

## SITE INFORMATION

### Report Type: Closure Request

#### General Site Information:

|                             |                                                                                                                                                                                                   |       |       |               |  |  |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------|--|--|
| Site:                       | N G Phillips State #36 (Well Site)                                                                                                                                                                |       |       |               |  |  |
| Company:                    | COG Operating LLC                                                                                                                                                                                 |       |       |               |  |  |
| Section, Township and Range | Sec 27                                                                                                                                                                                            | T 17S | R 28E |               |  |  |
| Lease Number:               | API-30-015-24776                                                                                                                                                                                  |       |       |               |  |  |
| County:                     | Eddy County                                                                                                                                                                                       |       |       |               |  |  |
| GPS:                        | 32 47.965° N                                                                                                                                                                                      |       |       | 104 09.400° W |  |  |
| Surface Owner:              | State                                                                                                                                                                                             |       |       |               |  |  |
| Mineral Owner:              |                                                                                                                                                                                                   |       |       |               |  |  |
| Directions:                 | In Loco Hills, from the intersection of 360 and HWY 82 travel EAST on 82 for approximately .67 miles, turn North onto lease road for approximately 150 ft to location on East side of lease road. |       |       |               |  |  |
|                             |                                                                                                                                                                                                   |       |       |               |  |  |
|                             |                                                                                                                                                                                                   |       |       |               |  |  |
|                             |                                                                                                                                                                                                   |       |       |               |  |  |

#### Release Data:

|                          |                                   |
|--------------------------|-----------------------------------|
| Date Released:           | 1/8/2014                          |
| Type Release:            | Oil and Produced Water            |
| Source of Contamination: | Flowline connection failure       |
| Fluid Released:          | 2 barrels oil and 3 barrels water |
| Fluids Recovered:        | 0 bbls                            |

#### Official Communication:

|               |                                                                              |                                                                            |
|---------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Name:         | Robert McNeil                                                                | Ike Tavaréz                                                                |
| Company:      | COG Operating, LLC                                                           | Tetra Tech                                                                 |
| Address:      | One Concho Center<br>600 W. Illinois Ave.                                    | 4000 N. Big Spring<br>Ste 401                                              |
| City:         | Midland Texas, 79701                                                         | Midland, Texas                                                             |
| Phone number: | (432) 686-3023                                                               | (432) 687-8110                                                             |
| Fax:          | (432) 684-7137                                                               |                                                                            |
| Email:        | <a href="mailto:rmcneil@conchoresources.com">rmcneil@conchoresources.com</a> | <a href="mailto:Ike.Tavaréz@tetrattech.com">Ike.Tavaréz@tetrattech.com</a> |

#### Ranking Criteria

| Depth to Groundwater:                     | Ranking Score | Site Data |
|-------------------------------------------|---------------|-----------|
| <50 ft                                    | 20            |           |
| 50-99 ft                                  | 10            |           |
| >100 ft.                                  | 0             |           |
| WellHead Protection:                      | Ranking Score | Site Data |
| Water Source <1,000 ft., Private <200 ft. | 20            |           |
| Water Source >1,000 ft., Private >200 ft. | 0             | 0         |
| Surface Body of Water:                    | Ranking Score | Site Data |
| <200 ft.                                  | 20            |           |
| 200 ft - 1,000 ft.                        | 10            |           |
| >1,000 ft.                                | 0             | 0         |
| Total Ranking Score:                      |               | 0         |

#### Acceptable Soil RRAL (mg/kg)

| Benzene | Total BTEX | TPH   |
|---------|------------|-------|
| 10      | 50         | 5,000 |



**TETRA TECH**

May 19, 2014

Mr. Mike Bratcher  
Environmental Engineer Specialist  
Oil Conservation Division, District 2  
811 S. First Street  
Artesia, New Mexico 88210

**Re: Closure Request for the COG Operating LLC., N G Phillips State #36, Unit P, Section 27, Township 17 South, Range 29 East, Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the N G Phillips State #36, Unit P, Section 27, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32 47.965°, W 104 09.400°. The site location is shown on Figures 1 and 2.

### **Background**

According to the State of New Mexico C-141 Initial Report, the leak was discovered on January 08, 2014, and released approximately two (2) barrels of oil and three (3) barrels of produced water from a steel flowline. To alleviate the problem, COG personnel repaired the flowline. Zero (0) barrels of standing fluids were recovered. The spill initiated north of the pad affecting an area 80' X 20' in the pasture. The initial C-141 form is enclosed in Appendix A.

### **Groundwater**

No water wells were listed within Section 27. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 100' below surface. The groundwater data is shown in Appendix B.

### **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of

**Tetra Tech**

4000 North Big Spring, Ste 401 Midland, TX 79705

**Tel** 432.682.4559 **Fax** 432.682.3946 [www.tetrattech.com](http://www.tetrattech.com)



Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

### **Soil Assessment and Analytical Results**

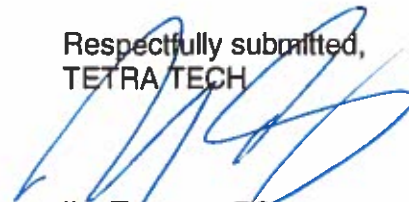
On January 20, 2014, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1 through AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the TPH or BTEX RRAL's. Elevated chloride concentrations were detected in all of the sample locations with chloride highs of 6,730 mg/kg at 1.0', 5,200 mg/kg at 1.0', and 5,070 mg/kg at 1.5' below surface, respectively. Deeper samples were not collected due to the dense caliche formation. The chloride impact was not vertically defined.

### **Closure Request**

Upon further review, the spill path appears to have migrated in an old closed reserve pit area. The aerial photographs indicate a possible closed reserve pit north of the pad as shown on the attached Figures. Based on the volume lost and findings, COG requests no further action and request closure of the spill issue. If you have any questions or comments concerning the assessment for this site, please call me at (432) 682-4559.

