

**3R - 380**

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# **REPORTS**

**DATE:**

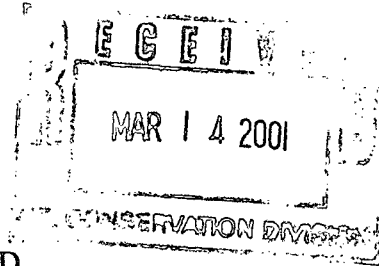
**MAR. 2001**

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28300

**BLAGG ENGINEERING, INC.**

P.O. Box 87, Bloomfield, New Mexico 87413  
Phone: (505)632-1199 Fax: (505)632-3903



March 7, 2001

Mr. William C. Olson, Hydrologist  
New Mexico Oil Conservation Division-NMOCD  
Environmental Bureau  
1220 St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: BP Amoco (formerly Amoco Production Company)  
Groundwater Monitoring Report  
Gallegos Canyon Unit (GCU) # 214, Unit B, Sec. 16, T28N, R12W, NMPM  
San Juan County, New Mexico**

Dear Mr. Olson:

BP Amoco has retained Blagg Engineering, Inc. to conduct environmental monitoring of groundwater at the GCU # 214.

Groundwater monitoring has been undertaken since the July, 1995. Since June, 1996, BP Amoco has followed its NMOCD approved groundwater work plan and continues to monitor the site on an annual basis. No permanent closure is requested at this time.

If you have any questions concerning the enclosed documentation, please contact either myself or Jeffrey C. Blagg at the address or phone number listed above. Thank you for your cooperation and assistance.

Respectfully submitted:  
**Blagg Engineering, Inc.**

Nelson J. Velez  
Staff Geologist

Attachment: Groundwater Report

cc: Mr. Denny Foust, Environmental Geologist, NMOCD District III Office, Aztec, NM  
Mr. Buddy Shaw, Environmental Coordinator, BP Amoco, Farmington, NM (without lab reports)

## **BP Amoco - GCU # 214 - Separator Pit Nw/4 Ne/4 Sec. 16, T28N, R12W**

|                                               |                                                                                               |                                 |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------|
| <b><u>Site Assessment Date:</u></b>           | <b>5/19/92</b>                                                                                | <b>(Documentation Included)</b> |
| <b><u>Pit closure Dates:</u></b>              | <b>7/18/94</b>                                                                                | <b>(Documentation Included)</b> |
| <b><u>Monitor Well Installation Date:</u></b> | <b>7/9/95</b>                                                                                 |                                 |
| <b><u>Monitor Well Sampling Dates:</u></b>    | <b>7/10/95, 9/7/95, 12/6/95, 3/18/96, 6/4/96, 6/25/97, 6/8/98,<br/>5/28/99, &amp; 5/22/00</b> |                                 |

### **Groundwater Monitor Well Sampling Procedures:**

Groundwater samples were collected from site monitor wells (*Figure 1*) following US EPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per US EPA Method 8020 or 8021. The samples were preserved cool and with either mercuric chloride or hydrochloric acid and hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site.

### **Water Quality and Flow Direction Information:**

The BTEX results for the 1996 through 2000 sampling events are summarized in the following table. MW #'s 1 and 3 BTEX data demonstrate levels below 25% of the New Mexico Water Quality Control Commission's (NMWQCC) groundwater allowable concentrations in all five (5) sampling events between July, 1995 and June, 1996. Therefore, it was determined to terminate sampling of those wells. Benzene within MW # 2 has exceeded NMWQCC standards since July, 1995, but has also been decreasing up to the present.

Based on the enclosed site monitor well information, groundwater flow is interpreted to be in the northeast direction. The groundwater gradient maps are displayed on *Figures 2 through Figure 6*.

### **Summary and/or Recommendations:**

Based on the aforementioned and enclosed documentation, the soil and groundwater at the excavated separator pit area appears to have been partially remediated during the pit closure activities. However, the results from MW #2 concludes that groundwater contamination continues to exist in the pit area and is possibly being remediated by natural attenuation. Therefore, it is suggested to continue annual monitoring of MW #2 to evaluate the decreasing trend observed in the benzene value.

All aspects of the BP Amoco's groundwater work plan dated October 22, 1996 and approved by NMOCDC with lettered dated February 7, 1997, has been adhered to.

# AMOCO GROUNDWATER MONITOR WELL LABORATORY RESULTS

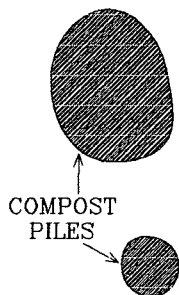
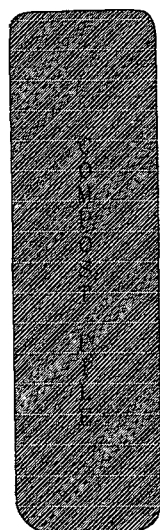
SUBMITTED BY BLAGG ENGINEERING, INC.

GCU # 214 - SEPARATOR PIT  
UNIT B, SEC. 16, T28N, R12W

REVISED DATE: JUNE 14, 2000  
FILENAME: (21-2Q-00.WK4) NJV

| SAMPLE<br>DATE | MONITOR<br>WELL No: | D.T.W.<br>(ft) | T.D.<br>(ft) | TDS<br>mg/L | COND.<br>(umhos/cm) | pH  | PRODUCT<br>(ft) | BTEX EPA METHOD 8021 (PPB) |         |                  |                 |
|----------------|---------------------|----------------|--------------|-------------|---------------------|-----|-----------------|----------------------------|---------|------------------|-----------------|
|                |                     |                |              |             |                     |     |                 | Benzene                    | Toluene | Ethyl<br>Benzene | Total<br>Xylene |
| 10-Jul-95      | MW#1                | 17.53          | 20.00        |             | 4800                | 7.4 |                 | 0.3                        | 43.7    | 0.64             | 4.03            |
| 07-Sep-95      |                     | 17.27          |              |             | 4000                | 7.8 |                 | ND                         | ND      | ND               | ND              |
| 06-Dec-95      |                     | 17.96          |              |             | 3200                | 7.5 |                 | ND                         | ND      | ND               | ND              |
| 18-Mar-96      |                     | 18.10          |              |             | 2000                | 7.9 |                 | ND                         | ND      | ND               | ND              |
| 04-Jun-96      |                     | 17.95          |              |             | 3000                | 7.4 |                 | ND                         | ND      | ND               | ND              |
| 10-Jul-95      | MW#2                | 16.96          | 20.00        |             | 4400                | 8.0 |                 | 873                        | 76.3    | 345              | 1924            |
| 07-Sep-95      |                     | 16.56          |              |             | 4200                | 8.2 |                 | 226                        | 9.7     | 91.6             | 546.6           |
| 06-Dec-95      |                     | 17.60          |              |             | 5500                | 8.0 |                 | 421                        | 3.97    | 30.1             | 100             |
| 18-Mar-96      |                     | 17.62          |              |             | 3300                | 7.7 |                 | 115                        | ND      | ND               | ND              |
| 04-Jun-96      |                     | 17.34          |              |             | 4600                | 7.2 |                 | 175                        | ND      | ND               | 7.06            |
| 25-Jun-97      |                     | 16.65          |              |             | 3000                | 8.2 |                 | 164                        | 0.6     | 59               | 35.1            |
| 08-Jun-98      |                     | 16.96          |              |             | 3300                | 7.2 |                 | 236                        | 7.6     | 17.4             | 67.9            |
| 28-May-99      |                     | 16.87          |              |             | 3500                | 7.2 |                 | 221                        | 10.6    | 11.1             | 22.6            |
| 22-May-00      |                     | 16.63          |              |             | 3100                | 7.9 |                 | 79                         | ND      | 7.6              | 5               |
| 10-Jul-95      | MW#3                | 12.20          | 15.00        |             | 5500                | 7.4 |                 | 0.36                       | 22.8    | 0.44             | 1.76            |
| 07-Sep-95      |                     | 11.55          |              |             | 6000                | 7.8 |                 | 1.6                        | 1.1     | ND               | 1.8             |
| 06-Dec-95      |                     | 12.60          |              |             | 5700                | 7.6 |                 | ND                         | ND      | ND               | ND              |
| 18-Mar-96      |                     | 12.80          |              |             | 3400                | 7.4 |                 | ND                         | ND      | ND               | ND              |
| 04-Jun-96      |                     | 12.38          |              |             | 4500                | 7.2 |                 | ND                         | ND      | ND               | ND              |

# FIGURE 1



WELL  
HEAD



↑  
FLOW  
DIRECTION

→  
DIRECTION TO  
GALLEGOS WASH

● MW #3

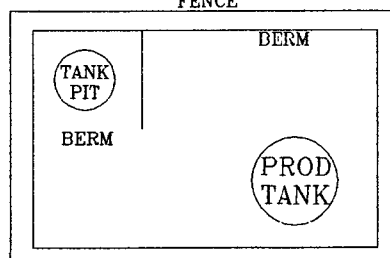
SEP

● MW #2

ACCESS RD.

MW #1 ●

FENCE



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE  
AS THE INSTRUMENTS USED IN OBTAINING THE  
FOOTAGE AND BEARING FROM THE WELL HEAD  
(BRUNTON COMPASS AND LASER RANGE FINDER).  
ALL OTHER STRUCTURES DISPLAYED ON THE SITE  
MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO  
SCALE.

0 50 100 FT.

AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W  
SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.  
CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 632-1199

PROJECT: MW INSTALL.

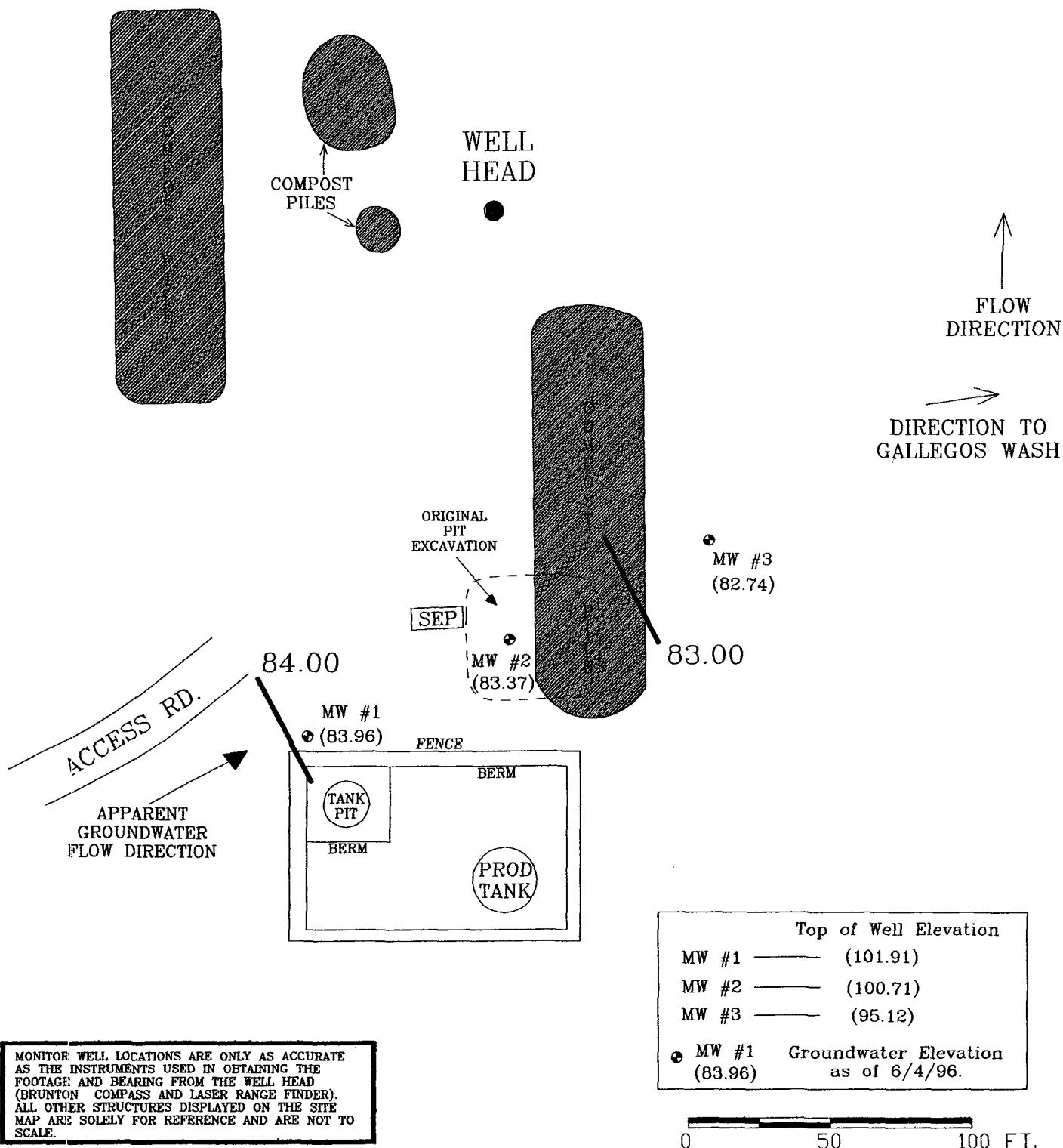
DRAWN BY: NJV

FILENAME: GCU-214

SITE  
MAP

7/96

# FIGURE 2 (2nd 1/4, 1996)



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: 1/4ly Monitor.

DRAWN BY: NJV

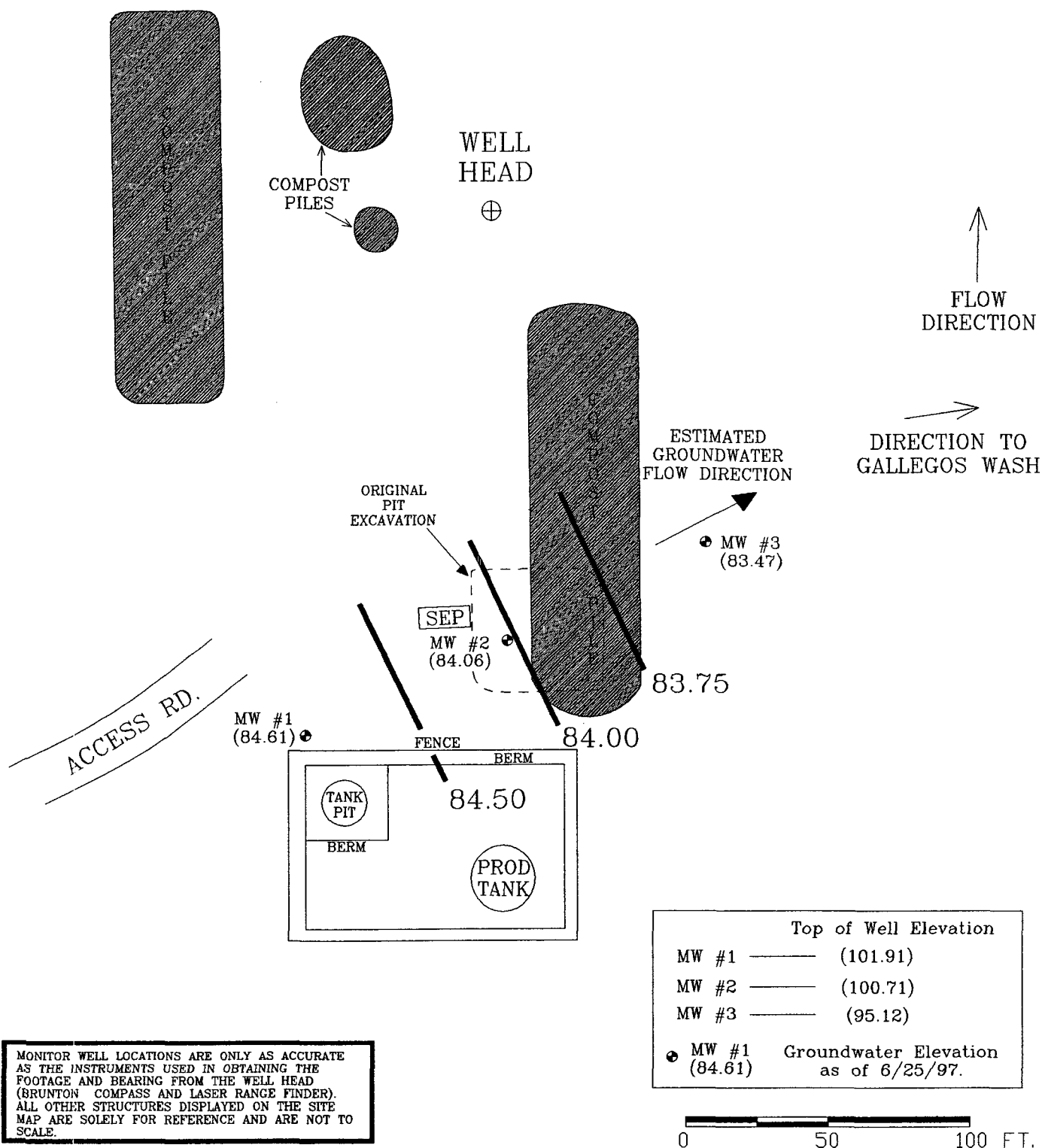
FILENAME: 214-GW

REVISED: 1/18/97 NJV

GROUNDWATER  
GRADIENT  
MAP  
6/96



# FIGURE 3 (2nd 1/4, 1997)



AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W  
SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 632-1199

PROJECT: MW SAMP.

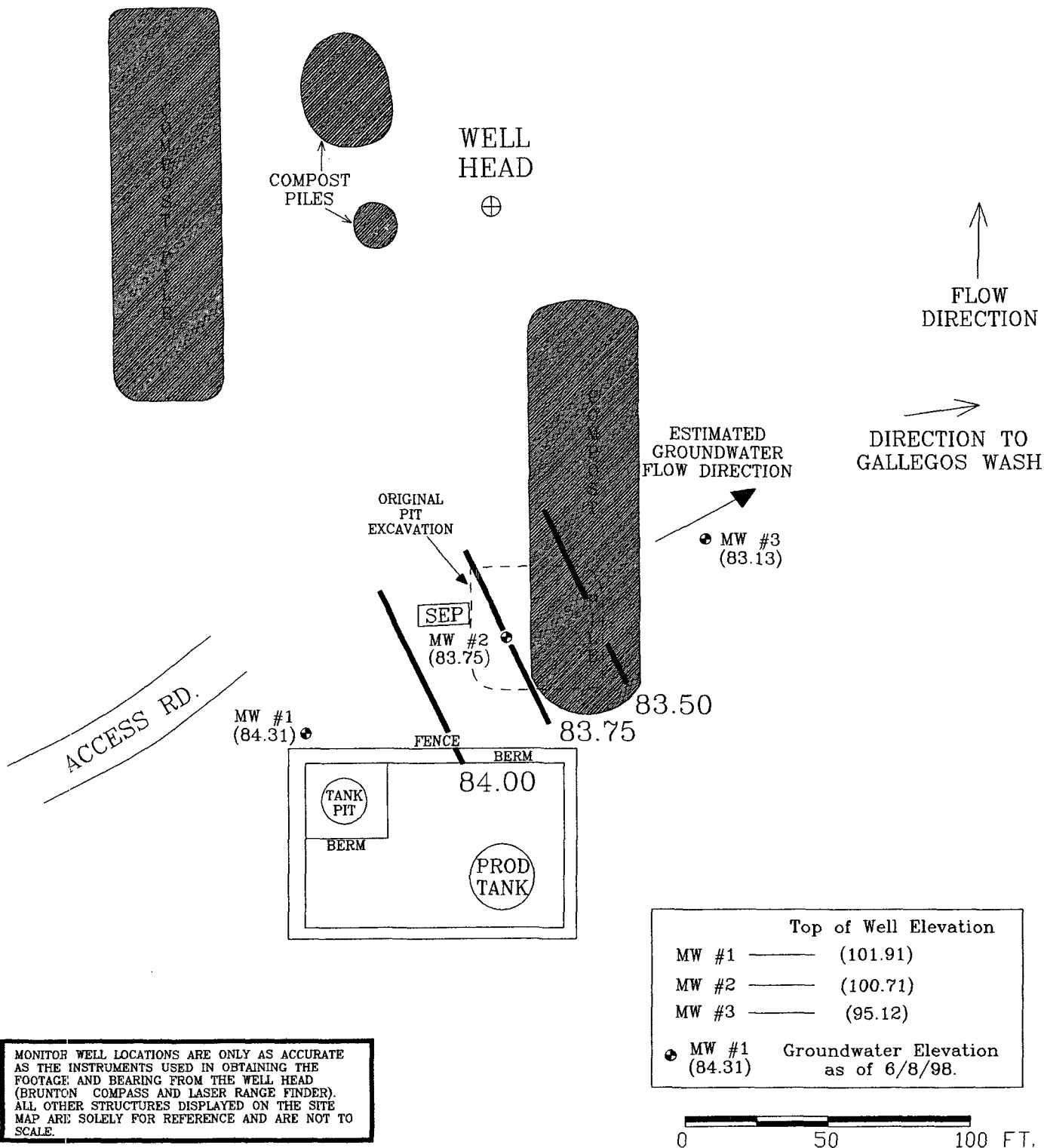
DRAWN BY: NJV

FILENAME: 06-25-97

REVISED: 06-27-97 NJV

GROUNDWATER  
GRADIENT  
MAP  
06/97

# FIGURE 4 (2nd 1/4, 1998)



AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMP.

