# 3R - 434

# JUNE 2009 GWMR

07/30/2009



3 R 43 4 6121 Indian School Rd. NE Suite 200 Albuquerque, NM 87110 (505) 237-8440

July 30, 2009

Mr. Glen von Gonten
State of New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RECEIVED OC

RE:

ConocoPhillips Company Faye Burdette No. I - June 2009 Groundwater Monitoring Report

Aztec, New Mexico

Dear Mr. von Gonten:

Enclosed please find one copy of the above-referenced document as compiled by Tetra Tech, Inc. for this Aztec area site.

Please do not hesitate to contact me at (505) 237-8440 if you have any questions or require additional information.

Sincerely,

Kelly E. Blanchard

Project Manager/Geologist

Kelly & Blanchard

Enclosures (I)

# QUARTERLY GROUNDWATER MONITORING REPORT JUNE 2009 SAMPLING EVENT

CONOCOPHILLIPS COMPANY FAYE BURDETTE NO. I API No. 30-045-09725 AZTEC, NEW MEXICO

Prepared for:



420 South Keeler Avenue Bartlesville, OK 74004

Prepared by:



6121 Indian School Rd. NE Suite 200 Albuquerque, NM 87110 Tetra Tech Project No. 9690127.100

# **TABLE OF CONTENTS**

| 1.0  | INT         | RODUCTION                               | 1 |
|------|-------------|---|---|
|      |             | Site History                            |   |
| 2.0  | ME.         | THODOLOGY AND RESULTS                   | 1 |
|      | <b>2.</b> I | Monitoring Summary                      | I |
|      | 2.2         | Groundwater Sampling Methodology        | I |
|      | 2.3         | Groundwater Sampling Analytical Results | 2 |
| 3.0  | CO          | NCLUSIONS                               | 2 |
|      |             |   |   |
| FIGU | RES         |   |   |

- 1. Site Location Map
- 2. Site Layout Map
- 3. Groundwater Contour Map June 2009

#### **TABLES**

- I. Site History Timeline
- 2. Groundwater Elevation Data Summary
- 3. Groundwater Laboratory Analytical Results Summary

### **APPENDICES**

- Appendix A. Groundwater Sampling Field Forms
- Appendix B. Groundwater Laboratory Analytical Report

# QUARTERLY GROUNDWATER MONITORING REPORT CONOCOPHILLIPS FAYE BURDETTE NO. 1, AZTEC, NEW MEXICO

#### 1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on June 17, 2009, at the ConocoPhillips Company Faye Burdette No. 1 site in Aztec, New Mexico (Site). This event represents the fourth quarter of groundwater sampling conducted by Tetra Tech at the Site.

The Site is located near the intersection of Highway 550 and Pioneer Avenue in Aztec, NM. The Site consists of a gas production well head and associated equipment and installations. The location and general features of the Site are shown on **Figures 1** and **2**, respectively.

# 1.1 Site History

The history of the Site is outlined in **Table 1**. The existing monitor well network consists of monitor wells MW-1, MW-2, MW-3, and MW-4. Monitor wells MW-2, MW-3, and MW-4 were installed during January 2009. All four monitor wells have been incorporated into a quarterly monitoring program that began after the groundwater sampling event of January 29, 2009.

#### 2.0 METHODOLOGY AND RESULTS

The following subsections describe the groundwater monitoring methodology and sampling analytical results.

#### 2.1 Monitoring Summary

Groundwater samples were collected from monitor wells MW-1, MW-2, MW-3, and MW-4 on June 17, 2009. Prior to sampling, depth to groundwater was measured in all monitor wells. A groundwater contour map, showing a general flow direction to the northwest, is provided in **Figure 3**. Groundwater elevation data is included in **Table 2**.

# 2.2 Groundwater Sampling Methodology

Between 3 to 6 gallons of water (approximately three well volumes) were purged from each monitor well before collecting groundwater samples. The purged water was disposed of in the on-site waste water tank. A 1.5-inch dedicated bailer was used to purge each well and collect groundwater samples. The samples were placed in laboratory prepared bottles, packed on ice, and shipped with chain of custody documentation to Southern Petroleum Laboratory (SPL) located in Houston, Texas. The groundwater samples were analyzed for the presence of benzene, toluene, ethyl-benzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B, and for total metals including iron, manganese, and aluminum by EPA Methods SW-846 and 6010B. Groundwater sampling field forms are provided in **Appendix A**.

## 2.3 Groundwater Sampling Analytical Results

Groundwater quality samples collected during the June 17, 2009 monitoring event indicate the following results:

- BTEX concentrations were below laboratory detection limits for all monitor wells
- The New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards for iron and manganese were exceeded in all monitor wells (including background well MW-2). The NMWQCC standards for iron and manganese are 1 milligram per liter (mg/L) and 0.2 mg/L, respectively

**Table 3** summarizes the laboratory analytical results for the June 2009 groundwater sampling event. The corresponding laboratory analysis report (including quality control summaries) is included in **Appendix B**.

#### 3.0 CONCLUSIONS

Tetra Tech recommends continued quarterly groundwater sampling at the Site in order to provide sufficient data for Site closure. Site closure will be requested when groundwater quality results begin to indicate that all constituents of concern are consistently below NMWQCC groundwater quality standards. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

**FIGURES** 



FIGURE 1.
Site Location Map
CONOCOPHILLIPS
FAYE BURDETTE NO.1
Sec 9, T30N, R11W
Aztec, New Mexico



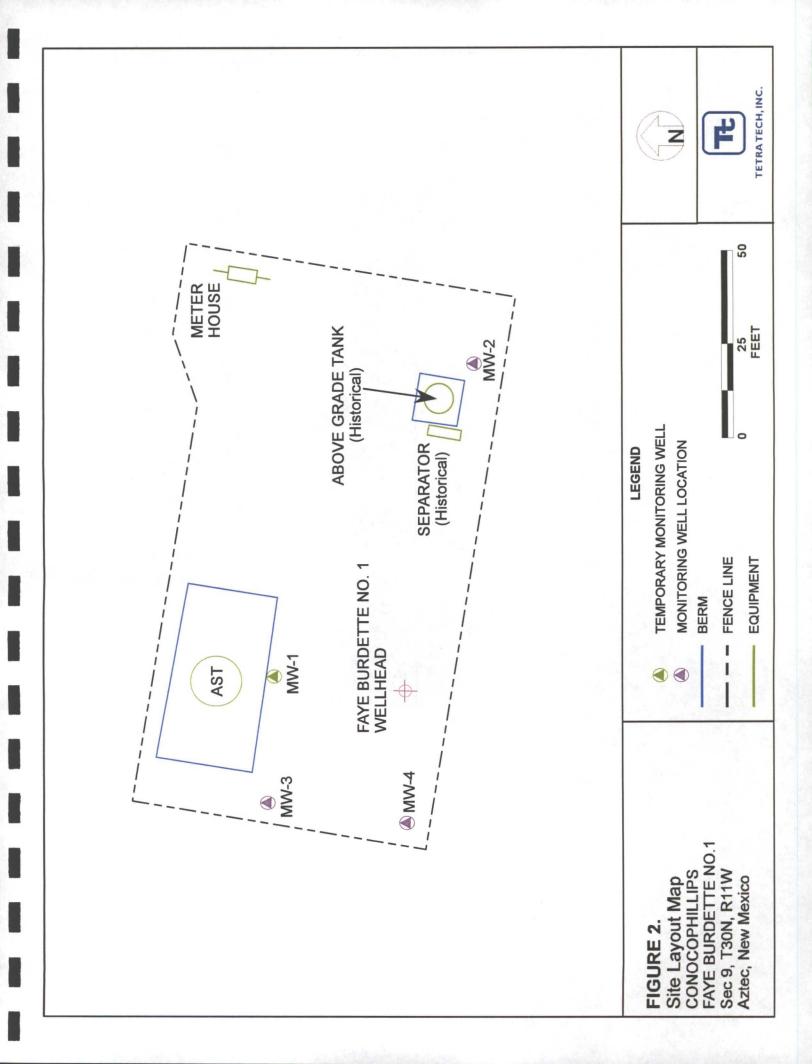
Directions from HW 550 to ConocoPhillips Faye Burdette No.1 site location

