

**3R - 235**

# **REPORTS**

**DATE:**

**2002**

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**Certified Mail: #7001 1940 0002 1371 7676**

February 28, 2003

**RECEIVED**

**MAR 05 2003**

Mr. William C. Olson  
New Mexico Oil Conservation Division  
1220 St. Francis Dr.  
Santa Fe, NM 87504

ENVIRONMENTAL BUREAU  
OIL CONSERVATION DIVISION

**RE: 2002 Pit Project Annual Groundwater Report**

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual reports for the 30 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

EPFS has organized the 30 Annual Reports (Volumes 1, 2 and 3) by land type. Volume 1 contains Annual Reports for sites found on Federal land. Volume 2 contains Non Federal sites and Volume 3 contains sites on Navajo land. Of the 30 reports submitted, EPFS is requesting closure of three sites located on Navajo lands. Of the three Navajo sites submitted for closure OCD has closed the Charley Pah #4 and the John Charles #8. The Rementa et al #1 has not been closed by either agency and EPFS reiterates request for closure of this site. EPFS understands closure of groundwater sites on Navajo land falls under jurisdiction of the Navajo Nation Environmental Protection Agency and original documents have been submitted to them for review. Other Navajo sites are included in the report for your information.

Three additional sites were submitted for closure in 2002. EPFS recently has received closure on the W.D. Heath B-5. Closure approval is pending on the D Loop Line Drip and Hammond # 41A. All of these sites are included in the 2002 Annual Report.

If you have any questions concerning the enclosed reports, please call me at (505) 599-2124.

Sincerely,



Scott T. Pope P.G.  
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # 7001 1940 0002 1371 7669**  
Mr. Bill Liesse, BLM - w / enclosures (federal sites only), **Certified Mail # 7001 1940 0002 1371 7652**



**RECEIVED**

**MAR 05 2003**

ENVIRONMENTAL BUREAU  
OIL CONSERVATION DIVISION

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**El Paso Field Services**

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**San Juan Basin Pit Program  
Groundwater Sites Project**

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**2002 Annual Report  
Federal Sites (Volume 1)**

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March 2003



**MWH**

10619 South Jordan Gateway, Suite 100  
Salt Lake City, Utah 84095

# EL PASO FIELD SERVICES ANNUAL GROUNDWATER REPORT

## FEDERAL SITES VOLUME I

### TABLE OF CONTENTS

#### Site Map

| METER or LINE ID | SITE NAME             | TOWNSHIP | RANGE | SECTION | UNIT |
|------------------|-----------------------|----------|-------|---------|------|
| 89961            | Fields A#7A           | 32N      | 11W   | 34      | E    |
| 89232            | Johnston Fed #6A      | 31N      | 09W   | 35      | F    |
| 94715            | James F. Bell #1E     | 30N      | 13W   | 10      | P    |
| 89620            | Sandoval GC A #1A     | 30N      | 09W   | 35      | C    |
| 87493            | W D Heath B-5         | 30N      | 09W   | 31      | M    |
| LD151            | Lat 0-21 Line Drip    | 30N      | 09W   | 12      | O    |
| 73220            | Fogelson 4-1 Com. #14 | 29N      | 11W   | 4       | P    |
| 97213            | Hamner #9             | 29N      | 09W   | 20      | A    |
| 72890            | Ohio C Government #3  | 28N      | 11W   | 26      | P    |
| LD169            | D Loop Line Drip      | 28N      | 08W   | 33      | I    |
| LD174            | LAT LD 40             | 28N      | 04W   | 13      | H    |
| 89894            | Hammond #41A          | 27N      | 08W   | 25      | O    |
| 94810            | Miles Fed 1A          | 26N      | 07W   | 5       | F    |
| LD072            | K27 LD072             | 25N      | 06W   | 4       | E    |
| 87640            | Canada Mesa #2        | 24N      | 06W   | 24      | I    |