Respectfully submitted,  
TETRA TECH



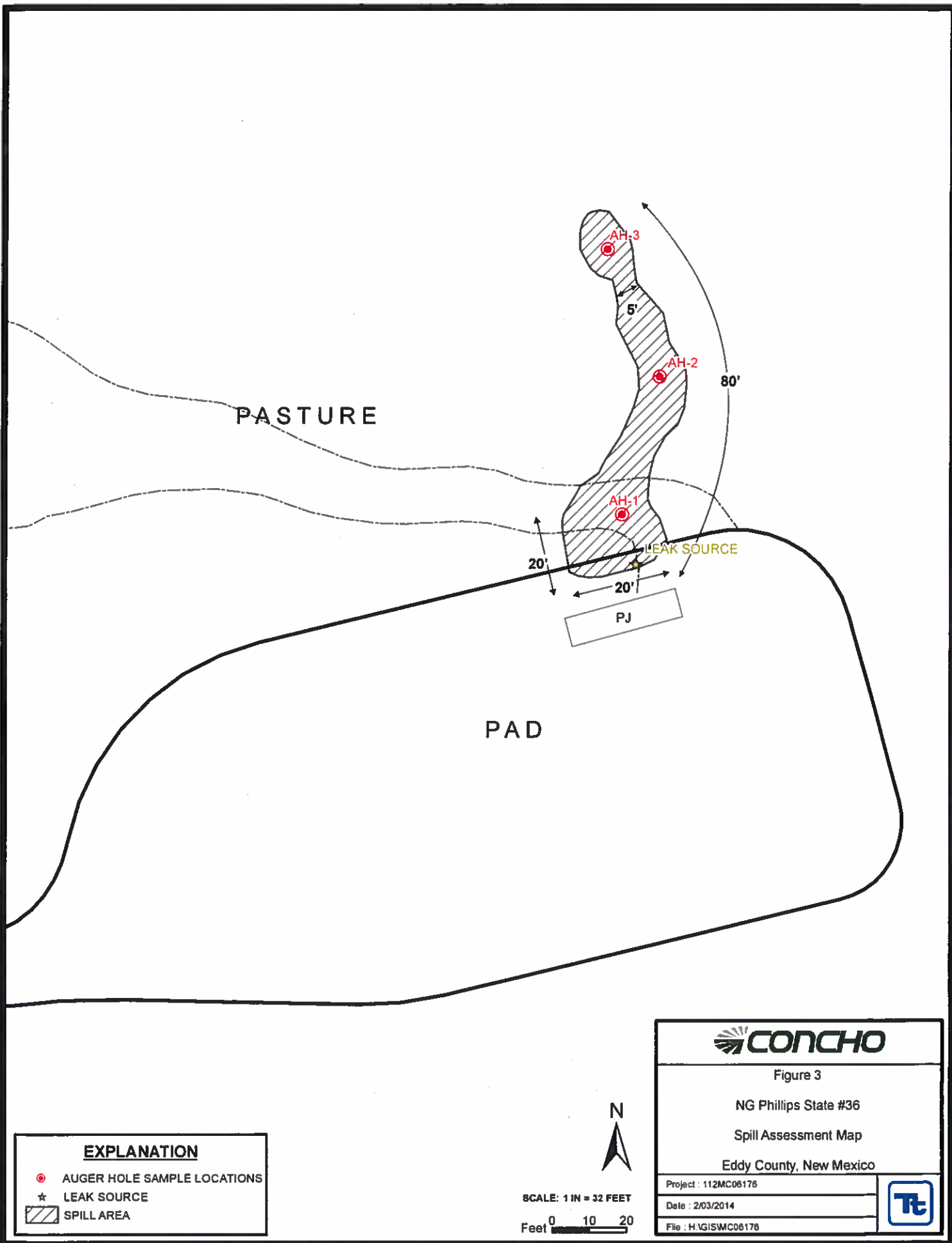
Ike Tavarez, PG  
Senior Project Manager

cc: Robert McNeil – COG

## Figures







## Photos



View North – Area of AH-1



View North – Area of AH-2 and AH-3

## Appendix A

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

**Release Notification and Corrective Action**

**OPERATOR**

☐ Initial Report ☒ Final Report

|                 |                                           |               |                |
|-----------------|-------------------------------------------|---------------|----------------|
| Name of Company | COG Operating LLC                         | Contact       | Robert McNeill |
| Address         | 600 W. Illinois Ave, Midland, Texas 79701 | Telephone No. | (432) 685-4332 |
| Facility Name   | N G Phillips St. #36                      | Facility Type | flow line      |

|                      |               |                               |
|----------------------|---------------|-------------------------------|
| Surface Owner: State | Mineral Owner | Lease No. (API#) 30-015-24776 |
|----------------------|---------------|-------------------------------|

**LOCATION OF RELEASE**

|                  |               |                 |              |               |                  |               |                |        |
|------------------|---------------|-----------------|--------------|---------------|------------------|---------------|----------------|--------|
| Unit Letter<br>P | Section<br>27 | Township<br>17S | Range<br>28E | Feet from the | North/South Line | Feet from the | East/West Line | County |
|------------------|---------------|-----------------|--------------|---------------|------------------|---------------|----------------|--------|

Latitude 32 47.965° N Longitude 104 09.400° W

**NATURE OF RELEASE**

|                                                                                                                                                     |                                                         |                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|
| Type of Release: Oil and Produced Water                                                                                                             | Volume of Release 2bbls of oil, 3bbls of produced water | Volume Recovered 0bbls of oil, 0bbls of produced water |
| Source of Release: Flowline                                                                                                                         | Date and Hour of Occurrence 1/08/14                     | Date and Hour of Discovery 1/08/2014 9:25am            |
| Was Immediate Notice Given?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required | If YES, To Whom?                                        |                                                        |
| By Whom?                                                                                                                                            | Date and Hour                                           |                                                        |
| Was a Watercourse Reached?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                   | If YES, Volume Impacting the Watercourse.<br>N/A        |                                                        |

If a Watercourse was Impacted, Describe Fully.\*

N/A

Describe Cause of Problem and Remedial Action Taken.\*

Connection on a steel flowline corroded. Replaced the bad joints with new steel line.

Describe Area Affected and Cleanup Action Taken.\*

Initially 2bbls of oil and 3bbls of produced water were released. COG was unable to recover any fluids. Tetra Tech inspected the site and collected samples to define spills extent. No TPH or BTEX exceeded the RRAL. Elevated chlorides were detected in the soils. However, the spill footprint appears to have migrated top of a closed reserve pit located north of the well pad. Based on the findings, COG requested closure of the spill. Tetra Tech prepared closure report and submitted to NMOCD for review.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

|                                                                                                |                                  |                  |                                   |
|------------------------------------------------------------------------------------------------|----------------------------------|------------------|-----------------------------------|
| Signature:  | <b>OIL CONSERVATION DIVISION</b> |                  |                                   |
| Printed Name: Ike Tavarez (agent for COG)                                                      | Approved by District Supervisor: |                  |                                   |
| Title: Project Manager                                                                         | Approval Date:                   | Expiration Date: |                                   |
| E-mail Address: Ike.Tavarez@TetraTech.com                                                      | Conditions of Approval:          |                  | Attached <input type="checkbox"/> |
| Date: 5-21-14                                                                                  | Phone: (432) 682-4559            |                  |                                   |

\* Attach Additional Sheets If Necessary

## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - N G Phillips State #25**  
**Eddy County, New Mexico**

| 16 South |    |    | 27 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 16 South |    |    | 28 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 16 South |    |    | 29 East |        |    |
|----------|----|----|---------|--------|----|
| 6        | 5  | 4  | 3       | 2      | 1  |
| 7        | 8  | 9  | 10      | 11     | 12 |
| 18       | 17 | 16 | 15      | 14 220 | 13 |
| 19       | 20 | 21 | 22      | 23     | 24 |
| 30       | 29 | 28 | 27      | 26     | 25 |
| 31       | 32 | 33 | 34      | 35     | 36 |

| 17 South |    |    | 27 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 17 South |    |    | 28 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 17 South |    |    | 29 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 18 South |    |    | 27 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 18 South |    |    | 28 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

| 18 South |    |    | 29 East |    |    |
|----------|----|----|---------|----|----|
| 6        | 5  | 4  | 3       | 2  | 1  |
| 7        | 8  | 9  | 10      | 11 | 12 |
| 18       | 17 | 16 | 15      | 14 | 13 |
| 19       | 20 | 21 | 22      | 23 | 24 |
| 30       | 29 | 28 | 27      | 26 | 25 |
| 31       | 32 | 33 | 34      | 35 | 36 |