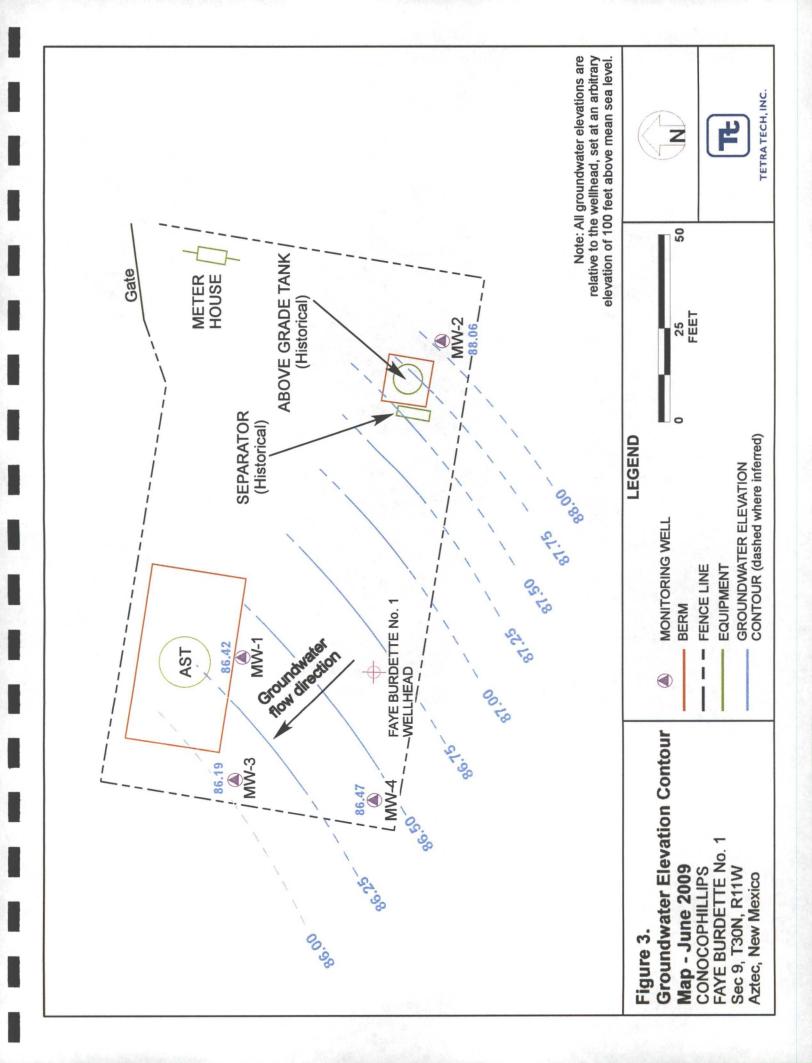
Approximate ConocoPhillips Faye Burdette No.1 Site location





TETRA TECH, INC.





**TABLES** 

Table 1. Site History Timeline - ConocoPhillips Faye Burdette No. 1

| DATE        | ACTIVITY   |
|-------------|--|
| 29-Apr-1962 | Well was spudded by Southwest Production Company.  |
| 1-Sep-1963  | Ownership of well transferred to Beta Development Company.   |
| 21-Feb-1983 | NMOCD inspection noted a leaky 2-inch valve on a storage tank.   |
| 15-Aug-1988 | Ownership of well transferred to Mesa Operating Limited Partnership.   |
| 1-Jul-1991  | Ownership of well transferred to Conoco Inc.   |
| 24-May-2007 | A small (<25 gallons) release occurred from the produced water tank after a rusty spot was scraped off. Follow-up excavation encountered evidence of pre-existing hydrocarbon-impacted soil, apparently related to a former earthen pit beneath the tank.  |
| Jul-07      | Contaminated soil excavated from the Site. Two ground water samples were obtained at the time of this excavation, and one (1) of these samples was found to contain total xylenes above the State of New Mexico drinking water standard.   |
| 26-Sep-07   | Ground water monitoring well installed to a depth of 15 feet below ground surface (bgs) by Envirotech Inc. of Farmington, NM (Envirotech). A soil sample obtained from the well boring was analyzed for benzene, BTEX and total petroleum hydrocarbons (TPH). Results were below NMOCD regulations of 10 parts per million (ppm), 50 ppm, and 100 ppm, respectively. |
|             | A ground water sample was collected from the temporary monitoring well (MW-1) and analyzed for BTEX; results were below the State of New Mexico drinking water standard for this constituent. Depth to ground water recorded at 9.5 feet bgs.  |
| Nov-07      | Envirotech report recommends plugging and abandonment of the temporary ground water monitoring well and a no further action determination for the Site (Envirotech, 2007).   |
| Apr-08      | Oil Conservation Division of NM Energy, Minerals, and Resources Dept. indicates additional investigation and sampling is necessary for closure consideration during a meeting with Glenn Von Gonten.   |
| 22-Oct-08   | 1st quarter sampling of MW-1 by Tetra Tech.  |
| Jan-09      | Installed additional monitoring wells MW-2, MW-3 and MW-4.   |
| 29-Jan-09   | 2nd quarter sampling of MW-1 by Tetra Tech. Initial sampling of monitoring wells MW-2, MW-3, and MW-4  |
| 31-Mar-09   | 3rd quarter sampling of MW-1 by Tetra Tech. 2nd quarter sampling of monitoring wells MW-2, MW-3, and MW-4.   |
| 17-Jun-09   | 4th quarter sampling of MW-1 by Tetra Tech. 3rd quarter sampling of monitoring wells MW-2, MW-3, and MW-4.   |

Table 2. Groundwater Elevation Data Summary - ConocoPhillips Faye Burdette No. 1

| Well ID | Total Depth<br>(ft bgs) | Screen<br>Interval (ft) | *Elevation<br>(ft) (TOC) | Date<br>Measured | Depth to Groundwater (ft below<br>TOC) | Relative Groundwater<br>Elevation |
|---------|-------------------------|-------------------------|--------------------------|------------------|--|-----------------------------------|
|         |                         |                         |                          | 10/22/2008       | 10.91                                  | 86.75                             |
| MW-1    | 17.52                   | 48-148                  | 97.66                    | 1/29/2009        | 11.72                                  | 85.94                             |
|         | 70:                     | )<br> -<br> -<br> -     | 5                        | 3/31/2009        | 11.88                                  | 82.78                             |
|         |                         |                         |                          | 6/17/2009        | 11.24                                  | 86.42                             |
|         |                         |                         |                          | 1/29/2009        | 10.91                                  | 87.63                             |
| MW-2    | 19.45                   | 5.0 - 20.0              | 98.54                    | 3/31/2009        | 11.12                                  | 87.42                             |
|         |                         |                         |                          | 6/17/2009        | 10.48                                  | 88.06                             |
|         |                         |                         |                          | 1/29/2009        | 11.44                                  | 85.72                             |
| MW-3    | 22.96                   | 5.0 - 20.0              | 97.16                    | 3/31/2009        | 11.62                                  | 85.54                             |
|         |                         |                         |                          | 6/17/2009        | 10.97                                  | 86.19                             |
|         |                         |                         |                          | 1/29/2009        | 11.02                                  | 86.04                             |
| MW-4    | 22.28                   | 5.0 - 20.0              | 90'26                    | 3/31/2009        | 11.18                                  | 85.88                             |
|         |                         |                         |                          | 6/17/2009        | 10.59                                  | 86.47                             |

ft = Feet

TOC = Top of casing

bgs = below ground surface

\* Elevation relative to wellhead, set at an arbitrary elevation of 100 feet above mean sea level.

