79,000	15.0		1.13		7g	

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate

COMMENTS:

INSTRUMENTATION:

pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☑ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

~~Sample ID~~ _____ Sample Time _____ BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ ~~TB~~ _____

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-7 Development ☐ Sampling ☐ Field Parameters

Project Manager Ashley Lowe Date 11-12-02 Start Time 11:25 Weather 45, Sunny

Depth to Water 32.8 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 5.95 Well Dia. 4" TD 32.8

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☐ Sabilization of Indicator Parameters ☐ Other 1 well casing vol

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 5.95	3.9 gal		

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
11:25	6.06	219,000	14.6		1.55		4	light yellow, cloudy

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate

COMMENTS:

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☑ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

Sample ID _____ Sample Time _____ BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB _____

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-8 Development ☐ Sampling ☑

Project Manager Ashley Lowe Date 11-12-02 Start Time 10:20 Weather 40° Sunny

Depth to Water 12.115 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 10.09 Well Dia. 4" TD 22.18

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☑ Sabilization of Indicator Parameters ☐ Other or bail dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 10.09	6.5 x 3		19.5 gal

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
10:22		>19,000	12.3				2	Conductivity out of range & pH
		"	11.7				5	meter not working
		"	12.4				7	light yellow, slightly cloudy
		"	12.9				10	strong odor
		"	13.0				12	
		"	12.9				14	bailing dry
		"	12.9				15	
		"	12.9				15.5	dry - brown & silty

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
10:45		>19,000	12.9		7.27				

COMMENTS: Pulled socks on 11/7/02 to allow water level to recover. Replaced after sampling. pH meter is broken. Well went dry prior to purging 3 well volumes

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

Sample ID San Juan River Plant MW-8 Sample Time 10:45 BTEX ☑ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB TB021112O1

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH

Location: San Juan River Plant Well No: MW-9 Development ☐ Sampling ☑

Project Manager Ashley Lowe Date 11-12-02 Start Time 9:07 Weather 40° Sunny

Depth to Water 6.86 Depth to Product NA Product Thickness NA Measuring Point TOC

Water Column Height 15.06 Well Dia. 4" TD 21.95

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☑ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☑ Sabilization of Indicator Parameters ☐ Other or bail dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 15.06	9.8 x 3		29.4 gal

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
9:10	3.89	9640	12.2				2	light brown, cloudy
	3.91	9660	13.5				5	
	3.80	10710	13.5				8	
	3.70	10810	12.7				10	
	3.75	11050	12.4				15	yellow color, clearer
	3.90	12270	12.4				17	
	3.94	10100	10.2				20	
	3.94	10610	11.1				20.5	bailing down
	3.99	10940	12.0				21	brown, cloudy & silty
	4.00	10890	12.1				21.5	
	4.04	10860	12.0				22	dry well

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
9:40	4.04	10860	12.0		3.05			22gal	

COMMENTS: Turned off sparge system 11/7/02 to allow water level to recover. Well bailed dry prior to purging 3 well casing volumes. Turned sparge system back on after replacing flow gage.

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☑ _____

DO Monitor ☑ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz Plant

Sample ID San Juan River Plant MW-9 Sample Time 9:40 BTEX ☑ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB TB021112OI

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project Manager: Ashley Lowe
Client Company: MWH
Site Name: San Juan River Plant

Project No: 220013
Date: 11-12-02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
W-2	12:00	55.56	—	64.37	—	—	
MW-4	~~11:35~~ 11:39	~~53.095~~	—	32.34	—	—	field parameters
MW-5	12:54	17.31	—	31.89	—	—	field parameters
MW-6	12:26	31.755	—	42.13	—	—	field parameters
MW-7	11:25	32.8	—	32.8	—	—	field parameters
MW-8	10:20	12.115	—	22.2	—	—	ground water sample
MW-9	9:07	6.86	—	21.92	—	—	ground water sample

COMMENTS: MW-9: turned sparge system back on at 10:00 after replacing flow gage. Flow gage = 6 scfm. Pressure in well = 0.25 psi after 15 mins. May be low because it was purged dry.

MW-8: replaced socks after sampling

Signature: Ashley L Lowe
Date: 11/12/02

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 021112AL01
Page 1 of 1
Air Bill No. 836381676576

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan River Basin
Project Number 220013
Date Due 21 days
Sampler's Name Ashley Lowe
(print/clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				No Preservative
San Juan River Plant	MW-9		11-12-02	9:40	WG	B	✓											
San Juan River Plant	MW-8		11-12-02	10:45	WG	B	✓											✓
TB021112L01			11-12-02				✓											

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley Lowe/AGSE		11/12/02	5:00

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project Manager: Ashley Lowe
Client Company: MWH
Site Name: San Juan River Plant

Project No: 220013
Date: 10/23/02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-9	13:18	6.60	~~=~~ NA	21.95	—	—	DO = 3.81 @
							18.3 °C

COMMENTS: Sparge apparatus was disconnected at top of flow meter. This has happened often & flow meter may need to be replaced. Adjusted float so that meter would work. Re-connected & tightened all joints. After letting system run for ~15 mins, measured pressure at well as 3.75 psi

Signature: Ashley L Lowe
Date: 10/23/02

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project Manager: Ashley Lowe
Client Company: MWH
Site Name: San Juan River Plant

Project No: 220013
Date: 10/07/02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-9	9:45	6.815	—	21.95	—	—	DO = 4.28 19.20

COMMENTS: Sparge apparatus was leaking air at bottom of flow gage. Used teflon tape to repair. Hose had blown off of compressor. Tightened both ends of hose

Turned system off to measure depth to water & DO.

Signature: Ashley L Lowe Date: 10/07/02

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project Manager: Ashley Lowe
Client Company: MWH
Site Name: San Juan River Plant

Project No: 220013
Date: 09/27/02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
SW-9	10:02	6.72	—	21.95	—	—	DO = 3.56 mg/L @ 21.2 °C
MW sparg per Ashley Lowe							

COMMENTS: Sparge system was shut off to measure water levels & DO. Measured air flow in SW-9 before shutting of = 36 psi

Signature: Ashley L Lowe

Date: 09/27/02

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
Project Manager: Ashley Lowe
Client Company: MWH
Site Name: San Juan River Plant

Project No: 220013
Date: 09/20/02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-9	11:15	6.778	—	21.95	—	—	DO = 3.24 mg/L
							@ 20.8°C

COMMENTS: O&M: measured water levels & DO prior to turning sparge system back on. Set clock to 11:25, on time = 6am, off time = 2pm. Sparge pump works!
Sparge apparatus was disconnected at top of flow meter. Reconnected all joints. Let system run At 12:02, measured pressure in MW-9.

P = 3.75 psi

Left system running

Meter house was shifted over well. May have turned over & been uprighted Needs to be staked down.

Signature: Ashley L Lowe

Date: 09/20/02

8.27.02

Data found on the following sheets for SJRP W-2, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 dated 8.21.02 have not been entered in the database. These wells were sampled (lab analyses and field parameters) on 8.15.02, however the samples that were sent to the lab had a problem with the bottles requiring that the wells be resampled. The field forms from 8.21.02 are only to document the resample. Field parameters for these wells for the month of August should be dated 8.15.02.

AES

Well Number W-2

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name 1 San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
- Initial Depth of Well (feet)
- Initial Depth to Water (feet) 57.26 'BTOC
- Height of Water Column in Well (feet)
- Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump	Bailer
☐ Centrifugal	☐ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	14:47		✓		32oz	23.0	7.17	5060		sample collected in 1L bottle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (¼ purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley R Lowe Date 08/21/02 Reviewer Date

AESL
906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-4 Development Purging

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin Project Manager Ashley Lowe Project No. 220013

Client Company Montgomery Watson Harza Phase.Task No.

Site Name 1 San Juan River Plant Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet) 53.00'
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method		Water Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer	Increment	Cumulative					
08/21/02	14:34		✓		30 oz	24.6	7.07	3860		sample collected in 1L bottle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (¼ purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley R Lowe Date 08/21/02 Reviewer Date

AES

Well Number MW-5

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name 1 San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet) 18.678' BTOC
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☑ pH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	15:55		✓		112 oz	20.8	7.68	14310		sample collected in unpreserved 1L bottle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (¼ purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley L Lowe | Date 08/21/02 | Reviewer | Date

AES

Well Number MW-6

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Project Name San Juan River Basin Project Manager Ashley Lowe Project No. 220013

Client Company Montgomery Watson Harza Phase.Task No.

Site Name 1 San Juan River Plant Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet) 31.57 'BTOC
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☑ pH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	15:45		✓		64oz	22.8	7.36	11640		sampled in 1L unpreserved bottle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (4 purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley & Lowe Date 08/21/02 Reviewer Date

AES

Well Number MW-7

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name 1 San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet) 27.47 BTOC
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☒ pH Meter
- ☐ DO Monitor
- ☒ Conductivity Meter
- ☒ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	14:57				64oz	21.8	7.29	12420		sample collected in 1L bottle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (¼ purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley L Lowe Date 08/21/02 Reviewer Date

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906 San Juan Blvd. Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-8

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin Project Manager Ashley Lowe Project No. 220013

Client Company Montgomery Watson Harza Phase.Task No.

Site Name San Juan River Plant Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
- Initial Depth of Well (feet)
- Initial Depth to Water (feet) 11.86' BTOC
- Height of Water Column in Well (feet)
- Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments / Serial No. (if applicable)
- ☑ pH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump	Bailer
☐ Centrifugal	☐ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	15:10		✓		18oz	22.6	6.99	10750		sample collected in 1L bottle
										replaced ORC (socks) - had been removed for sampling last week. 11.86' is a better water level reading, since water in well had time to settle
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (¼ purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley L Lowe Date 08/21/02 Reviewer Date

AES

Well Number MW-9

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
- Initial Depth of Well (feet)
- Initial Depth to Water (feet) 7.125' BTOC
- Height of Water Column in Well (feet)
- Diameter (inches): Well Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
Total			

Instruments — Serial No. (if applicable)
- ☑ pH Meter
- ☐ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump	Bailer
☐ Centrifugal	☐ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/21/02	15:28		✓		16 oz	25.1	7.47	13450	4.85	sample collected in 1L bottle.
										sparge system is still not on-clock has not moved since last week & appears not to have run at all. Electrician changed the fuse, but has not helped. Called L. Bynally to discuss what to do next.
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments This well was sampled 08/15/02 (4 purged). Preserved bottles were used at that time. A sample was collected using a clean disposable bailer directly from the top of the water column today in unpreserved bottles (TDS, Anions, Alkalinity)

Developer's Signature (s) Ashley R Lowe | Date 08/21/02 | Reviewer | Date

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020821AL01
Page 2 of 2
Air Bill No. 834715209690

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars

Project San Juan River Basin
Project Number 4270032-020105
Date Due @ 21 days
Sampler's Name Ashley Lowe
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				
SJ	MW-4		5/21/02	14:34	WG			✓	✓			✓						
SJ	W-2		5/21/02	14:47	WG			✓	✓			✓						
SJ	MW7		5/21/02	14:57	WG			✓	✓			✓						
SJ	MW-8		5/21/02	15:10	WG			✓	✓			✓						
SJ	MW-9		5/21/02	15:28	WG			✓	✓			✓						
SJ	MW-6		5/21/02	15:45	WG			✓	✓			✓						
SJ	MW-5		5/21/02	15:55	WG			✓	✓			✓						

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley Lowe/MESE		05/22/02	11:00

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number W-2

Development / (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 64.37 'BTOC
Initial Depth to Water (feet) 57.55 'BTOC
Height of Water Column in Well (feet) 6.82'
Diameter (inches): Well 2" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.16 × 6.82 =	1.1 × 3 =		3.3 gal
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	10:31		✓		32 oz	22.8	6.08	5540		clear
					64	20.7	6.12	4910		
					96	19.7	6.14	4870		
					128	18.9	6.14	4870		
					146	18.8	6.16	4840		light yellow color, bailing down
		d(in)	gal/ft		154	18.7	6.18	4750		hardly any water - letting recover ~10 mins
		2	0.16		162	18.9	6.15	4790		
		4	0.65		166	18.9	6.15	4760		will sample - almost dry
		6	1.47							sample at 10:53 for BTEX & general chem

Circle the date and time that the development criteria are met.