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

## Appendix C

## Summary Report

Ike Tavarez  
Tetra Tech  
1910 N. Big Spring Street  
Midland, TX 79705

Report Date: January 30, 2014

Work Order: 14012201

Project Location: Eddy Co, NM  
Project Name: COG/N G Phillips State #36  
Project Number: 112MC06176

| Sample | Description | Matrix | Date Taken | Time Taken | Date Received |
|--------|-------------|--------|------------|------------|---------------|
| 352059 | AH-1 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352060 | AH-1 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352061 | AH-2 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352062 | AH-2 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352063 | AH-3 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352064 | AH-3 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |

| Sample - Field Code | BTEX                   |                    |                         |                   | TPH DRO - NEW  | TPH GRO            |
|---------------------|------------------------|--------------------|-------------------------|-------------------|----------------|--------------------|
|                     | Benzene<br>(mg/Kg)     | Toluene<br>(mg/Kg) | Ethylbenzene<br>(mg/Kg) | Xylene<br>(mg/Kg) | DRO<br>(mg/Kg) | GRO<br>(mg/Kg)     |
| 352059 - AH-1 0-1'  | <0.100 <sup>1</sup> qr | <0.100 qr          | <0.100 qr               | <0.100 qr         | <50.0 qr,q*    | <20.0 <sup>2</sup> |
| 352061 - AH-2 0-1'  | <0.0200 qr             | <0.0200 qr         | <0.0200 qr              | <0.0200 qr        | <50.0 qr,q*    | <4.00              |
| 352063 - AH-3 0-1'  | <0.0200                | <0.0200            | <0.0200                 | <0.0200           | <50.0 qr,q*    | <4.00              |

Sample: 352059 - AH-1 0-1'

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 6730   | mg/Kg | 4  |

Sample: 352060 - AH-1 1-1.5'

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 4140   | mg/Kg | 4  |

<sup>1</sup>Dilution due to hydrocarbons.<sup>2</sup>Dilution due to hydrocarbons.

**Sample: 352061 - AH-2 0-1'**

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 5200   | mg/Kg | 4  |

**Sample: 352062 - AH-2 1-1.5'**

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 3370   | mg/Kg | 4  |

**Sample: 352063 - AH-3 0-1'**

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 4900   | mg/Kg | 4  |

**Sample: 352064 - AH-3 1-1.5'**

| Param    | Flag | Result | Units | RL |
|----------|------|--------|-------|----|
| Chloride |      | 5070   | mg/Kg | 4  |



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298  
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944  
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313  
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750  
E-Mail: [lab@traceanalysis.com](mailto:lab@traceanalysis.com) WEB: [www.traceanalysis.com](http://www.traceanalysis.com)

## Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

Ike Tavaréz  
Tetra Tech  
1910 N. Big Spring Street  
Midland, TX, 79705

Report Date: January 30, 2014

Work Order: 14012201

Project Location: Eddy Co, NM  
Project Name: COG/N G Phillips State #36  
Project Number: 112MC06176

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

| Sample | Description | Matrix | Date Taken | Time Taken | Date Received |
|--------|-------------|--------|------------|------------|---------------|
| 352059 | AH-1 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352060 | AH-1 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352061 | AH-2 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352062 | AH-2 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352063 | AH-3 0-1'   | soil   | 2014-01-20 | 00:00      | 2014-01-21    |
| 352064 | AH-3 1-1.5' | soil   | 2014-01-20 | 00:00      | 2014-01-21    |

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 28 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive style with a large, stylized 'M' and 'A'.

---

Dr. Blair Leftwich, Director  
Dr. Michael Abel, Project Manager

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| Sample 352062 (AH-2 1-1.5')        | 9         |
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| QC Batch 108641 - Method Blank (1) | 12        |
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| QC Batch 108577 - CCV (3)          | 23        |
| QC Batch 108641 - CCV (1)          | 23        |
| QC Batch 108641 - CCV (2)          | 23        |
| QC Batch 108641 - CCV (3)          | 24        |
| QC Batch 108647 - CCV (1)          | 24        |
| QC Batch 108647 - CCV (2)          | 24        |
| QC Batch 108647 - CCV (3)          | 24        |
| QC Batch 108648 - CCV (1)          | 25        |

|                                     |           |
|-------------------------------------|-----------|
| QC Batch 108648 - CCV (2) . . . . . | 25        |
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## Case Narrative

Samples for project COG/N G Phillips State #36 were received by TraceAnalysis, Inc. on 2014-01-21 and assigned to work order 14012201. Samples for work order 14012201 were received intact at a temperature of 6.8 C. Samples on ice.

Samples were analyzed for the following tests using their respective methods.

| Test                 | Method       | Prep Batch | Prep Date           | QC Batch | Analysis Date       |
|----------------------|--------------|------------|---------------------|----------|---------------------|
| BTEX                 | S 8021B      | 91798      | 2014-01-22 at 14:44 | 108575   | 2014-01-23 at 14:57 |
| BTEX                 | S 8021B      | 91850      | 2014-01-23 at 16:26 | 108647   | 2014-01-24 at 06:50 |
| Chloride (Titration) | SM 4500-Cl B | 91894      | 2014-01-27 at 08:22 | 108704   | 2014-01-28 at 15:20 |
| TPH DRO - NEW        | S 8015 D     | 91898      | 2014-01-24 at 16:30 | 108641   | 2014-01-27 at 10:35 |
| TPH GRO              | S 8015 D     | 91798      | 2014-01-22 at 14:44 | 108577   | 2014-01-23 at 15:01 |
| TPH GRO              | S 8015 D     | 91850      | 2014-01-23 at 16:26 | 108648   | 2014-01-24 at 06:50 |

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14012201 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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## Analytical Report

**Sample: 352059 - AH-1 0-1'**

Laboratory: Midland  
Analysis: BTEX  
QC Batch: 108575  
Prep Batch: 91798

Analytical Method: S 8021B  
Date Analyzed: 2014-01-23  
Sample Preparation: 2014-01-22

Prep Method: S 5035  
Analyzed By: AK  
Prepared By: AK

| Parameter    | Flag | Cert | RL<br>Result | Units | Dilution | RL     |
|--------------|------|------|--------------|-------|----------|--------|
| Benzene      | Qr,U | 2    | <0.100       | mg/Kg | 5        | 0.0200 |
| Toluene      | Qr,U | 2    | <0.100       | mg/Kg | 5        | 0.0200 |
| Ethylbenzene | Qr,U | 2    | <0.100       | mg/Kg | 5        | 0.0200 |
| Xylene       | Qr   | 2    | <0.100       | mg/Kg | 5        | 0.0200 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.94   | mg/Kg | 5        | 2.00            | 97                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.19   | mg/Kg | 5        | 2.00            | 110                 | 70 - 130           |