Table 3. Groundwater Laboratory Analytical Results - ConocoPhillips Faye Burdette No. 1

| OI HOW                              | 400        | Aluminum | ron     | Manganese | Benzene | Toluene | Ethylbenzene | Total Videos          |
|-------------------------------------|------------|----------|---------|-----------|---------|---------|--------------|-----------------------|
| al light                            | Date       | (mg/L)   | (mg/L)  | (mg/L)    | (µg/L)  | (ng/L)  | (µg/L)       | i otal Aylenes (μg/L) |
|                                     | 10/22/2008 | ΝΑ       | 3.74    | 2.09      | < 5     | < 5     | < 5          | < 5                   |
| 7 7084                              | 1/29/2009  | 2.14     | 2.77    | 1.41      | < 5     | <5      | < 5          | < 5                   |
| - 00101                             | 3/31/2009  | 3.64     | 4.83    | 1.24      | < 5     | <5      | < 5          | < 5                   |
|                                     | 6/17/2009  | 2.5      | 5.58    | 2.47      | < 5     | < 5     | < 5          | < 5                   |
|                                     | 1/29/2009  | ΑN       | ΑN      | ΝΑ        | < 5     | < 5     | < 5          | < 5                   |
| MW-1 Duplicate                      | 3/31/2009  | NA       | ΑN      | NA        | < 5     | <5      | < 5          | < 5                   |
|                                     | 6/17/2009  | 2.83     | 6.13    | 2.52      | < 5     | < 5     | < 5          | <5                    |
|                                     | 1/29/2009  | 4.15     | 3.15    | 1.79      | < 5     | < 5     | < 5          | < 5                   |
| MW-2                                | 3/31/2009  | 1.17     | 1.02    | 0.326     | < 5     | <5      | < 5          | < 5                   |
|                                     | 6/17/2009  | 3.4      | 2.8     | 1.37      | < 5     | <5      | < 5          | < 5                   |
|                                     | 1/29/2009  | 1.82     | 2.24    | 0.374     | < 5     | < 5     | < 5          | < 5                   |
| MW-3                                | 3/31/2009  | 1.64     | 1.91    | 0.271     | < 5     | < 5     | < 5          | <5                    |
|                                     | 6/17/2009  | 1.68     | 2.14    | 0.628     | <5      | < 5     | < 5          | <5                    |
|                                     | 1/29/2009  | 6.92     | 3.17    | 4.15      | < 5     | < 2     | < 5          | <5                    |
| MW-4                                | 3/31/2009  | 4.21     | 3.22    | 1.45      | < 5     | < 5     | < 5          | . <5                  |
|                                     | 6/17/2009  | 2.43     | 2.05    | 0.854     | < 5     | < 5     | < 5          | < 5                   |
| Method                              |            | SW6010B  | SW6010B | SW6010B   | 8260B   | 8260B   | 8260B        | 8260B                 |
| NMWQCC Groundwater Quality Standard | Standard   | 5.0      | 1.0     | 0.2       | 10      | 750     | 750          | 620                   |
|                                     |            |          |         |           |         |         |              |                       |

# Notes:

MW = monitoring well
NMWQCC = New Mexico Water Quality Control Commission
Constituents in **BOLD** exceed NMWQCC groundwater quality standards

mg/L = milligrams per liter

μg/L = micrograms per liter NA = not analyzed <5 = result below laboratory detection limit

**APPENDIX A** 

| TE             |                      | 1               | WATER SA        | AMPLING FII                        | ELD FO                 | RM          |                       |             |
|----------------|----------------------|-----------------|-----------------|------------------------------------|------------------------|-------------|-----------------------|-------------|
| Project No.    | Frage Bu             | udette          |                 |                                    |                        | 4           | of                    | 4           |
| Site Location  | Aztec, 1             | VM              |                 |                                    |                        | - 1         |                       | /           |
| Site/Well No.  | MW-                  |                 | eate No. (My)   | 1 cote                             | Date                   | 6/17        | 09                    |             |
| Weather        | hot                  | Time :<br>Begar | Sampling D      | 35                                 | Time Samp<br>Completed |             | D                     |             |
|                |                      |                 | EVACUATIO       | N DATA                             | D                      | olica la    | 2 /04                 | 15          |
| Description of | Measuring Pt (MP)    | 10C             |                 |                                    | .,, -                  | Privile (   | 0. 10                 | <del></del> |
| Height of MP   | Above/Below Land Sur |                 | ·               | MP Elevation                       |                        |             |                       |             |
| Total Sounded  | Depth of Well Below  | MP              | <u>1.52</u>     | Water-Level Elev                   | ation                  |             |                       |             |
| Held           |                      | 1               | <u>.24</u>      | Diameter of Casi<br>Gallons Pumped | /Bailed                | 2 inch LAin | ch                    |             |
| Wet            |                      |                 | 0.26            | Prior to Sampling                  | 3                      |             | -                     |             |
|                | Gail                 | ons in Well     |                 | Sampling Pump<br>(feet below land  | Intake<br>surface)     |             |                       |             |
| Purging Equip  | ment <u>dedicul</u>  |                 |                 | 7.6                                |                        |             |                       |             |
|                |                      |                 |                 | D PARAMETER                        |                        | DOW         | ORP                   | Othor       |
| Time           | Temperature          | pH<br>つ、40      | Conductivity    | 0.872                              | 4, Z                   | D0%<br>42.3 | 1 %. 6                | Other       |
| 1043           | 14,82                | 7.7.7           | 1268            | 0.824                              | 2.96                   | 29.2        | 20.8                  |             |
| 1090           | 17,90                | 1312            | 1203            | 17. 78 3                           | -6±1-1                 | e*17 • \$   | <del>~ (* 1    </del> |             |
| Sampling Equ   | ipment               | Low Flow Pump   | / Disposable Ba | iler                               | 1                      |             |                       |             |
|                | tuents Sampled       |                 | Container Desc  | ription                            |                        |             | rvative               |             |
| BTI            | X                    |                 | 3 VOAS          | 5                                  |                        | 10          |                       |             |
| Fr, V          | Un, Al               |                 | 32 02. D        | lastic_                            | 14                     | NU3         |                       |             |
|                |                      | · —             | ·               |                                    | ,                      | •           | ·                     |             |
| Remarks        |                      |                 |                 |                                    |                        |             |                       |             |
| Sampling Per   | sonnel GO            | Am              |                 |                                    |                        |             |                       |             |
|                |                      |                 | Well Casin      | g Volumes                          |                        |             |                       |             |
|                | Gai./ft. 1 ½         | 4" = 0.077      | 2" = 0.16       | -                                  | 0.37                   | 4" = 0.65   |                       |             |
|                | 1 ½                  | ᪠= 0.10         | 2 1/3" = 0.24   | 3" 1/4 =                           | 0.50                   | 6° = 1.46   | :                     |             |

| Te             |                                       |                       | WATER SA        | AMPLING FI                        | ELD FO                 | RM                                    |                |       |
|----------------|---------------------------------------|-----------------------|-----------------|-----------------------------------|------------------------|---------------------------------------|----------------|-------|
| Project No.    | Faye P                                | ourdette              | ·               |                                   |                        | (                                     | of             | 4     |
| Site Location  | Attic. N                              | M                     |                 |                                   |                        |                                       |                | 1     |
| Site/Well No.  | мw- 2                                 | •                     | cate No.        |                                   | Date                   | 6/1                                   | 7/69           |       |
| Weather        | Sunny, 15°                            | Time<br>Bega          | Sampling 00     | 120                               | Time Samp<br>Completed |                                       | 945            |       |
|                | )                                     |                       | EVACUATIO       | N DATA                            |                        |                                       |                |       |
| Description of | Measuring Pt (MP)                     | TOC                   |                 |                                   |                        |                                       |                |       |
| Height of MP   | Above/Below Land S                    | urface                |                 | MP Elevation                      |                        |                                       |                |       |
| Total Sounder  | d Depth of Well Belo                  | WMP 10                | 1.45            | Water-Level Ele                   | vation                 | · · · · · · · · · · · · · · · · · · · |                |       |
| Held           | Depth to Wa                           | ter Below MP <u>(</u> | ). 48           | Diameter of Cas<br>Gailons Pumped |                        | 2 inch / 4 in                         | ch             | · .   |
| Wet            | _ Water Co                            | olumn in Well 🦳 🎖     | 97              | Prior to Samplin                  |                        | <u> </u>                              | <u> </u>       |       |
|                |                                       | lons per Foot         | 0.(b<br>43 v.3  | Sampling Pump<br>(feet below land |                        |                                       |                |       |
| Purging Equip  | ment <u>Adia</u>                      | fed bailer=           | - 4.29          |                                   |                        |                                       | <del></del>    |       |
|                |                                       |                       |                 | D PARAMETER                       | <del></del>            | 000/                                  |                |       |
| Time<br>927    | Temperature                           | 9.23                  | Conductivity    | C. GUA                            | 6,29                   | 00%<br>61.5                           | ORP<br>196,9   | Other |
| 930            | 14.08                                 | 7.30                  | 1021            | 0.656                             | 5.12                   | 42.3                                  | 204.6          |       |
|                |                                       |                       |                 |                                   |                        |                                       |                |       |
| Sampling Equ   | ipment                                | Low Flow Pump         | / Disposable Ba | ller                              |                        |                                       |                | _     |
| Consti         | tuents Sampled                        | ŀ                     | Container Desc  | ription                           |                        | Prese                                 | <u>rvative</u> |       |
| 15(1-)         | X, K, Ma, AI                          | _ 40                  | IML UUtz        | MHCI                              |                        |                                       | <u>.</u>       |       |
|                | <del></del> .                         |                       | 9 52            | 22 plash                          |                        | ····                                  |                |       |
|                | · · · · · · · · · · · · · · · · · · · |                       | <u> </u>        | HN03-                             |                        |                                       |                |       |
| Remarks        |                                       |                       |                 |                                   |                        |                                       |                |       |
| Sampling Pen   | sonnel                                | 60 A                  | M               |                                   |                        |                                       |                |       |
|                |                                       | λ (                   | Well Casin      | a Volumes                         | <del></del>            |                                       |                |       |
|                | Gal./ft, 1                            | 1/4" = 0.077          | 2" = 0.16       |                                   | 0.37                   | 4" = 0.65                             |                |       |
|                |                                       | ½" = 0.10             | 21/4" = 0.24    |                                   |                        | 6" = 1.46                             |                |       |