Comments Took many tries to fill 2 50cc bottles & 1L bottle. Had to stop frequently to let well recover
Samples contain a lot of silt

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-4

Development (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 56.91 'BTOC
- Initial Depth to Water (feet) 52.93 'BTOC
- Height of Water Column in Well (feet) 3.99
- Diameter (inches): Well 2" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.16 × 3.99 =	0.64 × 3 =		1.9 gal
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	11:40		✓		32 oz	23.8	7.38	4890		light brown, cloudy
					60	21.2	7.12	3740		already bailing down
					88	19.8	6.99	3730		grayer color w/black silt
					104	18.9	6.92	3760		not recovering
					120	18.9	6.89	3780		too little recovery - almost dry
		d(in)	gal/ft							
		2	0.16							sample at 11:52 for BTEX & general chem
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments sampled before purged 3 volumes b/c well went dry

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESL

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-5

Development / (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, New Mexico

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 31.89' BTOC
- Initial Depth to Water (feet) 18.61' BTOC
- Height of Water Column in Well (feet) 13.28'
- Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 13.28 =	8.63 x 3 =		25.9 gal
Total			

Instruments / Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	8:24		✓		0.5 gal	16.9	5.42	12080		clear, light brown
					2	15.5	5.35	12120		
					4	14.6	5.31	12140		
					6	14.4	5.30	12140		
					8	14.4	5.29	11950		cloudy - dark brown
		d(in)	gal/ft		10	14.4	5.27	11920		
		2	0.16		11	14.2	5.26	11890		silty & sudsy
		4	0.65		13	14.3	5.13	12110		
		6	1.47		15	14.3	5.14	12070		

Circle the date and time that the development criteria are met.

Comments

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESL

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-5

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 31.89 'BTOC
- Initial Depth to Water (feet) 18.61 'BTOC
- Height of Water Column in Well (feet) 13.28
- Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 × 13.28	8.63 × 3		25.9 gal
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02			✓		17	14.4	5.10	12040		
					19	14.9	5.11	12040		bailing down
					19.4	14.3	5.14	11810		
					19.6	14.7	5.15	12010		almost dry
										sample at 9:20 for BTEX & general chem
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments Poor recovery after 18 gal. ~~Bailed~~ Sampled before 3 volumes purged b/c almost dry & parameters had stabilized. This well needs a new dedicated bailer & a well cap. High salt content

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-6

Development (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 42.725' BTOC
Initial Depth to Water (feet) 31.50' BTOC
Height of Water Column in Well (feet) 11.2'
Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well: Gallons	Water Volume in Well: Ounces	Gal/oz to be removed
11.2 x 0.65 =	7.29 x 3 =		21.9 gal
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	9:38		✓		1 gal	20.8	5.46	11260		light yellow, slightly cloudy
					3	19.8	5.46	9900		
					5	19.2	5.49	10210		dark brown, silty
					7	18.7	5.51	10080		
					9	18.4	5.55	10380		
		d(in)	gal/ft		11	18.4	5.60	10750		
		2	0.16		13	18.5	5.66	10760		
		4	0.65		15	17.9	5.69	10640		very silty
		6	1.47		17	17.9	5.75	10610		

Circle the date and time that the development criteria are met.

Comments

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

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Well Number MW-6

Development / (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 42.725'BTOC
- Initial Depth to Water (feet) 31.50'BTOC
- Height of Water Column in Well (feet) 11.2
- Diameter (inches): Well 4" Gravel Pack

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
see page 1			
Total			

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02					19 gal	17.7	5.75	11080		
					20	17.9	5.78	11340		
					21	17.7	5.78	11340		
					22	17.6	5.78	11310		
										sampled at 10:19 for BTEX & gen chem
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments used AESE's permanent 1 gal PVC bailer - decontaminated w/ H2O & alconox soap first

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESE

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Well Number MW-7

Development / (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 32.80 'BTOC
Initial Depth to Water (feet) 27.065 'BTOC
Height of Water Column in Well (feet) 5.7'
Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.65x5.7=	3.7x3=		11 gal
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal
Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/02	12:04		✓		0.5	25.4	7.08	12310		light yellow, clear
					1.5	22.4	7.01	12310		cloudy - brown silt
					2.5	21.2	6.97	12290		
					3.5	19.7	6.83	12360		
					4.5	19.8	6.66	12490		
		d(in)	gal/ft		5.5	19.7	6.59	12530		bailing down
		2	0.16		6.2	19.4	6.57	12480		
		4	0.65		7	19.2	6.53	12220		
		6	1.47		7.3	19.1	6.55	12270		

Circle the date and time that the development criteria are met.

Comments

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

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Well Number MW-7 Development (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin Project Manager Ashley Lowe Project No. 220.013

Client Company Montgomery Watson Harza Phase.Task No.

Site Name San Juan River Plant Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 32.80 'BTOC
- Initial Depth to Water (feet) 27.05 'BTOC
- Height of Water Column in Well (feet) 5.7
- Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
see page 1			
Total			

Instruments (Serial No. (if applicable))
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal: Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02			✓		7.8	19.1	6.54	12250		
					8	19.0	6.56	12220		no recovery, almost dry - will sample
										sample at 12:28 for BTEX & general chem
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments Sampled before purged 3 volumes b/c well went dry

Developer's Signature (s) Ashley L Lowe Date 08/15/02 Reviewer Date

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Well Number MW-8 Development (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin Project Manager Ashley Lowe Project No. 220013

Client Company Montgomery Watson Harza Phase.Task No.

Site Name San Juan River Plant Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 22.20 'BTOC
Initial Depth to Water (feet) 12.90 'BTOC
Height of Water Column in Well (feet) 9.3
Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 × 9.3 =	6.05 × 3 =		18.1 gal
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	12:43		✓		1 gal	27.4	6.93	13350	12.00	clear, light yellow, sweet smell
					5	21.5	7.19	12980		
					7.5	19.3	7.60	12540		
					8.5	18.8	7.70	12341		cloudy w/silt
					9.5	18.4	7.83	12280		
		d(in)	gal/ft		10	18.1	7.89	12270		
		2	0.16		12	19.3	8.08	12380		
		4	0.65		12.5	18.8	8.11	12490		
		6	1.47		13	17.9	8.11	12350		bailing down

Circle the date and time that the development criteria are met.

Comments ORC (socks) in well-removed & left out. Will take water level in 2 weeks & reinstall socks

Developer's Signature (s) Ashley L Lowe Date 08/15/02 Reviewer Date

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Well Number MW-8

Development / (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 22.20 'BTOC
- Initial Depth to Water (feet) 12.901 'BTOC
- Height of Water Column in Well (feet) 9.3'
- Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
see pg 1			
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02			✓		13.5	17.8	8.11	12190	1	
					14	17.6	8.10	12110		
					14.4	17.5	8.10	12090		almost dry - will sample
										sample at 13:14 for BTEX & general chem
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments One 50cc vile contains air bubbles - CO_2 in water reacting w/HCl preservative. Triple rinsed 2nd vile & used unpreserved. No road to MW-8 - 4-wheeled to get truck close

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

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Well Number MW-9

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 21.92 'BTOC
Initial Depth to Water (feet) 6.925 'BTOC
Height of Water Column in Well (feet) 14.995'
Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
0.65 x 14.995	9.7 x 3		29.2 gal
Total			

Instruments — **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02	13:25		✓		0.5gal	28.3	7.49	13970	14.2	light yellow, clear
					3.5	25.4	7.34	14230		
					6	22.8	6.56	13570		cloudy w/silt
					8	21.4	6.14	13320		
					10	20.2	5.73	13080		
		d(in)	gal/ft		12	19.6	5.26	12960		
		2	0.16		14	19.1	5.03	12730		
		4	0.65		16	17.7	5.00	12660		
		6	1.47		17.5	18.3	5.00	12760		bailing down

Circle the date and time that the development criteria are met.

Comments

Developer's Signature (s) Ashley L Lowe | Date 08/15/02 | Reviewer | Date

AESE

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Farmington, NM 87401
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Well Number MW-9

Development (Purging)

WELL DEVELOPMENT AND PURGING DATA

Project Name San Juan River Basin | Project Manager Ashley Lowe | Project No. 220013

Client Company Montgomery Watson Harza | Phase.Task No.

Site Name San Juan River Plant | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
- Initial Depth of Well (feet) 21.92 'BTOC
- Initial Depth to Water (feet) 6.925 'BTOC
- Height of Water Column in Well (feet) 14.995'
- Diameter (inches): Well 4" Gravel Pack

Gal/ft × ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
see pg 1			
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Kutz Plant

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8/15/02			✓		18	17.6	5.01	12790		
					18.4	17.3	4.99	12650		
					18.6	17.2	4.99	12630	1.94	almost dry - will sample
										sample at 13:57 for BTEX & general Chem
		d(in)	gal/ft							
		2	0.16							
		4	0.65							
		6	1.47							

Circle the date and time that the development criteria are met.

Comments 1 50-cc bottle has bubbles - CO_3 in water reacting w/HCl preservative Triple rinsed 2nd bottle. It's filled unpreserved - Turned sparge system back on after sampling

Developer's Signature (s) Ashley L Lowe Date 08/15/02 Reviewer Date

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Farmington, NM 87401
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WELL OBSERVATION DATA

Project Name San Juan River Basin Project No. 220013

Project Manager Ashley Lowe Date 08/15/02

Client Company Montgomery Watson Harza

Site Name San Juan River Plant

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Comments
MW-5	8:24	18.61	—	31.89'	—	sampled, no cap on well
MW-6	9:38	31.50	—	42.73	—	not a solid bottom-silt on probe sampled
W-2	10:31	57.55	—	64.37	—	not a solid bottom-sampled
MW-4	11:40	52.93	—	56.91	—	sampled
MW-7	12:04	27.07	—	32.80	—	sampled
MW-8	12:43	12.90	—	22.20	—	ORC inspection, sampled
MW-9	13:25	16.925	—	21.92	—	O&M, sampled DO=

Comments

MW-8: socks are very hard-removed, then took water level & sampled left socks out, will get water level again in 2 wks, then will reinstall
08/16/02 water level= 12.095' BTOC

SW-9: O&M- turned sparge system back on-timer set to 6am-2pm for run time
SCFM at flow gage = 4
Pressure at MW-9 = X compressor at MW-9 was running at 7:30am on 8/16/02 but shut off b/c pump got too hot. Did not get pressure reading - needs electrician.