**Sample: 352059 - AH-1 0-1'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 108704  
Prep Batch: 91894

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2014-01-28  
Sample Preparation: 2014-01-27

Prep Method: N/A  
Analyzed By: AR  
Prepared By: AR

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 6730         | mg/Kg | 10       | 4.00 |

**Sample: 352059 - AH-1 0-1'**

Laboratory: Lubbock  
Analysis: TPH DRO - NEW  
QC Batch: 108641  
Prep Batch: 91898

Analytical Method: S 8015 D  
Date Analyzed: 2014-01-27  
Sample Preparation: 2014-01-24

Prep Method: N/A  
Analyzed By: DS  
Prepared By: DS

| Parameter | Flag    | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|---------|------|--------------|-------|----------|------|
| DRO       | Qr,Qs,U | 1    | <50.0        | mg/Kg | 1        | 50.0 |

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| Surrogate   | Flag | Cert | Result | Units | Dilution | Spike Amount | Percent Recovery | Recovery Limits |
|-------------|------|------|--------|-------|----------|--------------|------------------|-----------------|
| n-Tricosane |      |      | 85.3   | mg/Kg | 1        | 100          | 85               | 70 - 130        |

**Sample: 352059 - AH-1 0-1'**

|                     |                                |                     |
|---------------------|--------------------------------|---------------------|
| Laboratory: Midland | Analytical Method: S 8015 D    | Prep Method: S 5035 |
| Analysis: TPH GRO   | Date Analyzed: 2014-01-23      | Analyzed By: AK     |
| QC Batch: 108577    | Sample Preparation: 2014-01-22 | Prepared By: AK     |
| Prep Batch: 91798   |                                |                     |

| Parameter | Flag | Cert | RL<br>Result | Units          | Dilution | RL   |
|-----------|------|------|--------------|----------------|----------|------|
| GRO       | 2    | U    | 2            | <20.0<br>mg/Kg | 5        | 4.00 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike Amount | Percent Recovery | Recovery Limits |
|------------------------------|------|------|--------|-------|----------|--------------|------------------|-----------------|
| Trifluorotoluene (TFT)       |      |      | 1.94   | mg/Kg | 5        | 2.00         | 97               | 70 - 130        |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.56   | mg/Kg | 5        | 2.00         | 128              | 70 - 130        |

**Sample: 352060 - AH-1 1-1.5'**

|                                |                                 |                  |
|--------------------------------|---------------------------------|------------------|
| Laboratory: Midland            | Analytical Method: SM 4500-Cl B | Prep Method: N/A |
| Analysis: Chloride (Titration) | Date Analyzed: 2014-01-28       | Analyzed By: AR  |
| QC Batch: 108704               | Sample Preparation: 2014-01-27  | Prepared By: AR  |
| Prep Batch: 91894              |                                 |                  |

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 4140         | mg/Kg | 10       | 4.00 |

**Sample: 352061 - AH-2 0-1'**

|                     |                                |                     |
|---------------------|--------------------------------|---------------------|
| Laboratory: Midland | Analytical Method: S 8021B     | Prep Method: S 5035 |
| Analysis: BTEX      | Date Analyzed: 2014-01-23      | Analyzed By: AK     |
| QC Batch: 108575    | Sample Preparation: 2014-01-22 | Prepared By: AK     |
| Prep Batch: 91798   |                                |                     |

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sample 352061 continued ...

| Parameter    | Flag | Cert | RL<br>Result | Units | Dilution | RL     |
|--------------|------|------|--------------|-------|----------|--------|
| Parameter    | Flag | Cert | RL<br>Result | Units | Dilution | RL     |
| Benzene      | Qr,U | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Toluene      | Qr,U | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Ethylbenzene | Qr,U | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Xylene       | Qr,U | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.63   | mg/Kg | 1        | 2.00            | 82                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.04   | mg/Kg | 1        | 2.00            | 102                 | 70 - 130           |

**Sample: 352061 - AH-2 0-1'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 108704  
Prep Batch: 91894

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2014-01-28  
Sample Preparation: 2014-01-27

Prep Method: N/A  
Analyzed By: AR  
Prepared By: AR

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 5200         | mg/Kg | 10       | 4.00 |

**Sample: 352061 - AH-2 0-1'**

Laboratory: Lubbock  
Analysis: TPH DRO - NEW  
QC Batch: 108641  
Prep Batch: 91898

Analytical Method: S 8015 D  
Date Analyzed: 2014-01-27  
Sample Preparation: 2014-01-24

Prep Method: N/A  
Analyzed By: DS  
Prepared By: DS

| Parameter | Flag    | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|---------|------|--------------|-------|----------|------|
| DRO       | Qr,Qs,U | 1    | <50.0        | mg/Kg | 1        | 50.0 |

| Surrogate   | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|-------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| n-Tricosane |      |      | 87.4   | mg/Kg | 1        | 100             | 87                  | 70 - 130           |

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**Sample: 352061 - AH-2 0-1'**

Laboratory: Midland  
Analysis: TPH GRO  
QC Batch: 108577  
Prep Batch: 91798

Analytical Method: S 8015 D  
Date Analyzed: 2014-01-23  
Sample Preparation: 2014-01-22

Prep Method: S 5035  
Analyzed By: AK  
Prepared By: AK

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| GRO       | U    | 2    | <4.00        | mg/Kg | 1        | 4.00 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.70   | mg/Kg | 1        | 2.00            | 85                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.08   | mg/Kg | 1        | 2.00            | 104                 | 70 - 130           |

**Sample: 352062 - AH-2 1-1.5'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 108704  
Prep Batch: 91894

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2014-01-28  
Sample Preparation: 2014-01-27

Prep Method: N/A  
Analyzed By: AR  
Prepared By: AR

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 3370         | mg/Kg | 10       | 4.00 |

**Sample: 352063 - AH-3 0-1'**

Laboratory: Midland  
Analysis: BTEX  
QC Batch: 108647  
Prep Batch: 91850

Analytical Method: S 8021B  
Date Analyzed: 2014-01-24  
Sample Preparation: 2014-01-23

Prep Method: S 5035  
Analyzed By: AK  
Prepared By: AK

| Parameter    | Flag | Cert | RL<br>Result | Units | Dilution | RL     |
|--------------|------|------|--------------|-------|----------|--------|
| Benzene      | U    | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Toluene      | U    | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Ethylbenzene | U    | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |
| Xylene       | U    | 2    | <0.0200      | mg/Kg | 1        | 0.0200 |

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| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike Amount | Percent Recovery | Recovery Limits |
|------------------------------|------|------|--------|-------|----------|--------------|------------------|-----------------|
| Trifluorotoluene (TFT)       |      |      | 1.87   | mg/Kg | 1        | 2.00         | 94               | 70 - 130        |
| 4-Bromofluorobenzene (4-BFB) |      |      | 1.92   | mg/Kg | 1        | 2.00         | 96               | 70 - 130        |