DRAWN BY: NJV

FILENAME: 06-08-98

REVISED: 06-10-98 NJV

GROUNDWATER

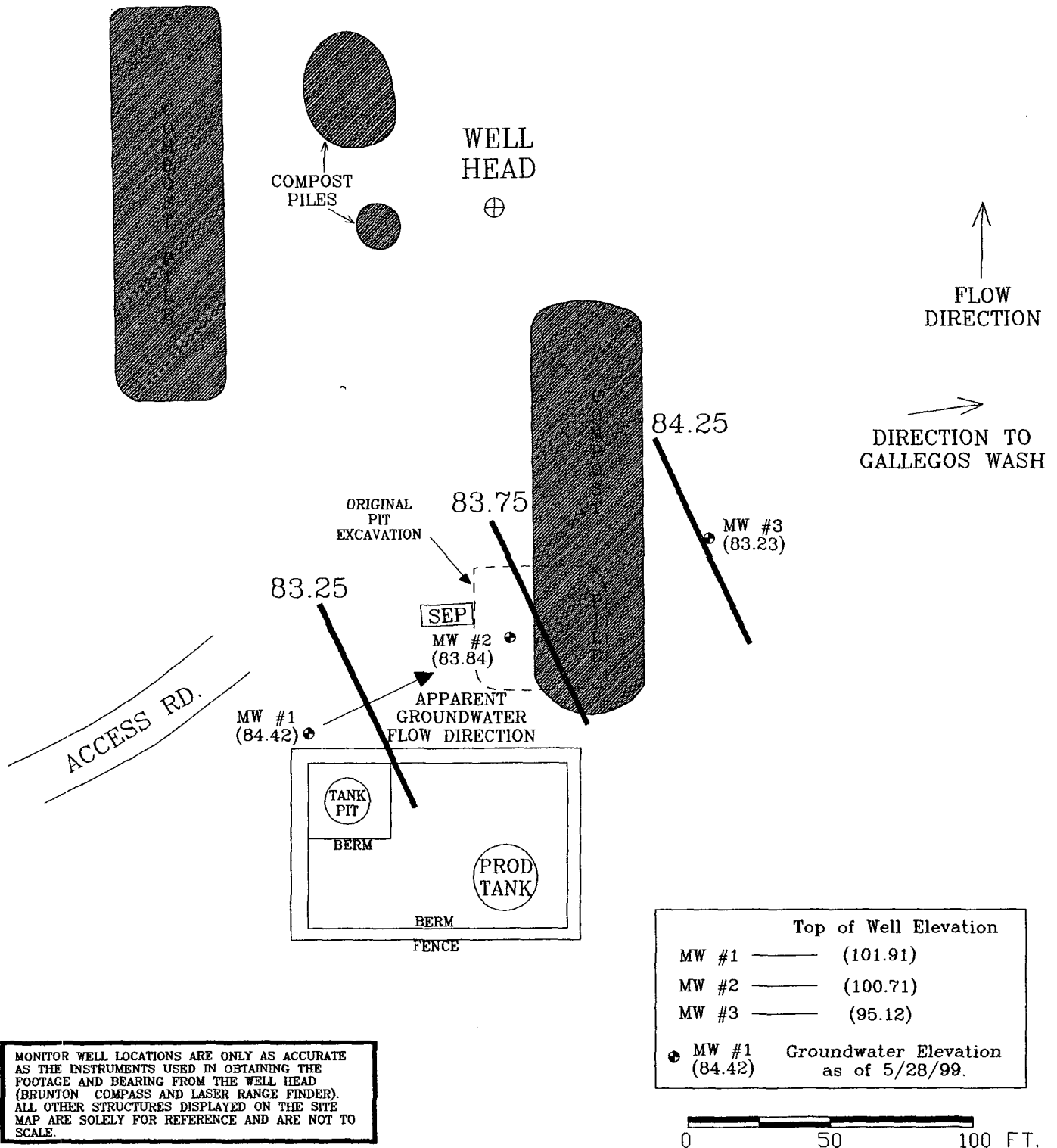
GRADIENT  
MAP

06/98





# FIGURE 5 (2nd 1/4, 1999)



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMP.

DRAWN BY: NJV

FILENAME: 05-28-99

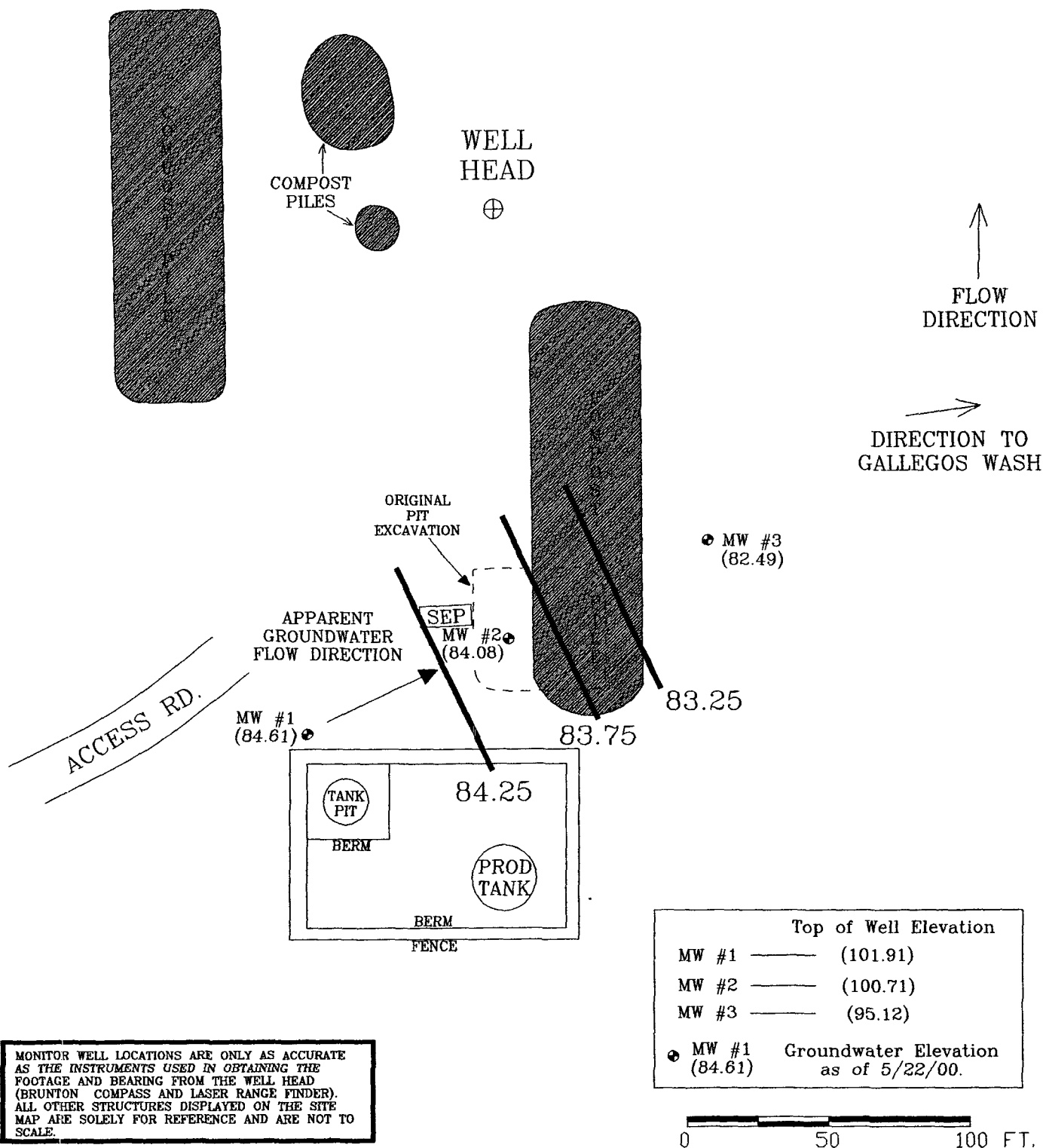
REVISED: 06-06-99 NJV

GROUNDWATER  
GRADIENT

MAP

05/99

# FIGURE 6 (2nd 1/4, 2000)



AMOCO PRODUCTION COMPANY

GCU 214

NW/4 NE/4 SEC. 16, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMP.

DRAWN BY: NJV

FILENAME: 05-22-00

REVISED: 05-31-00 NJV

GROUNDWATER

GRADIENT  
MAP

05/00

# MONITOR WELL #1

AMOCO PRODUCTION COMPANY  
GCU # 214  
MONITOR WELL CONSTRUCTION & COMPLETION  
INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC  
DRAFTED BY: NJV  
DATE: JULY '95  
FILENAME: MW-1

MOSTLY DARK  
YELLOWISH  
ORANGE SAND,  
NON COHESIVE,  
SLIGHTLY MOIST  
TO SATURATED (@  
WATER TABLE),  
FIRM, NO APPARENT  
HC ODOR DETECTED  
PHYSICALLY FROM  
TOP OF WELL  
CASING.

TOC 2.00' A.G.S.

GROUND SURFACE

1.25 INCH SCHEDULE 40 THREADED  
COUPLING PVC CASING

TOS 13.00' B.G.S.

▼ 15.53' 7/10/95

1.25 INCH SCHEDULE 40 THREADED  
COUPLING PVC 0.020 INCH  
SLOTTED SCREEN

TD 18.00' B.G.S.

DRILLING TD 20.00' B.G.S.

|     |   |                      |
|-----|---|----------------------|
| TOC | = | TOP OF CASING        |
| TOS | = | TOP OF SCREEN        |
| TD  | = | TOTAL DEPTH          |
| AGS | = | ABOVE GROUND SURFACE |
| BGS | = | BELOW GROUND SURFACE |

# MONITOR WELL #2

AMOCO PRODUCTION COMPANY

GCU # 214

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JULY '95

FILENAME: MW-2

MOSTLY DARK  
YELLOWISH  
ORANGE SAND TO  
SILTY SAND FROM  
0.0-15.0 FT., LIGHT  
GRAY FROM 15.0-20.0  
FT., NON COHESIVE,  
SLIGHTLY MOIST TO  
SATURATED (@ WATER  
TABLE), FIRM,  
SLIGHT HC ODOR  
DETECTED PHYSICALLY  
FROM TOP OF WELL  
CASING.

TOC 2.20' A.G.S.

GROUND SURFACE

1.25 INCH SCHEDULE 40 THREADED  
COUPLING PVC CASING

TOS 12.80' B.G.S.

▼ 14.73' 7/10/95

1.25 INCH SCHEDULE 40 THREADED  
COUPLING PVC 0.020 INCH  
SLOTTED SCREEN

TD 17.80' B.G.S.

DRILLING TD 20.00' B.G.S.

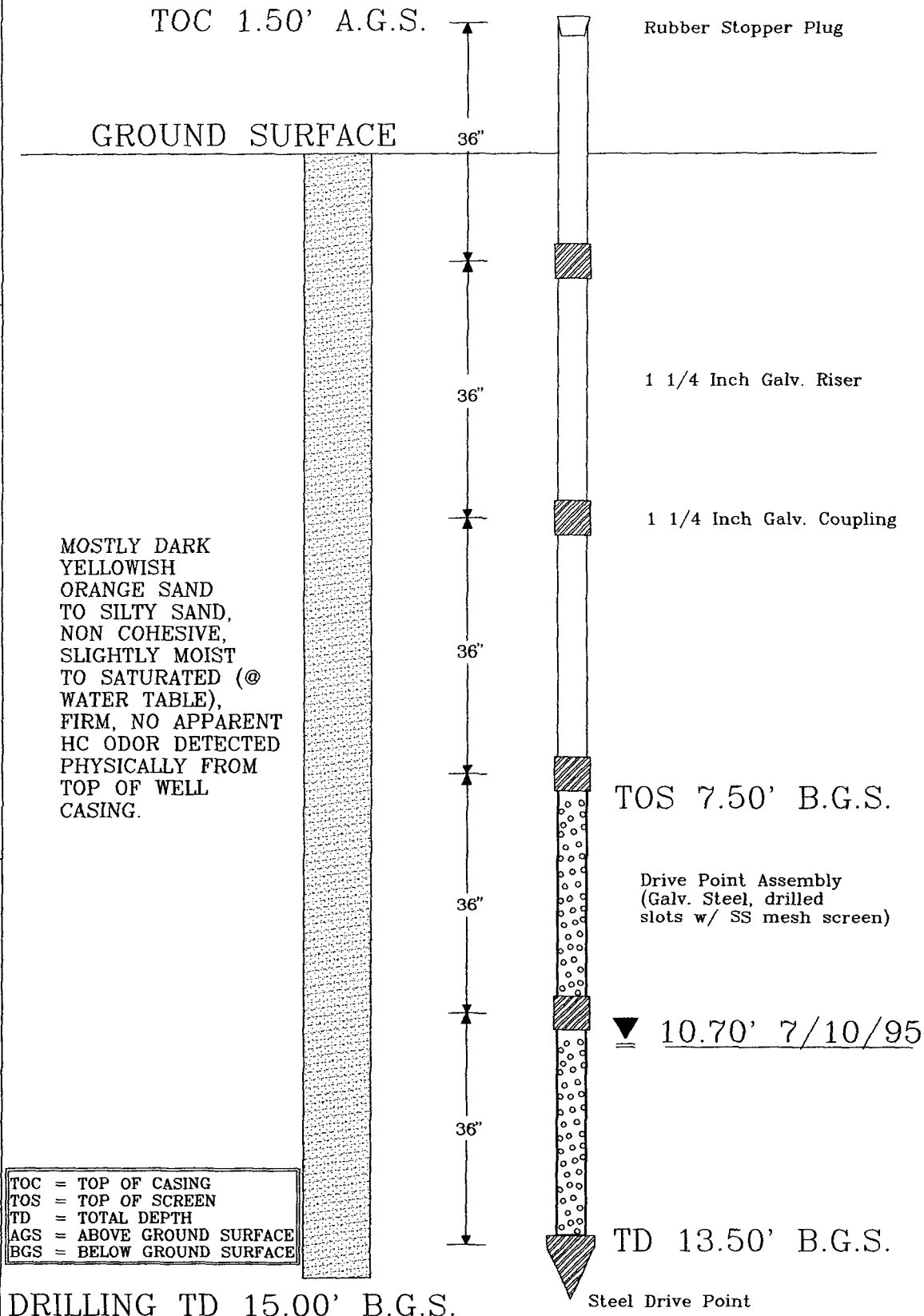
|     |   |                      |
|-----|---|----------------------|
| TOC | = | TOP OF CASING        |
| TOS | = | TOP OF SCREEN        |
| TD  | = | TOTAL DEPTH          |
| AGS | = | ABOVE GROUND SURFACE |
| BGS | = | BELOW GROUND SURFACE |

# WELL POINT #3 (MW-3)

AMOCO PRODUCTION COMPANY  
GCU # 214  
DRIVE POINT MONITOR WELL  
CONSTRUCTION & COMPLETION

BLAGG ENGINEERING, INC.  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC  
DRAFTED BY: NJV  
DATE: JULY '95  
FILENAME: MW-3



# MONITOR WELL QUARTERLY MONITORING DATA

PROJECT NO: \_\_\_\_\_

CHAIN-OF-CUSTODY NO: 0999

PROJECT MANAGER: Pro

SAMPLER:                     P20                    

[illegible]

Note well diameter if not standard 2".

**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: Amoco - GCU 214  
Sample ID: MW - 1  
Lab ID: 1194  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 07/12/95  
Date Sampled: 07/10/95  
Date Received: 07/10/95  
Date Analyzed: 07/11/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 0.30                    | 0.20                      |
| Toluene        | 43.7                    | 5.00                      |
| Ethylbenzene   | 0.64                    | 0.20                      |
| m,p-Xylenes    | 3.29                    | 0.40                      |
| o-Xylene       | 0.74                    | 0.20                      |

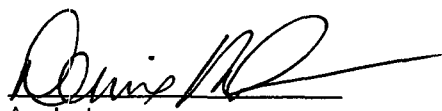
|            |      |
|------------|------|
| Total BTEX | 48.7 |
|------------|------|

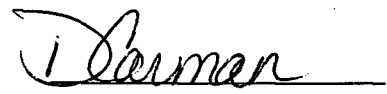
ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 98                      | 88 - 110%                |
|                         | Bromofluorobenzene | 90                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:** Sample contained a large amount of silt.

  
Analyst

  
Review

**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: Amoco - GCU 214  
Sample ID: MW - 2  
Lab ID: 1195  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 07/12/95  
Date Sampled: 07/10/95  
Date Received: 07/10/95  
Date Analyzed: 07/11/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 873                     | 40.0                      |
| Toluene        | 76.3                    | 20.0                      |
| Ethylbenzene   | 345                     | 40.0                      |
| m,p-Xylenes    | 1,590                   | 80.0                      |
| o-Xylene       | 334                     | 40.0                      |

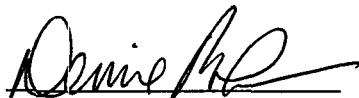
|                   |              |
|-------------------|--------------|
| <b>Total BTEX</b> | <b>3,220</b> |
|-------------------|--------------|

ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 102                     | 88 - 110%                |
|                         | Bromofluorobenzene | 95                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review



**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: Amoco - GCU 214  
Sample ID: MW - 3  
Lab ID: 1196  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 07/12/95  
Date Sampled: 07/10/95  
Date Received: 07/10/95  
Date Analyzed: 07/11/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 0.36                    | 0.20                      |
| Toluene        | 22.8                    | 0.40                      |
| Ethylbenzene   | 0.44                    | 0.20                      |
| m,p-Xylenes    | 1.41                    | 0.40                      |
| o-Xylene       | 0.35                    | 0.20                      |

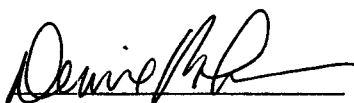
|                   |             |
|-------------------|-------------|
| <b>Total BTEX</b> | <b>25.3</b> |
|-------------------|-------------|

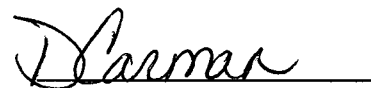
ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 103                     | 88 - 110%                |
|                         | Bromofluorobenzene | 94                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:** Sample contained a large amount of silt.

  
Analyst

  
Review



BLAGG ENGINEERING INC.

MONITOR WELL QUARTERLY MONITORING DATA

DATE: 9-7-95

PROJECT NO: \_\_\_\_\_

CLIENT: AMO CO

CHAIN-OF-CUSTODY NO: 4382

LOCATION: 6CU 214

ENVIRONMENTAL

PROJECT MANAGER: REG

SAMPLER: REG

MONITOR WELL DATA

| WELL # | WELL ELEV. | WATER ELEV. | DTW (FT) | T.D. (FT) | TEM °F | pH  | COND. (uMHO) | BAILS (GAL) | PROD (IN) |
|--------|------------|-------------|----------|-----------|--------|-----|--------------|-------------|-----------|
| MW-1   | —          | —           | 17.27    | 20.00     | 63.7   | 7.8 | 4000         | 4           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
| MW-2   | —          | —           | 16.56    | 20.00     | 64.2   | 8.2 | 4200         | 6           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
| MW-3   | —          | —           | 11.55    | 15.00     | 63.5   | 7.8 | 6000         | 4           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |

Notes: DTW = Depth to water

TD = Total depth

Bailed = Volume of water bailed from well prior to sampling.