MW-9: DO before bailing = 14.2 mg/L ; after purging = 1.94 mg/L

Called Lynn Benally & left message about Sparge Pump 8/16/02 9am → After consulting w/MWH, will decide how to proceed.
Also called Marc Greeley & left message 9:15am

Signature Ashley L Lowe Date 08/15/02

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020815AL01
Page 1 of 1
Air Bill No. 834715209873

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan River Basin EPC San Juan River Plant
Project Number 4270032-020105
Date Due 21 days
Sampler's Name Ashley Lowe
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0
SJ	MW-5		8/15/02	9:20	WG	B	X							
SJ	MW-5A		8/15/02	9:20	WG	B		X	X	X	X	X	X	X
SJ	MW6		8/15/02	10:31	WG	B	X							
SJ	MW6-A		8/15/02	10:39	WG	B		X	X	X	X	X	X	X
SJ	W-2		8/15/02	10:53	WG	B	X							
SJ	W-2A		8/15/02	10:53	WG	B		X	X	X	X	X	X	X
SJ	MW-4		8/15/02	11:52	WG	B	X							
SJ	MW-4A		8/15/02	11:52	WG	B		X	X	X	X	X	X	X
SJ	MW7		8/15/02	12:28	WG	B	X							
SJ	MW-7A		8/15/02	12:28	WG	B		X	X	X	X	X	X	X
SJ	MW-8		8/15/02	1314	WG	B	X							
SJ	MW-8A		8/15/02	1314	WG	B		X	X	X	X	X	X	X
SJ	MW-9		8/15/02	1357	WG	B	X							
SJ	MW-9A		8/15/02	1357	WG	B		X	X	X	X	X	X	X

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley Lowe / AESE		08/15/02	4:00

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

AESE
906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

WELL OBSERVATION DATA

Project Name San Juan River Basin Project No. 220013

Project Manager Ashley Lowe Date 07/22/02

Client Company Montgomery Watson Harza

Site Name San Juan River Plant

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Comments
MW-8	10:20	12.120	—	22.18	—	DO: 9.33 mg/L @ 16.7°C
SW-8	10:26	12.035	—	22.36	—	DO: 1.22 mg/L @ 15.5°C
					—	
MW-9	10:45	6.948	—	21.95'	—	DO: 2.82 mg/L @ 21.1°C

Comments MW-8: sacks are pretty hard
No road to MW8 & SW8 anymore – have to walk from gate
MW-9: still no electricity. According to Rick, will be on next week

Signature Ashley Lowe Date 07/22/02

0204230908

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-8

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name San Juan River Plant | Project Manager Martin Nee | Project No. 6204

Client Company Montgomery Watson | Phase.Task No.

Site Name | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☑ Other or bail dry

Water Volume Calculation
Initial Depth of Well (feet) 22.18' BTOC
Initial Depth to Water (feet) 12.60' BTOC
Height of Water Column in Well (feet) 9.58'
Diameter (inches): Well 4" Gravel Pack

0.65 Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		6.23x3=	18.7gal
Gravel Pack			
Drilling Fluids			
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ ~~DO~~ Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal
in container, then taken to Bloomfield

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
05/22/02	8:30							1			14.2	6.72	8770		yellowish color
								3			13.5	7.10	8740		slightly clearer
								~~4.5~~			13.1	7.88	8760		
								7			13.4	8.1	8780		yellowish greenish
								8			13.5	8.19	8880		
		d(in)	gal/ft					9			12.7	8.28	8650		cloudy
		2	0.16					10.5			13.0	8.41	8820		suds/ water
		4	0.65					12			13.2	8.83	8450		
		6	1.47					13			12.5	8.70	8860		

Circle the date and time that the development criteria are met.

Comments noticed sweet odor after bailed 13gals; smell got stronger as more water was bailed. Recovery remained remained strong throughout bailing process. Put socks back in well (had been removed 24 hrs prior to bailing)

Developer's Signature (s) Ashley Lowe Date 05/23/02 Reviewer Date

0204230908

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-8

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name San Juan River Plant | Project Manager Martin Nee | Project No. 6204

Client Company Montgomery Watson / El Paso | Phase.Task No.

Site Name | Site Address Kirtland, NM

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet)
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing			
Gravel Pack			
Drilling Fluids			
Total			

Instruments — Serial No. (if applicable)
- ☐ PH Meter
- ☐ DO Monitor
- ☐ Conductivity Meter
- ☐ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
								13.7			12.7	8.79	8860		slight odor from water in bailer
								14.7			12.6	8.89	8940		
								15.7			13.1	8.89	8930		
								16.7			13.0	8.98	8930		very cloudy
								17			12.7	8.96	8880		
		d(in)	gal/ft					18			12.9	8.90	8950		
		2	0.16					19			13.0	8.84	8920		gray color-odor
		4	0.65					19.5			13.0	8.80	8960		very strong odor
		6	1.47					19.8			13.2	8.79	8920		

Circle the date and time that the development criteria are met.

5/23/02 9:08

Comments see front page

9:16 after sample; DO = 8.90 mg/L DTW 20.38' BTOC

Developer's Signature (s) Ashley Lowe | Date 05/23/02 | Reviewer | Date

020523110

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-9

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name San Juan River Plant | Project Manager Martin Nee | Project No. 6204

Client Company Montgomery Watson / El Paso | Phase.Task No.

Site Name | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet) 21.94'
Initial Depth to Water (feet) 5.45'
Height of Water Column in Well (feet) 16.49'
Diameter (inches): Well 4 Gravel Pack

0.65 Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		10.72 x 3 = 32.16 gal	
Gravel Pack			
Drilling Fluids			
Total			

Instruments / **Serial No. (if applicable)**
- ☑ PH Meter
- ☑ DO Monitor
- ☐ Conductivity Meter
- ☐ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal Bloomfield

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
05/23/02	10:20							1 gal			21.1	6.49	12400		slight green-yellow color
								3			18.8	5.92	12260		
								5			16.9	5.39	12500		sudsy
								7			16.4	5.12	12210		
								9			16.3	4.96	12230		sudsy
		d(in)	gal/ft					12			16.5	5.01	12360		
		2	0.16					13			16.5	4.79	12330		
		4	0.65					15			16.3	4.89	12350		
		6	1.47					18			16.3	4.87	12210		

Circle the date and time that the development criteria are met.

Comments sparge system was running when we arrived; turned off & waited ~50 mins for water level to return to normal before bailing; lost recovery after 20 gals, but never went dry; water remained mostly clear, no odors

Developer's Signature (s) Ashley & Lowe Date 05/23/02 Reviewer Date

WELL DEVELOPMENT AND PURGING DATA

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-9

Development
Purging

Serial No. WDPD-

Project Name San Juan River Plant | Project Manager Martin Nee | Project No. 6204

Client Company Montgomery Watson/El Paso | Phase.Task No.

Site Name | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet)
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing			
Gravel Pack			
Drilling Fluids			
Total			

Instruments — Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
								20			16.4	4.62	12280		well drying - bailer hitting bottom
								21			16.0	4.52	12330		
								23			16.1	4.63	12490		
								23.8			16.0	4.65	12540		
								24			16.3	4.69	12340		
		d(in)	gal/ft					24.5			16.2	4.70	12180		losing recovery
		2	0.16					25			16.3	4.61	12270		
		4	0.65					26.3			16.1	4.74	12200		cloudier - slightly yellow
		6	1.47					27			16.1	4.75	12260		

Circle the date and time that the development criteria are met.

Comments see front page

Developer's Signature (s) Ashley Lowe Date 05/23/02 Reviewer Date

020523 1110

AESE

906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

Well Number MW-9

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name San Juan River Plant | Project Manager Martin Nee | Project No. 6204

Client Company Montgomery Watson/El Paso | Phase.Task No.

Site Name | Site Address Kirtland, NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
Initial Depth of Well (feet)
Initial Depth to Water (feet)
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing			
Gravel Pack			
Drilling Fluids			
Total			

Instruments / **Serial No. (if applicable)**
- ☑ pH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
								27.5			16.4	4.68	12250		
								28.5			16.4	4.63	12260		
								29.5			17.4	4.71	12450		
								30.5			16.9	4.73	12460		
								31.5			17.1	4.42	12470		
5/23/02	11:06	d(in)	gal/ft					32.5			16.9	4.39	12410		
	11:10	2	0.16												sample
		4	0.65												
		6	1.47												

Circle the date and time that the development criteria are met.

Comments see front

after sampling: DTW = 5.45' BTOC
DO = 4.6 mg/L

Developer's Signature (s) Ashley Lowe Date 05/23/02 Reviewer Date

AES

906 San Juan Blvd Ste D
Farmington, NM 87401
505.566.9116/(9120fax)

Well Number MW-9

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name Air Sparge Pilot Test Project Manager Martin Nee Project No. 6204

Client Company MWH Phase Task No.

Site Name San Juan Rim Phat Site Address 99 CR 6500

Development Criteria

- [x] 3 to 5 Casing Volumes of Water Removal
- [ ] Stabilization of Indicator Parameters
- [ ] Other

Water Volume Calculation

Initial Depth of Well (feet) 21.92 BTOC
Initial Depth to Water (feet) 7.16 BTOC
Height of Water Column in Well (feet) 14.76
Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		9.59	28.78
Gravel Pack			
Drilling Fluids			
Total		9.59	28.78

Instruments

Serial No. (if applicable)

- [x] PH Meter
- [x] DO Monitor
- [x] Conductivity Meter
- [x] Temperature Meter
- [ ] Other

Methods of Development

Pump
- [ ] Centrifugal
- [ ] Submersible
- [ ] Peristaltic

Bailer
- [x] Bottom Valve
- [ ] Double Check Valve
- [ ] Stainless-steel Kemmerer

- [ ] Other

Water Disposal

Trip Blank 020221 1130

Disposed at site

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/L)	Comments
2/21/02	1017		X											2.23 mg/L	
	1025						1	1			11.4	6.13	11620		Slight yellow
	1040						1	2			12.9	5.98	12190		Clear "
	1043						3	5			12.8	6.13	12070		" "
	1052						5	10			11.9	6.07	11920		" "
	1057						5	15			11.6	6.07	12040		" "
	1100					17.55	5	20			12.0	6.32	12010		
	1102						4	24			11.3	6.39	11860		Well is dry
2/21/02	1110					20.13									

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Sample MW-9 020221 1115

AESL
906 San Juan Blvd Ste D
Farmington, NM 87401
505.566.9116/(9120fax)

WELL DEVELOPMENT AND PURGING DATA

Development
Purging

Well Number MW-9

Serial No. WDPD-

Page ___ of ___

Project Name San Juan River Plant
Project Manager MJN
Project No. 6204
Client Company Montgomery Watson
Phase.Task No.
Site Name San Juan River Plant
Site Address CR 6500 Kirtland

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 2200
Initial Depth to Water (feet) 727
Height of Water Column in Well (feet) 1473
Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		457	2872
Gravel Pack			
Drilling Fluids			
Total			

Instruments

Serial No. (if applicable)

☒ PH Meter
☒ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☐ Other
Water Disposal Kutz

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic

Bailer
☐ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

☐ Other

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
1/25	0820					727				0					
	0829									1	7.3	5.36	<10K	4.41	Clear Slight Yllo
	0835									3	9.2	5.40	<10		
										6	10.4	4.91	<10		
										8	10.9	4.06	<10		
										13	10.5	4.47	<10		
										17	10.4	4.42	<10		
										21	10.4	4.44	<10		Clear Yllo/tan,
	0850									23	10	4.58			Bubbling
	0855					706									
	0910					1721								3.22	

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C2C @ 21"/min Sample 0125070900 MW-9

[signature]

AES
906 San Juan Blvd Ste D
Farmington, NM 87401
505.566.9116/(9120fax)

WELL DEVELOPMENT AND PURGING DATA

Development
Purging

Well Number: MW-8

Serial No. WDPD-

Page ___ of ___

Project Name: San Juan Riv
Project Manager: MJN
Project No. 0204
Client Company: Montgomery Watson
Phase.Task No. ___
Site Name: San Juan River Plant
Site Address: CR6500 Kirtland NM

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☑ Stabilization of Indicator Parameters
- ☐ Other ___

Water Volume Calculation
Initial Depth of Well (feet): 22.25
Initial Depth to Water (feet): 12.35
Height of Water Column in Well (feet): 9.90
Diameter (inches): Well ___ Gravel Pack ___

Instruments / Serial No. (if applicable)
- ☑ PH Meter
- ☑ DO Monitor
- ☑ Conductivity Meter
- ☑ Temperature Meter
- ☐ Other Kit 7

Water Disposal ___

Methods of Development
Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other ___

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		6.43	19.3
Gravel Pack			30
Drilling Fluids			
Total			19.3

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
1/25	0715		X								11.5	6.93	<10K	8.45	clear Y/10
											11.6	7.11	<10		
										5	10.7	7.35	<10		
										8	10.4	7.74	<10		
	0733									10	11.3	7.9	<10		
										12	11.5	8.03	<10		
										14	12.4	8.21	<10		
	742									15	12.1	8.29	<10		well is dry
	745					2011									
	750					2005									

Sampled MW8 012502 0750 2 VOA BTEX
installed ORC socks

MJN 1/25/02

AESE

906 San Juan Blvd Ste D
Farmington, NM 87401
505.566.9116/(9120fax)

Well Number MW-5

Development / Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Page ____ of ____

Project Name SJRP Pilot | Project Manager MJN | Project No. 0204

Client Company Montgomery Watson | Phase.Task No. ____

Site Name San Juan River Plant | Site Address CR 6500 Kirtland NM 87

Development Criteria

- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other ____

Water Volume Calculation

Initial Depth of Well (feet) 31.11½ 953
Initial Depth to Water (feet) 17.73
Height of Water Column in Well (feet) 14.223
Diameter (inches): Well ____ Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		9.24	27.74
Gravel Pack			
Drilling Fluids			
Total			

Instruments

Serial No. (if applicable)

- ☒ PH Meter ____
- ☒ DO Monitor ____
- ____
- ☒ Conductivity Meter ____
- ☒ Temperature Meter ____
- ☒ Other 1

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other ____

Water Disposal Kutz

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
1/25	0940									1	13.2	6.7	<20	1.19	Clear
										4	11.1	6.64	<20		Clear Grey
	1002									8	9.9	6.53	<20		
										12	10	6.55	<20		
										16	9.9	6.53			
										20	10.1	6.54			
	1020									23	10.1	6.49			Well is dry
	1029					30.71									

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Sample 012502 1025 MW-5

1/25/

APPENDIX B

2002 LABORATORY REPORTS

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-026092
Collected by: Ashley Lowe
Collected on: 11/12/02

Received: 11/13/02
Extracted: N/A
Tested: 11/14/02
Reported: 11/25/02

Sample Description: Water
Project Description: 220013 San Juan River Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result MW-8 02-06092-1	MW-9 02-06092-2	TB02111201 02-06092-3
BTXE						
Dilution Factor				1	1	1
BENZENE	8021B	µg/L	0.5	3.0	13.0	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	2.4	2.4	1.1
TOLUENE	8021B	µg/L	0.5	0.4J	0.3J	<0.5
O-XYLENE	8021B	µg/L	0.5	0.3J	<0.5	0.3J
M,P-XYLENE	8021B	µg/L	1	2.5	1	1

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-026092
Collected by: Ashley Lowe
Collected on: 11/12/02
Sample description:
Water
Project: San Juan River Basin /220013

Received: 11/13/02
Tested: 11/14/02
Reported: 12/10/02

Analysis of Water

801-026092QC

Component Name	Analysis Batch #	CCV (μg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
BTXE												
Benzene	02G4679	100	100	N.D.	μg/L	18.0	90	87	92	6	68-130	31
Toluene	02G4679	100	104	N.D.	μg/L	70.0	90	97	102	5	66-133	33
Ethylbenzene	02G4679	100	108	N.D.	μg/L	18.0	95	94	101	7	65-134	35
m/p-Xylene	02G4679	200	100	N.D.	μg/L	70.0	91	96	102	6	65-134	35
o-Xylene	02G4679	100	102	N.D.	μg/L	25.0	91	99	105	6	65-134	35

Notation:
ICV – Initial Calibration Verification
CCV – Continuation Calibration Verification
LCS – Lab Control Spike
MS – Matrix Spike
MSD – Matrix Spike Duplicate
ICS – Interference Check Standard
MD – Matrix Duplicate
N.D. – Not detected or less than PQL
CCB – Continuation Calibration Blank
M-blank – Method Blank
SP Level – Spike Level
%Rec – Recovery Percent
%RPD – Relative Percent Differences
%Diff – Control Limit for %RPD
ICP-SD – ICP Serial Dilution
N.A. – Not Applicable

Respectfully submitted,

Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

FORM-2A

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name:	Montgomery Watson Harza	Contract No:		Lab Code:	APCL
Case No:		SAS No:		SDG Number:	026092
Project ID:	San Juan River Basin	Project No:	220013	Sample Matrix:	Water
		Batch No:	02G4679		

#	Client Sample No	Lab Sample ID	S1 % #	TOT OUT
1		02G4679-LCS-01	82	0
2		02G4679-LSD-01	85	0
3		02G4679-MB-02	86	0
4	MW-8	02-6092-1	91	0
5	MW-9	02-6092-2	90	0
6	TB02111201	02-6092-3	87	0
7	MW-8	02-6092-1MS	87	0
8	MW-8	02-6092-1MSD	86	0
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

	QC Control Limit
S1 = 4-BROMO-FLUOROBENZENE (PID)	65-134

Column to be used to flag recovery values:

* – Values outside of contract required QC Limits D – Surrogate diluted out I – Matrix Interference

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 021112AL01
Page 1 of 1
Air Bill No. 836381676576

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan River Basin
Project Number 220013
Date Due 21 days
Sampler's Name Ashley Lowe
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				No Preservative
San Juan River Plant	MW-9		11-12-02	9:40	WG	B	✓											
San Juan River Plant	MW-8		11-12-02	10:45	WG	B	✓											✓
TB021112L01			11-12-02				✓											

6092

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley Lowe/MESE	APCL	11/12/02	5:00
	11/13/02	1000	

LABORATORY USE ONLY

SAMPLES WERE:

1 Shipped or hand delivered
Notes:

2 Ambient or Chilled
Notes:

3 Temperature _____

4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:

5 Properly Preserved
Y N
Notes:

6 Received Within Holding Times
Y N
Notes:

COC Tape Was:

1 Present on Outer Package
Y N NA

2 Unbroken on Outer Package
Y N NA

3 Present on Sample
Y N NA

4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024524
Collected by: Ashley Lowe
Collected on: 08/21/02

Received: 08/24/02
Extracted: N/A
Tested: 08/26-30/02
Reported: 09/11/02

Sample Description: Water
Project Description: 4270032-020105 San Juan River Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result MW-4 02-04524-1	MW-5 02-04524-2	MW-6 02-04524-3
ALKALINITY	EPA310.1	mg/L	4	874	459	145
TOTAL DISSOLVED SOLIDS	EPA160.1	mg/L	10	4,060	20,300	14,900
Dilution Factor				80	400	400
CHLORIDE	EPA300.0	mg/L	0.25	234	331	1,040
SULFATE	EPA300.0	mg/L	0.25	1,790	14,400	8,300

Component Analyzed	Method	Unit	PQL	Analysis Result MW-7 02-04524-4	MW-8 02-04524-5	MW-9 02-04524-6	W-2 02-04524-7
ALKALINITY	EPA310.1	mg/L	4	900	4,420	<4	170
TOTAL DISSOLVED SOLIDS	EPA160.1	mg/L	10	17,500	13,200	17,200	5,690
Dilution Factor				400	200	400	200
CHLORIDE	EPA300.0	mg/L	0.25	367	318	673	296
SULFATE	EPA300.0	mg/L	0.25	11,000	5,450	11,600	3,380

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024524
Collected by: Ashley Lowe
Collected on: 08/21/02
Sample description:
Water
Project: San Juan River Basin /4270032-020105

Received: 08/24/02
Tested: 08/26-30/02
Reported: 09/13/02

Analysis of Water

801-024524QC

Component Name	Analysis Batch #	CCV (mg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
WET Analysis in Water												
Alkalinity	02W4136	-	-	N.D.	mg/L	100	101	101*	101*	0	90-110	10
Chloride Cl^-, by IC	02W4087	4.00	96	N.D.	mg/L	1600	100	96	100	4	75-125	25
Sulfate SO_4^{--}, by IC	02W4087	15.0	101	N.D.	mg/L	6000	101	103	105	2	75-125	25
Solids, Total Dissolved (TDS)	02W4066	-	-	N.D.	mg/L	400	103	100	99	1	80-119	20

*: LCS/LCSD is used.

Notation:
ICV - Initial Calibration Verification
CCV - Continuation Calibration Verification
LCS - Lab Control Spike
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ICS - Interference Check Standard
MD - Matrix Duplicate
N.D. - Not detected or less than PQL
CCB - Continuation Calibration Blank
M-blank - Method Blank
SP Level - Spike Level
%Rec - Recovery Percent
%RPD - Relative Percent Differences
%Diff - Control Limit for %RPD
ICP-SD - ICP Serial Dilution
N.A. - Not Applicable

Respectfully submitted,

Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020821AL01
Page 2 of 2
Air Bill No. 834715209690

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan River Basin
Project Number 4270032-020105
Date Due @ 21 days
Sampler's Name Ashley Lowe
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix[a]	Sampling Technique[b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				
SJ	MW-4		8/21/02	14:34	WG			✓	✓			✓						
SJ	W-2		8/21/02	14:47	WG			✓	✓			✓						
SJ	MW-7		8/21/02	14:57	WG			✓	✓			✓						
SJ	MW-8		8/21/02	15:10	WG			✓	✓			✓						
SJ	MW-9		8/21/02	15:28	WG			✓	✓			✓						
SJ	MW-6		8/21/02	15:45	WG			✓	✓			✓						
SJ	MW-5		8/21/02	15:55	WG			✓	✓			✓						
											4524							

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley L Lowe/AESE	APCL 8/24/02 1000	08/22/02	10:00

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024412
Collected by: Ashley Lowe
Collected on: 08/15/02

Received: 08/16/02
Extracted: 08/16-19/02
Tested: 08/17-19/02
Revised: 09/19/02

Sample Description: Water
Project Description: 4270032-020105 San Juan River Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result SJ MW-2-A 02-04412-8	SJ MW-4-A 02-04412-9	SJ MW-5-A 02-04412-10
METALS						
Dilution Factor				1	1	1
ALUMINUM	SW6010B	µg/L	100	1,130	1,370	2,700
ARSENIC	SW6010B	µg/L	5	4.9J	20.7	10.6
BARIUM	SW6010B	µg/L	10	32.7	27.1	17.5
CADMIUM	SW6010B	µg/L	2	0.79J	1.2J	0.46J
CALCIUM	SW6010B	µg/L	200	402,000	210,000	361,000
CHROMIUM	SW6010B	µg/L	5	5.6	10.2	5.0J
COBALT	SW6010B	µg/L	5	3.5J	191	12.7
COPPER	SW6010B	µg/L	10	116	158	14.0
IRON	SW6010B	µg/L	300	1,760	6,500	3,380
LEAD	SW6010B	µg/L	5	3.1J	11.3	4.8J
MAGNESIUM	SW6010B	µg/L	100	108,000	80,100	168,000
MANGANESE	SW6010B	µg/L	5	216	6,080	3,260
MERCURY	SW7470A	µg/L	0.5	0.12J	0.61	0.077J
MOLYBDENUM	SW6010B	µg/L	5	2.8J	2.7J	< 5
NICKEL	SW6010B	µg/L	5	7.5	261	49.3
Dilution Factor				1	1	20
POTASSIUM	SW6010B	µg/L	400	13,400	8,990	30,900
Dilution Factor				1	1	1
SELENIUM	SW6010B	µg/L	10	108	3.4J	3.2J
SILVER	SW6010B	µg/L	10	2.8J	1.7J	2.6J
Dilution Factor				20	20	20
SODIUM	SW6010B	µg/L	2000	1,350,000	1,040,000	5,980,000
Dilution Factor				1	1	1
ZINC	SW6010B	µg/L	10	73.3	241	49.0

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result SJ MW-6-A 02-04412-11	SJ MW-7-A 02-04412-12	SJ MW-8-A 02-04412-13	SJ MW-9-A 02-04412-14
METALS							
Dilution Factor				1	1	1	1
ALUMINUM	SW6010B	µg/L	100	13,600	3,210	508	8,900
ARSENIC	SW6010B	µg/L	5	7.8	7.2	23.8	8.8
BARIUM	SW6010B	µg/L	10	13.9	44.1	29.0	11.9
CADMIUM	SW6010B	µg/L	2	10.9	1.3J	<2	8.4
CALCIUM	SW6010B	µg/L	200	388,000	416,000	67,200	358,000
CHROMIUM	SW6010B	µg/L	5	30.3	8.1	1,080	7.8
COBALT	SW6010B	µg/L	5	202	11.6	7.0	183
COPPER	SW6010B	µg/L	10	43.4	23.7	14.0	51.2
IRON	SW6010B	µg/L	300	986	4,240	6,890	849
LEAD	SW6010B	µg/L	5	<5	<5	<5	<5
MAGNESIUM	SW6010B	µg/L	100	316,000	173,000	465,000	258,000
MANGANESE	SW6010B	µg/L	5	6,550	4,570	162	6,470
MERCURY	SW7470A	µg/L	0.5	0.095J	0.092J	0.070J	0.13J
MOLYBDENUM	SW6010B	µg/L	5	<5	2.1J	56.8	<5
NICKEL	SW6010B	µg/L	5	272	26.7	251	295
Dilution Factor				20	1	20	1
POTASSIUM	SW6010B	µg/L	400	29,100	26,800	62,900	25,600
Dilution Factor				1	1	1	1
SELENIUM	SW6010B	µg/L	10	304	11.4	2.2J	6.7J
SILVER	SW6010B	µg/L	10	4.0J	3.4J	<10	2.9J
Dilution Factor				20	20	20	20
SODIUM	SW6010B	µg/L	2000	4,080,000	4,810,000	4,720,000	4,490,000
Dilution Factor				1	1	1	1
ZINC	SW6010B	µg/L	10	612	68.0	14.5	516

Component Analyzed	Method	Unit	PQL	Analysis Result SJ MW-2 02-04412-1	SJ MW-4 02-04412-2	SJ MW-5 02-04412-3	SJ MW-6 02-04412-4
BTXE							
Dilution Factor				1	1	1	1
BENZENE	8021B	µg/L	0.5	1.4	0.8	0.4J	0.3J
ETHYLBENZENE	8021B	µg/L	0.5	0.8	1.1	<0.5	<0.5
TOLUENE	8021B	µg/L	0.5	0.4J	<0.5	<0.5	<0.5
O-XYLENE	8021B	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
M,P-XYLENE	8021B	µg/L	1	1J	0.9J	1	0.9J

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result SJ MW-7 02-04412-5	SJ MW-8 02-04412-6	SJ MW-9 02-04412-7	Trip Blank 02-04412-15
BTXE							
Dilution Factor				1	1	1	1
BENZENE	8021B	µg/L	0.5	0.4J	0.8	11.7	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	0.9	4.4	2.1	<0.5
TOLUENE	8021B	µg/L	0.5	0.4J	<0.5	< 0.5	<0.5
O-XYLENE	8021B	µg/L	0.5	<0.5	<0.5	< 0.5	<0.5
M,P-XYLENE	8021B	µg/L	1	1	7.3	0.9J	0.8J

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020815AL01
Page 1 of 1
Air Bill No. 834715209873

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan River Basin EPC San Juan River Plant
Project Number 4270032-020105
Date Due 21 days
Sampler's Name Ashley Lowe
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				
SJ	MW-5		8/15/02	9:20	WG	B	X									441		
SJ	MW-5A		8/15/02	9:20	WG	B		X	X	X	X	X	X	X				
SJ	MW6		8/15/02	10:31	WG	B	X											
SJ	MW6-A		8/15/02	10:39	WG	B		X	X	X	X	X	X	X				
SJ	W-2		8/15/02	10:53	WG	B	X											
SJ	W-2A		8/15/02	10:53	WG	B		X	X	X	X	X	X	X				
SJ	MW-4		8/15/02	11:52	WG	B	X											
SJ	MW-4A		8/15/02	11:52	WG	B		X	X	X	X	X	X	X				
SJ	MW7		8/15/02	12:28	WG	B	X											
SJ	MW-7A		8/15/02	12:28	WG	B		X	X	X	X	X	X	X				
SJ	MW-8		8/15/02	1314	WG	B	X											
SJ	MW-8A		8/15/02	1314	WG	B		X	X	X	X	X	X	X				
SJ	MW-9		8/15/02	1357	WG	B	X											
SJ	MW-9A		8/15/02	1357	WG	B		X	X	X	X	X	X	X				

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley Lowe / AESE		08/15/02	4:00
	Plant IC	8/16/02	0930

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
3 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801) 617-4200

Service ID #: 801-024412
Collected by: Ashley Lowe
Collected on: 08/15/02
Sample description:
Water
Project: San Juan River Basin /4270032-020105

Received: 08/16/02
Tested: 08/17-19/02
Reported: 09/05/02

Analysis of Water

801-024412QC

Component Name	Analysis Batch #	ICV (mg/L)	ICV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
METAL Analysis in Water												
Mercury	02M1931	0.0075	101	N.D.	mg/L	0.0050	98	91	91	0	75-125	20
Aluminum	02M1928	10.0	98	N.D.	mg/L	2.00	97	100	99	1	75-125	20
Antimony	02M1928	4.00	97	N.D.	mg/L	0.500	95	100	99	1	75-125	20
Arsenic	02M1928	1.00	98	N.D.	mg/L	0.500	98	103	102	1	75-125	20
Barium	02M1928	10.0	98	N.D.	mg/L	4.00	102	103	102	1	75-125	20
Beryllium	02M1928	1.00	97	N.D.	mg/L	0.200	94	98	95	2	75-125	20
Cadmium	02M1928	2.00	98	N.D.	mg/L	0.250	99	101	100	1	75-125	20
Calcium	02M1928	100	97	N.D.	mg/L	20.0	93	101	99	2	75-125	20
Chromium	02M1928	1.00	98	N.D.	mg/L	1.00	101	102	101	1	75-125	20
Cobalt	02M1928	4.00	98	N.D.	mg/L	1.00	102	103	103	0	75-125	20
Copper	02M1928	4.00	98	N.D.	mg/L	1.00	96	102	102	0	75-125	20
Iron	02M1928	10.0	97	N.D.	mg/L	1.00	100	101	100	1	75-125	20
Lead	02M1928	1.00	96	N.D.	mg/L	3.00	102	100	99	1	75-125	20
Magnesium	02M1928	50.0	98	N.D.	mg/L	10.0	95	98	96	2	75-125	20
Manganese	02M1928	4.00	98	N.D.	mg/L	1.00	97	98	97	0	75-125	20
Molybdenum	02M1928	4.00	98	N.D.	mg/L	2.00	100	98	98	0	75-125	20
Nickel	02M1928	4.00	97	N.D.	mg/L	1.00	101	102	101	1	75-125	20
Potassium	02M1928	30.0	98	N.D.	mg/L	5.00	82	82*	82*	0	80-120	20
Selenium	02M1928	1.00	96	N.D.	mg/L	0.500	94	98	96	1	75-125	20
Silver	02M1928	2.00	98	N.D.	mg/L	1.00	95	97	96	0	75-125	20
Sodium	02M1928	200	98	N.D.	mg/L	40.0	91	92	90	2	75-125	20
Thallium	02M1928	1.00	98	N.D.	mg/L	0.500	103	99	97	2	75-125	20
Vanadium	02M1928	4.00	98	N.D.	mg/L	2.00	99	98	97	0	75-125	20
Zinc	02M1928	4.00	98	N.D.	mg/L	0.500	102	95	94	1	75-125	20

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Component Name	Analysis Batch #	CCV (μg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
BTXE												
Benzene	02G3567	100	100	N.D.	μg/L	18.0	90	90*	91*	2	65-129	31
Toluene	02G3567	100	95	N.D.	μg/L	70.0	91	90	90	0	66-133	33
Ethylbenzene	02G3567	100	97	N.D.	μg/L	18.0	97	91	91	0	65-134	35
m/p-Xylene	02G3567	200	90	N.D.	μg/L	70.0	93	91	91	0	65-134	35
o-Xylene	02G3567	100	93	N.D.	μg/L	25.0	93	94	93	0	65-134	35

*: LCS/LCSD is used.

Notation:
ICV – Initial Calibration Verification
CCV – Continuation Calibration Verification
LCS – Lab Control Spike
MS – Matrix Spike
MSD – Matrix Spike Duplicate
ICS – Interference Check Standard
MD – Matrix Duplicate
N.D. – Not detected or less than PQL
CCB – Continuation Calibration Blank
M-blank – Method Blank
SP Level – Spike Level
%Rec – Recovery Percent
%RPD – Relative Percent Differences
%Diff – Control Limit for %RPD
ICP-SD – ICP Serial Dilution
N.A. – Not Applicable

Respectfully submitted,

Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

FORM-2A

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name:	Montgomery Watson Harza	Contract No:		Lab Code:	APCL
Case No:		SAS No:		SDG Number:	024412
Project ID:	San Juan River Basin	Project No:	4270032-020105	Sample Matrix:	Water
		Batch No:	02G3567		

#	Client Sample No	Lab Sample ID	S1 % #	TOT OUT
1		02G3567-LCS-01	80	0
2		02G3567-LSD-01	82	0
3		02G3567-MB-02	85	0
4	02BBPZ10SWG03	02-4408-7MS	82	0
5	02BBPZ10SWG03	02-4408-7MSD	80	0
6	SJ MW-2	02-4412-1	89	0
7	SJ MW-4	02-4412-2	92	0
8	SJ MW-5	02-4412-3	94	0
9	SJ MW-6	02-4412-4	94	0
10	SJ MW-7	02-4412-5	92	0
11	SJ MW-8	02-4412-6	94	0
12	SJ MW-9	02-4412-7	91	0
13	TRIP BLANK	02-4412-15	90	0
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

QC Control Limit

S1 = 4-BROMO-FLUOROBENZENE (PID) 65-134

Column to be used to flag recovery values:

* – Values outside of contract required QC Limits D – Surrogate diluted out I – Matrix Interference

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **205211**
June 06, 2002

AESE
906 SAN JUAN BLVD. SUITE D
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name SAN JUAN RIVER PLANT
Project Number (NONE)

Attention: MARTIN NEE/LYNN BENALLY

On 05/24/02 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: AESE	PINNACLE ID	: 205211
PROJECT #	: (NONE)	DATE RECEIVED	: 05/24/02
PROJECT NAME	: SAN JUAN RIVER PLANT	REPORT DATE	: 06/06/02

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
205211 - 01	MW-8	AQUEOUS	05/23/02
205211 - 02	MW-9	AQUEOUS	05/23/02
205211 - 03	TRIP BLANK	AQUEOUS	05/07/02

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

'EST : EPA 8021 MODIFIED
:LIENT : AESE PINNACLE I.D.: 205211
'ROJECT # : (NONE)
'ROJECT NAME : SAN JUAN RIVER PLANT

;AMPLE D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED		DIL. FACTOR
1	MW-8	AQUEOUS	05/23/02	NA	05/29/02		5
2	MW-9	AQUEOUS	05/23/02	NA	05/29/02		1
3	TRIP BLANK	AQUEOUS	5/07/02*	NA	05/28/02	H	1

'ARAMETER	DET. LIMIT	UNITS	MW-8	MW-9	TRIP BLANK
;ENZENE	0.5	**UG/L**	**200**	**1.4**	< 0.5
'OLUENE	0.5	UG/L	< 2.5	< 0.5	< 0.5
:THYLBENZENE	0.5	**UG/L**	**7.9**	< 0.5	< 0.5
'O [redacted]YLENES	1.0	**UG/L**	**17**	< 1.0	< 1.0
;URROGATE:					
;ROMOFLUOROBENZENE (%)			107	102	103
URROGATE LIMITS	(80 - 120)				

:HEMIST NOTES:
H = The Trip Blank was received and analyzed past hold time.

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 205211
LANK I. D.	: 052802	DATE EXTRACTED	: N/A
LIENT	: AESE	DATE ANALYZED	: 05/28/02
ROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
ROJECT NAME	: SAN JUAN RIVER PLANT		

ARAMETER	UNITS	
ENZENE	UG/L	<0.5
OLUENE	UG/L	<0.5
THYLBENZENE	UG/L	<0.5
OTAL XYLENES	UG/L	<1.0

URROGATE:
ROMOFLUOROBENZENE (%) 98
U ATE LIMITS: (80 - 120)
H T NOTES:
I/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
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Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 205211
LANK I. D.	: 052902	DATE EXTRACTED	: N/A
LIENT	: AESE	DATE ANALYZED	: 05/29/02
ROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
ROJECT NAME	: SAN JUAN RIVER PLANT		

ARAMETER	UNITS	
ENZENE	UG/L	<0.5
OLUENE	UG/L	<0.5
THYLBENZENE	UG/L	<0.5
OTAL XYLENES	UG/L	<1.0
URROGATE:		
ROMOFLUOROBENZENE (%)		100
UR ATE LIMITS:	(80 - 120)	

H NOTES:
/A

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS / LCSD

EST	: EPA 8021 MODIFIED		
ATCH #	: 052802	PINNACLE I.D.	: 205211
LIENT	: AESE	DATE EXTRACTED	: N/A
ROJECT #	: (NONE)	DATE ANALYZED	: 05/28/02
ROJECT NAME	: SAN JUAN RIVER PLANT	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	21.6	108	21.2	106	2	(80 - 120)	20
OLUENE	<0.5	20.0	21.8	109	21.4	107	2	(80 - 120)	20
THYLBENZENE	<0.5	20.0	22.2	111	21.8	109	2	(80 - 120)	20
OTAL XYLENES	<1.0	60.0	68.5	114	67.3	112	2	(80 - 120)	20

H T NOTES:
/A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS / LCSD

EST	: EPA 8021 MODIFIED		
ATCH #	: 052902	PINNACLE I.D.	: 205211
LIENT	: AESE	DATE EXTRACTED	: N/A
ROJECT #	: (NONE)	DATE ANALYZED	: 05/29/02
ROJECT NAME	: SAN JUAN RIVER PLANT	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	20.7	104	20.3	102	2	(80 - 120)	20
OLUENE	<0.5	20.0	21.1	106	20.6	103	2	(80 - 120)	20
THYLBENZENE	<0.5	20.0	21.6	108	21.0	105	3	(80 - 120)	20
OTAL XYLENES	<1.0	60.0	67.3	112	65.0	108	3	(80 - 120)	20

H T NOTES:
/A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

EST : EPA 8021 MODIFIED
ISMSD # : 205205-01
LIENT : AESE
ROJECT # : (NONE)
ROJECT NAME : SAN JUAN RIVER PLANT

PINNACLE I.D. : 205211
DATE EXTRACTED : N/A
DATE ANALYZED : 05/28/02
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	20.7	104	21.2	106	2	(80 - 120)	20
OLUENE	<0.5	20.0	21.1	106	21.6	108	2	(80 - 120)	20
THYLBENZENE	<0.5	20.0	21.5	108	22.1	111	3	(80 - 120)	20
OTAL XYLENES	<1.0	60.0	66.3	111	68.2	114	3	(80 - 120)	20

HE[illegible] NOTES:
/A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 05/24/02 PAGE: 1 OF 1

PLI Accession #: 20524

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee

COMPANY: AESE
ADDRESS: 906 San Juan Blvd, Ste D
Farmington, NM 87401
PHONE: 505-566-9116
FAX: 505-566-9120

BILL TO: El Paso/MWH
COMPANY:
ADDRESS: 614 Reilly Ave
Farmington, NM 87401

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	NUMBER OF CONTAINERS
MW-8	05/23/02	9:08	water	01	2
MW-9	05/23/02	11:10	water	02	2
Trip Blank	5/7/02	1134	AQ	03	1

ANALYSIS REQUEST

SAMPLE ID	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:
MW-8					X																			
MW-9					X																			
Trip Blank					X																			

PROJECT INFORMATION

PROJ. NO.:
PROJ. NAME: San Juan River Plant
P.O. NO.:
SHIPPED VIA: Greyhound Bus

SAMPLE RECEIPT

NO. CONTAINERS	5
CUSTODY SEALS	Y / N / (NA)
RECEIVED IN ICE	YES
BLUE ICE / ICE	ICE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr ☐48hr ☐72hr ☐1 WEEK (NORMAL) ☑

CERTIFICATION REQUIRED ☐NM ☐SDWA ☐OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

Rec'd TB out of hold

Ice Present

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Ashley Love Time: 10:00	Signature: Time:
Printed Name: Ashley Love Date: 05/24/02	Printed Name: Date:
Company: AESE	Company:
See reverse side (Force Majeure)	
RECEIVED BY: 1.	RECEIVED BY: (LAB) 2.
Signature: Time:	Signature: Time: 1620
Printed Name: Date:	Printed Name: Date: 05/24/02
Company:	Pinnacle Laboratories Inc.

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **202100**
March 05, 2002

AESE
906 SAN JUAN BLVD.
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name SAN JUAN RIVER PLANT
Project Number 6204

Attention: MARTIN NEE/SCOTT POPE

On 02/22/02 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: AESE	PINNACLE ID	: 202100
PROJECT #	: 6204	DATE RECEIVED	: 02/22/02
PROJECT NAME	: SAN JUAN RIVER PLANT	REPORT DATE	: 03/05/02

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
202100 - 01	MW-9 0202211115	AQUEOUS	02/21/02
202100 - 02	FIELD BLANK 0202211130	AQUEOUS	02/21/02

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : AESE
PROJECT # : 6204
PROJECT NAME : SAN JUAN RIVER PLANT

PINNACLE I.D.: 202100

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-9 0202211115	AQUEOUS	02/21/02	NA	02/25/02	1
02	FIELD BLANK 0202211130	AQUEOUS	02/21/02	NA	02/25/02	1

PARAMETER	DET. LIMIT	UNITS	MW-9 0202211115	FIELD BLANK 0202211130
BENZENE	0.5	**UG/L**	**48**	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5
ETHYLBENZENE	0.5	**UG/L**	**7.4**	< 0.5
TOTAL XYLENES	1.0	**UG/L**	**4.5**	< 1.0
SURROGATE:				
BROMOFLUOROBENZENE (%)			94	94
SURROGATE LIMITS	(80 - 120)			

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

'EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 202100
LANK I. D.	: 022502	DATE EXTRACTED	: N/A
LIENT	: AESE	DATE ANALYZED	: 02/25/02
'ROJECT #	: 6204	SAMPLE MATRIX	: AQUEOUS
'ROJECT NAME	: SAN JUAN RIVER PLANT		

'ARAMETER	UNITS	
ENZENE	UG/L	<0.5
'OLUENE	UG/L	<0.5
THYLBENZENE	UG/L	<0.5
'OTAL XYLENES	UG/L	<1.0
URROGATE:		
ROMOFLUOROBENZENE (%)		87
U GATE LIMITS:	(80 - 120)	

T NOTES:
I/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

EST	: EPA 8021 MODIFIED		
ATCH #	: 022502	PINNACLE I.D.	: 202100
LIENT	: AESE	DATE EXTRACTED	: N/A
ROJECT #	: 6204	DATE ANALYZED	: 02/25/02
ROJECT NAME	: SAN JUAN RIVER PLANT	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	18.8	94	18.3	92	3	(80 - 120)	20
OLUENE	<0.5	20.0	18.9	95	17.9	90	5	(80 - 120)	20
THYLBENZENE	<0.5	20.0	17.9	90	17.3	87	3	(80 - 120)	20
OTAL XYLENES	<1.0	60.0	55.7	93	53.6	89	4	(80 - 120)	20

HEMIST NOTES:
/A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

EST	: EPA 8021 MODIFIED		
ISMSD #	: 202102-03	PINNACLE I.D.	: 202100
LIENT	: AESE	DATE EXTRACTED	: N/A
ROJECT #	: 6204	DATE ANALYZED	: 02/25/02
ROJECT NAME	: SAN JUAN RIVER PLANT	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	19.1	96	22.0	110	14	(80 - 120)	20
OLUENE	<0.5	20.0	18.8	94	25.7	129	31	(80 - 120)	20
THYLBENZENE	<0.5	20.0	18.3	92	20.5	103	11	(80 - 120)	20
OTAL XYLENES	<1.0	60.0	56.6	94	63.1	105	11	(80 - 120)	20

HEMIST NOTES:
The MSD spike recovery and the RPD for Toluene are out of criteria due to matrix interference.

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 2/21/02 PAGE: 1 OF 1

PLI Accession #: 202100

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: MJ NEE

COMPANY: A. E. Schmidt

ADDRESS: 906 San Juan Blvd STED
Farmington NM 87401

PHONE: 505 566 9116

FAX: 505 566 9120

BILL TO: SL P230 Attn: Scott Pope

COMPANY:

ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject		(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:		NUMBER OF CONTAINERS
mw-9 020221 1115	2/21/02	1115	Water	-01						X																					
Field Blank 020221 1130	2/21/02	1130	Water	-02						X																					

PROJECT INFORMATION

PROJ. NO.: 6204

PROJ. NAME: San Juan River Plant

P.O. NO.:

SHIPPED VIA: Greyhound

SAMPLE RECEIPT

NO. CONTAINERS	
CUSTODY SEALS	Y/N/NA
RECEIVED INTACT	Y/N
BLUE ICE/ICE	Y/N

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

$HgCl_2$

on ice

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Time: 1200	Signature: Time:
Printed Name: MJ NEE Date: 2/21/02	Printed Name: Date:
Company: AESE	Company:
See reverse side (Force Majeure)	
RECEIVED BY: 1.	**RECEIVED BY: (LAB) 2.**
Signature: Time:	Signature: Time: 11:5
Printed Name: Date:	Printed Name: Date: 2/22/02
Company:	Pinnacle Laboratories Inc.

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **201109**
February 22, 2002

AESE
906 SAN JUAN BLVD.
FARMINGTON, NM 87401

EL PASO FIELD SERVICE COMPANY
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name SAN JUAN RIVER PLANT
Project Number 6204

Attention: MARTIN NEE/LYNN BENALLY

On 01/26/02 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being reissued at the request of the client. Original report was issued on February 19, 2002.

EPA Method 8021 was performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other analyses were performed by Severn Trent Laboratories, Pensacola, FL.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: AESE	PINNACLE ID	: 201109
PROJECT #	: 6204	DATE RECEIVED	: 01/26/02
PROJECT NAME	: SAN JUAN RIVER PLANT	REPORT DATE	: 02/22/02

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
201109 - 01	MW-5, 0125021025	AQUEOUS	01/25/02
201109 - 02	MW-9, 0125020900	AQUEOUS	01/25/02
201109 - 03	MW-8, 01250750	AQUEOUS	01/25/02
201109 - 04	TRIP BLANK	AQUEOUS	01/21/02

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : AESE
PROJECT # : 6204
PROJECT NAME : SAN JUAN RIVER PLANT

PINNACLE I.D.: 201109

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-5, 0125021025	AQUEOUS	01/25/02	NA	01/28/02	1
02	MW-9, 0125020900	AQUEOUS	01/25/02	NA	01/28/02	1
03	MW-8, 01250750	AQUEOUS	01/25/02	NA	01/28/02	1

PARAMETER	DET. LIMIT	UNITS	MW-5, 0125021025	MW-9, 0125020900	MW-8, 01250750
BENZENE	0.5	**UG/L**	< 0.5	**22**	**110**
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE	0.5	**UG/L**	< 0.5	**4.4**	**2.3**
TOTAL XYLENES	1.0	**UG/L**	< 1.0	**3.0**	**9.8**

SURROGATE:				
BROMOFLUOROBENZENE (%)		105	110	112
SURROGATE LIMITS	(80 - 120)			

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : AESE
PROJECT # : 6204
PROJECT NAME : SAN JUAN RIVER PLANT

PINNACLE I.D.: 201109

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	TRIP BLANK	AQUEOUS	01/21/02	NA	01/28/02	1

PARAMETER	DET. LIMIT	UNITS	TRIP BLANK
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	UG/L	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5
TOTAL XYLENES	1.0	UG/L	< 1.0

SURROGATE:
BROMOFLUOROBENZENE (%) 104
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 201109
BLANK I. D.	: 012802	DATE EXTRACTED	: N/A
CLIENT	: AESE	DATE ANALYZED	: 01/28/02
PROJECT #	: 6204	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: SAN JUAN RIVER PLANT		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<1.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		102
SURROGATE LIMITS:	(80 - 120)	

COMMENTS NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021 MODIFIED		
BATCH ID#	: 012802	PINNACLE I.D.	: 201109
CLIENT	: AESE	DATE EXTRACTED	: N/A
PROJECT #	: 6204	DATE ANALYZED	: 01/28/02
PROJECT NAME	: SAN JUAN RIVER PLANT	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	19.5	98	19.2	96	2	(80 - 120)	20
TOLUENE	<0.5	20.0	20.0	100	19.8	99	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.3	102	20.1	101	1	(80 - 120)	20
TOTAL XYLENES	<1.0	60.0	62.0	103	61.3	102	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: _____ PAGE: ___ OF ___

PLI Accession #: 201107

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER:

COMPANY: AESE
ADDRESS: 906 San Juan Blvd Ste D
Farmington NM 87401
PHONE: 505 566 9116
FAX: 505 566 9120
BILL TO: BPFS Scott Pope
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☒ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	Diss Metals	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry: Lynn Clan	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	NUMBER OF CONTAINERS
mw-5, 012502 1025	1/25/02	1025	W	-01					X					X	X									X						2
mw-9, 012502 0900	1/25/02	0900	W	-02					X					X	X									X						5
mw-8, 012502 0750	1/25/02	0750	W	-03					X					X	X									X						2
TRIP BLANK	01.21	1630	AQ	-04					X																					1

PROJECT INFORMATION

PROJ. NO.: 6204
PROJ. NAME: San Juan River Pkg
P.O. NO.:
SHIPPED VIA: Greyhound

SAMPLE RECEIPT

NO. CONTAINERS	910
CUSTODY SEALS	Y / N / NA
RECEIVED INTACT	Y
BLUE ICE/ICE	Y

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☑

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

Please call Lynn Benally @ 505 599 2178 to verify Analyte List
(505)599-2119 Fax

RELINQUISHED BY: 1.

Signature: Time: 1600
Printed Name: M. J. Nee Date: 1/25/02
Company:
See reverse side (Force Majeure)

RECEIVED BY: 1.

Signature: Time:
Printed Name: Date:
Company:

RELINQUISHED BY: 2.

Signature: Time:
Printed Name: Date:
Company:

RECEIVED BY: (LAB) 2.

Signature: Time: 1336
Printed Name: Date: 01.26.02
Pinnacle Laboratories Inc.

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C2-01593
Received: 29 JAN 02
Reported: 12 FEB 02

Ms. Jacinta Tenorio
Pinnacle Laboratories
2709-D Pan American Freeway Northeast
Albuquerque, NM 87107

Project: 201109-AESE/SAN JUAN RIVER PLANT
Sampled By: Client
Code: 084120212

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01593-1	MW-9,0125020900/201109-02	01-25-02/09:00

PARAMETER	01593-1
Total Dissolved Solids (160.1), mg/l	18000
Dilution Factor	1
Prep Date	01.31.02
Analysis Date	02.01.02
Batch ID	TDW011
Prep Method	160.1
Analyst	ST
Chloride (325.2/4500E/9251), mg/l	740
Dilution Factor	20
Analysis Date	02.05.02
Batch ID	CKW007B
Analyst	CR
Alkalinity Series (2320B)	
Alkalinity (to pH 4.5) as CaCO3, mg/l	<1.0
Bicarbonate (2320/4500), mg/l	<1.0
Carbon Dioxide, mg/l	<1.0
pH, mg/l	4.5
Hydroxide, mg/l	<1.0
Carbonate (2320/4500), mg/l	<1.0
Dilution Factor	1
Analysis Date	01.31.02
Batch ID	AEW007
Analyst	BE

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C2-01593
Received: 29 JAN 02
Reported: 12 FEB 02

Ms. Jacinta Tenorio
Pinnacle Laboratories
2709-D Pan American Freeway Northeast
Albuquerque, NM 87107

Project: 201109-AESE/SAN JUAN RIVER PLANT
Sampled By: Client
Code: 084120212

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
01593-1	MW-9,0125020900/201109-02	01-25-02/09:00

PARAMETER	01593-1
Nitrate-Nitrite, Nitrogen (353.2)	
Nitrate + Nitrite-N, mg/l	0.10
Dilution Factor	1
Analysis Date	02.06.02
Batch ID	N3W08B
Analyst	CR
Sulfate as SO4 (375.4), mg/l	11000
Dilution Factor	500
Analysis Date	02.08.02
Batch ID	SEW011
Analyst	AB
Metals, Dissolved (6010B)	
Calcium, Dissolved, mg/l	310
Iron, Dissolved, mg/l	0.20
Magnesium, Dissolved, mg/l	310
Manganese, Dissolved, mg/l	8.0
Potassium, Dissolved, mg/l	23
Sodium, Dissolved, mg/l	5200
Dilution Factor	1;100
Prep Date	01.31.02
Analysis Date	01.31.02
Batch ID	PD014
Prep Method	N/A
Analyst	GSP

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C2-01593
Received: 29 JAN 02
Reported: 12 FEB 02

Ms. Jacinta Tenorio
Pinnacle Laboratories
2709-D Pan American Freeway Northeast
Albuquerque, NM 87107

Project: 201109-AESE/SAN JUAN RIVER PLANT
Sampled By: Client
Code: 084120212

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01593-2	Method Blank	
01593-3	Lab Control Standard % Recovery	

PARAMETER	01593-2	01593-3
Total Dissolved Solids (160.1), mg/l	<5.0	104 %
Dilution Factor	1	---
Prep Date	01.31.02	---
Analysis Date	02.01.02	---
Batch ID	TDW011	TDW011
Prep Method	160.1	---
Analyst	ST	---
hloride (325.2/4500E/9251), mg/l	<2.0	103 %
Dilution Factor	1	---
Analysis Date	02.05.02	---
Batch ID	CKW007B	CKW007B
Analyst	CR	---
Alkalinity Series (2320B)		
Alkalinity (to pH 4.5) as CaCO3, mg/l	<1.0	104 %
Bicarbonate (2320/4500), mg/l	<1.0	---
Carbon Dioxide, mg/l	<1.0	---
Hydroxide, mg/l	<1.0	---
Carbonate (2320/4500), mg/l	<1.0	---
Dilution Factor	1	---
Analysis Date	01.31.02	---
Batch ID	AEW007	AEW007
Analyst	BE	---

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C2-01593
Received: 29 JAN 02
Reported: 12 FEB 02

Ms. Jacinta Tenorio
Pinnacle Laboratories
2709-D Pan American Freeway Northeast
Albuquerque, NM 87107

Project: 201109-AESE/SAN JUAN RIVER PLANT
Sampled By: Client
Code: 084120212

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01593-2	Method Blank	
01593-3	Lab Control Standard % Recovery	

PARAMETER	01593-2	01593-3
Nitrate-Nitrite, Nitrogen (353.2)		
Nitrate + Nitrite-N, mg/l	<0.10	105 %
Dilution Factor	1	---
Analysis Date	02.06.02	---
Batch ID	N3W08B	N3W08B
Analyst	CR	---
Sulfate as SO4 (375.4), mg/l	<5.0	90 %
Dilution Factor	1	---
Analysis Date	02.08.02	---
Batch ID	SEW011	SEW011
Analyst	AB	---
Metals, Dissolved (6010B)		
Calcium, Dissolved, mg/l	<0.50	96 %
Iron, Dissolved, mg/l	<0.10	97 %
Magnesium, Dissolved, mg/l	<0.50	94 %
Manganese, Dissolved, mg/l	<0.010	96 %
Potassium, Dissolved, mg/l	<1.0	91 %
Sodium, Dissolved, mg/l	<1.0	93 %
Dilution Factor	1	1
Prep Date	01.31.02	01.31.02
Analysis Date	01.31.02	01.31.02
Batch ID	PD014	PD014
Prep Method	N/A	N/A
Analyst	GSP	GSP

SEVERN TRENT SERVICES

STL Pensacola
LOG NO: C2-01593
Received: 29 JAN 02
Reported: 12 FEB 02

Ms. Jacinta Tenorio
Pinnacle Laboratories
2709-D Pan American Freeway Northeast
Albuquerque, NM 87107

Project: 201109-AESE/SAN JUAN RIVER PLANT
Sampled By: Client
Code: 084120212

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
01593-2	Method Blank	
01593-3	Lab Control Standard % Recovery	

PARAMETER	01593-2	01593-3

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
See the Project Sample Inspection Form (PSIF) to determine if a sample was received that did not meet EPA requirements for sample collection, preservation, or holding time.

Lance Larson, Project Manager

Final Page Of Report

STL Pensacola
PROJECT SAMPLE INSPECTION FORM

SEVERN TRENT SERVICES

Lab Order #: C201593 Date Received: 1-29-02

1.	Was there a Chain of Custody?	(Yes)	No*		8.	Were samples checked for preservative? *(Check pH of all H_2O requiring preservative (STL-PN SOP 917) except VOA vials that require zero headspace)+*	(Yes)	No*	N/A
2.	Was Chain of Custody properly filled out and relinquished?	Yes	(No*)		9.	Is there sufficient volume for analysis requested?	Yes	(No*)	N/A *(Can)*
3.	Were samples received cold? (Criteria: 2° - 6°C: STL-SOP	(Yes)	No*	N/A	10.	Were samples received within Holding Time? (REFER TO STL-SOP 1040)	Yes	(No*)	
4.	Were all samples properly labeled and identified?	(Yes)	No*		11.	Is Headspace visible > ¼" in diameter in VOA vials?* If any headspace is evident, comment in out-of-control section.	Yes*	No	(N/A)
5.	Did samples require splitting or compositing*? Req By: PM Client Other*	Yes*	(No)						
6.	Were samples received in proper containers for analysis requested?	(Yes)	No*		12.	If sent, were matrix spike bottles returned?	Yes	No*	(N/A)
7.	Were all sample containers received intact?	(Yes)	No*		13.	Was Project Manager notified of problems? (initials: JC) PSIF	(Yes)	No*	N/A

Airbill Number(s): 1Z 878 168 01 4322 4639 **Shipped By:** UPS

Cooler Number(s): CLIENT **Shipping Charges:** N/A

Cooler Weight(s): 24# **Cooler Temp(s) (°C):** 2°C (CCC49)
(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

Out of Control Events and Inspection Comments:

2. SAMPLES MW-5,0425021025/201109-01 & MW-8,0125075O/201109-03 WERE NOT RECEIVED WITH SHIPMENT. JC 1-29-02

9. REFER TO #2. JC 1-29-02

10. ~~SAMPLES FOR NNO3 WERE RECEIVED OUT OF HOLD TIME.~~ JC 1-29-02 N/A JC 1/29/02

PLI -02 only sample sent per M.Hk. 1/29/02 JC

(USE BACK OF PSIF FOR ADDITIONAL NOTES AND COMMENTS)

Inspected By: JC **Date:** 1-29-02 **Logged By:** LLK **Date:** 29-JAN-02

♣ *Note all Out-of-Control and/or questionable events on Comment Section of this form. For holding times, the analytical department will flag immediate hold time samples(pH, Dissolved O_2, Residual CL) as out of hold time, therefore, these samples will not be documented on this PSIF.*

If Other, note who requested the splitting or compositing of samples on the Comment Section of this form. All volatile samples requested to be split or composited must be done in the Volatile Lab. Document: "Volatile sample values may be compromised due to sample splitting (compositing)"

\+ *All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (STL-SOP 938, section 2.2.9).*

* *According to EPA, ¼" of headspace is allowed in 40 ml vials requiring volatile analysis, however, STL makes it policy to record any headspace as out-of-control (STL-SOP 938, section 2.2.12).*

Pinnacle Laboratories, Inc. — **Interlab Chain of Custody** — Date: 1/28 Page: 1 of

Network Project Manager: Jacinta A. Tenorio

Pinnacle Laboratories, Inc.
2709-D Pan American Freeway, NE
Albuquerque, New Mexico 87107
(505) 344-3777 Fax (505) 344-4413

Please filter & preserve samples for dissolved metals.

C201593

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	RCRA TCLP METALS	Metals-13 PP List	Metals-TAL (23 METALS)	Diss: Ca, Mg, K, Na, Fe, Mn	TOX	TOC	Gen Chemistry: Cl, SO4, TDS	Alk. Hr, Total NO2/NO3	Oil and Grease	Volatile Organics GC/MS (8260)	BOD	COD	PESTICIDES/PCB (608/8082)	Herbicides (615/8151)	PNA (8310)/8270 SIMS	8240 (TCLP 1311) ZHE		Base/Neutral Acid Compounds GC/MS (625/8270)	URANIUM (ICP-MS)	RADIUM 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
MW-5, 012502N025/201109-01	1/25	1025	AQ						X			X	X														
MW-9, 0125020900/201109-02	↓	0900	↓						X			X	X														
MW-8, 01250750/201109-03	↓	0750	↓						X			X	X														

PROJECT INFORMATION		SAMPLE RECEIPT		SAMPLES SENT TO:		RELINQUISED BY: 1	RELINQUISED BY: 2
PROJECT #:	201109	Total Number of Containers		PENSACOLA - STL-FL	X	Signature: Francine Tonrio Time: 1700	Signature: Time:
PROJ. NAME:	AESE	Chain of Custody Seals		ESL - OR		Printed Name: Francine Tonrio Date: 1/28/02	Printed Name: Date:
QC LEVEL:	STD. IV	Received Intact?		STL - CT		Pinnacle Laboratories, Inc.	Company
QC REQUIRED:	MS MSD BLANK	Received Good Cond./Cold		ATEL - AZ		RECEIVED BY: 1	RECEIVED BY: 2
TAT:	STANDARD RUSH!!	LAB NUMBER:		ATEL - MARION		Signature: Time: 1325	Signature: Time:
				ATEL - MELMORE		Printed Name: F. Cabrera Date: 1-29-02	Printed Name: Date:
DUE DATE:	2/11	COMMENTS:		BARRINGER		Company SR-P-S	Company
RUSH SURCHARGE:	—			ENVIRO TEST LABS			
CLIENT DISCOUNT:	—			WCAS			
SPECIAL CERTIFICATION REQUIRED:	YES NO			WOHL			

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: _____ PAGE: ___ OF ___

PLI Accession #: 201109

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER:

COMPANY: ABSE
ADDRESS: 906 San Juan Blvd Ste D
Farmington NM 87401
PHONE: 505 566 9116
FAX: 505 566 9120
BILL TO: BPFS Scott Pope
COMPANY:
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	Diss Metals	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:	Lynn Class	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	NUMBER CONTAINERS
mw-5, 012502 1025	1/25/02	1025	W	-01					X					X	X										X						2
mw-9, 012502 0900	1/25/02	0900	W	-02					X						X										X						3
mw-8, 012502 0750	1/25/02	0750	W	-03					X						X										X						2
Trip Blank	01.21	1630	AQ	-04					X																						1

PROJECT INFORMATION

PROJ. NO.: 6204
PROJ. NAME: San Juan River Monitoring
P.O. NO.:
SHIPPED VIA: Greyhound

SAMPLE RECEIPT

NO. CONTAINERS	9/10
CUSTODY SEALS	Y / N (NA)
RECEIVED INTACT	Y
BLUE ICE/ICE	Y / N

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☑

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

Please call Lynn Benally @ 505 599 2178 to verify Analyte List
(505) 599-2119 Fax

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Time: 1600	Signature: Time:
Printed Name: M. J. Nee Date: 1/25/02	Printed Name: Date:
Company:	Company:
See reverse side (Force Majeure)	
RECEIVED BY: 1.	**RECEIVED BY: (LAB) 2.**
Signature: Time:	Signature: Time: 1336
Printed Name: Date:	Printed Name: Date: 01.26.02
Company:	Pinnacle Laboratories Inc.