**Sample: 352063 - AH-3 0-1'**

Laboratory: Midland  
Analysis: Chloride (Titration)      Analytical Method: SM 4500-Cl B      Prep Method: N/A  
QC Batch: 108704      Date Analyzed: 2014-01-28      Analyzed By: AR  
Prep Batch: 91894      Sample Preparation: 2014-01-27      Prepared By: AR

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 4900         | mg/Kg | 10       | 4.00 |

**Sample: 352063 - AH-3 0-1'**

Laboratory: Lubbock  
Analysis: TPH DRO - NEW      Analytical Method: S 8015 D      Prep Method: N/A  
QC Batch: 108641      Date Analyzed: 2014-01-27      Analyzed By: DS  
Prep Batch: 91898      Sample Preparation: 2014-01-24      Prepared By: DS

| Parameter | Flag      | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|-----------|------|--------------|-------|----------|------|
| DRO       | Qr, Qs, U | 1    | <50.0        | mg/Kg | 1        | 50.0 |

| Surrogate   | Flag | Cert | Result | Units | Dilution | Spike Amount | Percent Recovery | Recovery Limits |
|-------------|------|------|--------|-------|----------|--------------|------------------|-----------------|
| n-Tricosane |      |      | 91.5   | mg/Kg | 1        | 100          | 92               | 70 - 130        |

**Sample: 352063 - AH-3 0-1'**

Laboratory: Midland  
Analysis: TPH GRO      Analytical Method: S 8015 D      Prep Method: S 5035  
QC Batch: 108648      Date Analyzed: 2014-01-24      Analyzed By: AK  
Prep Batch: 91850      Sample Preparation: 2014-01-23      Prepared By: AK

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| GRO       | U    | 2    | <4.00        | mg/Kg | 1        | 4.00 |

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| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike Amount | Percent Recovery | Recovery Limits |
|------------------------------|------|------|--------|-------|----------|--------------|------------------|-----------------|
| Trifluorotoluene (TFT)       |      |      | 1.80   | mg/Kg | 1        | 2.00         | 90               | 70 - 130        |
| 4-Bromofluorobenzene (4-BFB) |      |      | 1.88   | mg/Kg | 1        | 2.00         | 94               | 70 - 130        |

**Sample: 352064 - AH-3 1-1.5'**

|             |                      |                     |              |              |     |
|-------------|----------------------|---------------------|--------------|--------------|-----|
| Laboratory: | Midland              | Analytical Method:  | SM 4500-Cl B | Prep Method: | N/A |
| Analysis:   | Chloride (Titration) | Date Analyzed:      | 2014-01-28   | Analyzed By: | AR  |
| QC Batch:   | 108704               | Sample Preparation: | 2014-01-27   | Prepared By: | AR  |
| Prep Batch: | 91894                |                     |              |              |     |

| Parameter | Flag | Cert | RL<br>Result | Units | Dilution | RL   |
|-----------|------|------|--------------|-------|----------|------|
| Chloride  |      |      | 5070         | mg/Kg | 10       | 4.00 |

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## Method Blanks

Method Blank (1) QC Batch: 108575

QC Batch: 108575  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Parameter    | Flag | Cert | MDL<br>Result | Units | RL   |
|--------------|------|------|---------------|-------|------|
| Benzene      |      | 2    | <0.00533      | mg/Kg | 0.02 |
| Toluene      |      | 2    | <0.00645      | mg/Kg | 0.02 |
| Ethylbenzene |      | 2    | <0.0116       | mg/Kg | 0.02 |
| Xylene       |      | 2    | <0.00874      | mg/Kg | 0.02 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.93   | mg/Kg | 1        | 2.00            | 96                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.13   | mg/Kg | 1        | 2.00            | 106                 | 70 - 130           |

Method Blank (1) QC Batch: 108577

QC Batch: 108577  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Parameter | Flag | Cert | MDL<br>Result | Units | RL |
|-----------|------|------|---------------|-------|----|
| GRO       |      | 2    | <2.32         | mg/Kg | 4  |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 2.06   | mg/Kg | 1        | 2.00            | 103                 | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.15   | mg/Kg | 1        | 2.00            | 108                 | 70 - 130           |

Method Blank (1) QC Batch: 108641

QC Batch: 108641  
Prep Batch: 91898

Date Analyzed: 2014-01-27  
QC Preparation: 2014-01-24

Analyzed By: DS  
Prepared By: CM

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| Parameter | Flag | Cert | MDL<br>Result | Units | RL |
|-----------|------|------|---------------|-------|----|
| DRO       |      | 1    | <5.22         | mg/Kg | 50 |

| Surrogate   | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|-------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| n-Tricosane |      |      | 101    | mg/Kg | 1        | 100             | 101                 | 70 - 130           |

**Method Blank (1)**      QC Batch: 108647

QC Batch: 108647  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Parameter    | Flag | Cert | MDL<br>Result | Units | RL   |
|--------------|------|------|---------------|-------|------|
| Benzene      |      | 2    | <0.00533      | mg/Kg | 0.02 |
| Toluene      |      | 2    | <0.00645      | mg/Kg | 0.02 |
| Ethylbenzene |      | 2    | <0.0116       | mg/Kg | 0.02 |
| Xylene       |      | 2    | <0.00874      | mg/Kg | 0.02 |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.80   | mg/Kg | 1        | 2.00            | 90                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.03   | mg/Kg | 1        | 2.00            | 102                 | 70 - 130           |

**Method Blank (1)**      QC Batch: 108648

QC Batch: 108648  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Parameter | Flag | Cert | MDL<br>Result | Units | RL |
|-----------|------|------|---------------|-------|----|
| GRO       |      | 2    | <2.32         | mg/Kg | 4  |

| Surrogate                    | Flag | Cert | Result | Units | Dilution | Spike<br>Amount | Percent<br>Recovery | Recovery<br>Limits |
|------------------------------|------|------|--------|-------|----------|-----------------|---------------------|--------------------|
| Trifluorotoluene (TFT)       |      |      | 1.89   | mg/Kg | 1        | 2.00            | 94                  | 70 - 130           |
| 4-Bromofluorobenzene (4-BFB) |      |      | 2.05   | mg/Kg | 1        | 2.00            | 102                 | 70 - 130           |

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Method Blank (1)      QC Batch: 108704

QC Batch: 108704  
Prep Batch: 91894

Date Analyzed: 2014-01-28  
QC Preparation: 2014-01-27

Analyzed By: AR  
Prepared By: AR

| Parameter | Flag | Cert | MDL<br>Result | Units | RL |
|-----------|------|------|---------------|-------|----|
| Chloride  |      |      | <3.85         | mg/Kg | 4  |

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## Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

QC Batch: 108575  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Param        | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|--------------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| Benzene      |   | 2 | 1.61          | mg/Kg | 1    | 2.00            | <0.00533         | 80   | 70 - 130      |
| Toluene      |   | 2 | 1.72          | mg/Kg | 1    | 2.00            | <0.00645         | 86   | 70 - 130      |
| Ethylbenzene |   | 2 | 1.85          | mg/Kg | 1    | 2.00            | <0.0116          | 92   | 70 - 130      |
| Xylene       |   | 2 | 5.68          | mg/Kg | 1    | 6.00            | <0.00874         | 95   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param        |    |    |        | LCS D |       | Dil. | Spike Amount | Matrix Result | Rec. | Rec. Limit | RPD | RPD Limit |
|--------------|----|----|--------|-------|-------|------|--------------|---------------|------|------------|-----|-----------|
|              | F  | C  | Result | Units |       |      |              |               |      |            |     |           |
| Benzene      | Qr | Qr | 2      | 2.07  | mg/Kg | 1    | 2.00         | <0.00533      | 104  | 70 - 130   | 25  | 20        |
| Toluene      | Qr | Qr | 2      | 2.28  | mg/Kg | 1    | 2.00         | <0.00645      | 114  | 70 - 130   | 28  | 20        |
| Ethylbenzene | Qr | Qr | 2      | 2.56  | mg/Kg | 1    | 2.00         | <0.0116       | 128  | 70 - 130   | 32  | 20        |
| Xylene       | Qr | Qr | 2      | 7.79  | ug/Kg | 1    | 6.00         | <0.00874      | 130  | 70 - 130   | 31  | 20        |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | LCS<br>Result | LCS<br>Result | Units | Dil. | Spike<br>Amount | LCS<br>Rec. | LCS<br>Rec. | Rec.<br>Limit |
|------------------------------|---------------|---------------|-------|------|-----------------|-------------|-------------|---------------|
| Trifluorotoluene (TFT)       | 1.68          | 2.22          | mg/Kg | 1    | 2.00            | 84          | 111         | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 1.94          | 2.45          | mg/Kg | 1    | 2.00            | 97          | 122         | 70 - 130      |

### Laboratory Control Spike (LCS-1)

QC Batch: 108577  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| GRO   |   | 2 | 16.3          | mg/Kg | 1    | 20.0            | <2.32            | 82   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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control spikes continued ...

| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
| GRO   |   | 2 | 17.2          | mg/Kg | 1    | 20.0            | <2.32            | 86   | 70 - 130      | 5   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | LCS<br>Result | LCS<br>Result | Units | Dil. | Spike<br>Amount | LCS<br>Rec. | LCS<br>Rec. | Rec.<br>Limit |
|------------------------------|---------------|---------------|-------|------|-----------------|-------------|-------------|---------------|
| Trifluorotoluene (TFT)       | 1.76          | 1.87          | mg/Kg | 1    | 2.00            | 88          | 94          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 2.13          | 2.17          | mg/Kg | 1    | 2.00            | 106         | 108         | 70 - 130      |

#### Laboratory Control Spike (LCS-1)

QC Batch: 108641  
Prep Batch: 91898

Date Analyzed: 2014-01-27  
QC Preparation: 2014-01-24

Analyzed By: DS  
Prepared By: CM

| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| DRO   |   | 1 | 202           | mg/Kg | 1    | 250             | <5.22            | 81   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| DRO   |   | 1 | 209           | mg/Kg | 1    | 250             | <5.22            | 84   | 70 - 130      | 3   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate   | LCS<br>Result | LCS<br>Result | Units | Dil. | Spike<br>Amount | LCS<br>Rec. | LCS<br>Rec. | Rec.<br>Limit |
|-------------|---------------|---------------|-------|------|-----------------|-------------|-------------|---------------|
| n-Tricosane | 88.7          | 90.7          | mg/Kg | 1    | 100             | 89          | 91          | 70 - 130      |

#### Laboratory Control Spike (LCS-1)

QC Batch: 108647  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Param   | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|---------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| Benzene |   | 2 | 1.81          | mg/Kg | 1    | 2.00            | <0.00533         | 90   | 70 - 130      |

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control spikes continued ...

| Param        | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|--------------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| Toluene      |   | 2 | 1.97          | mg/Kg | 1    | 2.00            | <0.00645         | 98   | 70 - 130      |
| Ethylbenzene |   | 2 | 2.04          | mg/Kg | 1    | 2.00            | <0.0116          | 102  | 70 - 130      |
| Xylene       |   | 2 | 6.26          | mg/Kg | 1    | 6.00            | <0.00874         | 104  | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param        | F | C | LCSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|--------------|---|---|----------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Benzene      |   | 2 | 1.99           | mg/Kg | 1    | 2.00            | <0.00533         | 100  | 70 - 130      | 10  | 20           |
| Toluene      |   | 2 | 2.12           | mg/Kg | 1    | 2.00            | <0.00645         | 106  | 70 - 130      | 7   | 20           |
| Ethylbenzene |   | 2 | 2.26           | mg/Kg | 1    | 2.00            | <0.0116          | 113  | 70 - 130      | 10  | 20           |
| Xylene       |   | 2 | 6.47           | mg/Kg | 1    | 6.00            | <0.00874         | 108  | 70 - 130      | 3   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | LCS<br>Result | LCSD<br>Result | Units | Dil. | Spike<br>Amount | LCS<br>Rec. | LCSD<br>Rec. | Rec.<br>Limit |
|------------------------------|---------------|----------------|-------|------|-----------------|-------------|--------------|---------------|
| Trifluorotoluene (TFT)       | 1.83          | 2.12           | mg/Kg | 1    | 2.00            | 92          | 106          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 2.07          | 2.32           | mg/Kg | 1    | 2.00            | 104         | 116          | 70 - 130      |

#### Laboratory Control Spike (LCS-1)

QC Batch: 108648  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Param | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| GRO   |   | 2 | 16.0          | mg/Kg | 1    | 20.0            | <2.32            | 80   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param | F | C | LCSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|---|---|----------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| GRO   |   | 2 | 16.2           | mg/Kg | 1    | 20.0            | <2.32            | 81   | 70 - 130      | 1   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | LCS<br>Result | LCSD<br>Result | Units | Dil. | Spike<br>Amount | LCS<br>Rec. | LCSD<br>Rec. | Rec.<br>Limit |
|------------------------------|---------------|----------------|-------|------|-----------------|-------------|--------------|---------------|
| Trifluorotoluene (TFT)       | 1.76          | 1.72           | mg/Kg | 1    | 2.00            | 88          | 86           | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 2.10          | 2.09           | mg/Kg | 1    | 2.00            | 105         | 104          | 70 - 130      |

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#### Laboratory Control Spike (LCS-1)

QC Batch: 108704  
Prep Batch: 91894

Date Analyzed: 2014-01-28  
QC Preparation: 2014-01-27

Analyzed By: AR  
Prepared By: AR

| Param    | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|----------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|
| Chloride |   |   | 2870          | mg/Kg | 1    | 2500            | <3.85            | 115  | 89.7 - 115.9  |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param    | F | C | LCS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|----------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Chloride |   |   | 2840          | mg/Kg | 1    | 2500            | <3.85            | 114  | 89.7 - 115.9  | 1   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Matrix Spike (MS-1) Spiked Sample: 352019

QC Batch: 108575  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Param        | F | C | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|--------------|---|---|--------------|-------|------|-----------------|------------------|------|---------------|
| Benzene      |   | 2 | 1.64         | mg/Kg | 1    | 2.00            | <0.00533         | 82   | 70 - 130      |
| Toluene      |   | 2 | 1.80         | mg/Kg | 1    | 2.00            | <0.00645         | 90   | 70 - 130      |
| Ethylbenzene |   | 2 | 1.88         | mg/Kg | 1    | 2.00            | <0.0116          | 94   | 70 - 130      |
| Xylene       |   | 2 | 5.75         | mg/Kg | 1    | 6.00            | <0.00874         | 96   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param        | F | C | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|--------------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Benzene      |   | 2 | 1.70          | mg/Kg | 1    | 2.00            | <0.00533         | 85   | 70 - 130      | 4   | 20           |
| Toluene      |   | 2 | 1.84          | mg/Kg | 1    | 2.00            | <0.00645         | 92   | 70 - 130      | 2   | 20           |
| Ethylbenzene |   | 2 | 2.01          | mg/Kg | 1    | 2.00            | <0.0116          | 100  | 70 - 130      | 7   | 20           |
| Xylene       |   | 2 | 6.14          | mg/Kg | 1    | 6.00            | <0.00874         | 102  | 70 - 130      | 7   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
|------------------------------|--------------|---------------|-------|------|-----------------|------------|-------------|---------------|
| Trifluorotoluene (TFT)       | 1.67         | 1.74          | mg/Kg | 1    | 2               | 84         | 87          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 1.82         | 1.94          | mg/Kg | 1    | 2               | 91         | 97          | 70 - 130      |

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**Matrix Spike (MS-1)** Spiked Sample: 352019

QC Batch: 108577  
Prep Batch: 91798

Date Analyzed: 2014-01-23  
QC Preparation: 2014-01-22

Analyzed By: AK  
Prepared By: AK

| Param | F | C | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|---|---|--------------|-------|------|-----------------|------------------|------|---------------|
| GRO   |   | 2 | 16.2         | mg/Kg | 1    | 20.0            | <2.32            | 81   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param | F | C | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| GRO   |   | 2 | 16.1          | mg/Kg | 1    | 20.0            | <2.32            | 80   | 70 - 130      | 1   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
|------------------------------|--------------|---------------|-------|------|-----------------|------------|-------------|---------------|
| Trifluorotoluene (TFT)       | 1.75         | 1.68          | mg/Kg | 1    | 2               | 88         | 84          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 2.04         | 2.00          | mg/Kg | 1    | 2               | 102        | 100         | 70 - 130      |

**Matrix Spike (MS-1)** Spiked Sample: 352056

QC Batch: 108641  
Prep Batch: 91898

Date Analyzed: 2014-01-27  
QC Preparation: 2014-01-24

Analyzed By: DS  
Prepared By: CM

| Param | F  | C  | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|----|----|--------------|-------|------|-----------------|------------------|------|---------------|
| DRO   | Q* | Q* | 548          | mg/Kg | 1    | 250             | 865              | -125 | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param | F      | C      | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|--------|--------|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| DRO   | Q*, Q* | Q*, Q* | 881           | mg/Kg | 1    | 250             | 865              | 6    | 70 - 130      | 47  | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate   | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
|-------------|--------------|---------------|-------|------|-----------------|------------|-------------|---------------|
| n-Tricosane | 109          | 133           | mg/Kg | 1    | 100             | 109        | 133         | 70 - 130      |

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**Matrix Spike (xMS-1)** Spiked Sample: 352063

QC Batch: 108647  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Param        | F | C | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|--------------|---|---|--------------|-------|------|-----------------|------------------|------|---------------|
| Benzene      |   | 2 | 3.38         | mg/Kg | 1    | 4.00            | <0.00533         | 84   | 70 - 130      |
| Toluene      |   | 2 | 3.66         | mg/Kg | 1    | 4.00            | <0.00645         | 92   | 70 - 130      |
| Ethylbenzene |   | 2 | 3.81         | mg/Kg | 1    | 4.00            | <0.0116          | 95   | 70 - 130      |
| Xylene       |   | 2 | 11.5         | mg/Kg | 1    | 12.0            | <0.00874         | 96   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param        | F | C | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|--------------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Benzene      |   | 2 | 3.27          | mg/Kg | 1    | 4.00            | <0.00533         | 82   | 70 - 130      | 3   | 20           |
| Toluene      |   | 2 | 3.55          | mg/Kg | 1    | 4.00            | <0.00645         | 89   | 70 - 130      | 3   | 20           |
| Ethylbenzene |   | 2 | 3.71          | mg/Kg | 1    | 4.00            | <0.0116          | 93   | 70 - 130      | 3   | 20           |
| Xylene       |   | 2 | 11.3          | mg/Kg | 1    | 12.0            | <0.00874         | 94   | 70 - 130      | 2   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Surrogate                    | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
|------------------------------|--------------|---------------|-------|------|-----------------|------------|-------------|---------------|
| Trifluorotoluene (TFT)       | 3.43         | 3.35          | mg/Kg | 1    | 4               | 86         | 84          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 3.98         | 3.87          | mg/Kg | 1    | 4               | 100        | 97          | 70 - 130      |

**Matrix Spike (MS-1)** Spiked Sample: 352063

QC Batch: 108648  
Prep Batch: 91850

Date Analyzed: 2014-01-24  
QC Preparation: 2014-01-23

Analyzed By: AK  
Prepared By: AK

| Param | F | C | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|-------|---|---|--------------|-------|------|-----------------|------------------|------|---------------|
| GRO   |   | 2 | 15.7         | mg/Kg | 1    | 20.0            | <2.32            | 78   | 70 - 130      |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param | F | C | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|-------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| GRO   |   | 2 | 16.1          | mg/Kg | 1    | 20.0            | <2.32            | 80   | 70 - 130      | 2   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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*matrix spikes continued ...*

| Surrogate                    | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
|------------------------------|--------------|---------------|-------|------|-----------------|------------|-------------|---------------|
| Surrogate                    | MS<br>Result | MSD<br>Result | Units | Dil. | Spike<br>Amount | MS<br>Rec. | MSD<br>Rec. | Rec.<br>Limit |
| Trifluorotoluene (TFT)       | 1.66         | 1.66          | mg/Kg | 1    | 2               | 83         | 83          | 70 - 130      |
| 4-Bromofluorobenzene (4-BFB) | 2.00         | 2.04          | mg/Kg | 1    | 2               | 100        | 102         | 70 - 130      |

**Matrix Spike (MS-1)** Spiked Sample: 352563

QC Batch: 108704  
Prep Batch: 91894

Date Analyzed: 2014-01-28  
QC Preparation: 2014-01-27

Analyzed By: AR  
Prepared By: AR

| Param    | F | C | MS<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit |
|----------|---|---|--------------|-------|------|-----------------|------------------|------|---------------|
| Chloride |   |   | 2590         | mg/Kg | 5    | 2500            | <19.2            | 104  | 78.9 - 121    |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

| Param    | F | C | MSD<br>Result | Units | Dil. | Spike<br>Amount | Matrix<br>Result | Rec. | Rec.<br>Limit | RPD | RPD<br>Limit |
|----------|---|---|---------------|-------|------|-----------------|------------------|------|---------------|-----|--------------|
| Chloride |   |   | 2700          | mg/Kg | 5    | 2500            | <19.2            | 108  | 78.9 - 121    | 4   | 20           |

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

## Calibration Standards

### Standard (CCV-1)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0961                 | 96                          | 80 - 120                      | 2014-01-23       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.103                  | 103                         | 80 - 120                      | 2014-01-23       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.102                  | 102                         | 80 - 120                      | 2014-01-23       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.310                  | 103                         | 80 - 120                      | 2014-01-23       |

### Standard (CCV-2)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0980                 | 98                          | 80 - 120                      | 2014-01-23       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.102                  | 102                         | 80 - 120                      | 2014-01-23       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.102                  | 102                         | 80 - 120                      | 2014-01-23       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.311                  | 104                         | 80 - 120                      | 2014-01-23       |

### Standard (CCV-3)

QC Batch: 108575

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0989                 | 99                          | 80 - 120                      | 2014-01-23       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.104                  | 104                         | 80 - 120                      | 2014-01-23       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.102                  | 102                         | 80 - 120                      | 2014-01-23       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.312                  | 104                         | 80 - 120                      | 2014-01-23       |

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**Standard (CCV-1)**

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 1.03                   | 103                         | 80 - 120                      | 2014-01-23       |

**Standard (CCV-2)**

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 0.943                  | 94                          | 80 - 120                      | 2014-01-23       |

**Standard (CCV-3)**

QC Batch: 108577

Date Analyzed: 2014-01-23

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 0.976                  | 98                          | 80 - 120                      | 2014-01-23       |

**Standard (CCV-1)**

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| DRO   |      | 1    | mg/Kg | 250                   | 204                    | 82                          | 80 - 120                      | 2014-01-27       |

**Standard (CCV-2)**

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

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| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| DRO   |      | 1    | mg/Kg | 250                   | 214                    | 86                          | 80 - 120                      | 2014-01-27       |

**Standard (CCV-3)**

QC Batch: 108641

Date Analyzed: 2014-01-27

Analyzed By: DS

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| DRO   |      | 1    | mg/Kg | 250                   | 212                    | 85                          | 80 - 120                      | 2014-01-27       |

**Standard (CCV-1)**

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0989                 | 99                          | 80 - 120                      | 2014-01-24       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.104                  | 104                         | 80 - 120                      | 2014-01-24       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.102                  | 102                         | 80 - 120                      | 2014-01-24       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.312                  | 104                         | 80 - 120                      | 2014-01-24       |

**Standard (CCV-2)**

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0958                 | 96                          | 80 - 120                      | 2014-01-24       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.100                  | 100                         | 80 - 120                      | 2014-01-24       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.0993                 | 99                          | 80 - 120                      | 2014-01-24       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.300                  | 100                         | 80 - 120                      | 2014-01-24       |

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112MC06176

Work Order: 14012201  
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**Standard (CCV-3)**

QC Batch: 108647

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param        | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|--------------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Benzene      |      | 2    | mg/kg | 0.100                 | 0.0949                 | 95                          | 80 - 120                      | 2014-01-24       |
| Toluene      |      | 2    | mg/kg | 0.100                 | 0.0992                 | 99                          | 80 - 120                      | 2014-01-24       |
| Ethylbenzene |      | 2    | mg/kg | 0.100                 | 0.0963                 | 96                          | 80 - 120                      | 2014-01-24       |
| Xylene       |      | 2    | mg/kg | 0.300                 | 0.294                  | 98                          | 80 - 120                      | 2014-01-24       |

**Standard (CCV-1)**

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 0.976                  | 98                          | 80 - 120                      | 2014-01-24       |

**Standard (CCV-2)**

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 0.924                  | 92                          | 80 - 120                      | 2014-01-24       |

**Standard (CCV-3)**

QC Batch: 108648

Date Analyzed: 2014-01-24

Analyzed By: AK

| Param | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|-------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| GRO   |      | 2    | mg/Kg | 1.00                  | 0.998                  | 100                         | 80 - 120                      | 2014-01-24       |

Report Date: January 30, 2014  
112MC06176

Work Order: 14012201  
COG/N G Phillips State #36

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**Standard (CCV-1)**

QC Batch: 108704

Date Analyzed: 2014-01-28

Analyzed By: AR

| Param    | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|----------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Chloride |      |      | mg/Kg | 100                   | 105                    | 105                         | 85 - 115                      | 2014-01-28       |

**Standard (CCV-2)**

QC Batch: 108704

Date Analyzed: 2014-01-28

Analyzed By: AR

| Param    | Flag | Cert | Units | CCVs<br>True<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed |
|----------|------|------|-------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|
| Chloride |      |      | mg/Kg | 100                   | 94.6                   | 95                          | 85 - 115                      | 2014-01-28       |

## Appendix

### Report Definitions

| Name | Definition                 |
|------|----------------------------|
| MDL  | Method Detection Limit     |
| MQL  | Minimum Quantitation Limit |
| SDL  | Sample Detection Limit     |

### Laboratory Certifications

| C | Certifying Authority | Certification Number | Laboratory Location |
|---|----------------------|----------------------|---------------------|
| - | NCTRCA               | WFWB384444Y0909      | TraceAnalysis       |
| - | DBE                  | VN 20657             | TraceAnalysis       |
| - | HUB                  | 1752439743100-86536  | TraceAnalysis       |
| - | WBE                  | 237019               | TraceAnalysis       |
| 1 | NELAP                | T104704219-13-9      | Lubbock             |
| 2 | NELAP                | T104704392-13-7      | Midland             |

### Standard Flags

| F   | Description                                                                                                                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B   | Analyte detected in the corresponding method blank above the method detection limit                                                                                                                                                 |
| H   | Analyzed out of hold time                                                                                                                                                                                                           |
| J   | Estimated concentration                                                                                                                                                                                                             |
| Jb  | The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL. |
| Je  | Estimated concentration exceeding calibration range.                                                                                                                                                                                |
| MI1 | Split peak or shoulder peak                                                                                                                                                                                                         |
| MI2 | Instrument software did not integrate                                                                                                                                                                                               |
| MI3 | Instrument software misidentified the peak                                                                                                                                                                                          |
| MI4 | Instrument software integrated improperly                                                                                                                                                                                           |
| MI5 | Baseline correction                                                                                                                                                                                                                 |
| Qc  | Calibration check outside of laboratory limits.                                                                                                                                                                                     |
| Qr  | RPD outside of laboratory limits                                                                                                                                                                                                    |
| Qs  | Spike recovery outside of laboratory limits.                                                                                                                                                                                        |
| Qsr | Surrogate recovery outside of laboratory limits.                                                                                                                                                                                    |
| U   | The analyte is not detected above the SDL                                                                                                                                                                                           |

## Result Comments

- 1 Dilution due to hydrocarons.
- 2 Dilution due to hydrocarbons.

## Attachments

The scanned attachments will follow this page.  
Please note, each attachment may consist of more than one page.