|                 |                       |                  | WATER SA                     | AMPLING F                      | IELD FO          | RM           |         | _     |
|-----------------|-----------------------|------------------|------------------------------|--------------------------------|------------------|--------------|---------|-------|
| Project No.     | Faye R                | wedette          |                              |                                |                  | 3            | of      | 4     |
| Site Location   | Acter                 | NM               |                              |                                |                  |              |         |       |
| Site/Well No.   | MW- 3                 |                  | licate No.                   |                                | Date<br>Time Sam |              | +109    |       |
| Weather         | hot                   |                  | e Sampling<br>an <u>D Li</u> | )                              | Completed        |              | 025     |       |
|                 |                       |                  | EVACUATIO                    | N DATA                         |                  |              |         |       |
| Description of  | Measuring Pt (MF      | 76C              |                              |                                |                  | <del>-</del> |         |       |
| Height of MP    | Above/Below Land      | d Surface        |                              | MP Elevation                   |                  |              |         |       |
| Total Sounded   | Depth of Well Be      | elow MP          | 22.96                        | Water-Level E                  | levation         |              |         |       |
| Held            | Depth to V            | Vater Below MP   | 0.97                         | Diameter of Ca                 |                  | 2 inch /4 in | ch      |       |
| Wet             | Water                 | Column in Well   | 11.99                        | Gallons Pump<br>Prior to Sampl |                  |              |         |       |
|                 | C                     | Gallons per Foot | b.)6                         | Sampling Pum                   |                  |              |         |       |
| Disanta a Fanda | detin'                | led burven 1.    | = 5 76                       | (feet below lan                | u sunace)        |              |         | ·     |
| Purging Equip   | ment ( <u>Actifut</u> | ACIA 1741 BOV    | M S/CM?<br>LING DATA/FIEL    | 5                              |                  |              |         |       |
| Time            | Temperature           | SAMP             | LING DATA/FIEL Conductivity  | TDS 3                          | RS moll          | DO%          | ORP     | Other |
| 1017            | 14,44                 | 7.34             | 1079                         | 0.701                          | 5,24             | 73.7         | 153.6   |       |
| 1022            | 14,22                 | 7. 7.9           | 1679                         | 0.702                          |                  | 20.2         | 150,1   |       |
|                 |                       |                  |                              |                                |                  | L            |         |       |
| Sampling Equi   | ipment                | Low Flow Pump    | Disposable Ba                | iler                           |                  |              |         |       |
| Constit         | uents Sampled         |                  | Container Desc               | ription                        |                  | Prese        | rvatíve |       |
| BTO             | In Fr AI              | <u>40</u>        | a Was                        | 8                              | <u> 40</u>       | 1 (00)       | k)      |       |
|                 |                       | <u> </u>         | 3202 01                      | ck c                           |                  | S HA         | Jó,     |       |
|                 | <u> </u>              |                  |                              |                                |                  |              |         |       |
| Remarks         |                       |                  |                              |                                |                  |              |         |       |
| Sampling Pers   | sonnel                |                  |                              |                                |                  |              |         |       |
|                 |                       |                  | Well Casin                   | Volumes                        |                  |              |         | l     |
|                 | Gal./ft.              | 1 1/4" = 0.077   | 2" = 0.16                    | _                              | = 0.37           | 4" = 0.65    |         |       |
|                 |                       | 1 1/3" = 0.10    | $2\frac{1}{2}$ " = 0.24      | 3" 1/2                         |                  | 6" = 1.46    |         |       |

|                |                       | ١                | NATER SA       | MPLING FII                            | ELD FO         | RM           |             |             |
|----------------|-----------------------|------------------|----------------|---------------------------------------|----------------|--------------|-------------|-------------|
| Project No.    | Faye B.               | wdute            |                |                                       |                | 4            | of _        | 4           |
| Site Location  | Aztec, M              | M                |                |                                       |                |              | _           | <i></i>     |
| Site/Welf No.  | MW- 4                 |                  | ate No.        | <del></del>                           | Date           | <u>le 17</u> | 07          |             |
| Weather        | hot                   | I ime s<br>Began | Sampling 09    | 50                                    | Time Sampleted |              | <i>as</i>   | <del></del> |
|                |                       |                  | EVACUATIO      | N DATA                                |                |              |             |             |
| Description of | Measuring Pt (MP)     | TOC              |                |                                       |                | -            |             |             |
| Height of MP   | Above/Below Land Su   | rface            |                | MP Elevation                          |                |              |             |             |
| Total Sounded  | i Depth of Well Below | MP _2            | 1.28           | Water-Level Elev                      | vation         |              |             |             |
| Held           | _ Depth to Wate       | r Below MP       | 1.59           | Diameter of Casi                      |                | 2 inch /4 in | ch          |             |
| Wet            | Water Col             | umn in Well      | .69            | Gallons Pumped<br>Prior to Sampling   |                |              | 55          |             |
|                |                       | <u></u>          | .16<br>7 x3    | Sampling Pump<br>(feet below land     |                |              |             |             |
| Purging Equip  | ment aledicate        | ed bailer:       | = 5.61         |                                       |                |              |             |             |
|                |                       |                  |                | D PARAMETERS                          |                |              | ·           |             |
| 7 Time         | Temperature           | 7.32             | Conductivity   | /) 7/2_                               | 5,00           | D0%<br>47.7  | ORP<br>1978 | Other       |
| 959            | 1426                  | 7.33             | 1138           | 0.740                                 | 4.90           | 46.7         | 165.2       |             |
| 1002           | 14,20                 | 7.30_            | 1174           | 0.763                                 | 3.59           | 34.7         | 124.4       |             |
|                |                       |                  |                |                                       |                |              |             |             |
| Sampling Equ   | ipment                | Low Flow Pump (  | Disposable Bai | er                                    |                |              |             |             |
| Constit        | uents Sampled         | <u>9</u>         | Container Desc | ription                               |                | Prese        | rvative     |             |
| BTEX           |                       | 3                | VOAS           |                                       |                | HQ.          |             |             |
| FRIN           | 1n, A1                |                  | 12 07. pl      | astic                                 |                | HNOz         |             |             |
|                |                       | _                | У              |                                       |                |              | ·           |             |
|                |                       |                  |                |                                       |                |              |             |             |
| Remarks        |                       | Δ                |                |                                       | •              |              |             |             |
| Sampling Pers  | sonnel $(71)$ , $A$   | m/               |                | · · · · · · · · · · · · · · · · · · · |                |              |             | <u></u>     |
|                |                       |                  | Well Casing    | y Volumes                             | •              |              |             |             |
|                | Gal./ft. 11           | 4" = 0.077       | 2" = 0.16      | =                                     | 0.37           | 4" = 0.65    |             |             |
|                | 13                    | 4" = 0.10        | 2 1/2" = 0.24  | 3° 1⁄2 =                              | 0.50           | 6" = 1.46    |             |             |