**MWH**  
MONTGOMERY WATSON HARZA

## ACRONYMS

|        |   |
|--------|---|
| B      | Benzene                                     |
| E      | Ethylbenzene                                |
| EPFS   | El Paso Field Services                      |
| ft     | foot/feet                                   |
| GWEL   | groundwater elevation                       |
| ID     | identifier                                  |
| MW     | Monitoring Well                             |
| PSH    | Phase Separated Hydrocarbons                |
| NMWQCC | New Mexico Water Quality Control Commission |
| T      | Toluene                                     |
| TOC    | Top Of Casing                               |
| NE     | not established                             |
| NS     | not sampled                                 |
| ORC    | oxygen release compound                     |
| OCD    | Oil Conservation Division                   |
| ppb    | parts per billion                           |
| µg/L   | micrograms per liter                        |
| X      | Total Xylenes                               |



**EPFS GROUNDWATER SITES  
2002 ANNUAL GROUNDWATER REPORT**

**Sandoval GC A #1A  
Meter Code: 89620**

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**SITE DETAILS**

**LEGAL DESCRIPTION:** Twn: 30N Rng: 9W Sec: 35 Unit: C  
**NMOCD Haz Ranking:** 10 **Land Type:** Federal **Operator:** Amoco Production Company

**PREVIOUS ACTIVITIES**

**Site Assessment:** 5/94 **Excavation:** 9/94 (50cy) **Soil Boring:** 5/95  
**Monitor Well:** 5/95 **Geoprobe:** NA **Additional MWs:** NA  
**Downgradient MWs:** NA **Replace MW:** 8/97 **Quarterly Initiated:** 4/96  
**ORC Nutrient Injection:** 10/01 **Re-Excavation:** 7/97 (504cy) **PSH Removal Initiated:** NA  
**Annual Initiated:** 4/99 **Quarterly Resumed:** NA

**SUMMARY OF 2002 ACTIVITIES**

**MW-1:**

- Annual groundwater sampling was performed during 2002.
- The ORC socks in MW-1 were inspected during the groundwater sampling event.

**Site-Wide Activities:** No other activities were performed at this site during 2002.

**SUMMARY TABLES AND GRAPHS**

- Analytical data are summarized in Table 1 and presented graphically in Figure 2.
- Analytical reports are presented in Attachment 1.
- Field documentation is presented in Attachment 2.

**SITE MAP**

A site map is attached as Figure 1.

**GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS**

No subsurface activities were performed at this site during 2002.

**DISPOSITION OF GENERATED WASTES**

No wastes were generated at this site during 2002.

**EPFS GROUNDWATER SITES  
2002 ANNUAL GROUNDWATER REPORT**

**Sandoval GC A #1A  
Meter Code: 89620**

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**ISOCONCENTRATION MAPS**

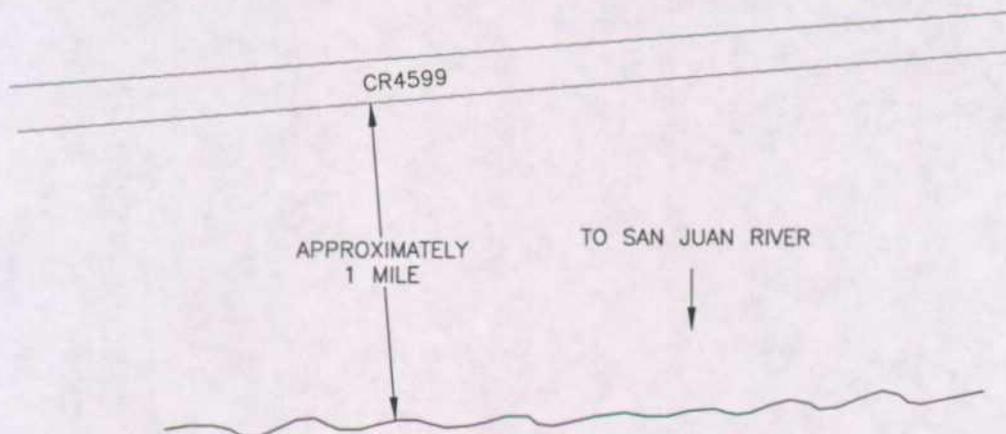
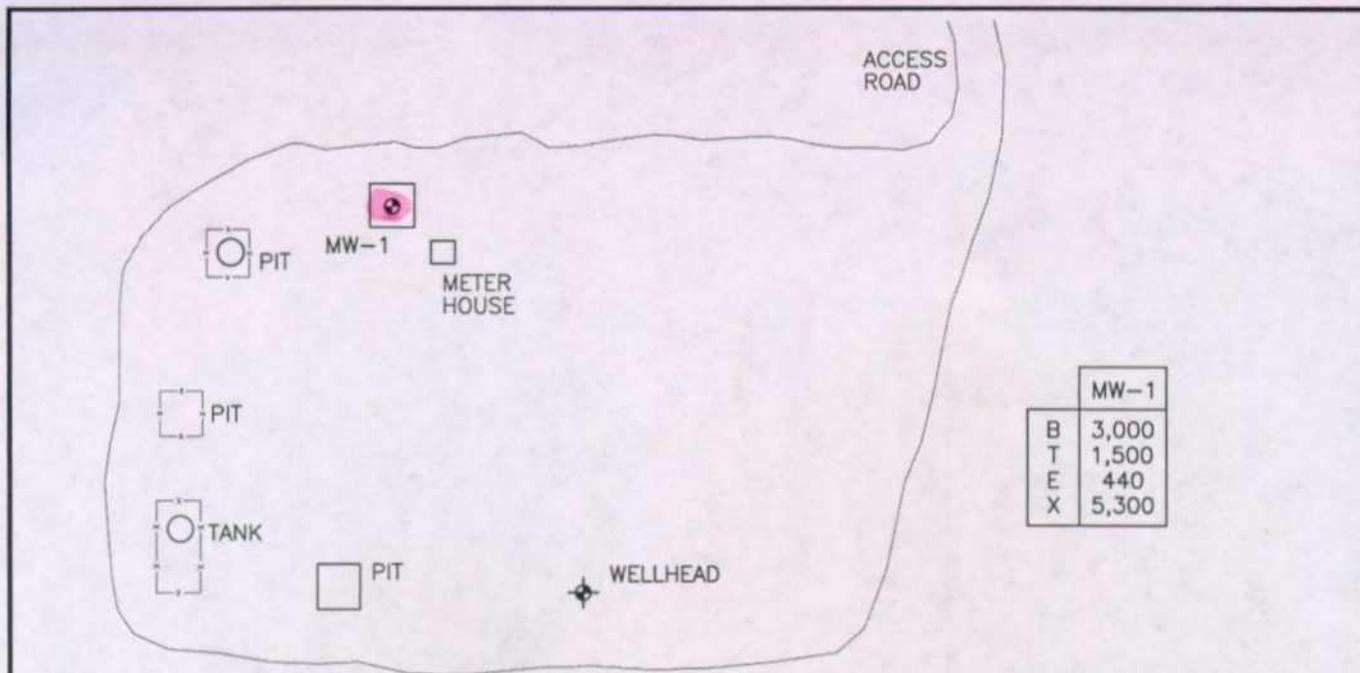
No isoconcentration maps were prepared for this site, however, the attached site map presents the analytical data collected during 2002.

**CONCLUSIONS**

- The benzene concentration in MW-1 continues to be elevated with a measured concentrations of 3,000 µg/l in 2002.
- Previous attempts to install additional monitoring wells at this site have resulted in drilling refusal. The installation of additional monitoring wells at his site is not considered feasible.

**RECOMMENDATIONS**

- EPFS will continue annual groundwater sampling at MW-1.
- EPFS will inspect the ORC socks installed in MW-1, and will replace as required.



LEGEND

- ⊙ MW-1      Approximate Monitoring Well Location and Number
- B          Benzene ( $\mu\text{g/L}$ )
- T          Toluene ( $\mu\text{g/L}$ )
- E          Ethylbenzene ( $\mu\text{g/L}$ )
- X          Total Xylenes ( $\mu\text{g/L}$ )



NOT TO SCALE

SANDOVAL GAS COM A #1A, METER 89620  
MAY, 2002

GROUNDWATER SITES  
EL PASO FIELD SERVICES

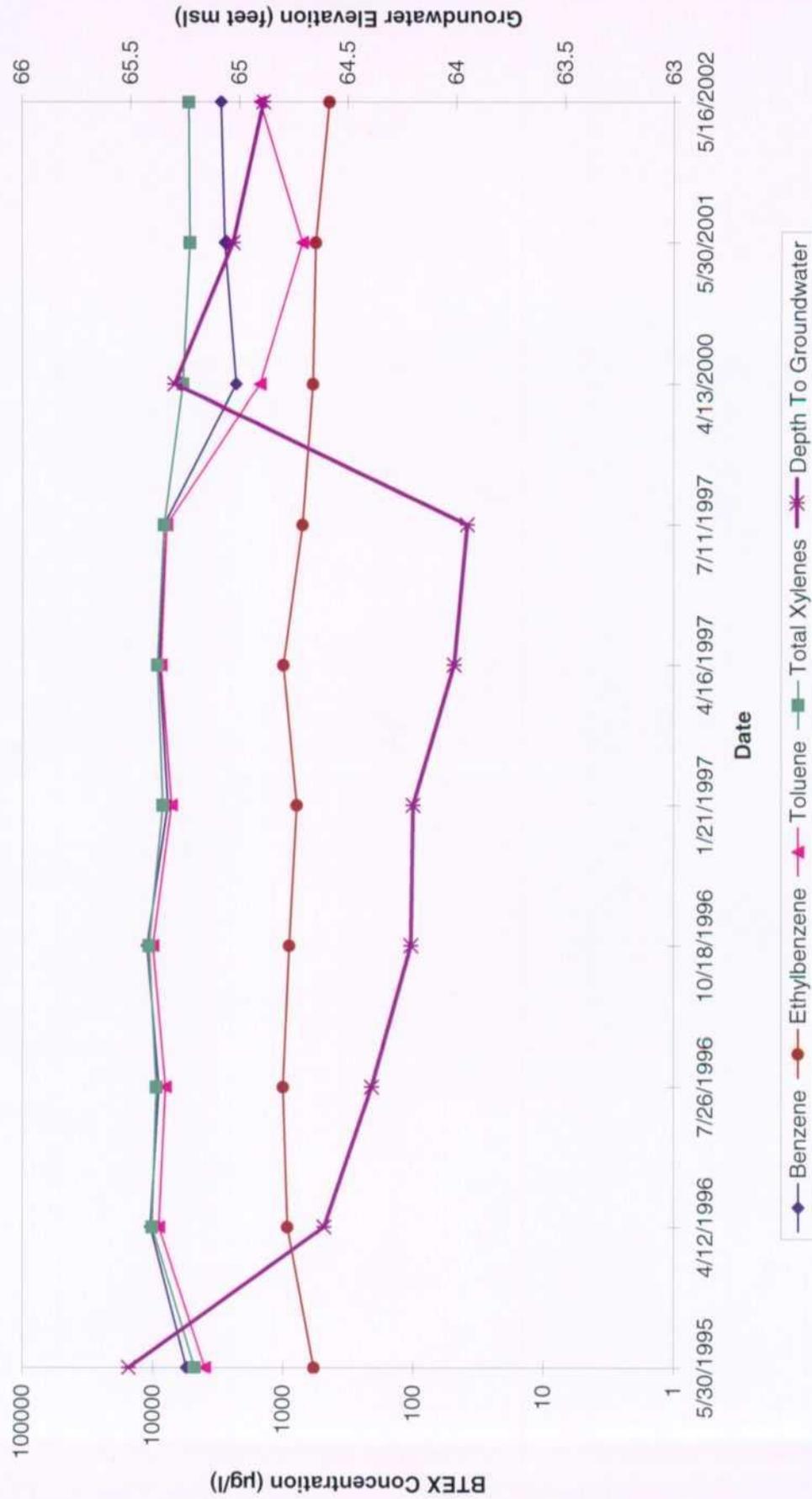
FIGURE 1

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER  
 SANDOVAL GAS COM A#1A (METER #89620)  
 (Page 1 of 1)

| Sample Identification | Sample Date | MW Identification | Benzene (µg/l) | Toluene (µg/l) | Ethylbenzene (µg/l) | Total Xylenes (µg/l) |
|-----------------------|-------------|-------------------|----------------|----------------|---------------------|----------------------|
| SAN-0205-MW1          | 16-May-02   | 1                 | 3000           | 1500           | 440                 | 5300                 |

Figure 2  
 BTEX Concentration and Groundwater Elevation vs. Time  
 Sandoval Gas Com A#1A (Meter #89620)  
 MW-1



**ATTACHMENT 1**  
**LABORATORY REPORTS**

PINNACLE  
LABORATORIES

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

Pinnacle Lab ID number      **205136**  
May 24, 2002

AMEC EARTH & ENVIRONMENTAL  
2060 AFTON PLACE  
FARMINGTON, NM 87401

EL PASO FIELD SERVICES  
614 RIELLY STREET  
FARMINGTON, NM 87401

Project Name                      SANDOVAL A #1A  
Project Number                    1517000121

Attention:                      LISA WINN/SCOTT POPE

On 05/17/02 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       | : AMEC EARTH & ENVIRONMENTAL | PINNACLE ID   | : 205136   |
| PROJECT #    | : 1517000121                 | DATE RECEIVED | : 05/17/02 |
| PROJECT NAME | : SANDOVAL A #1A             | REPORT DATE   | : 05/24/02 |
| <hr/>        |                              | <hr/>         |            |
| PINNACLE     |                              |               | DATE       |
| ID #         | CLIENT DESCRIPTION           | MATRIX        | COLLECTED  |
| <hr/>        | <hr/>                        | <hr/>         | <hr/>      |
| 205136 - 01  | SAN-0205-MW1                 | AQUEOUS       | 05/16/02   |
| 205136 - 02  | TRIP BLANK                   | AQUEOUS       | 05/16/02   |

**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 : AMEC EARTH & ENVIRONMENTAL  
PROJECT # : 1517000121  
PROJECT NAME : SANDOVAL A #1A

PINNACLE I.D.: 205136

| SAMPLE | DATE         | DATE    | DATE     | DIL.      |          |        |
|--------|--------------|---------|----------|-----------|----------|--------|
| D. #   | CLIENT I.D.  | MATRIX  | SAMPLED  | EXTRACTED | ANALYZED | FACTOR |
| 11     | SAN-0205-MW1 | AQUEOUS | 05/16/02 | NA        | 05/19/02 | 50     |
| 12     | TRIP BLANK   | AQUEOUS | 05/16/02 | NA        | 05/22/02 | 1      |

| PARAMETER     | DET. LIMIT | UNITS | SAN-0205-MW1 | TRIP BLANK |
|---------------|------------|-------|--------------|------------|
| BENZENE       | 0.5        | UG/L  | 3000         | < 0.5      |
| TOLUENE       | 0.5        | UG/L  | 1500         | 0.61 *     |
| ETHYLBENZENE  | 0.5        | UG/L  | 440          | < 0.5      |
| TOTAL XYLENES | 1.0        | UG/L  | 5300         | < 1.0      |

**SURROGATE:**

|                             |     |     |
|-----------------------------|-----|-----|
| BROMOFLUOROBENZENE (%)      | 101 | 104 |
| SURROGATE LIMITS (80 - 120) |     |     |

**CHEMIST NOTES:**

- The Trip Blank was reanalyzed to verify results.
- \* The Trip Blank was supplied by the client.

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. : 205136  
LANK I. D. : 051802                              DATE EXTRACTED : N/A  
CLIENT : AMEC EARTH & ENVIRONMENTAL      DATE ANALYZED : 05/18/02  
PROJECT # : 1517000121                        SAMPLE MATRIX : AQUEOUS  
PROJECT NAME : SANDOVAL A #1A

| PARAMETER     | UNITS |      |
|---------------|-------|------|
| BENZENE       | UG/L  | <0.5 |
| TOLUENE       | UG/L  | <0.5 |
| ETHYLBENZENE  | UG/L  | <0.5 |
| ORTHO XYLENES | UG/L  | <1.0 |

PROPAGATE:  
BROMOFLUOROBENZENE (%)                      108  
PROPAGATE LIMITS:                      ( 80 - 120 )  
+ NOTES:  
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          | PINNACLE I.D.  | : 205136   |
| ATCH #       | : 051802                     | DATE EXTRACTED | : N/A      |
| CLIENT       | : AMEC EARTH & ENVIRONMENTAL | DATE ANALYZED  | : 05/18/02 |
| PROJECT #    | : 1517000121                 | SAMPLE MATRIX  | : AQUEOUS  |
| PROJECT NAME | : SANDOVAL A #1A             | UNITS          | : UG/L     |

| PARAMETER     | SAMPLE RESULT | CONC SPIKE | SPIKED SAMPLE | % REC | DUP SPIKE | DUP % REC | RPD | REC LIMITS   | RPD LIMITS |
|---------------|---------------|------------|---------------|-------|-----------|-----------|-----|--------------|------------|
| ENZENE        | <0.5          | 40.0       | 41.6          | 104   | 41.1      | 103       | 1   | ( 80 - 120 ) | 20         |
| OLUENE        | <0.5          | 40.0       | 41.9          | 105   | 41.5      | 104       | 1   | ( 80 - 120 ) | 20         |
| THYLBENZENE   | <0.5          | 40.0       | 42.8          | 107   | 42.5      | 106       | 1   | ( 80 - 120 ) | 20         |
| TOTAL XYLENES | <1.0          | 120        | 132           | 110   | 130       | 108       | 2   | ( 80 - 120 ) | 20         |

ANALYST NOTES:  
/A

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

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



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          | PINNACLE I.D. :  | 205136   |
| ATCH # :      | 052202                     | DATE EXTRACTED : | N/A      |
| LIENT :       | AMEC EARTH & ENVIRONMENTAL | DATE ANALYZED :  | 05/22/02 |
| ROJECT # :    | 1517000121                 | SAMPLE MATRIX :  | AQUEOUS  |
| ROJECT NAME : | SANDOVAL A #1A             | UNITS :          | UG/L     |

| PARAMETER    | SAMPLE RESULT | CONC SPIKE | SPIKED SAMPLE | % REC | DUP SPIKE | DUP % REC | RPD | REC LIMITS   | RPD LIMITS |
|--------------|---------------|------------|---------------|-------|-----------|-----------|-----|--------------|------------|
| ENZENE       | <0.5          | 20.0       | 20.1          | 101   | 19.1      | 96        | 5   | ( 80 - 120 ) | 20         |
| OLUENE       | <0.5          | 20.0       | 20.4          | 102   | 19.4      | 97        | 5   | ( 80 - 120 ) | 20         |
| THYLBENZENE  | <0.5          | 20.0       | 20.7          | 104   | 19.8      | 99        | 4   | ( 80 - 120 ) | 20         |
| OTAL XYLENES | <1.0          | 60.0       | 64.0          | 107   | 61.1      | 102       | 5   | ( 80 - 120 ) | 20         |

HEAT 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  
MS/MSD

|                |                            |                  |          |
|----------------|----------------------------|------------------|----------|
| EST :          | EPA 8021 MODIFIED          | PINNACLE I.D. :  | 205136   |
| SMSD # :       | 205131-01                  | DATE EXTRACTED : | N/A      |
| CLIENT :       | AMEC EARTH & ENVIRONMENTAL | DATE ANALYZED :  | 05/19/02 |
| PROJECT # :    | 1517000121                 | SAMPLE MATRIX :  | AQUEOUS  |
| PROJECT NAME : | SANDOVAL A #1A             | UNITS :          | UG/L     |

| PARAMETER    | SAMPLE RESULT | CONC SPIKE | SPIKED SAMPLE | % REC | DUP SPIKE | DUP % REC | RPD | REC LIMITS   | RPD LIMITS |
|--------------|---------------|------------|---------------|-------|-----------|-----------|-----|--------------|------------|
| ENZENE       | 33.7          | 40.0       | 69.3          | 89    | 72.1      | 96        | 4   | ( 80 - 120 ) | 20         |
| OLUENE       | 4.92          | 40.0       | 42.6          | 94    | 44.1      | 98        | 3   | ( 80 - 120 ) | 20         |
| THYLBENZENE  | 1.02          | 40.0       | 39.8          | 97    | 41.2      | 100       | 3   | ( 80 - 120 ) | 20         |
| OTAL XYLENES | 3.33          | 120        | 124           | 101   | 128       | 104       | 3   | ( 80 - 120 ) | 20         |

REMARKS NOTES:  
N/A

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

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

SHADED AREAS ARE FOR LAB USE ONLY.

**PROJECT MANAGER:** LISA BEINH  
**COMPANY:** AMEC  
**ADDRESS:** 2060 AFTON PLACE  
 Farming TON N.M. 87401  
**PHONE:** (505) 327-7928  
**FAX:** (505) 326-5721  
**BILL TO:** SCOTT POPE  
**COMPANY:** EL PASO Field Services  
**ADDRESS:** 614 Reilly AVE  
 Farming TON N.M.

| SAMPLE ID    | DATE    | TIME | METHOD           | FIELD |
|--------------|---------|------|------------------|-------|
| SAN-0105-MW1 | 5-16-02 | 1355 | H <sub>2</sub> O | 01    |
| Trip BLANK   | 5-16-02 | 1522 | H <sub>2</sub> O | 01    |

**ANALYSIS REQUEST**

| ANALYSIS REQUEST  | CONTAINERS |
|---|------------|
| Petroleum Hydrocarbons (418.1) TRPH   |            |
| (MOD.8015) Diesel/Direct Inject   |            |
| (M8015) Gas/Purge & Trap  |            |
| 8021 (BTEX)/8015 (Gasoline) MTBE  |            |
| 8021 (BTEX) <input type="checkbox"/> MTBE <input type="checkbox"/> TMB <input type="checkbox"/> PCE |            |
| 8021 (TCL)  |            |
| 8021 (EDX)  |            |
| 8021 (HALO)   |            |
| 8021 (CUST)   |            |
| 504.1 EDB <input type="checkbox"/> / DBCP <input type="checkbox"/>                                  |            |
| 8260 (TCL) Volatile Organics  |            |
| 8260 (Full) Volatile Organics   |            |
| 8260 (CUST) Volatile Organics   |            |
| 8260 (Landfill) Volatile Organics   |            |
| 8260 (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:   |            |

|                               |   |                                  |                               |
|-------------------------------|---|----------------------------------|-------------------------------|
| <b>PROJECT INFORMATION</b>    | <b>PRIOR AUTHORIZATION REQUIRED FOR RUSH PROJECTS</b>   | <b>RELIQUISHED BY:</b>           | <b>RELIQUISHED BY:</b>        |
| PROJ. NO.: S1700012-1         | (RUSH) <input type="checkbox"/> 24hr <input type="checkbox"/> 48hr <input type="checkbox"/> 72hr <input type="checkbox"/> 1 WEEK <input checked="" type="checkbox"/> (NORMAL) | Signature: <i>[Signature]</i>    | Signature: <i>[Signature]</i> |
| PROJ. NAME: 505 FS G.W. PROJ. | CERTIFICATION REQUIRED: <input type="checkbox"/> NM <input type="checkbox"/> SDWA <input type="checkbox"/> OTHER  | Printed Name: Chris MAJEZ        | Printed Name: <i>[Name]</i>   |
| P.O. NO.:                     | METHANOL PRESERVATION <input type="checkbox"/>  | Company: AMEC                    | Company: <i>[Company]</i>     |
| SHIPPED VIA: Greyhound        |   | See reverse side (Force Majeure) |                               |
| <b>SAMPLE RECEIPT</b>         | <b>COMMENTS:</b> FIXED FEE <input type="checkbox"/>   | <b>RECEIVED BY (LAB)</b>         | <b>RECEIVED BY (LAB)</b>      |
| NO. CONTAINERS: 2             | SAN DONAL #1A   | Signature: <i>[Signature]</i>    | Signature: <i>[Signature]</i> |
| CUSTOMER SEAL: <i>[Seal]</i>  | meter # (89620)   | Date: 5-16-02                    | Date: <i>[Date]</i>           |
| RESERVED FOR: <i>[Text]</i>   |   |                                  |                               |
| LAB USE ONLY:                 |   |                                  |                               |

PLEASE FILL THIS FORM IN COMPLETELY.

**ATTACHMENT 2**  
**FIELD DOCUMENTATION**

Development  
 Purging

## WELL DEVELOPMENT AND PURGING DATA FORM



Well Number Mw1  
 Project Name EPES G-w project  
 Client Company Ek pro Field Services  
 Site Name SANDWALK  
 Project Manager Lisa Winn  
 Site Address Rural SAN JUAN CO.  
 Project No. 1517000121  
 Page 1 of 1

**Development Criteria**  
 3 to 5 Casing Volumes of Water Removal  
 Stabilization of Indicator Parameters  
 Other \_\_\_\_\_

**Methods of Development**  
 Pump  
 Centrifugal  
 Submersible  
 Peristaltic  
 Other \_\_\_\_\_  
 Boiler  
 Bottom Valve  
 Double Check Valve  
 Stainless-steel Kemmerer

**Water Volume Calculation**

Initial Depth of Well (feet) 38.31  
 Initial Depth to Water (feet) 35.11  
 Height of Water Column in Well (feet) 3.2  
 Diameter (Inches): Well 4" Gravel Pack \_\_\_\_\_

| Item            | Water Volume in Well |                | Gallons to be Removed |
|-----------------|----------------------|----------------|-----------------------|
|                 | Cubic Feet           | Gallons        |                       |
| Well Casing     | <u>3.2</u>           | <u>208 x 3</u> | <u>6.24</u>           |
| Gravel Pack     |                      |                |                       |
| Drilling Fluids |                      |                |                       |
| Total           |                      |                | <u>6.24</u>           |

**Instruments**

pH Meter Serial No. (if applicable) YSI 63  
 DO Monitor YSI 95  
 Conductivity Meter YSI 63  
 Temperature Meter YSI 63  
 Other \_\_\_\_\_

**Water Disposal**  
to Sewerage Treatment Plant

**Water Removal Data**

| Date    | Time | Development Method | Removal Rate (gal/min) | Intake Depth (feet) | Ending Water Depth (feet) | Water Volume Removed (gallons) |            | Product Volume Removed (gallons) |            | Temperature (°C) | pH   | Conductivity (mmhos/cm) | Dissolved Oxygen (mg/l) | Comments                     |
|---------|------|--------------------|------------------------|---------------------|---------------------------|--------------------------------|------------|----------------------------------|------------|------------------|------|-------------------------|-------------------------|------------------------------|
|         |      |                    |                        |                     |                           | Incremental                    | Cumulative | Incremental                      | Cumulative |                  |      |                         |                         |                              |
| 5-16-02 | 1316 | X                  |                        |                     |                           | 1.5                            | 1.5        |                                  |            | 17.7             | 7.15 | 3790                    |                         | Discolor with 5 ppt < 0.5 on |
|         | 1319 | X                  |                        |                     |                           | 1.5                            | 3          |                                  |            | 16.1             | 7.28 | 3688                    |                         | "                            |
|         | 1323 | X                  |                        |                     | 32.46                     | 1.5                            | 4.5        |                                  |            | 16.4             | 7.37 | 5645                    | 4.70                    | no change                    |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |
|         |      |                    |                        |                     |                           |                                |            |                                  |            |                  |      |                         |                         |                              |

Comments AFTER Boiling Approximately 4.5 gal Boiled well Dry, let recover Sampled for  
BP&X 1355

Developer's Signature(s) [Signature] Date 5-16-02 Reviewer's Signature [Signature] Date 5/20/02