Ideally a minimum of 3 well volumes:

1.25" well = 24 oz. per foot of water. (2 bails)

2" well = 0.49 gallons per foot of water.

4" well = 1.95 gallons per foot of water.

Note well diameter if not standard 2".

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Blagg / Amoco | Project #:          | 04034    |
| Sample ID:         | MW - 1        | Date Reported:      | 09-11-95 |
| Chain of Custody:  | 4382          | Date Sampled:       | 09-07-95 |
| Laboratory Number: | 8908          | Date Received:      | 09-08-95 |
| Sample Matrix:     | Water         | Date Analyzed:      | 09-11-95 |
| Preservative:      | HgCl & Cool   | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | ND                      | 1                  | 0.4                     |
| Toluene      | ND                      | 1                  | 0.5                     |
| Ethylbenzene | ND                      | 1                  | 0.5                     |
| p,m-Xylene   | ND                      | 1                  | 0.4                     |
| o-Xylene     | ND                      | 1                  | 0.4                     |

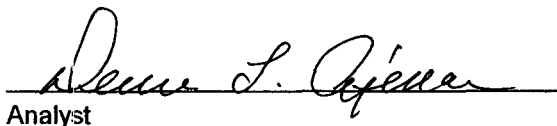
ND - Parameter not detected at the stated detection limit.

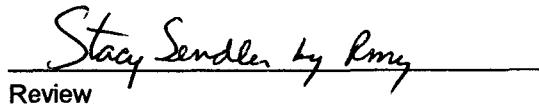
| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 94 %             |
|                       | Bromofluorobenzene | 102 %            |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: GCU 214.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Blagg / Amoco | Project #:          | 04034    |
| Sample ID:         | MW - 2        | Date Reported:      | 09-11-95 |
| Chain of Custody:  | 4382          | Date Sampled:       | 09-07-95 |
| Laboratory Number: | 8909          | Date Received:      | 09-08-95 |
| Sample Matrix:     | Water         | Date Analyzed:      | 09-11-95 |
| Preservative:      | HgCl & Cool   | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | 226                     | 5                  | 2.2                     |
| Toluene      | 9.7                     | 5                  | 2.5                     |
| Ethylbenzene | 91.6                    | 5                  | 2.4                     |
| p,m-Xylene   | 519                     | 5                  | 2.0                     |
| o-Xylene     | 27.6                    | 5                  | 2.2                     |

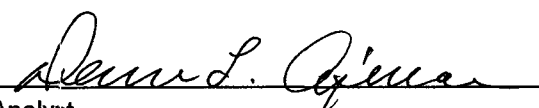
ND - Parameter not detected at the stated detection limit.

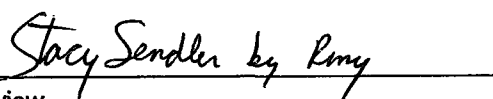
| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 96 %             |
|                       | Bromofluorobenzene | 102 %            |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: GCU 214.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Blagg / Amoco | Project #:          | 04034    |
| Sample ID:         | MW - 3        | Date Reported:      | 09-11-95 |
| Chain of Custody:  | 4382          | Date Sampled:       | 09-07-95 |
| Laboratory Number: | 8910          | Date Received:      | 09-08-95 |
| Sample Matrix:     | Water         | Date Analyzed:      | 09-11-95 |
| Preservative:      | HgCl & Cool   | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | 1.6                     | 1                  | 0.4                     |
| Toluene      | 1.1                     | 1                  | 0.5                     |
| Ethylbenzene | ND                      | 1                  | 0.5                     |
| p,m-Xylene   | 1.0                     | 1                  | 0.4                     |
| o-Xylene     | 0.8                     | 1                  | 0.4                     |

ND - Parameter not detected at the stated detection limit.

| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 95 %             |
|                       | Bromofluorobenzene | 102 %            |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: GCU 214.

  
Analyst

  
Review

## CHAIN OF CUSTODY RECORD

| Client/Project Name                                 |             | Project Location |            | ANALYSIS/PARAMETERS       |                   |      |      |                                                |  |  |      |        |                                 |      |
|-----------------------------------------------------|-------------|------------------|------------|---------------------------|-------------------|------|------|------------------------------------------------|--|--|------|--------|---------------------------------|------|
| BLAGG / Amoco / <i>blagg</i>                        |             | GCC 214          |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
| Sampler: (Signature)<br><i>R. E. O'Neil</i>         |             |                  |            | Chain of Custody Tape No. |                   |      |      |                                                |  |  |      |        |                                 |      |
| Sample No./ Identification                          | Sample Date | Sample Time      | Lab Number | Sample Matrix             | No. of Containers |      |      |                                                |  |  |      |        | Remarks                         |      |
| MW-1                                                | 9-7         | 1345             | 8908       | water                     | 2                 | ✓    |      |                                                |  |  |      |        | PRES. Hg Cl <sub>2</sub> - cool |      |
| MW-2                                                | 9-7         | 1420             | 8909       | "                         | 2                 | ✓    |      |                                                |  |  |      |        | "                               |      |
| MW-3                                                | 9-7         | 1400             | 8910       | "                         | 2                 | ✓    |      |                                                |  |  |      |        | "                               |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
|                                                     |             |                  |            |                           |                   |      |      |                                                |  |  |      |        |                                 |      |
| Relinquished by: (Signature)<br><i>R. E. O'Neil</i> |             |                  |            | Date                      | 9-8-95            | Time | 1430 | Received by: (Signature)<br><i>Walter Span</i> |  |  | Date | 9-8-95 | Time                            | 1430 |
| Relinquished by: (Signature)                        |             |                  |            |                           |                   |      |      | Received by: (Signature)                       |  |  |      |        |                                 |      |
| Relinquished by: (Signature)                        |             |                  |            |                           |                   |      |      | Received by: (Signature)                       |  |  |      |        |                                 |      |

**ENVIROTECH INC.**  
 5796 U.S. Highway 64-3014  
 Farmington, New Mexico 87401  
 (505) 632-0615

**BLAGG ENGINEERING INC.**

**MONITOR WELL QUARTERLY MONITORING DATA**

DATE: 12-6-95 PROJECT NO: \_\_\_\_\_

CLIENT: Amoco CHAIN-OF-CUSTODY NO: \_\_\_\_\_

LOCATION: 6C4 214

PROJECT MANAGER: Red SAMPLER: Red

**MONITOR WELL DATA**

| WELL # | WELL ELEV. | WATER ELEV. | DTW (FT) | T.D. (FT) | TEM °F | pH  | COND. (uMHO) | BAILS (GAL) | PROD (IN) |
|--------|------------|-------------|----------|-----------|--------|-----|--------------|-------------|-----------|
| MW-1   | —          | —           | 17.96    | 20.00     | 59.3   | 7.5 | 3200         | 3           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
| MW-2   | —          | —           | 17.60    | 20.00     | 61.7   | 8.0 | 5500         | 5           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
| MW-3   | —          | —           | 12.60    | 15.00     | 60.3   | 7.6 | 5700         | 3           | —         |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |
|        |            |             |          |           |        |     |              |             |           |

Notes: DTW = Depth to water

TD = Total depth

Bailed = Volume of water bailed from well prior to sampling.

Ideally a minimum of 3 well volumes:

1.25" well = 24 oz. per foot of water. (2 bails)

2" well = 0.49 gallons per foot of water.

4" well = 1.95 gallons per foot of water.

Note well diameter if not standard 2".



**PURGEABLE AROMATICS**

**Blagg Engineering, Inc.**

Project ID: Amoco/GCU 214  
Sample ID: MW - 1  
Lab ID: 2092  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 12/20/95  
Date Sampled: 12/06/95  
Date Received: 12/06/95  
Date Analyzed: 12/14/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.20                      |
| Toluene        | ND                      | 0.20                      |
| Ethylbenzene   | ND                      | 0.20                      |
| m,p-Xylenes    | ND                      | 0.40                      |
| o-Xylene       | ND                      | 0.20                      |

|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

ND - Analyte not detected at the stated detection limit.

|                         |                  |                         |                          |
|-------------------------|------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene | 98                      | 88 - 110%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: Amoco/GCU 214  
Sample ID: MW - 2  
Lab ID: 2093  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 12/20/95  
Date Sampled: 12/06/95  
Date Received: 12/06/95  
Date Analyzed: 12/14/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 421                     | 100                       |
| Toluene        | 3.97                    | 2.00                      |
| Ethylbenzene   | 30.1                    | 2.00                      |
| m,p-Xylenes    | 89.9                    | 4.00                      |
| o-Xylene       | 10.1                    | 2.00                      |

|            |     |
|------------|-----|
| Total BTEX | 555 |
|------------|-----|

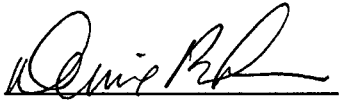
ND - Analyte not detected at the stated detection limit.

|                         |                  |                         |                          |
|-------------------------|------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene | 103                     | 88 - 110%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

**PURGEABLE AROMATICS**

**Blagg Engineering, Inc.**

Project ID: Amoco/GCU 214  
Sample ID: MW - 3  
Lab ID: 2094  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 12/20/95  
Date Sampled: 12/06/95  
Date Received: 12/06/95  
Date Analyzed: 12/14/95

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.20                      |
| Toluene        | ND                      | 0.20                      |
| Ethylbenzene   | ND                      | 0.20                      |
| m,p-Xylenes    | ND                      | 0.40                      |
| o-Xylene       | ND                      | 0.20                      |

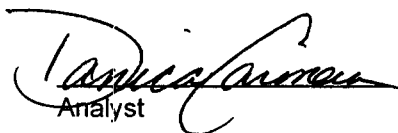
|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

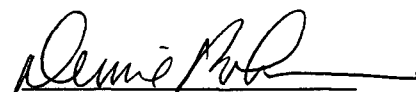
ND - Analyte not detected at the stated detection limit.

**Quality Control:**      Surrogate                      Percent Recovery                      Acceptance Limits  
Trifluorotoluene                      99                      88 - 110%

**Reference:**                      Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209,  
Oct. 1984.

**Comments:**

  
Analyst

  
Review

**ENVIRONMENTAL LABORATORY**  
807 S. CARLTON • FARMINGTON, NM 87401 • (505) 326-2395

## CHAIN OF CUSTODY

**PROJECT MANAGER:**

Analytica Lab I.D.:

**Company:**

**Address:**

**Phone:**

**Fax:**

**Bill To:**

**Company:**

**Address:**

| Sample ID | Date | Time | Matrix | Lab ID |
|-----------|------|------|--------|--------|
| MW #1     | 12-6 | 1350 | wmr    |        |
| MW #2     | 12-6 | 1420 | "      |        |
| MW #3     | 12-6 | 1330 | "      |        |
|           |      |      |        |        |
|           |      |      |        |        |
|           |      |      |        |        |
|           |      |      |        |        |
|           |      |      |        |        |
|           |      |      |        |        |
|           |      |      |        |        |

| Project Information                                              |                           | Sample Receipt |
|------------------------------------------------------------------|---------------------------|----------------|
| Proj. #: AMOCo                                                   | No. Containers:           |                |
| Proj. Name: 6C4 Z14                                              | Custody Seals: Y / N / NA |                |
| P.O. No.                                                         | Received Intact:          |                |
| Shipped Via: DEL'D                                               | Received Cold:            |                |
| Required Turnaround Time (Prior Authorization Required for Rush) |                           |                |

[illegible]

MONITOR WELL QUARTERLY MONITORING DATA

PROJECT NO: \_\_\_\_\_

CHAIN-OF-CUSTODY NO: ANALUTCA

PROJECT MANAGER:                     PFO                    

SAMPLER: REG

[illegible]

Ideally a minimum of 3 well volumes:

= 2 bails per foot - small teflon bailer

= 3 bails per foot - 3/4" disposable bailer

2" well = 0.49 gallons per foot of water.

4" well = 1.95 gallons per foot of water.

Note well diameter if not standard 2".



## PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample ID: MW - 1  
Lab ID: 2936  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 03/25/96  
Date Sampled: 03/18/96  
Date Received: 03/18/96  
Date Analyzed: 03/20/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

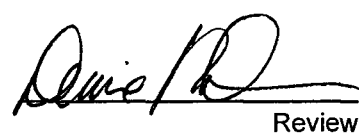
ND - Analyte not detected at the stated detection limit.

|                         |                  |                         |                          |
|-------------------------|------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene | 97                      | 88 - 110%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review



## PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample ID: MW - 2  
Lab ID: 2937  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 03/25/96  
Date Sampled: 03/18/96  
Date Received: 03/18/96  
Date Analyzed: 03/20/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 115                     | 5.00                      |
| Toluene        | ND                      | 5.00                      |
| Ethylbenzene   | ND                      | 5.00                      |
| m,p-Xylenes    | ND                      | 10.0                      |
| o-Xylene       | ND                      | 5.00                      |

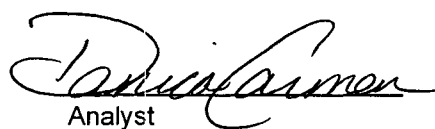
|            |     |
|------------|-----|
| Total BTEX | 115 |
|------------|-----|

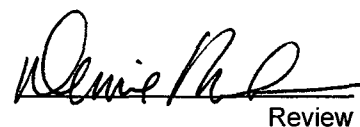
ND - Analyte not detected at the stated detection limit.

|                         |                  |                         |                          |
|-------------------------|------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene | 103                     | 88 - 110%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review



## PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample ID: MW - 3  
Lab ID: 2938  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 03/25/96  
Date Sampled: 03/18/96  
Date Received: 03/18/96  
Date Analyzed: 03/20/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

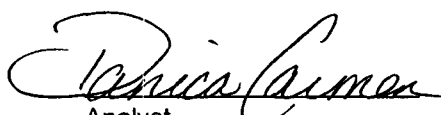
|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

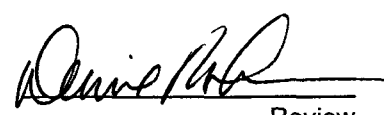
ND - Analyte not detected at the stated detection limit.

Quality Control: Surrogate      Percent Recovery      Acceptance Limits  
Trifluorotoluene      101      88 - 110%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209,  
Oct. 1984.

Comments:

  
Analyst

  
Review





March 27, 1996

Bob O'Neill  
Blagg Engineering, Inc.  
PO Box 87  
Bloomfield, NM 87413

Dear Mr. O'Neill:

Enclosed are the results for the analysis of the aqueous samples received on March 18, 1996, from the Amoco GCU 214 site. The samples were received cool and intact. Analysis for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) was performed on the samples, as per the chain of custody.

Analysis was performed on the samples according to EPA Method 602, using a Hewlett-Packard 5890 gas chromatograph equipped with an OI Analytical purge and trap (model 4560) and a photoionization detector. Detectable levels of btx analytes found in the samples are reported.

Quality control reports appear at the end of the analytical package and can be identified by title. Should you have any questions regarding the analysis, feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Denise A. Bohemier".

Denise A. Bohemier  
Lab Director

# PURGEABLE AROMATICS

## Quality Control Report

### Method Blank Analysis

Sample Matrix: Water  
Lab ID: MB35144

Report Date: 03/25/96  
Date Analyzed: 03/20/96

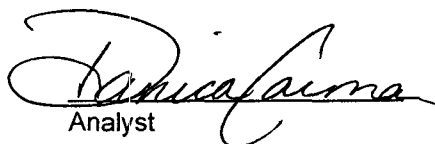
| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

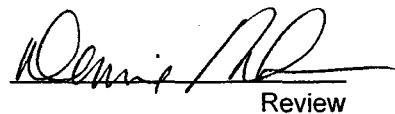
ND - Analyte not detected at the stated detection limit.

|                         |                  |                         |                          |
|-------------------------|------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene | 100                     | 88 - 110%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209,  
Oct. 1984.

**Comments:**

  
Analyst

  
Review

## Purgeable Aromatics

### Duplicate Analysis

Lab ID: 2937Dup  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 03/25/96  
Date Sampled: 03/18/96  
Date Received: 03/18/96  
Date Analyzed: 03/20/96

| Target Analyte | Original Conc.<br>(ug/L) | Duplicate Conc.<br>(ug/L) | Acceptance<br>Range (ug/L) |
|----------------|--------------------------|---------------------------|----------------------------|
| Benzene        | 115                      | 117                       | 94.1 - 138.3               |
| Toluene        | ND                       | ND                        | NA                         |
| Ethylbenzene   | ND                       | ND                        | NA                         |
| m,p-Xylenes    | ND                       | ND                        | NE                         |
| o-Xylene       | ND                       | ND                        | NE                         |

ND - Analyte not detected at the stated detection limit.

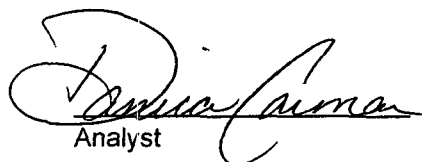
NA - Not applicable or not calculated.

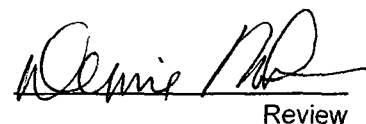
NE - Duplicate acceptance range not established by the EPA.

|                  |                  |                         |                          |
|------------------|------------------|-------------------------|--------------------------|
|                  | <u>Surrogate</u> | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
| Quality Control: | Trifluorotoluene | 101                     | 88 - 110%                |

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

  
Analyst

  
Review

## Purgeable Aromatics

### Matrix Spike Analysis

Lab ID: 2942Spk  
Sample Matrix: Water  
Preservative: Cool  
Condition: Intact

Report Date: 03/25/96  
Date Sampled: 03/18/96  
Date Received: 03/18/96  
Date Analyzed: 03/20/96

| Target Analyte | Spike Added (ug/L) | Original Conc. (ug/L) | Spiked Sample Conc. (ug/L) | % Recovery | Acceptance Limits (%) |
|----------------|--------------------|-----------------------|----------------------------|------------|-----------------------|
| Benzene        | 10                 | ND                    | 10.4                       | 104%       | 39 - 150              |
| Toluene        | 10                 | ND                    | 10.3                       | 102%       | 46 - 148              |
| Ethylbenzene   | 10                 | ND                    | 10.4                       | 103%       | 32 - 160              |
| m,p-Xylenes    | 20                 | ND                    | 20.7                       | 102%       | NE                    |
| o-Xylene       | 10                 | ND                    | 10.4                       | 103%       | NE                    |

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

NE - Spike acceptance range not established by the EPA.

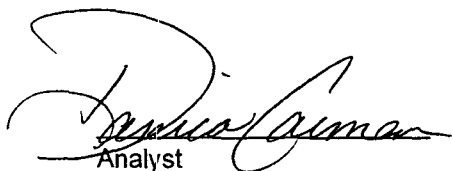
Quality Control: Surrogate  
Trifluorotoluene

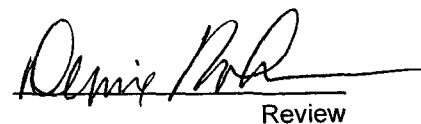
Percent Recovery  
98

Acceptance Limits  
88 - 110%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

  
Analyst

  
Review

## ENVIRONMENTAL LABORATORY

**PROJECT MANAGER:**  
Analytica Lab I.D.:

Bill To:  
Company:  
Address:

SALINE

| Sample ID                                                        | Date    | Time | Matrix                    | Lab ID |
|------------------------------------------------------------------|---------|------|---------------------------|--------|
| MW-1                                                             | 3-18    | 0920 | WATER                     |        |
| MW-2                                                             | 3-18    | 0940 | "                         |        |
| MW-3                                                             | 3-18    | 0950 | "                         |        |
|                                                                  |         |      |                           |        |
|                                                                  |         |      |                           |        |
|                                                                  |         |      |                           |        |
|                                                                  |         |      |                           |        |
| Project Information                                              |         |      | Sample Receipt            |        |
| Proj. #:                                                         | AMOC    |      | No. Containers:           |        |
| Proj. Name:                                                      | GCY 214 |      | Custody Seals: Y / N / NA |        |
| P. O. No:                                                        |         |      | Received Intact:          |        |
| Shipped Via:                                                     | DELTA   |      | Received Cold:            |        |
| Required Turnaround Time (Prior Authorization Required for Rush) |         |      |                           |        |

## Page 1 of 1

[illegible]

MONITOR WELL QUARTERLY MONITORING DATA

PROJECT NO: \_\_\_\_\_

CHAIN-OF-CUSTODY NO: AMALTS

PROJECT MANAGER: PEO

SAMPLER:                      *DE*

[illegible]

Ideally a minimum of 3 well volumes:

= 2 bails per foot - small teflon bailer

= 3 bails per foot - 3/4" disposable bailer

2" well = 0.49 gallons per foot of water.

4" well = 1.95 gallons per foot of water.

Note well diameter if not standard 2".

**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample ID: MW - 1  
Lab ID: 3782  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 06/12/96  
Date Sampled: 06/04/96  
Date Received: 06/05/96  
Date Analyzed: 06/11/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

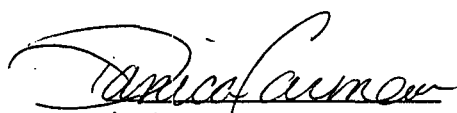
|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 89                      | 88 - 110%                |
|                         | Bromofluorobenzene | 91                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

**PURGEABLE AROMATICS****Blagg Engineering, Inc.**

Project ID: GCU 214  
Sample ID: MW - 2  
Lab ID: 3783  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 06/12/96  
Date Sampled: 06/04/96  
Date Received: 06/05/96  
Date Analyzed: 06/11/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | 175                     | 5.00                      |
| Toluene        | ND                      | 5.00                      |
| Ethylbenzene   | ND                      | 5.00                      |
| m,p-Xylenes    | ND                      | 10.0                      |
| o-Xylene       | 7.06                    | 5.00                      |

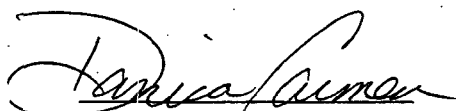
|            |     |
|------------|-----|
| Total BTEX | 190 |
|------------|-----|

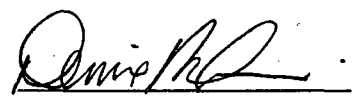
ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 99                      | 88 - 110%                |
|                         | Bromofluorobenzene | 98                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review



**PURGEABLE AROMATICS**

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample ID: MW - 3  
Lab ID: 3784  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 06/12/96  
Date Sampled: 06/04/96  
Date Received: 06/05/96  
Date Analyzed: 06/11/96

| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

|            |    |
|------------|----|
| Total BTEX | ND |
|------------|----|

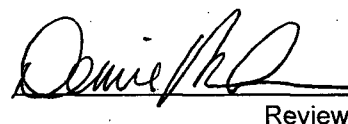
ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 96                      | 88 - 110%                |
|                         | Bromofluorobenzene | 95                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review



June 12, 1996

Bob O'Neill  
Blagg Engineering, Inc.  
PO Box 87  
Bloomfield, NM 87413

Dear Mr. O'Neill:

Enclosed are the results for the analysis of the samples received June 5, 1996. The samples were from the GCU 214 site. Analysis for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) was performed on the sample as per the accompanying chain of custody form.

Analysis was performed on the sample according to EPA Method 602, using a Hewlett-Packard 5890 gas chromatograph equipped with an OI Analytical purge and trap (model 4560) and a photoionization detector. Detectable levels of btx analytes were found in one of the samples, as reported.

Quality control reports appear at the end of the analytical package and can be identified by title. Should you have any questions regarding the analysis, feel free to call.

Sincerely,



Denise A. Bohemier  
Lab Director

# PURGEABLE AROMATICS

## Quality Control Report

### Method Blank Analysis

Sample Matrix: Water  
Lab ID: MB35227

Report Date: 06/12/96  
Date Analyzed: 06/11/96

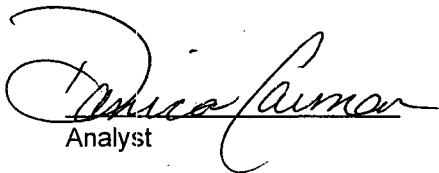
| Target Analyte | Concentration<br>(ug/L) | Detection Limit<br>(ug/L) |
|----------------|-------------------------|---------------------------|
| Benzene        | ND                      | 0.50                      |
| Toluene        | ND                      | 0.50                      |
| Ethylbenzene   | ND                      | 0.50                      |
| m,p-Xylenes    | ND                      | 1.00                      |
| o-Xylene       | ND                      | 0.50                      |

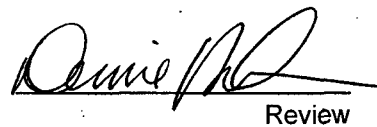
ND - Analyte not detected at the stated detection limit.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 99                      | 88 - 110%                |
|                         | Bromofluorobenzene | 100                     | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

## Purgeable Aromatics

### Duplicate Analysis

Lab ID: 3783Dup  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 06/12/96  
Date Sampled: 06/04/96  
Date Received: 06/05/96  
Date Analyzed: 06/11/96

| Target Analyte | Original Conc.<br>(ug/L) | Duplicate Conc.<br>(ug/L) | Acceptance<br>Range (ug/L) |
|----------------|--------------------------|---------------------------|----------------------------|
| Benzene        | 175                      | 169                       | 140 - 204                  |
| Toluene        | ND                       | ND                        | NA                         |
| Ethylbenzene   | ND                       | ND                        | NA                         |
| m,p-Xylenes    | ND                       | ND                        | NE                         |
| o-Xylene       | 7.06                     | 7.98                      | NE                         |

ND - Analyte not detected at the stated detection limit.

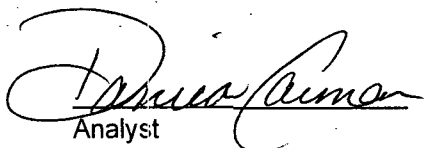
NA - Not applicable or not calculated.

NE - Duplicate acceptance range not established by the EPA.

|                         | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | Trifluorotoluene   | 101                     | 88 - 110%                |
|                         | Bromofluorobenzene | 101                     | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

## Purgeable Aromatics

### Matrix Spike Analysis

Lab ID: 3784Spk  
Sample Matrix: Water  
Preservative: Cool, HgCl<sub>2</sub>  
Condition: Intact

Report Date: 06/12/96  
Date Sampled: 06/04/96  
Date Received: 06/05/96  
Date Analyzed: 06/11/96

| Target Analyte | Spike Added<br>(ug/L) | Original Conc.<br>(ug/L) | Spiked Sample<br>Conc. (ug/L) | % Recovery | Acceptance<br>Limits (%) |
|----------------|-----------------------|--------------------------|-------------------------------|------------|--------------------------|
| Benzene        | 10                    | ND                       | 9.55                          | 95%        | 39 - 150                 |
| Toluene        | 10                    | ND                       | 9.63                          | 95%        | 46 - 148                 |
| Ethylbenzene   | 10                    | ND                       | 9.57                          | 96%        | 32 - 160                 |
| m,p-Xylenes    | 20                    | ND                       | 19.1                          | 95%        | NE                       |
| o-Xylene       | 10                    | ND                       | 9.54                          | 95%        | NE                       |

ND - Analyte not detected at the stated detection limit.

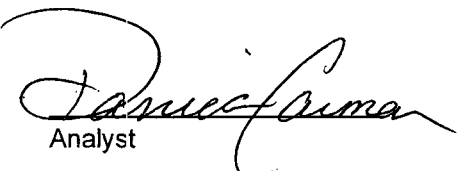
NA - Not applicable or not calculated.

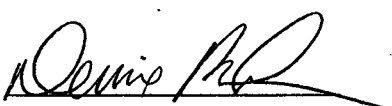
NE - Spike acceptance range not established by the EPA.

|                         |                    |                         |                          |
|-------------------------|--------------------|-------------------------|--------------------------|
| <b>Quality Control:</b> | <u>Surrogate</u>   | <u>Percent Recovery</u> | <u>Acceptance Limits</u> |
|                         | Trifluorotoluene   | 90                      | 88 - 110%                |
|                         | Bromofluorobenzene | 92                      | 86 - 115%                |

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

## CHAIN OF CUSTODY

[illegible]

| Sample ID                                                        | Date  | Time | Matrix | Lab ID                    |
|------------------------------------------------------------------|-------|------|--------|---------------------------|
| MW-1                                                             | 6-4   | 0845 | water  |                           |
| MW-2                                                             | "     | 0905 | "      |                           |
| MW-3                                                             | "     | 0920 | "      |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
|                                                                  |       |      |        |                           |
| Project Information                                              |       |      |        | Sample Receipt            |
| Proj. #:                                                         |       |      |        | No. Containers:           |
| Proj. Name:                                                      | Amoco |      |        | Custody Seals: Y / N / NA |
| P.O. No.:                                                        |       |      |        | Received Intact:          |
| Shipped-Via:                                                     | DEL'D |      |        | Received Cold:            |
| Required Turnaround Time (Prior Authorization Required for Rush) |       |      |        |                           |
| GCA 214                                                          |       |      |        |                           |

**PROJECT MANAGER:**  
Analytica Lab I.D.:

---

**Company:** BLA66  
**Address:**

---

**Phone:** 632-1199  
**Fax:**

---

**Bill To:** SAME  
**Company:**  
**Address:**

---

**ENVIRONMENTAL LABORATORY**  
807 S. CARLTON • FARMINGTON, NM 87401 • (505) 326-2395

**BLAGG ENGINEERING, INC.****MONITOR WELL SAMPLING DATA**CLIENT : AMOCO PRODUCTION CO.CHAIN-OF-CUSTODY # : 5119

|                                                          |
|----------------------------------------------------------|
| GCU # 214 - SEPARATOR PIT<br>UNIT B, SEC. 16, T28N, R12W |
|----------------------------------------------------------|

LABORATORY (S) USED : ENVIROTECH, INC.Date : June 25, 1997SAMPLER : NJVFilename : 06-25-97.WK3PROJECT MANAGER : NJV

| WELL<br># | WELL<br>ELEV.<br>(ft) | WATER<br>ELEV.<br>(ft) | DEPTH TO<br>WATER<br>(ft) | TOTAL<br>DEPTH<br>(ft) | SAMPLING<br>TIME | pH  | CONDUCT<br>(umhos) | VOLUME<br>PURGED<br>(gal.) | FREE<br>PRODUCT<br>(ft) |
|-----------|-----------------------|------------------------|---------------------------|------------------------|------------------|-----|--------------------|----------------------------|-------------------------|
| 1         | 101.91                | 84.61                  | 17.30                     | —                      | —                | —   | —                  | —                          | —                       |
| 2         | 100.71                | 84.06                  | 16.65                     | 20.00                  | 0845             | 8.2 | 3,000              | 0.75                       | —                       |
| 3         | 95.12                 | 83.47                  | 11.65                     | —                      | —                | —   | —                  | —                          | —                       |

NOTES : Volume of water purged from well prior to sampling;  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .(i.e. 2" MW  $r = (1/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .) (i.e. 4" MW  $r = (2/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot — small teflon bailer.

3 bails per foot — 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".Collected BTEX samples for MW # 2 only .

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

|                    |                          |                     |          |
|--------------------|--------------------------|---------------------|----------|
| Client:            | Blagg / Amoco            | Project #:          | 04034-10 |
| Sample ID:         | MW #2                    | Date Reported:      | 06-27-97 |
| Chain of Custody:  | 5119                     | Date Sampled:       | 06-25-97 |
| Laboratory Number: | B511                     | Date Received:      | 06-25-97 |
| Sample Matrix:     | Water                    | Date Analyzed:      | 06-26-97 |
| Preservative:      | HgCl <sub>2</sub> & Cool | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact            |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | 164                     | 1                  | 0.2                     |
| Toluene      | 0.6                     | 1                  | 0.2                     |
| Ethylbenzene | 59.0                    | 1                  | 0.2                     |
| p,m-Xylene   | 34.4                    | 1                  | 0.2                     |
| o-Xylene     | 0.7                     | 1                  | 0.1                     |
| Total BTEX   | 259                     |                    |                         |

ND - Parameter not detected at the stated detection limit.

| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 100 %            |
|                       | Bromofluorobenzene | 100 %            |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: GCU #214.

  
Analyst

  
Review





# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

**QUALITY ASSURANCE / QUALITY CONTROL**

**DOCUMENTATION**

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

|                    |                  |                     |          |
|--------------------|------------------|---------------------|----------|
| Client:            | QA/QC            | Project #:          | N/A      |
| Sample ID:         | Laboratory Blank | Date Reported:      | 06-27-97 |
| Laboratory Number: | 06-26-BTEX.BLANK | Date Sampled:       | N/A      |
| Sample Matrix:     | Water            | Date Received:      | N/A      |
| Preservative:      | N/A              | Date Analyzed:      | 06-26-97 |
| Condition:         | N/A              | Analysis Requested: | BTEX     |

| Parameter    | Concentration<br>(ug/L) | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|-------------------------|
| Benzene      | ND                      | 0.2                     |
| Toluene      | ND                      | 0.2                     |
| Ethylbenzene | ND                      | 0.2                     |
| p,m-Xylene   | ND                      | 0.2                     |
| o-Xylene     | ND                      | 0.1                     |

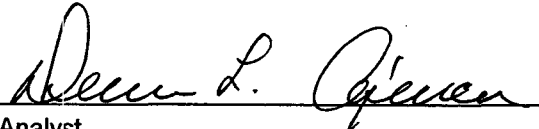
ND - Parameter not detected at the stated detection limit.

| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 100 %            |
|                       | Bromofluorobenzene | 100 %            |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: QA/QC for samples B511 - B520.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

|                    |                  |                     |           |
|--------------------|------------------|---------------------|-----------|
| Client:            | QA/QC            | Project #:          | N/A       |
| Sample ID:         | Matrix Duplicate | Date Reported:      | 06-27-97  |
| Laboratory Number: | B511             | Date Sampled:       | N/A       |
| Sample Matrix:     | Water            | Date Received:      | N/A       |
| Preservative:      | HgCl and Cool    | Date Analyzed:      | 06-26-97  |
| Condition:         | Cool and Intact  | Analysis Requested: | BTEX-8020 |

| Parameter    | Sample Result<br>(ug/L) | Duplicate Result<br>(ug/L) | Percent Diff. | Det. Limit<br>(ug/L) | Dilution Factor |
|--------------|-------------------------|----------------------------|---------------|----------------------|-----------------|
| Benzene      | 164                     | 164                        | 0.0%          | 0.2                  | 1               |
| Toluene      | 0.6                     | 0.6                        | 0.0%          | 0.2                  | 1               |
| Ethylbenzene | 59.0                    | 58.5                       | 0.8%          | 0.2                  | 1               |
| p,m-Xylene   | 34.4                    | 34.4                       | 0.0%          | 0.2                  | 1               |
| o-Xylene     | 0.7                     | 0.7                        | 0.0%          | 0.1                  | 1               |

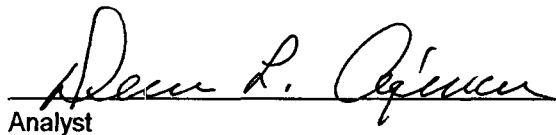
ND - Parameter not detected at the stated detection limit.

| QA/QC Acceptance Criteria: | Parameter      | Maximum Difference |
|----------------------------|----------------|--------------------|
|                            | 8020 Compounds | 30 %               |

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: QA/QC for samples B511 - B520.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client: QA/QC  
Sample ID: Matrix Spike  
Laboratory Number: B511  
Sample Matrix: Water  
Preservative: Cool  
Condition: Cool and Intact

Project #: N/A  
Date Reported: 06-27-97  
Date Sampled: N/A  
Date Received: N/A  
Date Analyzed: 06-26-97

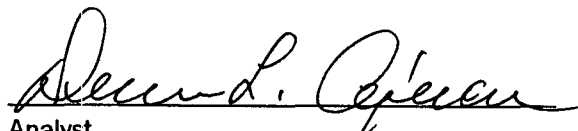
| Parameter    | Sample Result<br>(ug/L) | Spike Added<br>(ug/L) | Spiked Sample Result<br>(ug/L) | Det. Limit<br>(ug/L) | Percent Recovery | SW-846<br>% Rec. Accept. Range |
|--------------|-------------------------|-----------------------|--------------------------------|----------------------|------------------|--------------------------------|
| Benzene      | 164                     | 50.0                  | 214                            | 0.2                  | 100%             | 39-150                         |
| Toluene      | 0.6                     | 50.0                  | 50.4                           | 0.2                  | 100%             | 46-148                         |
| Ethylbenzene | 59.0                    | 50.0                  | 110                            | 0.2                  | 101%             | 32-160                         |
| p,m-Xylene   | 34.4                    | 100                   | 134                            | 0.2                  | 100%             | 46-148                         |
| o-Xylene     | 0.7                     | 50.0                  | 50.9                           | 0.1                  | 100%             | 46-148                         |

ND - Parameter not detected at the stated detection limit.

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: QA/QC for samples B511 - B520.

  
Analyst

  
Review

**BLAGG ENGINEERING, INC.****MONITOR WELL SAMPLING DATA**CLIENT : AMOCO PRODUCTION CO.CHAIN-OF-CUSTODY # : 6015

GCU # 214 - SEPARATOR PIT  
UNIT B, SEC. 16, T28N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.Date : June 8, 1998SAMPLER : N J VFilename : 06-08-98.WK4PROJECT MANAGER : N J V

| WELL<br># | WELL<br>ELEV.<br>(ft) | WATER<br>ELEV.<br>(ft) | DEPTH TO<br>WATER<br>(ft) | TOTAL<br>DEPTH<br>(ft) | SAMPLING<br>TIME | pH  | CONDUCT<br>(umhos) | VOLUME<br>PURGED<br>(gal.) | FREE<br>PRODUCT<br>(ft) |
|-----------|-----------------------|------------------------|---------------------------|------------------------|------------------|-----|--------------------|----------------------------|-------------------------|
| 1         | 101.91                | 84.31                  | 17.60                     | -                      | -                | -   | -                  | -                          | -                       |
| 2         | 100.71                | 83.75                  | 16.96                     | 20.00                  | 1100             | 7.2 | 3,300              | 0.60                       | -                       |
| 3         | 95.12                 | 83.13                  | 11.99                     | -                      | -                | -   | -                  | -                          | -                       |

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .(i.e. 2" MW  $r = (1/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .) (i.e. 4" MW  $r = (2/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".WELL #2 = 1.25" well point . Collected BTEX samples for MW #2 only .

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

|                    |                          |                     |          |
|--------------------|--------------------------|---------------------|----------|
| Client:            | Blagg / AMOCO            | Project #:          | 04034-10 |
| Sample ID:         | MW #2                    | Date Reported:      | 06-09-98 |
| Chain of Custody:  | 6015                     | Date Sampled:       | 06-08-98 |
| Laboratory Number: | D362                     | Date Received:      | 06-08-98 |
| Sample Matrix:     | Water                    | Date Analyzed:      | 06-09-98 |
| Preservative:      | HgCl <sub>2</sub> & Cool | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact            |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | 236                     | 1                  | 0.2                     |
| Toluene      | 7.6                     | 1                  | 0.2                     |
| Ethylbenzene | 17.4                    | 1                  | 0.2                     |
| p,m-Xylene   | 43.7                    | 1                  | 0.2                     |
| o-Xylene     | 24.2                    | 1                  | 0.1                     |

Total BTEX 329

ND - Parameter not detected at the stated detection limit.

| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 97 %             |
|                       | Bromofluorobenzene | 97 %             |

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: GCU #214.

Analyst

Review

6015

# ENVIROTECH INC.



# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

|                    |                  |                |          |
|--------------------|------------------|----------------|----------|
| Client:            | N/A              | Project #:     | N/A      |
| Sample ID:         | 06-09-BTEX QA/QC | Date Reported: | 06-09-98 |
| Laboratory Number: | D362             | Date Sampled:  | N/A      |
| Sample Matrix:     | Water            | Date Received: | N/A      |
| Preservative:      | N/A              | Date Analyzed: | 06-09-98 |
| Condition:         | N/A              | Analysis:      | BTEX     |

| Calibration and<br>Detection Limits (ug/L) | I-Cal RF   | C-Cal RF             | %Diff | Blank<br>Conc | Detect.<br>Limit |
|--------------------------------------------|------------|----------------------|-------|---------------|------------------|
|                                            |            | Accept Range 0 - 15% |       |               |                  |
| Benzene                                    | 1.4863E-02 | 1.4878E-02           | 0.10% | ND            | 0.2              |
| Toluene                                    | 2.2878E-02 | 2.2947E-02           | 0.30% | ND            | 0.2              |
| Ethylbenzene                               | 1.0578E-02 | 1.0663E-02           | 0.81% | ND            | 0.2              |
| p,m-Xylene                                 | 8.4559E-03 | 8.5155E-03           | 0.70% | ND            | 0.2              |
| o-Xylene                                   | 8.7385E-03 | 8.7912E-03           | 0.60% | ND            | 0.1              |

| Duplicate Conc. (ug/L) | Sample | Duplicate | %Diff | Accept Limit |
|------------------------|--------|-----------|-------|--------------|
| Benzene                | 236    | 237       | 0.2%  | 0 - 30%      |
| Toluene                | 7.6    | 7.6       | 0.0%  | 0 - 30%      |
| Ethylbenzene           | 17.4   | 17.5      | 0.6%  | 0 - 30%      |
| p,m-Xylene             | 43.7   | 43.9      | 0.5%  | 0 - 30%      |
| o-Xylene               | 24.2   | 24.4      | 0.8%  | 0 - 30%      |

| Spike Conc. (ug/L) | Sample | Amount Spiked | Spiked Sample | % Recovery | Accept Limits |
|--------------------|--------|---------------|---------------|------------|---------------|
| Benzene            | 236    | 50.0          | 275           | 96%        | 39 - 150      |
| Toluene            | 7.6    | 50.0          | 57.2          | 99%        | 46 - 148      |
| Ethylbenzene       | 17.4   | 50.0          | 66.4          | 99%        | 32 - 160      |
| p,m-Xylene         | 43.7   | 100.0         | 141           | 98%        | 46 - 148      |
| o-Xylene           | 24.2   | 50.0          | 73.1          | 99%        | 46 - 148      |

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.  
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples D362- D366.

Analyst

Review

# BLAGG ENGINEERING, INC.

## MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6687

GCU # 214 - SEPARATOR PIT  
UNIT B, SEC. 16, T28N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : May 28, 1999

SAMPLER : N J V

Filename : 05-28-99.WK4

PROJECT MANAGER : N J V

| WELL # | WELL ELEV. (ft) | WATER ELEV. (ft) | DEPTH TO WATER (ft) | TOTAL DEPTH (ft) | SAMPLING TIME | pH  | CONDUCT (umhos) | VOLUME PURGED (gal.) | FREE PRODUCT (ft) |
|--------|-----------------|------------------|---------------------|------------------|---------------|-----|-----------------|----------------------|-------------------|
| 1      | 101.91          | 84.42            | 17.49               | -                | -             | -   | -               | -                    | -                 |
| 2      | 100.71          | 83.84            | 16.87               | 20.00            | 0900          | 7.2 | 3,500           | 0.60                 | -                 |
| 3      | 95.12           | 83.23            | 11.89               | -                | -             | -   | -               | -                    | -                 |

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$

(i.e. 2" MW  $r = (1/12) \text{ ft.}$   $h = 1 \text{ ft.}$ ) (i.e. 4" MW  $r = (2/12) \text{ ft.}$   $h = 1 \text{ ft.}$ )

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

WELL #2 = 1.25" well point . Collected BTEX samples for MW #2 only .

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Blagg / AMOCO | Project #:          | 403410   |
| Sample ID:         | MW #2         | Date Reported:      | 06-02-99 |
| Chain of Custody:  | 6687          | Date Sampled:       | 05-28-99 |
| Laboratory Number: | F424          | Date Received:      | 05-28-99 |
| Sample Matrix:     | Water         | Date Analyzed:      | 06-01-99 |
| Preservative:      | HgCl2 & Cool  | Analysis Requested: | BTEX     |
| Condition:         | Cool & Intact |                     |          |

| Parameter    | Concentration<br>(ug/L) | Dilution<br>Factor | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|--------------------|-------------------------|
| Benzene      | 221                     | 1                  | 0.2                     |
| Toluene      | 10.6                    | 1                  | 0.2                     |
| Ethylbenzene | 11.1                    | 1                  | 0.2                     |
| p,m-Xylene   | 17.7                    | 1                  | 0.2                     |
| o-Xylene     | 4.9                     | 1                  | 0.1                     |

Total BTEX 265

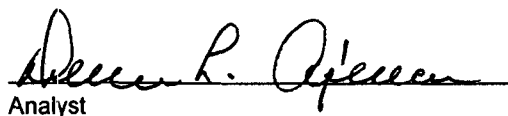
ND - Parameter not detected at the stated detection limit.

| Surrogate Recoveries: | Parameter          | Percent Recovery |
|-----------------------|--------------------|------------------|
|                       | Trifluorotoluene   | 100 %            |
|                       | Bromofluorobenzene | 100 %            |

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: GCU #214.

  
Analyst

  
Review

6687

**ENVIROTECH INC.**

5796 U.S. Highway 64  
Farmington, New Mexico 87401  
(505) 632-0615

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

|                    |                     |                |          |
|--------------------|---------------------|----------------|----------|
| Client:            | N/A                 | Project #:     | N/A      |
| Sample ID:         | 06-01-PM-BTEX QA/QC | Date Reported: | 06-02-99 |
| Laboratory Number: | F424                | Date Sampled:  | N/A      |
| Sample Matrix:     | Water               | Date Received: | N/A      |
| Preservative:      | N/A                 | Date Analyzed: | 06-01-99 |
| Condition:         | N/A                 | Analysis:      | BTEX     |

| Calibration and<br>Detection Limits (ug/L) | I-Cal RF    | C-Cal RF              | %Diff | Blank<br>Conc | Detect<br>Limit |
|--------------------------------------------|-------------|-----------------------|-------|---------------|-----------------|
|                                            |             | Accept. Range 0 - 15% |       |               |                 |
| Benzene                                    | 1.6360E-002 | 1.6412E-002           | 0.32% | ND            | 0.2             |
| Toluene                                    | 1.7563E-002 | 1.7566E-002           | 0.02% | ND            | 0.2             |
| Ethylbenzene                               | 7.1313E-003 | 7.1398E-003           | 0.12% | ND            | 0.2             |
| p,m-Xylene                                 | 8.5740E-003 | 8.5758E-003           | 0.02% | ND            | 0.2             |
| o-Xylene                                   | 7.9281E-003 | 7.9520E-003           | 0.30% | ND            | 0.1             |

| Duplicate Conc. (ug/L) | Sample | Duplicate | %Diff | Accept Limit |
|------------------------|--------|-----------|-------|--------------|
| Benzene                | 221    | 213       | 3.5%  | 0 - 30%      |
| Toluene                | 10.6   | 10.3      | 2.8%  | 0 - 30%      |
| Ethylbenzene           | 11.1   | 10.9      | 1.8%  | 0 - 30%      |
| p,m-Xylene             | 17.7   | 17.8      | 0.6%  | 0 - 30%      |
| o-Xylene               | 4.9    | 4.8       | 2.0%  | 0 - 30%      |

| Spike Conc. (ug/L) | Sample | Amount Spiked | Spiked Sample | % Recovery | Accept Limits |
|--------------------|--------|---------------|---------------|------------|---------------|
| Benzene            | 221    | 50.0          | 274           | 101%       | 39 - 150      |
| Toluene            | 10.6   | 50.0          | 60.9          | 100%       | 46 - 148      |
| Ethylbenzene       | 11.1   | 50.0          | 61.4          | 100%       | 32 - 160      |
| p,m-Xylene         | 17.7   | 100.0         | 118           | 100%       | 46 - 148      |
| o-Xylene           | 4.9    | 50.0          | 55.0          | 100%       | 46 - 148      |

ND - Parameter not detected at the stated detection limit.

\* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.  
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples F424 - F430 and F435.

Analyst

Review

**BLAGG ENGINEERING, INC.**  
MONITOR WELL SAMPLING DATA

CLIENT : BP AMOCO

CHAIN-OF-CUSTODY # : 10585

GCU # 214 - SEPARATOR PIT  
UNIT B, SEC. 16, T28N, R12W

LABORATORY (S) USED : ON - SITE TECH.

Date : May 22, 2000

SAMPLER : N J V

Filename : 05-22-00.WK4

PROJECT MANAGER : N J V

| WELL<br># | WELL<br>ELEV.<br>(ft) | WATER<br>ELEV.<br>(ft) | DEPTH TO<br>WATER<br>(ft) | TOTAL<br>DEPTH<br>(ft) | SAMPLING<br>TIME | pH  | CONDUCT<br>(umhos) | VOLUME<br>PURGED<br>(gal.) | FREE<br>PRODUCT<br>(ft) |
|-----------|-----------------------|------------------------|---------------------------|------------------------|------------------|-----|--------------------|----------------------------|-------------------------|
| 1         | 101.91                | 84.61                  | 17.30                     | -                      | -                | -   | -                  | -                          | -                       |
| 2         | 100.71                | 84.08                  | 16.63                     | 20.00                  | 0945             | 7.9 | 3,100              | 0.75                       | -                       |
| 3         | 95.12                 | 82.49                  | 12.63                     | -                      | -                | -   | -                  | -                          | -                       |

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .

(i.e. 2" MW  $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ ) (i.e. 4" MW  $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$ )

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2."

WELL #2 = 1.25" well point. Collected BTEX samples for MW #2 only.

OFF: (505) 325-5667  
FAX: (505) 327-1496



LAB: (505) 325-1556  
FAX: (505) 327-1496

## ANALYTICAL REPORT

Date: 30-May-00

|                    |                    |                            |                      |
|--------------------|--------------------|----------------------------|----------------------|
| <b>Client:</b>     | Blagg Engineering  | <b>Client Sample Info:</b> | GCU #214             |
| <b>Work Order:</b> | 0005057            | <b>Client Sample ID:</b>   | MW #2                |
| <b>Lab ID:</b>     | 0005057-01A        | <b>Matrix:</b>             | AQUEOUS              |
| <b>Project:</b>    | BP Amoco; GCU #214 | <b>Collection Date:</b>    | 5/22/2000 9:45:00 AM |
|                    |                    | <b>COC Record:</b>         | 10585                |

| Parameter                    | Result | PQL     | Qual | Units       | DF | Date Analyzed |
|------------------------------|--------|---------|------|-------------|----|---------------|
| AROMATIC VOLATILES BY GC/PID |        | SW8021B |      | Analyst: DM |    |               |
| Benzene                      | 79     | 0.5     |      | µg/L        | 1  | 5/25/2000     |
| Toluene                      | ND     | 0.5     |      | µg/L        | 1  | 5/25/2000     |
| Ethylbenzene                 | 7.6    | 0.5     |      | µg/L        | 1  | 5/25/2000     |
| m,p-Xylene                   | 4.5    | 1       |      | µg/L        | 1  | 5/25/2000     |
| o-Xylene                     | 0.5    | 0.5     |      | µg/L        | 1  | 5/25/2000     |

**Qualifiers:**

PQL - Practical Quantitation Limit  
ND - Not Detected at Practical Quantitation Limit  
J - Analyte detected below Practical Quantitation Limit  
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range  
Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -



1950

Date: 5/22/00

Page: 1 of 1

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499  
LAB: (505) 325-5667 • FAX: (505) 327-1496

[illegible]



# On Site Technologies, LTD.

Date: 30-May-00

CLIENT: Blagg Engineering  
 Work Order: 0005057  
 Project: BP Amoco; GCU #214

## QC SUMMARY REPORT

Method Blank

|                         |                       |                      |             |                          |                                                        |
|-------------------------|-----------------------|----------------------|-------------|--------------------------|--------------------------------------------------------|
| Sample ID: MB1          | Batch ID: GC-1_000524 | Test Code: SW8021B   | Units: µg/L | Analysis Date: 5/24/2000 | Prep Date:                                             |
| Client ID:              | 0005057               | Run ID: GC-1_000524A |             | SeqNo: 28092             |                                                        |
| Analyte                 | Result                | PQL                  | SPK value   | SPK Ref Val              | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Benzene                 | .2418                 | 0.5                  |             |                          | J                                                      |
| Ethylbenzene            | .1025                 | 0.5                  |             |                          | J                                                      |
| m,p-Xylene              | .2478                 | 1                    |             |                          | J                                                      |
| Methyl tert-Butyl Ether | ND                    | 1                    |             |                          |                                                        |
| o-Xylene                | .1145                 | 0.5                  |             |                          | J                                                      |
| Toluene                 | .2237                 | 0.5                  |             |                          | J                                                      |

|                         |                       |                      |             |                          |                                                        |
|-------------------------|-----------------------|----------------------|-------------|--------------------------|--------------------------------------------------------|
| Sample ID: MB1          | Batch ID: GC-1_000525 | Test Code: SW8021B   | Units: µg/L | Analysis Date: 5/25/2000 | Prep Date:                                             |
| Client ID:              | 0005057               | Run ID: GC-1_000525A |             | SeqNo: 28128             |                                                        |
| Analyte                 | Result                | PQL                  | SPK value   | SPK Ref Val              | %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual |
| Benzene                 | ND                    | 0.5                  |             |                          |                                                        |
| Ethylbenzene            | ND                    | 0.5                  |             |                          |                                                        |
| m,p-Xylene              | .1182                 | 1                    |             |                          | J                                                      |
| Methyl tert-Butyl Ether | ND                    | 1                    |             |                          |                                                        |
| o-Xylene                | .0413                 | 0.5                  |             |                          | J                                                      |
| Toluene                 | .2642                 | 0.5                  |             |                          | J                                                      |

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

# On Site Technologies, LTD.

Date: 30-May-00

CLIENT: Blagg Engineering  
 Work Order: 0005057  
 Project: BP Amoco; GCU #214

## QC SUMMARY REPORT

Sample Matrix Spike

|                          |        |                       |           |                    |        |              |           |                          |      |            |      |
|--------------------------|--------|-----------------------|-----------|--------------------|--------|--------------|-----------|--------------------------|------|------------|------|
| Sample ID: 0005053-01AMS |        | Batch ID: GC-1_000524 |           | Test Code: SW8021B |        | Units: µg/L  |           | Analysis Date: 5/24/2000 |      | Prep Date: |      |
| Client ID:               |        | 0005057               |           | Run ID:            |        | GC-1_000524A |           | SeqNo: 28093             |      |            |      |
| Analyte                  | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit     | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                  | 2901   | 5                     | 400       | 2393               | 126.9% | 73           | 126       |                          |      |            | ES   |
| Ethylbenzene             | 1023   | 5                     | 400       | 599.5              | 105.8% | 88           | 113       |                          |      |            | S    |
| m,p-Xylene               | 3010   | 10                    | 800       | 2112               | 112.3% | 83           | 112       |                          |      |            |      |
| Methyl tert-Butyl Ether  | 645.4  | 10                    | 400       | 222.2              | 105.8% | 81           | 125       |                          |      |            | E    |
| o-Xylene                 | 783.8  | 5                     | 400       | 355.6              | 107.1% | 93           | 110       |                          |      |            |      |
| Toluene                  | 2233   | 5                     | 400       | 1763               | 117.4% | 76           | 126       |                          |      |            |      |

|                           |        |                       |           |                    |        |              |           |                          |      |            |      |
|---------------------------|--------|-----------------------|-----------|--------------------|--------|--------------|-----------|--------------------------|------|------------|------|
| Sample ID: 0005053-01AMSD |        | Batch ID: GC-1_000524 |           | Test Code: SW8021B |        | Units: µg/L  |           | Analysis Date: 5/24/2000 |      | Prep Date: |      |
| Client ID:                |        | 0005057               |           | Run ID:            |        | GC-1_000524A |           | SeqNo: 28094             |      |            |      |
| Analyte                   | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit     | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                   | 2788   | 5                     | 400       | 2393               | 98.7%  | 73           | 126       | 2901                     | 4.0% | 6          | E    |
| Ethylbenzene              | 983.6  | 5                     | 400       | 599.5              | 96.0%  | 88           | 113       | 1023                     | 3.9% | 5          |      |
| m,p-Xylene                | 2894   | 10                    | 800       | 2112               | 97.7%  | 83           | 112       | 3010                     | 3.9% | 7          |      |
| Methyl tert-Butyl Ether   | 633.8  | 10                    | 400       | 222.2              | 102.9% | 81           | 125       | 645.4                    | 1.8% | 9          |      |
| o-Xylene                  | 764.9  | 5                     | 400       | 355.6              | 102.3% | 93           | 110       | 783.8                    | 2.4% | 6          |      |
| Toluene                   | 2147   | 5                     | 400       | 1763               | 95.9%  | 76           | 126       | 2233                     | 3.9% | 6          | E    |

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Blagg Engineering  
**Work Order:** 0005057  
**Project:** BP Amoco; GCU #214

**QC SUMMARY REPORT**  
 Sample Matrix Spike

|                          |        |                       |           |                    |        |              |           |                          |      |            |      |
|--------------------------|--------|-----------------------|-----------|--------------------|--------|--------------|-----------|--------------------------|------|------------|------|
| Sample ID: 0005053-01AMS |        | Batch ID: GC-1_000525 |           | Test Code: SW8021B |        | Units: µg/L  |           | Analysis Date: 5/25/2000 |      | Prep Date: |      |
| Client ID:               |        | 0005057               |           | Run ID:            |        | GC-1_000525A |           | SeqNo: 28129             |      |            |      |
| Analyte                  | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit     | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                  | 3237   | 10                    | 800       | 2403               | 104.2% | 73           | 126       |                          |      |            |      |
| Ethylbenzene             | 1427   | 10                    | 800       | 621.6              | 100.7% | 88           | 113       |                          |      |            |      |
| m,p-Xylene               | 3722   | 20                    | 1600      | 2150               | 98.3%  | 83           | 112       |                          |      |            |      |
| Methyl tert-Butyl Ether  | 1072   | 20                    | 800       | 211.5              | 107.6% | 81           | 125       |                          |      |            |      |
| o-Xylene                 | 1190   | 10                    | 800       | 363.4              | 103.4% | 93           | 110       |                          |      |            |      |
| Toluene                  | 2636   | 10                    | 800       | 1819               | 102.2% | 76           | 126       |                          |      |            |      |

|                           |        |                       |           |                    |        |              |           |                          |      |            |      |
|---------------------------|--------|-----------------------|-----------|--------------------|--------|--------------|-----------|--------------------------|------|------------|------|
| Sample ID: 0005053-01AMSD |        | Batch ID: GC-1_000525 |           | Test Code: SW8021B |        | Units: µg/L  |           | Analysis Date: 5/25/2000 |      | Prep Date: |      |
| Client ID:                |        | 0005057               |           | Run ID:            |        | GC-1_000525A |           | SeqNo: 28130             |      |            |      |
| Analyte                   | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit     | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                   | 3214   | 10                    | 800       | 2400               | 101.7% | 73           | 126       | 3237                     | 0.7% | 6          |      |
| Ethylbenzene              | 1419   | 10                    | 800       | 620                | 99.8%  | 88           | 113       | 1427                     | 0.6% | 5          |      |
| m,p-Xylene                | 3694   | 20                    | 1600      | 2100               | 99.6%  | 83           | 112       | 3722                     | 0.7% | 7          |      |
| Methyl tert-Butyl Ether   | 1074   | 20                    | 800       | 210                | 107.9% | 81           | 125       | 1072                     | 0.1% | 9          |      |
| o-Xylene                  | 1164   | 10                    | 800       | 360                | 100.5% | 93           | 110       | 1190                     | 2.2% | 6          |      |
| Toluene                   | 2622   | 10                    | 800       | 1800               | 102.8% | 76           | 126       | 2636                     | 0.5% | 6          |      |

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

# On Site Technologies, LTD.

Date: 30-May-00

## QC SUMMARY REPORT

Laboratory Control Spike - generic

CLIENT: Blagg Engineering  
Work Order: 0005057  
Project: BP Amoco; GCU #214

|                         |        |                       |           |                    |        |             |           |                          |      |            |      |
|-------------------------|--------|-----------------------|-----------|--------------------|--------|-------------|-----------|--------------------------|------|------------|------|
| Sample ID: LCS WATER    |        | Batch ID: GC-1_000524 |           | Test Code: SW8021B |        | Units: µg/L |           | Analysis Date: 5/24/2000 |      | Prep Date: |      |
| Client ID: 0005057      |        | Run ID: GC-1_000524A  |           |                    |        |             |           | SeqNo: 28091             |      |            |      |
| Analyte                 | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit    | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                 | 41.68  | 0.5                   | 40        | 0.2418             | 103.6% | 89          | 112       |                          |      |            |      |
| Ethylbenzene            | 41.22  | 0.5                   | 40        | 0.1025             | 102.8% | 93          | 112       |                          |      |            |      |
| m,p-Xylene              | 78.64  | 1                     | 80        | 0.2478             | 98.0%  | 88          | 108       |                          |      |            |      |
| Methyl tert-Butyl Ether | 40.9   | 1                     | 40        | 0                  | 102.2% | 87          | 115       |                          |      |            |      |
| o-Xylene                | 41.03  | 0.5                   | 40        | 0.1145             | 102.3% | 93          | 112       |                          |      |            |      |
| Toluene                 | 41.32  | 0.5                   | 40        | 0.2237             | 102.7% | 92          | 111       |                          |      |            |      |

| Sample ID: LCS WATER    |        | Batch ID: GC-1_000525 | Test Code: SW8021B | Units: µg/L  | Analysis Date: 5/25/2000 |          | Prep Date: |             |      |          |      |
|-------------------------|--------|-----------------------|--------------------|--------------|--------------------------|----------|------------|-------------|------|----------|------|
| Client ID:              |        | 0005057               | Run ID:            | GC-1_000525A | SeqNo:                   | 28127    |            |             |      |          |      |
| Analyte                 | Result | PQL                   | SPK value          | SPK Ref Val  | %REC                     | LowLimit | HighLimit  | RPD Ref Val | %RPD | RPDLimit | Qual |
| Benzene                 | 41.43  | 0.5                   | 40                 | 0            | 103.6%                   | 89       | 112        |             |      |          |      |
| Ethylbenzene            | 40.83  | 0.5                   | 40                 | 0            | 102.1%                   | 93       | 112        |             |      |          |      |
| m,p-Xylene              | 77.56  | 1                     | 80                 | 0.1182       | 96.8%                    | 88       | 108        |             |      |          |      |
| Methyl tert-Butyl Ether | 41.92  | 1                     | 40                 | 0            | 104.8%                   | 87       | 115        |             |      |          |      |
| o-Xylene                | 40.64  | 0.5                   | 40                 | 0.0413       | 101.5%                   | 93       | 112        |             |      |          |      |
| Toluene                 | 42.02  | 0.5                   | 40                 | 0.2642       | 104.4%                   | 92       | 111        |             |      |          |      |

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# On Site Technologies, LTD.

Date: 30-May-00

CLIENT: Blagg Engineering

Work Order: 0005057

Project: BP Amoco; GCU #214

## QC SUMMARY REPORT

Continuing Calibration Verification Standard

| Sample ID: CCV1 BTEX_0004 |        | Batch ID: GC-1_000524 | Test Code: SW8021B | Units: µg/L |             | Analysis Date: 5/24/2000 |          | Prep Date: |             |      |          |      |
|---------------------------|--------|-----------------------|--------------------|-------------|-------------|--------------------------|----------|------------|-------------|------|----------|------|
| Client ID: 0005057        |        | Run ID: GC-1_000524A  | PQL                | SPK value   | SPK Ref Val | %REC                     | LowLimit | HighLimit  | RPD Ref Val | %RPD | RPDLimit | Qual |
| Analyte                   | Result |                       |                    |             |             |                          |          |            |             |      |          |      |
| Benzene                   | 21.4   |                       | 0.5                | 20          | 0           | 107.0%                   | 85       | 115        |             |      |          |      |
| Ethylbenzene              | 21.3   |                       | 0.5                | 20          | 0           | 106.5%                   | 85       | 115        |             |      |          |      |
| m,p-Xylene                | 40.36  |                       | 1                  | 40          | 0           | 100.9%                   | 85       | 115        |             |      |          |      |
| Methyl tert-Butyl Ether   | 20.88  |                       | 1                  | 20          | 0           | 104.4%                   | 85       | 115        |             |      |          |      |
| o-Xylene                  | 21.31  |                       | 0.5                | 20          | 0           | 106.5%                   | 85       | 115        |             |      |          |      |
| Toluene                   | 21.06  |                       | 0.5                | 20          | 0           | 105.3%                   | 85       | 115        |             |      |          |      |
| 1,4-Difluorobenzene       | 90.77  |                       | 0                  | 100         | 0           | 90.8%                    | 80       | 105        |             |      |          |      |
| 4-Bromochlorobenzene      | 88.51  |                       | 0                  | 100         | 0           | 88.5%                    | 78       | 108        |             |      |          |      |
| Fluorobenzene             | 90.69  |                       | 0                  | 100         | 0           | 90.7%                    | 78       | 108        |             |      |          |      |

| Sample ID: CCV2 BTEX_0004 |        | Batch ID: GC-1_000524 | Test Code: SW8021B | Units: µg/L  | Analysis Date: 5/24/2000 |           |             |        | Prep Date: |           |             |      |          |      |
|---------------------------|--------|-----------------------|--------------------|--------------|--------------------------|-----------|-------------|--------|------------|-----------|-------------|------|----------|------|
| Client ID:                |        | 0005057               | Run ID:            | GC-1_000524A | PQL                      | SPK value | SPK Ref Val | %REC   | LowLimit   | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Analyte                   | Result |                       |                    |              |                          |           |             |        |            |           |             |      |          |      |
| Benzene                   | 20.59  |                       |                    | 0.5          |                          | 20        | 0           | 103.0% | 85         | 115       |             |      |          |      |
| Ethylbenzene              | 20.61  |                       |                    | 0.5          |                          | 20        | 0           | 103.1% | 85         | 115       |             |      |          |      |
| m,p-Xylene                | 38.95  |                       |                    | 1            |                          | 40        | 0           | 97.4%  | 85         | 115       |             |      |          |      |
| Methyl tert-Butyl Ether   | 21.51  |                       |                    | 1            |                          | 20        | 0           | 107.5% | 85         | 115       |             |      |          |      |
| o-Xylene                  | 20.66  |                       |                    | 0.5          |                          | 20        | 0           | 103.3% | 85         | 115       |             |      |          |      |
| Toluene                   | 20.38  |                       |                    | 0.5          |                          | 20        | 0           | 101.9% | 85         | 115       |             |      |          |      |
| 1,4-Difluorobenzene       | 90.07  |                       |                    | 0            |                          | 100       | 0           | 90.1%  | 80         | 105       |             |      |          |      |
| 4-Bromochlorobenzene      | 87     |                       |                    | 0            |                          | 100       | 0           | 87.0%  | 78         | 108       |             |      |          |      |
| Fluorobenzene             | 90.06  |                       |                    | 0            |                          | 100       | 0           | 90.1%  | 78         | 108       |             |      |          |      |

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Blagg Engineering  
**Work Order:** 0005057  
**Project:** BP Amoco; GCU #214

**QC SUMMARY REPORT**  
 Continuing Calibration Verification Standard

| Sample ID: CCV3 BTEX_0004 |        | Batch ID: GC-1_000524 |           | Test Code: SW8021B |        | Units: µg/L |           | Analysis Date: 5/24/2000 |      | Prep Date: |      |
|---------------------------|--------|-----------------------|-----------|--------------------|--------|-------------|-----------|--------------------------|------|------------|------|
| Client ID: 0005057        |        | Run ID: GC-1_000524A  |           | SeqNo: 28090       |        |             |           |                          |      |            |      |
| Analyte                   | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit    | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                   | 40.45  | 0.5                   | 40        | 0                  | 101.1% | 85          | 115       |                          |      |            |      |
| Ethylbenzene              | 39.88  | 0.5                   | 40        | 0                  | 99.7%  | 85          | 115       |                          |      |            |      |
| m,p-Xylene                | 75.55  | 1                     | 80        | 0                  | 94.4%  | 85          | 115       |                          |      |            |      |
| Methyl tert-Butyl Ether   | 42.77  | 1                     | 40        | 0                  | 106.9% | 85          | 115       |                          |      |            |      |
| o-Xylene                  | 39.98  | 0.5                   | 40        | 0                  | 99.9%  | 85          | 115       |                          |      |            |      |
| Toluene                   | 40.07  | 0.5                   | 40        | 0                  | 100.2% | 85          | 115       |                          |      |            |      |
| 1,4-Difluorobenzene       | 89.05  | 0                     | 100       | 0                  | 89.0%  | 80          | 105       |                          |      |            |      |
| 4-Bromochlorobenzene      | 88.07  | 0                     | 100       | 0                  | 88.1%  | 78          | 108       |                          |      |            |      |
| Fluorobenzene             | 89.28  | 0                     | 100       | 0                  | 89.3%  | 78          | 108       |                          |      |            |      |

| Sample ID: CCV1 BTEX_0004 |        | Batch ID: GC-1_000525 |           | Test Code: SW8021B |        | Units: µg/L |           | Analysis Date: 5/25/2000 |      | Prep Date: |      |
|---------------------------|--------|-----------------------|-----------|--------------------|--------|-------------|-----------|--------------------------|------|------------|------|
| Client ID: 0005057        |        | Run ID: GC-1_000525A  |           | SeqNo: 28124       |        |             |           |                          |      |            |      |
| Analyte                   | Result | PQL                   | SPK value | SPK Ref Val        | %REC   | LowLimit    | HighLimit | RPD Ref Val              | %RPD | RPDLimit   | Qual |
| Benzene                   | 22.01  | 0.5                   | 20        | 0                  | 110.0% | 85          | 115       |                          |      |            |      |
| Ethylbenzene              | 21.74  | 0.5                   | 20        | 0                  | 108.7% | 85          | 115       |                          |      |            |      |
| m,p-Xylene                | 41.11  | 1                     | 40        | 0                  | 102.8% | 85          | 115       |                          |      |            |      |
| Methyl tert-Butyl Ether   | 21.6   | 1                     | 20        | 0                  | 108.0% | 85          | 115       |                          |      |            |      |
| o-Xylene                  | 21.69  | 0.5                   | 20        | 0                  | 108.5% | 85          | 115       |                          |      |            |      |
| Toluene                   | 22.46  | 0.5                   | 20        | 0                  | 112.3% | 85          | 115       |                          |      |            |      |
| 1,4-Difluorobenzene       | 89.91  | 0                     | 100       | 0                  | 89.9%  | 80          | 105       |                          |      |            |      |
| 4-Bromochlorobenzene      | 89     | 0                     | 100       | 0                  | 89.0%  | 78          | 108       |                          |      |            |      |
| Fluorobenzene             | 90.48  | 0                     | 100       | 0                  | 90.5%  | 78          | 108       |                          |      |            |      |

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

**QC SUMMARY REPORT**  
Continuing Calibration Verification Standard

**CLIENT:** Blagg Engineering  
**Work Order:** 0005057  
**Project:** BP Amoco; GCU #214

|                           |        |                       |                    |             |                          |        |          |            |             |      |          |      |
|---------------------------|--------|-----------------------|--------------------|-------------|--------------------------|--------|----------|------------|-------------|------|----------|------|
| Sample ID: CCV2 BTEX_0004 |        | Batch ID: GC-1_000525 | Test Code: SW8021B | Units: µg/L | Analysis Date: 5/25/2000 |        |          | Prep Date: |             |      |          |      |
| Client ID: 0005057        |        | Run ID: GC-1_000525A  | PQL                | SPK value   | SPK Ref Val              | %REC   | LowLimit | HighLimit  | RPD Ref Val | %RPD | RPDLimit | Qual |
| Analyte                   | Result |                       |                    |             |                          |        |          |            |             |      |          |      |
| Benzene                   | 21.07  | 0.5                   | 20                 | 0           |                          | 105.4% | 85       | 115        |             |      |          |      |
| Ethylbenzene              | 21.05  | 0.5                   | 20                 | 0           |                          | 105.3% | 85       | 115        |             |      |          |      |
| m,p-Xylene                | 39.81  | 1                     | 40                 | 0           |                          | 99.5%  | 85       | 115        |             |      |          |      |
| Methyl tert-Butyl Ether   | 22.4   | 1                     | 20                 | 0           |                          | 112.0% | 85       | 115        |             |      |          |      |
| o-Xylene                  | 21.14  | 0.5                   | 20                 | 0           |                          | 105.7% | 85       | 115        |             |      |          |      |
| Toluene                   | 21.87  | 0.5                   | 20                 | 0           |                          | 109.3% | 85       | 115        |             |      |          |      |
| 1,4-Difluorobenzene       | 89.41  | 0                     | 100                | 0           |                          | 89.4%  | 80       | 105        |             |      |          |      |
| 4-Bromochlorobenzene      | 85.91  | 0                     | 100                | 0           |                          | 85.9%  | 78       | 108        |             |      |          |      |
| Fluorobenzene             | 90.04  | 0                     | 100                | 0           |                          | 90.0%  | 78       | 108        |             |      |          |      |

| Sample ID: CCV3 BTEX_0004 |        | Batch ID: GC-1_000525 | Test Code: SW8021B | Units: µg/L  |     | Analysis Date: 5/25/2000 |             |        | Prep Date: |           |             |      |          |      |
|---------------------------|--------|-----------------------|--------------------|--------------|-----|--------------------------|-------------|--------|------------|-----------|-------------|------|----------|------|
| Client ID:                |        | 0005057               | Run ID:            | GC-1_000525A | PQL | SPK value                | SPK Ref Val | %REC   | LowLimit   | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Analyte                   | Result |                       |                    |              |     |                          |             |        |            |           |             |      |          |      |
| Benzene                   | 39.96  |                       |                    | 0.5          |     | 40                       | 0           | 99.9%  | 85         |           | 115         |      |          |      |
| Ethylbenzene              | 39.38  |                       |                    | 0.5          |     | 40                       | 0           | 98.5%  | 85         |           | 115         |      |          |      |
| m,p-Xylene                | 74.59  |                       |                    | 1            |     | 80                       | 0           | 93.2%  | 85         |           | 115         |      |          |      |
| Methyl tert-Butyl Ether   | 41.88  |                       |                    | 1            |     | 40                       | 0           | 104.7% | 85         |           | 115         |      |          |      |
| o-Xylene                  | 39.39  |                       |                    | 0.5          |     | 40                       | 0           | 98.5%  | 85         |           | 115         |      |          |      |
| Toluene                   | 40.5   |                       |                    | 0.5          |     | 40                       | 0           | 101.3% | 85         |           | 115         |      |          |      |
| 1,4-Difluorobenzene       | 89.66  |                       |                    | 0            |     | 100                      | 0           | 89.7%  | 80         |           | 105         |      |          |      |
| 4-Bromochlorobenzene      | 85.66  |                       |                    | 0            |     | 100                      | 0           | 85.7%  | 78         |           | 108         |      |          |      |
| Fluorobenzene             | 89.09  |                       |                    | 0            |     | 100                      | 0           | 89.1%  | 78         |           | 108         |      |          |      |

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering  
 Work Order: 0005057  
 Project: BP Amoco; GCU #214  
 Test No: SW8021B

## QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

| Sample ID      | 14FBZ | 4BCBZ | FLBZ |  |  |  |  |  |
|----------------|-------|-------|------|--|--|--|--|--|
| 0005047-01A    | 89.4  | 87.8  | 90.7 |  |  |  |  |  |
| 0005047-02A    | 83    | 80.2  | 83.8 |  |  |  |  |  |
| 0005047-03A    | 89.5  | 87.8  | 90.4 |  |  |  |  |  |
| 0005047-04A    | 89.7  | 88.4  | 90.9 |  |  |  |  |  |
| 0005047-05A    | 89.8  | 87.5  | 90.7 |  |  |  |  |  |
| 0005047-06A    | 90.2  | 88.9  | 91   |  |  |  |  |  |
| 0005048-01A    | 88.3  | 87.9  | 89   |  |  |  |  |  |
| 0005048-02A    | 90    | 89.1  | 90.6 |  |  |  |  |  |
| 0005048-03A    | 88.5  | 87.3  | 88.4 |  |  |  |  |  |
| 0005048-05A    | 90.1  | 88.4  | 90.8 |  |  |  |  |  |
| 0005048-06A    | 90.7  | 88.4  | 92.1 |  |  |  |  |  |
| 0005048-07A    | 87.8  | 87.9  | 87.7 |  |  |  |  |  |
| 0005053-01A    | 88.6  | 89.4  | 88.3 |  |  |  |  |  |
| 0005053-01AMS  | 88.3  | 90    | 87.7 |  |  |  |  |  |
| 0005053-01AMSD | 88.3  | 88.9  | 87.7 |  |  |  |  |  |
| 0005053-02A    | 88.8  | 87.7  | 89.9 |  |  |  |  |  |
| 0005053-03A    | 89.9  | 87.6  | 90.6 |  |  |  |  |  |
| 0005055-01A    | 89.8  | 88.9  | 90.7 |  |  |  |  |  |
| 0005055-02A    | 90.6  | 89.1  | 91.6 |  |  |  |  |  |
| 0005055-03A    | 99.5  | 88.7  | 94.4 |  |  |  |  |  |
| 0005055-04A    | 102   | 89.4  | 93.3 |  |  |  |  |  |
| 0005055-05A    | 101   | 88.6  | 92.2 |  |  |  |  |  |
| 0005055-06A    | 90.5  | 88.8  | 91.2 |  |  |  |  |  |
| 0005055-07A    | 89.8  | 87.4  | 90.3 |  |  |  |  |  |
| 0005055-08A    | 89.5  | 87.7  | 90.9 |  |  |  |  |  |
| 0005055-09A    | 87.4  | 87    | 88.3 |  |  |  |  |  |
| 0005055-10A    | 89.6  | 88.2  | 90.8 |  |  |  |  |  |

### Acronym

### Surrogate

### QC Limits

|       |   |                      |        |
|-------|---|----------------------|--------|
| 14FBZ | = | 1,4-Difluorobenzene  | 80-105 |
| 4BCBZ | = | 4-Bromochlorobenzene | 78-108 |
| FLBZ  | = | Fluorobenzene        | 78-108 |

\* Surrogate recovery outside acceptance limits



**CLIENT:** Blagg Engineering  
**Work Order:** 0005057  
**Project:** BP Amoco; GCU #214  
**Test No:** SW8021B

## QC SUMMARY REPORT SURROGATE RECOVERIES

**Aromatic Volatiles by GC/PID**

| Sample ID       | 14FBZ | 4BCBZ | FLBZ |  |  |  |  |  |
|-----------------|-------|-------|------|--|--|--|--|--|
| 0005055-11A     | 89.9  | 88.6  | 90.7 |  |  |  |  |  |
| 0005055-12A     | 90.8  | 88.2  | 92.1 |  |  |  |  |  |
| 0005055-13A     | 90.7  | 88    | 91.2 |  |  |  |  |  |
| 0005055-14A     | 90.3  | 88.1  | 91.8 |  |  |  |  |  |
| 0005055-15A     | 90.1  | 88.6  | 90.7 |  |  |  |  |  |
| 0005056-01A     | 89    | 87.3  | 89.4 |  |  |  |  |  |
| 0005056-02A     | 89.6  | 88.1  | 90.8 |  |  |  |  |  |
| 0005056-03A     | 88.8  | 87.1  | 91.1 |  |  |  |  |  |
| 0005056-04A     | 90.7  | 88.4  | 90.7 |  |  |  |  |  |
| 0005057-01A     | 87.9  | 87.3  | 87.8 |  |  |  |  |  |
| CCV1 BTEX_00040 | 89.9  | 89    | 90.5 |  |  |  |  |  |
| CCV2 BTEX_00040 | 89.4  | 85.9  | 90   |  |  |  |  |  |
| CCV3 BTEX_00040 | 89.6  | 85.7  | 89.1 |  |  |  |  |  |
| LCS WATER       | 89.2  | 89.2  | 89.1 |  |  |  |  |  |
| MB1             | 89.9  | 88.8  | 90.8 |  |  |  |  |  |

| Acronym | Surrogate              | QC Limits |
|---------|------------------------|-----------|
| 14FBZ   | = 1,4-Difluorobenzene  | 80-105    |
| 4BCBZ   | = 4-Bromochlorobenzene | 78-108    |
| FLBZ    | = Fluorobenzene        | 78-108    |

\* Surrogate recovery outside acceptance limits

# 94168 ENVIROTECH Inc.

5796 US HWY. 84, FARMINGTON, NM 87401  
(505) 632-0815

1268-5-20-92  
1259 5-19-92

## FIELD REPORT: SITE ASSESSMENT

JOB No: 92140  
PAGE No: 1 of 1

PROJECT: PIT ASSESSMENTS & CLOSURE  
CLIENT: AMOCO PRODUCTION COMPANY  
CONTRACTOR: ENVIROTECH INC.  
EQUIPMENT USED: EXTENDAHOE

DATE STARTED: 5-19-92  
DATE FINISHED: 5-20-92  
ENVIRO. SPCLT: J.W.  
OPERATOR: L.B.  
ASSISTANT: C.T.

LOCATION: LSE: Gallegos G.C.U. WELL: No 214 OD: NW 1/4 NE 1/4 (B)  
SEC: 16 TWP: 28N RNG: 12W PM: N.M CNTY: S.J. ST: N.M PIT: Separator

LAND USE: NAVAJO Tribe

SURFACE CONDITIONS: EARTH Pit approx. 5' deep. Approx. 2' liquid in Pit

FIELD NOTES & REMARKS: Pit is located approx. 150' South and 40 East of well head. Gallegos wash is approx. 40' East of Pit, and approx. 25' below pit level. Wash has water running. Contamination seems to be running North east of Pit area.

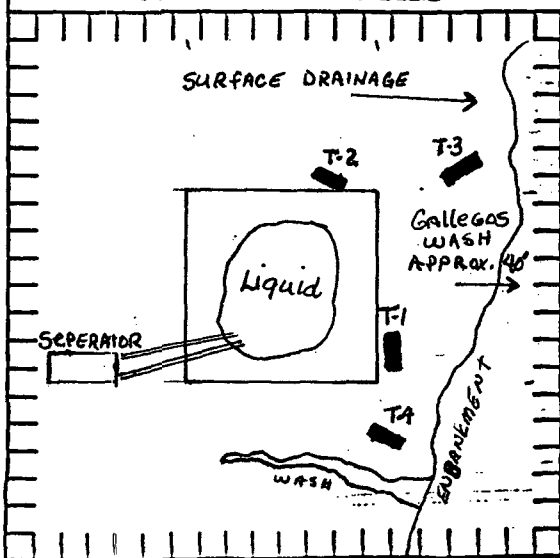
### SAMPLE INVENTORY:

| SMPL ID:  | SMPL TYPE: | LABORATORY ANALYSIS: |
|-----------|------------|----------------------|
| T-1 @ 10' | Soil       | Head Space           |
| T-1 @ 16' | Soil       | TPH                  |
| T-2 @ 10' | Soil       | Head Space           |
| T-3 @ 12' | Soil       | Head Space           |
| T-3 @ 17' | Soil       | TPH                  |
| T-4 @ 14' | Soil       | Head Space           |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |
|           |            |                      |

SCALE

0 5' 10' FEET

### SITE DIAGRAM



### TEST HOLE LOGS:

| TH#:  | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
|-------|------------|------------|---------|
| TH# 1 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| TH# 2 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| TH# 3 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| TH# 4 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| 1     |            |            |         |
| 2     |            |            |         |
| 3     |            |            |         |
| 4     |            |            |         |
| 5     | S          | Soil       | 9.9     |
| 6     |            |            |         |
| 7     |            |            |         |
| 8     |            |            |         |
| 9     |            |            |         |
| 10    | S          | Soil       | 1140    |
| 12    |            |            |         |
| 14    |            |            |         |
| 16    | S          | Soil       | 304     |
| 18    | T.O        | 16'        |         |
| 20    |            |            |         |
| TH# 2 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| 1     |            |            |         |
| 2     |            |            |         |
| 3     |            |            |         |
| 4     |            |            |         |
| 5     | S          | Soil       | 466     |
| 10    | T.D.       | 10'        |         |
| TH# 3 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| 1     |            |            |         |
| 2     |            |            |         |
| 3     |            |            |         |
| 4     |            |            |         |
| 5     | OL         | Soil       | 8.6     |
| 10    |            |            |         |
| 14    | OL         | Soil       | 1016    |
| 16    | OL         | Soil       | 5.9     |
| TH# 4 | SOIL TYPE: | SMPL TYPE: | QVM/TPH |
| 1     |            |            |         |
| 2     |            |            |         |
| 3     |            |            |         |
| 4     |            |            |         |
| 5     | SC         | Soil       | 400     |
| 10    | SC         | Soil       | 16.9    |

SOIL TYPE: C - Clay, M - Sil, S - Sand, G - Gravel, P - Peat, L - Lignite, H - Hard, N - Plastic, Grading: P - Poor, V - Very

5796 US HWY. 64, FARMINGTON, NM 87401  
(505) 832-0815

JOB No: \_\_\_\_\_  
PAGE No: \_\_\_\_\_ of \_\_\_\_\_

DATE STARTED: \_\_\_\_\_  
DATE FINISHED: \_\_\_\_\_  
ENVIRONMENTAL  
SPECIALIST: \_\_\_\_\_

FIELD NOTES &amp; REMARKS:

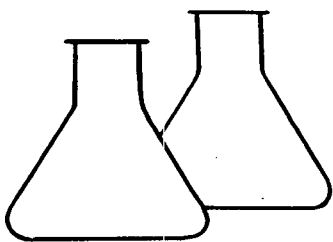
0 FEET  
PIT PERIMETER

## SAMPLE RESULTS

0 FEET  
PIT PROFILE

[illegible]

TRAVEL NOTES:    CALLOUT: \_\_\_\_\_    ONSITE: \_\_\_\_\_



# ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS HEADSPACE EXTRACTION

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Amoco         | Project #:          | 92140    |
| Sample ID:         | T1 @ 10'      | Date Reported:      | 09-02-92 |
| Laboratory Number: | 0751          | Date Sampled:       | 05-19-92 |
| Sample Matrix:     | Soil          | Date Received:      | 05-19-92 |
| Preservative:      | NA            | Date Analyzed:      | 07-21-92 |
| Condition:         | Cool & Intact | Analysis Requested: | BTEX     |

| Parameter    | Concentration<br>(ug/L) | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|-------------------------|
| Benzene      | 2.1                     | 1.6                     |
| Toluene      | 10.4                    | 1.6                     |
| Ethylbenzene | ND                      | 12.0                    |
| p,m-Xylene   | 830                     | 24.0                    |
| o-Xylene     | 328                     | 12.0                    |

Method: Method 3810, Headspace, Test Methods for Evaluating  
Solid Waste, SW-846, USEPA, Sept. 1986

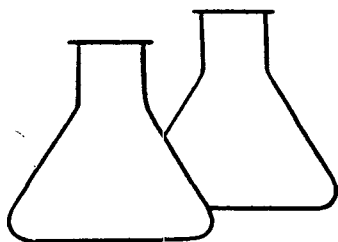
Method 8020, Aromatic Volatile Organics, Test Methods for  
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU # 214---Separator Pit---94168

Al Chahar  
Analyst

Morris D. Young  
Review



# ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: AMOCO  
Sample ID: T-1 @ 16'  
Laboratory Number: 0752  
Sample Matrix: Soil  
Preservative: Cool  
Condition: Cool & Intact

Project #: 92140  
Date Reported: 06-15-92  
Date Sampled: 05-19-92  
Date Received: NA  
Date Analyzed: 06-10-92  
Analysis Needed: TPH

| Parameter<br>-----              | Concentration<br>(mg/kg)<br>----- | Det.<br>Limit<br>(mg/kg)<br>----- |
|---------------------------------|-----------------------------------|-----------------------------------|
| Total Petroleum<br>Hydrocarbons | 28.6                              | 5.0                               |

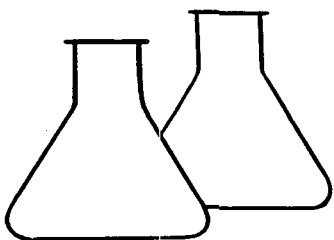
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gallegos Canyon Unit #214 Separator Pit 94168

Tony Tristano  
Analyst

Carl Lunsford  
Review



# ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS HEADSPACE EXTRACTION

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Amoco         | Project #:          | 92140    |
| Sample ID:         | T2 @ 10'      | Date Reported:      | 09-02-92 |
| Laboratory Number: | 0753          | Date Sampled:       | 05-19-92 |
| Sample Matrix:     | Soil          | Date Received:      | 05-19-92 |
| Preservative:      | NA            | Date Analyzed:      | 07-21-92 |
| Condition:         | Cool & Intact | Analysis Requested: | BTEX     |

| Parameter    | Concentration<br>(ug/L) | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|-------------------------|
| Benzene      | 6.0                     | 1.6                     |
| Toluene      | 21.3                    | 1.6                     |
| Ethylbenzene | 91                      | 12.0                    |
| p,m-Xylene   | 910                     | 24.0                    |
| o-Xylene     | 265                     | 12.0                    |

Method: Method 3810, Headspace, Test Methods for Evaluating  
Solid Waste, SW-846, USEPA, Sept. 1986

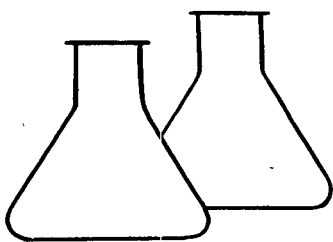
Method 8020, Aromatic Volatile Organics, Test Methods for  
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU # 214---Separator Pit---94168

Al Chaback  
Analyst

Marvin Young  
Review



# ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS HEADSPACE EXTRACTION

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Amoco         | Project #:          | 92140    |
| Sample ID:         | T3 @ 12'      | Date Reported:      | 09-03-92 |
| Laboratory Number: | 0783          | Date Sampled:       | 05-20-92 |
| Sample Matrix:     | Soil          | Date Received:      | 05-20-92 |
| Preservative:      | NA            | Date Analyzed:      | 07-23-92 |
| Condition:         | Cool & Intact | Analysis Requested: | BTEX     |

| Parameter    | Concentration<br>(ug/L) | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|-------------------------|
| Benzene      | 37.2                    | 16.0                    |
| Toluene      | 137                     | 16.0                    |
| Ethylbenzene | 193                     | 16.0                    |
| p,m-Xylene   | 1,650                   | 80.0                    |
| o-Xylene     | 160                     | 16.0                    |

Method: Method 3810, Headspace, Test Methods for Evaluating  
Solid Waste, SW-846, USEPA, Sept. 1986

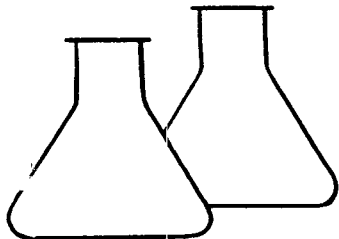
Method 8020, Aromatic Volatile Organics, Test Methods for  
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU # 214---Separator Pit---94168

Al Chaharley  
Analyst

Morris D. Young  
Review



# ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401  
PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: AMOCO  
Sample ID: T-3 @ 17'  
Laboratory Number: 0784  
Sample Matrix: Soil  
Preservative: Cool  
Condition: Cool & Intact

Project #: 92140  
Date Reported: 07-13-92  
Date Sampled: 05-20-19  
Date Received: 05-20-19  
Date Analyzed: 07-10-92  
Analysis Needed: TPH

| Parameter<br>-----              | Concentration<br>(mg/kg)<br>----- | Det.<br>Limit<br>(mg/kg)<br>----- |
|---------------------------------|-----------------------------------|-----------------------------------|
| Total Petroleum<br>Hydrocarbons | 140                               | 5.0                               |

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

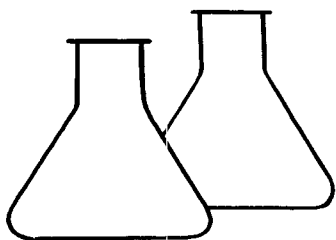
ND - Parameter not detected at the stated detection limit.

Comments: Gallegos GCU #214 Separator Pit 94168

Vanessa Ransom  
Analyst

Neil Samson  
Review





# ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

## EPA METHOD 8020 AROMATIC VOLATILE ORGANICS HEADSPACE EXTRACTION

|                    |               |                     |          |
|--------------------|---------------|---------------------|----------|
| Client:            | Amoco         | Project #:          | 92140    |
| Sample ID:         | T4 @ 14'      | Date Reported:      | 09-03-92 |
| Laboratory Number: | 0785          | Date Sampled:       | 05-20-92 |
| Sample Matrix:     | Soil          | Date Received:      | 05-20-92 |
| Preservative:      | NA            | Date Analyzed:      | 07-23-92 |
| Condition:         | Cool & Intact | Analysis Requested: | BTEX     |

| Parameter    | Concentration<br>(ug/L) | Det.<br>Limit<br>(ug/L) |
|--------------|-------------------------|-------------------------|
| Benzene      | 560                     | 8.0                     |
| Toluene      | 530                     | 8.0                     |
| Ethylbenzene | 3,880                   | 8.0                     |
| p,m-Xylene   | 7,000                   | 40.0                    |
| o-Xylene     | 700                     | 8.0                     |

Method: Method 3810, Headspace, Test Methods for Evaluating  
Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for  
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU # 214---Separator Pit---94168

Al Chaharley  
Analyst

Samuel D. Young  
Review

## CHAIN OF CUSTODY RECORD

94168

| Client/Project Name          |             |             | Project Location          |               | Analysis/Parameters      |           |
|------------------------------|-------------|-------------|---------------------------|---------------|--------------------------|-----------|
| Amoco 92140                  |             |             | Seperator pit             |               |                          |           |
| Sampler: (Signature)         |             |             | Chain of Custody Tape No. |               |                          |           |
| Di Wealkee                   |             |             |                           |               |                          |           |
| Sample No./ Identification   | Sample Date | Sample Time | Lab Number                | Sample Matrix | No. of Containers        | Remarks   |
| T-1 @ 10'                    | 5-19-92     | 1600        | 0751                      | Soil          | 1                        | TPH       |
| T-1 @ 16'                    | 5-19-92     | 1620        | 0752                      | Soil          | 1                        | Headspace |
| T-2 @ 10'                    | 5-19-92     | 1635        | 0753                      | Soil          | 1                        | 8020/RTX  |
| TRIP Blank                   | 5-19-92     |             | 0754                      | Soil          | 1                        |           |
| TRIP Blank                   | 5-19-92     |             | 0755                      | Water         | 1                        |           |
| Equipment Blank              | 5-19-92     |             | 0750                      | Water         | 1                        |           |
| Relinquished by: (Signature) |             |             | Date                      | Time          | Received by: (Signature) | Date      |
| Di Wealkee                   |             |             | 5-19-92                   | 1715          | Tony Tristano            | 5/19/92   |
| Relinquished by: (Signature) |             |             |                           |               | Received by: (Signature) |           |
| Relinquished by: (Signature) |             |             |                           |               | Received by: (Signature) |           |

**ENVIROTECH INC.**

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615

94168

## CHAIN OF CUSTODY RECORD

| Client/Project Name          |             |            |               |  |  | Project Location          |     | ANALYSIS/PARAMETERS |     |           |      |  |  |  |  |         |      |
|------------------------------|-------------|------------|---------------|--|--|---------------------------|-----|---------------------|-----|-----------|------|--|--|--|--|---------|------|
| Amoco 92140                  |             |            |               |  |  | Soperton Pte              |     |                     |     |           |      |  |  |  |  |         |      |
| Sampler: (Signature)         |             |            |               |  |  | Gallagher G.C.U. # 214    |     |                     |     |           |      |  |  |  |  |         |      |
| Sample No./ Identification   |             |            |               |  |  | Chain of Custody Tape No. |     | No. of Containers   | TPH | Headspace | BTEX |  |  |  |  | Remarks |      |
| Sample Date                  | Sample Time | Lab Number | Sample Matrix |  |  |                           |     |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      | 825         | 0783       | Soil          |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      | 845         | 0784       | Soil          |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      | 915         | 0785       | Soil          |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      |             | 0786       | Soil          |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      |             | 0787       | Water         |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| 5-20-92                      |             | 0788       | Water         |  |  | 1                         | - ✓ |                     |     |           |      |  |  |  |  |         |      |
| Relinquished by: (Signature) |             |            |               |  |  | Received by: (Signature)  |     |                     |     |           |      |  |  |  |  | Date    | Time |
| <i>J. Weahkee</i>            |             |            |               |  |  | <i>[Signature]</i>        |     |                     |     |           |      |  |  |  |  | 5-20-92 | 1636 |
| Relinquished by: (Signature) |             |            |               |  |  | Received by: (Signature)  |     |                     |     |           |      |  |  |  |  | 5/20/92 | 1636 |
| Relinquished by: (Signature) |             |            |               |  |  | Received by: (Signature)  |     |                     |     |           |      |  |  |  |  |         |      |

**ENVIROTECH INC.**  
 5796 U.S. Highway 64-3014  
 Farmington, New Mexico 87401  
 (505) 632-0615

**ENVIROTECH INC.**

5796 U.S. Highway 64-3014

Farlington, New Mexico 87401

(505) 632-0615

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.  
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

Amoco Production Company

3. Address and Telephone No.

200 Amoco Court, Farmington, N.M. 87401 Tel: (505) 326-9200

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

NW/NE Section 16 - 28N-12W

5. Lease Designation and Serial No.

6. If Indian, Allotment or Tribe Name

7. If Unit or CA, Agreement Designation

892000 844F

8. Well Name and No.

GCU-214

9. API Well No.

3004511623

10. Field and Pool, or Exploratory Area

DASIN, NAKOTA

11. County or Parish, State

SAN JUAN, NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Incident  
☒ Subsequent Report  
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment  
☐ Recompletion  
☐ Plugging Back  
☐ Casing Repair  
☐ Altering Casing  
☒ Other Pit closure

- ☐ Change of Name  
☐ New Construction  
☐ Non-Routine Fracturing  
☐ Water Shut-Off  
☐ Conversion to Injection  
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Pit closure verification - see attached documentation.

14. I hereby certify that the foregoing is true and correct

Signed

B. Shaw

Enviro. Coordinator

Date

2-24-95

(This space for Federal or State office use)

Approved by

Signature of approval, if any:

Title

Date

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\*See instruction on Reverse Side

District I  
P.O. Box 1980, Hobbes, NM

District II  
P.O. Drawer DD, Artes, NM 88211

District III  
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico  
Energy, Minerals and Natural Resource Department

OIL CONSERVATION DIVISION  
P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO  
APPROPRIATE  
DISTRICT OFFICE  
AND 1 COPY TO  
SANTA FE OFFICE  
(Revised 3/9/94)

**PIT REMEDIATION AND CLOSURE REPORT**

Operator: AMOCO PRODUCTION COMPANY Telephone: (505) 326-9219

Address: 200 AMOCO COURT, FARMINGTON, NM 87401

Facility Or: GALLEGOS CANYON UNIT #214

Well Name \_\_\_\_\_

Location: Unit or Qtr/Qtr Sec NW/NE Sec 16 T 28 R 12 County SAN JUAN

Pit Type: Separator XX Dehydrator \_\_\_\_\_ Other \_\_\_\_\_

Land Type: BLM XX State \_\_\_\_\_ Fee \_\_\_\_\_ Other \_\_\_\_\_

Pit Location: Pit dimensions: Length 53 width 51 depth 18  
(Attach diagram)

Reference: wellhead \_\_\_\_\_ Other \_\_\_\_\_ See Attached

Footage from reference: \_\_\_\_\_

Direction from reference: \_\_\_\_\_ Degrees \_\_\_\_\_ East North \_\_\_\_\_

of

\_\_\_\_\_ West South \_\_\_\_\_

|                          |                       |             |           |
|--------------------------|-----------------------|-------------|-----------|
| Depth To Ground Water:   | Less than 50 feet     | (20 points) |           |
| (Vertical Distance from  | 50 feet to 99 feet    | (10 points) |           |
| contaminants to seasonal | Greater than 100 feet | (0 points)  | <u>20</u> |
| high water elevation of  |                       |             |           |
| ground water)            |                       |             |           |

|                                         |     |             |          |
|-----------------------------------------|-----|-------------|----------|
| Wellhead Protection Area:               | Yes | (20 points) |          |
| (less than 200 feet from a private      | No  | (0 points)  | <u>0</u> |
| domestic water source, or, less than    |     |             |          |
| 1000 feet from all other water sources) |     |             |          |

|                                        |                        |             |           |
|----------------------------------------|------------------------|-------------|-----------|
| Distance To Surface Water:             | Less than 200 feet     | (20 points) |           |
| (Horizontal distance to perennial      | 200 feet to 1000 feet  | (10 points) |           |
| lakes, ponds, rivers, streams, creeks, | Greater than 1000 feet | (0 points)  | <u>20</u> |
| irrigation canals and ditches)         |                        |             |           |

RANKING SCORE (TOTAL POINTS): 40

PRINTED NAME  
AND TITLE

# FINAL PIT CLOSURE SAMPLING REPORT

OPERATOR: AMOCO PRODUCTION COMPANY

ADDRESS: 200 AMOCO COURT FARMINGTON, NM

WELL NAME

OR FACILITY: GALLEGOS CANYON UNIT #214

PIT TYPE: SEPARATOR

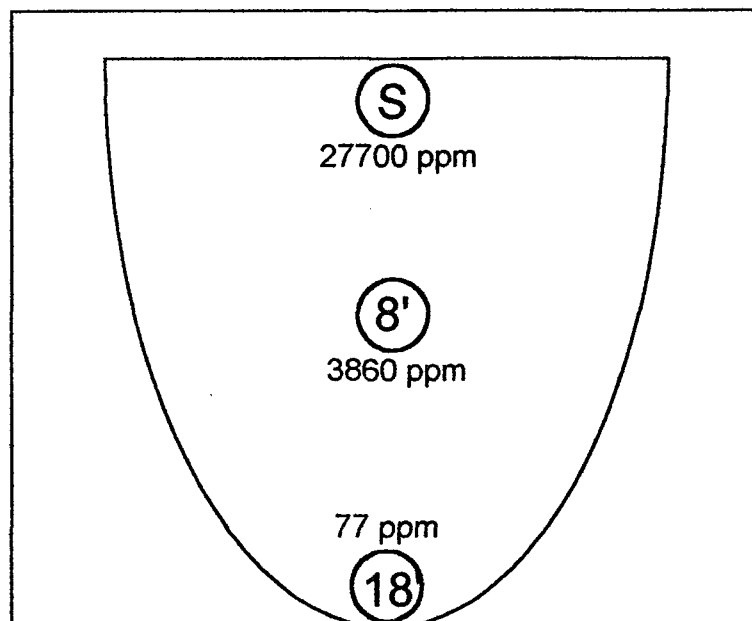
LEGALS: NW/NE SEC.16 T28N R12W

DEPTH

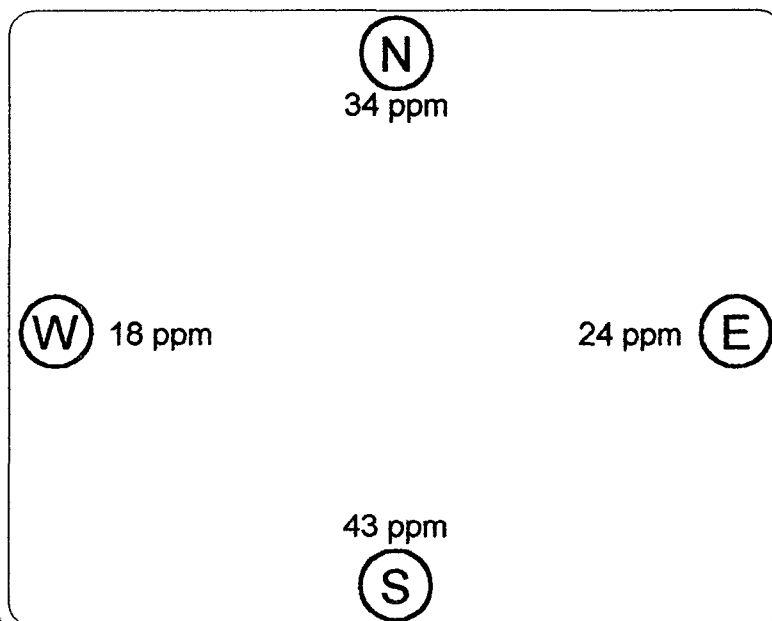
TPH/PPM

| DEPTH   | TPH/PPM |
|---------|---------|
| SURFACE | 27700   |
| 4'      | 19200   |
| 8'      | 3860    |
| 12'     | 2020    |
| 14'     | 384     |
| 18'     | 77      |
|         |         |
|         |         |
|         |         |
|         |         |
|         |         |
|         |         |
|         |         |
|         |         |

SIDE VIEW



TOP VIEW



WALL

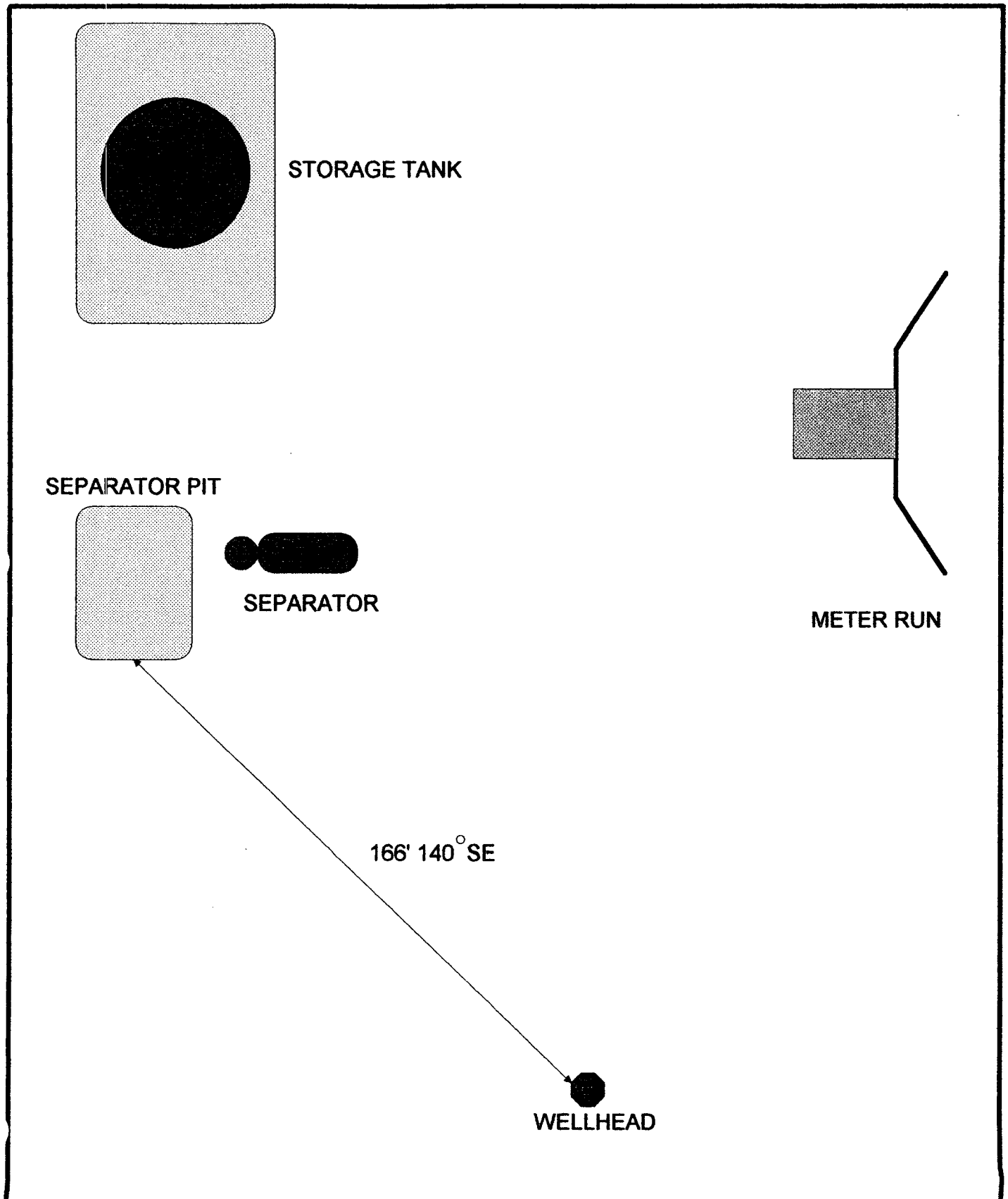
DEPTH

TPH/PPM

| WALL  | DEPTH | TPH/PPM |
|-------|-------|---------|
| NORTH | 18'   | 34      |
| WEST  | 18'   | 18      |
| SOUTH | 18'   | 43      |
| EAST  | 18'   | 24      |

AMOCO PRODUCTION COMPANY

GCU-214





CLIENT: AMOCOBLAGG ENGINEERING, INC.  
P.O. BOX 87, BLOOMFIELD, NM 87413  
(505) 632-1199LOCATION NO: B0201

C.O.C. NO: \_\_\_\_\_

## FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: GCH WELL #: 214 PITS: -  
QUAD/UNIT: B SEC: 16 TWP: 28N RNG: 12W PM: NM CNTY: SJ ST: NM  
QTR/FOOTAGE: NW 1/4 NE 1/4 CONTRACTOR: EPCDATE STARTED: 12/30/94

DATE FINISHED: \_\_\_\_\_

ENVIRONMENTAL  
SPECIALIST: NV

## SOIL REMEDIATION:

REMEDIATION SYSTEM: COMPOSTEDAPPROX. CUBIC YARDAGE: 1452LAND USE: RANGELEASE: I-149-IND-8474 NAVAJO  
TRIBE

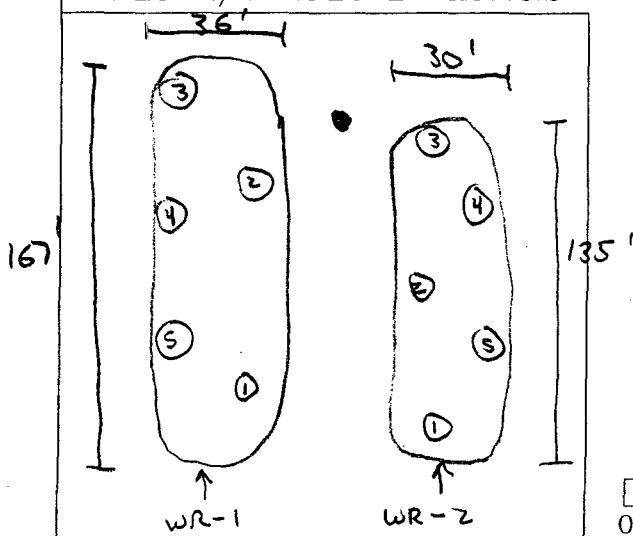
## FIELD NOTES &amp; REMARKS:

DEPTH TO GROUNDWATER: <50' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: <1000'NMDCD RANKING SCORE: 30 NMDCD TPH CLOSURE STD: 100 PPMWR-1 - SOIL MATERIAL MOSTLY PALE BROWN TO DK. YELL. BROWN SAND/  
COMPOST MIX, NO APPARENT ODOR IN OVM SAMPLE.WR-2 - SOIL MATERIAL DK. YELL. BROWN & LT. GRAY TO BLACK,  
STRONG HC ODOR IN DISCOLORED SOIL (FOUND MOSTLY W/IN  
CENTER OF STOCKPILE.

## FIELD 418.1 CALCULATIONS

| SAMPLE I.D. | LAB No.  | WEIGHT (g) | mL. FREON | DILUTION | READING | CALC. ppm |
|-------------|----------|------------|-----------|----------|---------|-----------|
| WR-2        | TPH-1342 | 5          | 20        | 1:1      | 202     | 808       |
|             |          |            |           |          |         |           |
|             |          |            |           |          |         |           |
|             |          |            |           |          |         |           |
|             |          |            |           |          |         |           |

## SKETCH/SAMPLE LOCATIONS



## OVM RESULTS

| SAMPLE ID | FIELD HEADSPACE PID (ppm) |
|-----------|---------------------------|
| WR-1      | 92.2                      |
| WR-2      | 0.0                       |
|           |                           |
|           |                           |
|           |                           |
|           |                           |

## LAB SAMPLES

| SAMPLE ID | ANALYSIS |
|-----------|----------|
|           |          |
|           |          |
|           |          |
|           |          |
|           |          |

## TRAVEL NOTES:

CALLOUT: 12/30/94ONSITE: 12/30/94

**BLAGG ENGINEERING, INC.**

P.O. Box 87, Bloomfield, New Mexico 87413

Phone: (505)632-1199 Fax: (505)632-3903

**FIELD MODIFIED EPA METHOD 418.1  
TOTAL PETROLEUM HYDROCARBONS**

Client: Amoco  
Sample ID: WR - 2  
Project Location: GCU 214  
Laboratory Number: TPH-1342

Project #:   
Date Analyzed: 12-30-94  
Date Reported: 12-30-94  
Sample Matrix: Soil

| Parameter                                   | Result, mg/kg | Detection<br>Limit, mg/kg |
|---------------------------------------------|---------------|---------------------------|
| Total Recoverable<br>Petroleum Hydrocarbons | 810           | 20                        |

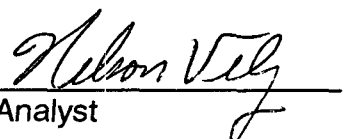
ND = Not Detectable at stated detection limits.

| QA/QC: | QA/QC Sample<br>TPH mg/kg | Duplicate<br>TPH mg/kg | %<br>*Diff. |
|--------|---------------------------|------------------------|-------------|
|        | 3560                      | 3040                   | 15.76       |

\*Administrative Acceptance limits set at 30%.

Method: Modified Method 418.1, Petroleum Hydrocarbons, Total  
Recoverable, Chemical Analysis of Water and Waste,  
USEPA Storet No.4551, 1978

Comments: Compost pile Composite - B0201

  
Analyst  
Review

NAVAJO

|                      |                                                                                |                                                       |
|----------------------|--------------------------------------------------------------------------------|-------------------------------------------------------|
| CLIENT: <u>Amoco</u> | BLAGG ENGINEERING, INC.<br>P.O. BOX 87, BLOOMFIELD, NM 87413<br>(505) 632-1199 | LOCATION NO: <u>B0201</u><br>C.D.C. NO: <u>AN1AMS</u> |
|----------------------|--------------------------------------------------------------------------------|-------------------------------------------------------|

## FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

|                                                                                                                  |                              |                                      |
|------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------|
| LOCATION: <u>GCY 214</u>                                                                                         | LEASE: <u>I-149-1NB-8474</u> | DATE STARTED: <u>4-17-96</u>         |
| QUAD/UNIT: <u>B</u> SEC: <u>16</u> TWP: <u>28 N</u> RNG: <u>12 W</u> BM: <u>NM</u> CNTY: <u>SJ</u> ST: <u>NM</u> |                              | DATE FINISHED: _____                 |
| QTR/FOOTAGE: <u>NW/NE</u>                                                                                        | CONTRACTOR: <u>EPC</u>       | ENVIRONMENTAL SPECIALIST: <u>REO</u> |

## SOIL REMEDIATION:

REMEDICATION SYSTEM: COMPOST APPROX. CUBIC YARDAGE: 1452  
LAND USE: RANGE

## FIELD NOTES &amp; REMARKS:

DEPTH TO GROUNDWATER: <50' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: >1000'

NMDCD RANKING SCORE: 20 NMDCD TPH CLOSURE STD: 100 PPM

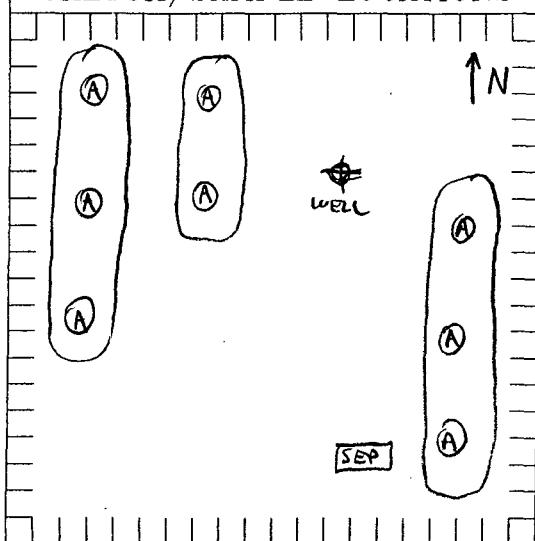
SOIL WELL COMPOSTED - COMPOSITE SAMPLE COLLECTED FROM 3 PILES.  
8-POINT COMPOSITE. MOIST, SILTY SAND.

## FIELD 418.1 CALCULATIONS

CLOSE C.P.

| SAMPLE I.D. | LAB No: | WEIGHT (g) | mL. FREON | DILUTION | READING | CALC. ppm |
|-------------|---------|------------|-----------|----------|---------|-----------|
|             |         |            |           |          |         |           |
|             |         |            |           |          |         |           |
|             |         |            |           |          |         |           |
|             |         |            |           |          |         |           |
|             |         |            |           |          |         |           |

## SKETCH/SAMPLE LOCATIONS



## OVM RESULTS

| SAMPLE ID | FIELD HEADSPACE PID (ppm) |
|-----------|---------------------------|
| comp. A   | 0                         |
|           |                           |
|           |                           |
|           |                           |
|           |                           |
|           |                           |

## LAB SAMPLES

| SAMPLE ID | ANALYSIS | TIME | RESULTS |
|-----------|----------|------|---------|
| comp. A   | 8015     | 1040 | ND      |
|           |          |      |         |
|           |          |      |         |
|           |          |      |         |
|           |          |      |         |
|           |          |      |         |

## TRAVEL NOTES:

CALLOUT: \_\_\_\_\_ ONSITE: 4-17-96 1020



## TOTAL VOLATILE PETROLEUM HYDROCARBONS

### Gasoline Range Organics

#### Blagg Engineering, Inc.

Project ID: GCU 214  
Sample Matrix: Soil  
Preservative: Cool  
Condition: Intact

Report Date: 05/01/96  
Date Sampled: 04/17/96  
Date Received: 04/18/96  
Date Extracted: 04/19/96  
Date Analyzed: 04/24/96

| Sample ID | Lab ID | Concentration<br>(mg/kg) | Detection Limit<br>(mg/kg) |
|-----------|--------|--------------------------|----------------------------|
| Comp: A   | 3149   | ND                       | 17.6                       |

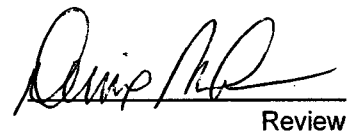
ND- Analyte not detected at the stated detection limit.

|                  |                  |                   |                          |
|------------------|------------------|-------------------|--------------------------|
| Quality Control: | <u>Surrogate</u> | <u>% Recovery</u> | <u>Acceptance Limits</u> |
|                  | Trifluorotoluene | 101%              | 50 - 150%                |

**Reference:** Method for the Determination of Gasoline Range Organics,  
State of Tennessee, Department of Environment and Conservation, Division  
of Underground Storage Tanks.

**Comments:**

  
Analyst

  
Review



## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Diesel Range Organics

Blagg Engineering, Inc.

Project ID: GCU 214  
Sample Matrix: Soil  
Preservative: Cool  
Condition: Intact

Report Date: 05/01/96  
Date Sampled: 04/17/96  
Date Received: 04/17/96  
Date Extracted: 04/29/96  
Date Analyzed: 04/29/96

| Sample ID | Lab ID | Concentration<br>(mg/kg) | Detection Limit<br>(mg/kg) |
|-----------|--------|--------------------------|----------------------------|
| Comp. A   | 3149   | ND                       | 16.9                       |

ND- Analyte not detected at the stated detection limit.

|                  |                  |                   |                          |
|------------------|------------------|-------------------|--------------------------|
| Quality Control: | <u>Surrogate</u> | <u>% Recovery</u> | <u>Acceptance Limits</u> |
|                  | o - Terphenyl    | 80%               | 50 - 150%                |

Reference: EPA Method 8015A, modified. "Nonhalogenated Volatile Organics by Gas Chromatography." Test Methods for Evaluating Solid Waste. Physical/ Chemical Methods, SW-846, 3rd Ed, Final Update I, July, 1992. USEPA.

Comments:

  
Analyst

  
Review