**APPENDIX B** 



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# **Conoco Phillips**

#### **Certificate of Analysis Number:**

# 09060969

Report To: **COP Faye-Burdette Project Name:** Aztec, NM Site: Tetra Tech, Inc. Kelly Blanchard Site Address: 6121 Indian School Road, N.E. Suite 200 PO Number: 4510713617 **Albuquerque** State: **New Mexico** NM 87110-State Cert. No.: ph: (505) 237-8440 fax: 7/1/2009 **Date Reported:** 

This Report Contains A Total Of 16 Pages

Excluding This Page, Chain Of Custody

And

**Any Attachments** 



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# Case Narrative for: Conoco Phillips

#### **Certificate of Analysis Number:**

#### 09060969

Report To:
Tetra Tech, Inc.

Kelly Blanchard 6121 Indian School Road, N.E.

Suite 200 Albuquerque

NM

87110-

ph: (505) 237-8440

fav

**Project Name:** 

**COP Faye-Burdette** 

Site:

Aztec, NM

Site Address:

PO Number:

4510713617

State:

**New Mexico** 

State Cert. No.:

Date Reported:

7/1/2009

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

500 Overlinas

09060969 Page 1 7/1/2009



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# **Conoco Phillips**

# **Certificate of Analysis Number:**

# 09060969

Report To:

Fax To:

Tetra Tech, Inc.

Kelly Blanchard

6121 Indian School Road, N.E.

Suite 200

Albuquerque

NM 87110-

ph: (505) 237-8440

fax: (505) 881-3283

Project Name:

**COP Faye-Burdette** 

Site:

Aztec, NM

Site Address:

PO Number:

4510713617

State:

New Mexico

State Cert. No.:

**Date Reported:** 

7/1/2009

| Client Sample ID | Lab Sample ID | Matrix | Date Collected        | Date Received        | COC ID | HOLD |
|------------------|---------------|--------|-----------------------|----------------------|--------|------|
| MW-1             | 09060969-01   | Water  | 6/17/2009 11:00:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |
| MW-2             | 09060969-02   | Water  | 6/17/2009 9:45:00 AM  | 6/18/2009 9:30:00 AM | 327801 |      |
| MW-3             | 09060969-03   | Water  | 6/17/2009 10:25:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |
| MW-4             | 09060969-04   | Water  | 6/17/2009 10:05:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |
| DUPLICATE        | 09060969-05   | Water  | 6/17/2009 10:45:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |
| Trip Blank       | 09060969-05   | Water  | 6/17/2009 10:45:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |
| Trip Blank       | 09060969-06   | Water  | 6/17/2009 10:45:00 AM | 6/18/2009 9:30:00 AM | 327801 |      |

50 a Cordinas

7/1/2009

Erica Cardenas Project Manager Date

Kesavalu M. Bagawandoss Ph.D., J.D. Laboratory Director

Ted Yen
Quality Assurance Officer



Surr: 4-Bromofluorobenzene

Surr: Toluene-d8

#### **HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

06/29/09 11:52 LU\_L

06/29/09 11:52 LU\_L

Collected: 06/17/2009 11:00 Client Sample ID:MW-1 09060969-01 SPL Sample ID:

|                     |            |          | Site: Azte | ec, NM |          |          |         |         |         |
|---------------------|------------|----------|------------|--------|----------|----------|---------|---------|---------|
| Analyses/Method     | Result     | QUAL.    | Rep.Limit  | Dil    | . Factor | Date Ana | lyzed   | Analyst | Seq. #  |
| METALS BY METHOD 60 | 10B, TOTAL | P.A. 180 |            | MCL    | SV       | V6010B   | Unit    | s: mg/L |         |
| Aluminum            | 2.5        |          | 0.1        |        | 1        | 06/24/09 | 15:00 E | EG      | 5084236 |

| Aluı | minum       | 2.               | 5             | 0.1         |   | 1 | 06/24/09 | 15:00 | EG | 5084236 |
|------|-------------|------------------|---------------|-------------|---|---|----------|-------|----|---------|
| Iron |             | 5.5              | 8             | 0.02        |   | 1 | 06/24/09 | 15:00 | EG | 5084236 |
| Mar  | nganese     | 2.4              | 7             | 0.005       | • | 1 | 06/24/09 | 15:00 | EG | 5084236 |
|      | Prep Method | Prep Date        | Prep Initials | Prep Factor |   |   |          |       |    |         |
|      | C)4/2010A   | 06/20/2000 44:20 | AD4           | 1.00        |   |   |          |       |    |         |

| SW3010A                | 06/20/2009 11:30 | AB1 | 1.00 |        |     |          |             |         |
|------------------------|------------------|-----|------|--------|-----|----------|-------------|---------|
| OLATILE ORGANIC        | S BY METHOD 826  | 60B |      |        | MCL | SW8260B  | Units: ug/L |         |
| Benzene                | N                | ID  |      | 5      | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |
| Ethylbenzene           | N                | ID  |      | 5      | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |
| Toluene                | 1                | ID  |      | 5      | .1  | 06/29/09 | 11:52 LU_L  | 5090427 |
| m,p-Xylene             | 7                | ID  |      | 5      | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |
| o-Xylene               | N                | ID  |      | 5      | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |
| Xylenes,Total          | N                | םו  |      | 5      | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |
| Surr: 1,2-Dichloroetha | ane-d4 92        | 2.9 | %    | 78-116 | 1   | 06/29/09 | 11:52 LU_L  | 5090427 |

%

%

74-125

82-118

1

1

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

99.2

99.2

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

09060969 Page 3 7/1/2009 4:00:46 PM

5090427

5090427



Manganese

#### **HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

06/24/09 15:04 EG

5084237

Client Sample ID: MW-2 Collected: 06/17/2009 9:45 SPL Sample ID: 09060969-02

|                               |             | Site: Azte | c, NM |        |          |       |           |         |
|-------------------------------|-------------|------------|-------|--------|----------|-------|-----------|---------|
| Analyses/Method               | Result QUAL | Rep.Limit  | Dil.  | Factor | Date Ana | lyzed | Analyst   | Seq. #  |
| METALS BY METHOD 6010B, TOTAL |             |            | MCL   | SV     | V6010B   | Un    | its: mg/L |         |
| Aluminum                      | 3.4         | 0.1        |       | 1      | 06/24/09 | 15:04 | EG        | 5084237 |
| Iron                          | 2.8         | 0.02       |       | 1      | 06/24/09 | 15:04 | EG        | 5084237 |

0.005

1

| • | Prep Method | Prep Date        | Prep Initials | Prep Factor |
|---|-------------|------------------|---------------|-------------|
|   | SW3010A     | 06/20/2009 11:30 | AB1           | 1.00        |

1.37

| OLATILE ORGANICS BY METI    | HOD 8260B |   |        | MCL |   | SW8260B  | Units: ug/L |         |
|-----------------------------|-----------|---|--------|-----|---|----------|-------------|---------|
| Benzene                     | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Ethylbenzene                | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Toluene                     | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| m,p-Xylene                  | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| o-Xylene                    | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Xylenes,Total               | ND        |   | 5      |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Surr: 1,2-Dichloroethane-d4 | 93.6      | % | 78-116 |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Surr: 4-Bromofluorobenzene  | 102       | % | 74-125 |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |
| Surr: Toluene-d8            | 99.4      | % | 82-118 |     | 1 | 06/29/09 | 12:19 LU_L  | 5090430 |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

09060969 Page 4 7/1/2009 4:00:46 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID:MW-3

Collected: 06/17/2009 10:25

SPL Sample ID:

09060969-03

| Site: | Aztec, | NM |  |
|-------|--------|----|--|
|-------|--------|----|--|

| Analyses/Method     | Result     | QUAL | Rep.Limit | Dil. Fa | ctor Date An | alyzed | Analyst   | Seq.#   |
|---------------------|------------|------|-----------|---------|--------------|--------|-----------|---------|
| METALS BY METHOD 60 | 10B, TOTAL |      | 2         | MCL     | SW6010B      | Ur     | its: mg/L |         |
| Aluminum            | 1.68       |      | 0.1       | 1       | 06/24/09     | 15:08  | EG        | 5084238 |
| Iron                | 2.14       |      | 0.02      | 1       | 06/24/09     | 15:08  | EG        | 5084238 |
| Manganese           | 0.628      |      | 0.005     | 1       | 06/24/09     | 15:08  | EG        | 5084238 |

| Prep Method | Prep Date        | Prep Initials | Prep Factor |
|-------------|------------------|---------------|-------------|
| SW3010A     | 06/20/2009 11:30 | AB1           | 1.00        |

| OLATILE ORGANICS BY MET     | 1OD 8260B | · <u></u> |        | MCL |   | SW8260B  | Units: ug/L |         |
|-----------------------------|-----------|-----------|--------|-----|---|----------|-------------|---------|
| Benzene                     | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Ethylbenzene                | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Toluene                     | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| m,p-Xylene                  | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| o-Xylene                    | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Xylenes,Total               | ND        |           | 5      |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Surr: 1,2-Dichloroethane-d4 | 93.2      | %         | 78-116 |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Surr: 4-Bromofluorobenzene  | 100       | %         | 74-125 |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |
| Surr: Toluene-d8            | 99.6      | %         | 82-118 |     | 1 | 06/29/09 | 12:46 LU_L  | 5090432 |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

09060969 Page 5 7/1/2009 4:00:46 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-4 Collected: 06/17/2009 10:05 SPL Sample ID: 09060969-04

| Site: | Aztec. | NM | ı |
|-------|--------|----|---|
|-------|--------|----|---|

| Analyses/Method               | Result | QUAL | Rep.Limit | Dil. | Facto   | or Date Ana | lyzed     | Analyst | Seq. #  |
|-------------------------------|--------|------|-----------|------|---------|-------------|-----------|---------|---------|
| METALS BY METHOD 6010B, TOTAL |        |      | MCL       |      | SW6010B | Un          | its: mg/L |         |         |
| Aluminum                      | 2.43   |      | 0.1       |      | 1       | 06/24/09    | 15:13     | EG      | 5084239 |
| Iron                          | 2.05   |      | 0.02      |      | 1       | 06/24/09    | 15:13     | EG      | 5084239 |
| Manganese                     | 0.854  |      | 0.005     |      | 1       | 06/24/09    | 15:13     | EG      | 5084239 |

| Prep Method | Prep Date        | Prep Initials | Prep Factor |
|-------------|------------------|---------------|-------------|
|             | 06/20/2009 11:30 | AB1           | 1.00        |

| OLATILE ORGANICS BY METH    | HOD 8260B |     |        | MCL |   | SW8260B    | Units: ug/L |         |
|-----------------------------|-----------|-----|--------|-----|---|------------|-------------|---------|
| Benzene                     | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Ethylbenzene                | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Toluene                     | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| m,p-Xylene                  | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| o-Xylene                    | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Xylenes,Total               | ND        |     | 5      |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Surr: 1,2-Dichloroethane-d4 | 92.2      | %   | 78-116 |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Surr: 4-Bromofluorobenzene  | 94.9      | %   | 74-125 |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |
| Surr: Toluene-d8            | 93.4      | . % | 82-118 |     | 1 | 06/28/09 1 | 7:04 JC     | 5088668 |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

09060969 Page 6 7/1/2009 4:00:46 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: DUPLICATE

Collected: 06/17/2009 10:45

SPL Sample ID:

09060969-05

| Site: Aztec, NM     |             |           |         |         |         |       |           |         |
|---------------------|-------------|-----------|---------|---------|---------|-------|-----------|---------|
| Analyses/Method     | Result QUAL | Rep.Limit | Dil. Fa | ctor Da | ate Ana | lyzed | Analyst   | Seq. #  |
| METALS BY METHOD 60 | 10B, TOTAL  |           | MCL     | SW60    | 10B     | Un    | its: mg/L |         |
| Aluminum            | 2.83        | 0.1       |         | 0       | 6/24/09 | 15:17 | EG        | 5084240 |
| Iron                | 6.13        | 0.02      |         | 1 0     | 6/24/09 | 15:17 | EG        | 5084240 |
| Manganese           | 2.52        | 0.005     |         | 0       | 6/24/09 | 15:17 | EG        | 5084240 |

| Prep Method | Prep Date        | Prep Initials | Prep Factor |
|-------------|------------------|---------------|-------------|
| SW3010A     | 06/20/2009 11:30 | AB1           | 1.00        |

| OLATILE ORGANICS BY METH    | IOD 8260B |   |        | MCL |   | SW8260B  | Units: ug/L |         |
|-----------------------------|-----------|---|--------|-----|---|----------|-------------|---------|
| Benzene                     | ND        |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Ethylbenzene                | . ND      |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Toluene                     | ND        |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| m,p-Xylene                  | ND        |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| o-Xylene                    | ND        |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Xylenes,Total               | ND        |   | 5      |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Surr: 1,2-Dichloroethane-d4 | 96.0      | % | 78-116 |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Surr: 4-Bromofluorobenzene  | 99.7      | % | 74-125 |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |
| Surr: Toluene-d8            | 100       | % | 82-118 |     | 1 | 06/29/09 | 13:13 LU_L  | 5090433 |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: Trip Blank Collected: 06/17/2009 10:45 SPL Sample ID: 09060969-06

| Site: Aztec, N | V |
|----------------|---|
|----------------|---|

| Analyses/Method             | Result    | QUAL | R | ep.Limit | Dil. Fa | actor | Date Ana | lyzed | Analyst    | Seq. #  |
|-----------------------------|-----------|------|---|----------|---------|-------|----------|-------|------------|---------|
| VOLATILE ORGANICS BY MET    | HOD 8260B |      |   |          | MCL     | SV    | V8260B   | Ur    | nits: ug/L |         |
| Benzene                     | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Ethylbenzene                | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Toluene                     | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| m,p-Xylene                  | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| o-Xylene                    | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Xylenes,Total               | ND        |      |   | 5        |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Surr: 1,2-Dichloroethane-d4 | 93.3      |      | % | 78-116   |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Surr: 4-Bromofluorobenzene  | 89.8      |      | % | 74-125   |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |
| Surr: Toluene-d8            | 99.4      |      | % | 82-118   |         | 1     | 06/29/09 | 13:40 | LU_L       | 5090434 |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

 $\ensuremath{\mathsf{B/V}}$  - Analyte detected in the associated Method Blank

\* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

E - Estimated Value exceeds calibration curve

TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

09060969 Page 8 7/1/2009 4:00:47 PM

# **Quality Control Documentation**



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# **Conoco Phillips COP Faye-Burdette**

Analysis:

Metals by Method 6010B, Total

Method:

SW6010B

Samples in Analytical Batch:

09060969

Lab Batch ID:

WorkOrder:

91295

#### **Method Blank**

RunID:

ICP2\_090624A-5084226

Units:

mg/L

Lab Sample ID

Client Sample ID

Analysis Date:

Manganese

06/24/2009 14:17

Analyst:

09060969-01B

EG

MW-1

Preparation Date:

06/20/2009 11:30

09060969-02B

Prep By:

AB1 Method SW3010A

0.005

09060969-03B

MW-2

09060969-04B 09060969-05B MW-3 MW-4

**DUPLICATE** 

Result Rep Limit Analyte ND 0.1 Aluminum ND 0.02 Iron

#### Laboratory Control Sample (LCS)

RunID:

ICP2\_090624A-5084227

Units:

mg/L

Analysis Date: Preparation Date:

06/24/2009 14:21 06/20/2009 11:30

ND

EG Analyst:

AB1 Method SW3010A Prep By:

| Analyte   | Spike<br>Added | Result | Percent<br>Recovery | Lower<br>Limit | Upper<br>Limit |
|-----------|----------------|--------|---------------------|----------------|----------------|
| Aluminum  | 1.000          | 1.078  | 107.8               | 80             | 120            |
| Iron      | 1.000          | 1.067  | 106.7               | 80             | 120            |
| Manganese | 1.000          | 1.021  | 102.1               | 80             | 120            |

#### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

09060865-02

RunID:

ICP2\_090624A-5084229

Units:

mg/L

Analysis Date:

06/24/2009 14:30

Analyst: EG

Preparation Date:

06/20/2009 11:30

Prep By:

AB1 Method SW3010A

| Analyte   | Sample<br>Result | MS<br>Spike<br>Added | MS<br>Result | MS %<br>Recovery | MSD<br>Spike<br>Added | MSD<br>Result | MSD %<br>Recovery | RPD    | RPD<br>Limit | Low<br>Limit | High<br>Limit |
|-----------|------------------|----------------------|--------------|------------------|-----------------------|---------------|-------------------|--------|--------------|--------------|---------------|
| Aluminum  | ND               | 1                    | 1.070        | 103.1            | 1                     | 1.067         | 102.8             | 0.2808 | 20           | 75           | 125           |
| Iron      | 0.6258           | 1                    | 1.633        | 100.7            | 1                     | 1.701         | 107.5             | 4.079  | 20           | 75           | 125           |
| Manganese | 0.1792           | 1                    | 1.198        | 101.9            | 1                     | 1.221         | 104.2             | 1.902  | 20           | 75           | 125           |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B/V - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - Recovery Outside Advisable QC Limits

E - Estimated Value exceeds calibration curve

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

TNTC - Too numerous to count

09060969 Page 10

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

7/1/2009 4:00:48 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

## **Conoco Phillips COP Faye-Burdette**

Analysis:

Volatile Organics by Method 8260B

Method:

RunID:

SW8260B

WorkOrder:

09060969

Lab Batch ID:

R276742

**Method Blank** 

Q\_090628B-5088667

Units:

ug/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

06/28/2009 14:19

JC Analyst:

09060969-04A

MW-4

| Analyte                     | Result | Rep Limit |
|-----------------------------|--------|-----------|
| Benzene                     | ND     | 5.0       |
| Ethylbenzene                | ND     | 5.0       |
| Toluene                     | ND     | 5.0       |
| m,p-Xylene                  | ND     | 5.0       |
| o-Xylene                    | ND     | 5.0       |
| Xylenes,Total               | ND     | 5.0       |
| Surr: 1,2-Dichloroethane-d4 | 100.2  | 78-116    |
| Surr: 4-Bromofluorobenzene  | 101.1  | 74-125    |
| Surr: Toluene-d8            | 98.8   | 82-118    |

#### Laboratory Control Sample (LCS)

RunID:

Q\_090628B-5088666

Units:

ug/L

Analysis Date:

06/28/2009 13:51

Analyst: JC

| Analyte                     | Spike<br>Added | Result | Percent<br>Recovery | Lower<br>Limit | Upper<br>Limit |
|-----------------------------|----------------|--------|---------------------|----------------|----------------|
| Benzene                     | 20.0           | 19.3   | 96.4                | 74             | 123            |
| Ethylbenzene                | 20.0           | 22.2   | 111                 | 72             | 127            |
| Toluene                     | 20.0           | 19.8   | 98.9                | 74             | 126            |
| m,p-Xylene                  | 40.0           | 46.6   | 116                 | 71             | 129            |
| o-Xylene                    | 20.0           | 23.6   | 118                 | 74             | 130            |
| Xylenes,Total               | 60.0           | 70.2   | 117                 | 71             | 130            |
| Surr: 1,2-Dichloroethane-d4 | 50.0           | 46.7   | 93.4                | 78             | 116            |
| Surr: 4-Bromofluorobenzene  | 50.0           | 51.6   | 103                 | 74             | 125            |
| Surr: Toluene-d8            | 50.0           | 48.9   | 97.9                | 82             | 118            |

#### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

09060969-04

RunID:

Q\_090628B-5088669

Units:

ug/L

Analysis Date:

06/28/2009 17:31

Analyst:

JC

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B/V - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - Recovery Outside Advisable QC Limits

E - Estimated Value exceeds calibration curve

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

TNTC - Too numerous to count

09060969 Page 11

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

7/1/2009 4:00:48 PM



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

# Conoco Phillips COP Faye-Burdette

Analysis:

Volatile Organics by Method 8260B

Method:

SW8260B

WorkOrder:

09060969

Lab Batch ID:

R276742

| Analyte                     | Sample<br>Result | MS<br>Spike<br>Added | MS<br>Result | MS %<br>Recovery | MSD<br>Spike<br>Added | MSD<br>Result | MSD %<br>Recovery | RPD    | RPD<br>Limit | Low<br>Limit | High<br>Limit |
|-----------------------------|------------------|----------------------|--------------|------------------|-----------------------|---------------|-------------------|--------|--------------|--------------|---------------|
| Benzene                     | ND               | 20                   | 16.2         | 80.9             | 20                    | 15.9          | 79.5              | 1.71   | - 22         | 70           | 124           |
| Ethylbenzene                | ND               | 20                   | 18.2         | 90.9             | 20                    | 18.2          | 90.9              | 0.0165 | 20           | 76           | 122           |
| Toluene                     | ND               | 20                   | 16.1         | 80.4             | 20                    | 17.0          | 85.0              | 5.56   | 24           | 80           | 117           |
| m,p-Xylene                  | ND               | 40                   | 36.8         | 92.0             | 40                    | 39.1          | 97.9              | 6.15   | 20           | 69           | 127           |
| o-Xylene                    | ND               | 20                   | 18.6         | 93.2             | 20                    | 19.1          | 95.5              | 2.38   | 20           | 84           | 114           |
| Xylenes,Total               | ND               | 60                   | 55.4         | 92.4             | 60                    | 58.2          | 97.1              | 4.90   | 20           | 69           | 127           |
| Surr: 1,2-Dichloroethane-d4 | ND               | 50                   | 44           | 88.1             | 50                    | 44.7          | 89.4              | 1.53   | 30           | 78           | 116           |
| Surr: 4-Bromofluorobenzene  | ND               | 50                   | 50.3         | 101              | 50                    | 51.7          | 103               | 2.77   | 30           | 74           | 125           |
| Surr: Toluene-d8            | ND               | 50                   | 46.8         | 93.6             | 50                    | 48.6          | 97.1              | 3.66   | 30           | 82           | 118           |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

E - Estimated Value exceeds calibration curve

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

\* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

TNTC - Too numerous to count

09060969 Page 12

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

7/1/2009 4:00:48 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# **Conoco Phillips COP Faye-Burdette**

Analysis:

Volatile Organics by Method 8260B

Method:

RunID:

Analysis Date:

SW8260B

06/29/2009 6:28

WorkOrder:

09060969

Lab Batch ID:

R276860

Method Blank

K 090628B-5090420

Units: Analyst: ug/L LU\_L

Lab Sample ID 09060969-01A

Samples in Analytical Batch:

Client Sample ID

09060969-02A

MW-1 MW-2

09060969-03A

MW-3

09060969-05A

**DUPLICATE** 

09060969-06A

Trip Blank

| Analyte                     | Result | Rep Limit |
|-----------------------------|--------|-----------|
| Benzene                     | ND     | 5.0       |
| Ethylbenzene                | ND     | 5.0       |
| Toluene                     | ND     | 5.0       |
| m,p-Xylene                  | ND     | 5.0       |
| o-Xylene                    | ND     | 5.0       |
| Xylenes,Total               | ND     | 5.0       |
| Surr: 1,2-Dichloroethane-d4 | 94.8   | 78-116    |
| Surr: 4-Bromofluorobenzene  | 98.9   | 74-125    |
| Surr: Toluene-d8            | 100.4  | 82-118    |

#### **Laboratory Control Sample (LCS)**

RunID:

K\_090628B-5090418

Units:

ug/L

Analysis Date:

06/29/2009 6:01

Analyst: LU\_L

| Analyte                     | Spike<br>Added | Result | Percent<br>Recovery | Lower<br>Limit | Upper<br>Limit |
|-----------------------------|----------------|--------|---------------------|----------------|----------------|
| Benzene                     | 20.0           | 19.9   | 99.4                | 74             | 123            |
| Ethylbenzene                | 20.0           | 20.8   | 104                 | 72             | 127            |
| Toluene                     | 20.0           | 21.8   | 109                 | 74             | 126            |
| m,p-Xylene                  | 40.0           | 43.9   | 110                 | 71             | 129            |
| o-Xylene                    | 20.0           | 23.2   | 116                 | 74             | 130            |
| Xylenes,Total               | 60.0           | 67.1   | 112                 | 71             | 130            |
| Surr: 1,2-Dichloroethane-d4 | 50.0           | 47.5   | 94.9                | 78             | 116            |
| Surr: 4-Bromofluorobenzene  | 50.0           | 53.1   | 106                 | 74             | 125            |
| Surr: Toluene-d8            | 50.0           | 50.4   | 101                 | 82             | 118            |

#### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

09060791-02

RunID:

K\_090628B-5090423

Units:

ug/L LU\_L

Analysis Date:

06/29/2009 10:58

Analyst:

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B/V - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - Recovery Outside Advisable QC Limits

E - Estimated Value exceeds calibration curve

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

TNTC - Too numerous to count

09060969 Page 13

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

7/1/2009 4:00:49 PM



**HOUSTON LABORATORY** 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

## **Conoco Phillips COP Faye-Burdette**

Analysis:

Volatile Organics by Method 8260B

Method:

SW8260B

WorkOrder:

09060969

Lab Batch ID:

R276860

| Analyte                     | Sample<br>Result | MS<br>Spike<br>Added | MS<br>Result | MS %<br>Recovery | MSD<br>Spike<br>Added | MSD<br>Result | MSD %<br>Recovery | RPD    | RPD<br>Limit | Low<br>Limit | High<br>Limit |
|-----------------------------|------------------|----------------------|--------------|------------------|-----------------------|---------------|-------------------|--------|--------------|--------------|---------------|
| Benzene                     | ND               | 20                   | 18.5         | 92.4             | 20                    | 18.0          | 90.2              | 2.40   | 22           | 70           | 124           |
| Ethylbenzene                | ND               | 20                   | 19.0         | 94.8             | 20                    | . 19.1        | 95.7              | 0.966  | 20           | 76           | 122           |
| Toluene                     | ND               | 20                   | 19.6         | 97.9             | 20                    | 19.0          | 95.0              | 3.02   | 24           | 80           | 117           |
| m,p-Xylene                  | ND               | 40                   | 36.6         | 91.5             | 40                    | 38.7          | 96.7              | 5.56   | 20           | 69           | 127           |
| o-Xylene                    | ND               | 20                   | 20.6         | 103              | 20                    | 19.9          | 99.4              | 3.62   | 20           | 84           | 114           |
| Xylenes,Total               | ND               | 60                   | 57.2         | 95.3             | 60                    | 58.6          | 97.6              | 2.35   | 20           | 69           | 127           |
| Surr: 1,2-Dichloroethane-d4 | ND               | 50                   | 47           | 94.1             | 50                    | 47.0          | 94.0              | 0.0638 | 30           | 78           | 116           |
| Surr: 4-Bromofluorobenzene  | ND               | 50                   | 52.2         | 104              | 50                    | 51.8          | 104               | 0.659  | 30           | 74           | 125           |
| Surr: Toluene-d8            | ND               | 50                   | 50.1         | 100              | 50                    | 50.5          | 101               | 0.710  | 30           | 82           | 118           |

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B/V - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

E - Estimated Value exceeds calibration curve

MI - Matrix Interference

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

D - Recovery Unreportable due to Dilution \* - Recovery Outside Advisable QC Limits

TNTC - Too numerous to count

09060969 Page 14

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

7/1/2009 4:00:49 PM

# Sample Receipt Checklist And Chain of Custody



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

# Sample Receipt Checklist

| Workorder: Date and Time Received: Temperature:                               | 09060969<br>6/18/2009 9:30:00 AM<br>2.0°C |     |                      | Received E<br>Carrier nan<br>Chilled by: | ne:     | T_B<br>Fedex-Standa<br>Water Ice | rd Overnight |
|---|---|-----|----------------------|--|---------|----------------------------------|--------------|
| 1. Shipping container/cooler in good condition?                               |   | Yes | <b>V</b>             | No 🗆                                     |         | Not Present                      |              |
| 2. Custody seals intact on shippping container/cooler?                        |   | Yes | ✓                    | No 🗆                                     |         | Not Present                      |              |
| 3. Custody seals intact on sample bottles?                                    |   | Yes |                      | No 🗆                                     |         | Not Present                      | $\checkmark$ |
| 4. Chain of custody present?  |   | Yes | <b>✓</b>             | No 🗌                                     |         |                                  |              |
| 5. Chain of custody signed when relinquished and received?                    |   | Yes | <b>✓</b>             | No 🗌                                     |         |                                  |              |
| 6. Chain of custody agrees with sample labels?                                |   | Yes | <b>✓</b>             | No 🗆                                     |         |                                  |              |
| 7. Samples in proper container/bottle?  |   | Yes | V                    | No 🗌                                     |         |                                  |              |
| 8. Sample containers intact?  |   | Yes | <b>✓</b>             | No 🗆                                     |         |                                  |              |
| 9. Sufficient sample volume for indicated test?                               |   | Yes | <b>✓</b>             | No 🗆                                     |         |                                  |              |
| 10. All samples received within holding time?                                 |   | Yes | ✓.                   | No 🗆                                     |         |                                  |              |
| 11. Container/Temp Blank temperature in compliance?                           |   | Yes | ✓                    | No 🗀                                     |         |                                  |              |
| 12. Water - VOA vials have  | Water - VOA vials have zero headspace?    |     | <b>✓</b>             | No 🗌                                     | VOA Via | s Not Present                    |              |
| 13. Water - Preservation checked upon receipt (except VOA*)?                  |   | Yes | <b>✓</b>             | No 🗆                                     | I       | Not Applicable                   |              |
| *VOA Preservation Checked After Sample Analysis                               |   |     |                      |  |         |                                  |              |
| SPL Representative:  Client Name Contacted:                                   |   |     | Contact Date & Time: |  |         |                                  |              |
| Non Conformance trip blanks send with samples but not listed on chain Issues: |   |     |                      |  |         |                                  |              |
| Client Instructions:  |   |     |                      | -  |         |                                  |              |

gricy (initial); 459 Hughes Drive Traverse City MI 49686 (231) 947-5777 327861 Requested Analysis Intact? [ce? 99000000 6. Received by Laborat 700 DU SPL Workorder No. Email A POU Special Detection Limits (specify): 2. Received by: 4. Received by: 6-X=01pcr 3=HVO3 31<u>7</u>0 <u>.</u> 500 Ambassador Caffery Parkway Scott, J.A 70583 (337) 237-4775 10 8 09 [A4 QC| TX TRRP ☐ 1.5 RECAP| nic=A lio=O lios=S harareW SE=Shulge H=chons=A substantial <u>-</u> 3 <u>ن</u>خ دي. <u>ج</u> ? 3 S grah 10 173 16 M (CN) X X Laboratory remarks: comp Finally (2) U.S. C. C. C. C. S. C. S Į, 1140 Special Reporting Requirements Results: 00 TIME Ë Analysis Request & Chain of Custony Report Standard OC Level 3 Qr. زر 3 1. Relinquished by Sampler: 7 <u>ا</u> () () DATE ij 3. Relinquished by: 5. Relinquished by: SPL, Inc. τ. مید زن زره پین Blar 12 1 Client Contact: KEILS BATELD CONTA AFF. N.W. 2 Business Days A Standard J ! Business Day | | Contract Rush TAT requires prior notice SAMPLE ID Requested TAT #Thananardic Jiend ( Australia Remarks: Phane/Use: Polici. X= 22 cvt 7 N V M. 3 J 3 Business Days Project Name/No.; 1. 1. 1. 1. 1-13/5/ ₹ **₹** Site Leastion: ( lient Name: 3 insoite To: Caluer. Site Name: Address: