Form 19 # 2521410

02231308

Page 1

FORM 4 Rev 12/05

State of Colorado

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax:(303)894-2109

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NOV 28 2012
COGCC

# SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 10079
2. Name of Operator: Antero Resources Piceance Corporation
3. Address: 1625 17th St STE 300 ATTN: Cole Kilstrom
City: Denver State: CO Zip: 80202
4. Contact Name: Cole Kilstrom
Phone: 303-357-6709
Fax: 303-357-7315

Complete the Attachment Checklist — OP OGCC

5. API Number 05- N/A
6. Well/Facility Name: Castle Springs Flowline
7. Well/Facility Number: Pipe CSF D Pad - CSF W Pad
8. Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSE 9 7S 91W 6
9. County: Garfield
10. Field Name: Wildcat
11. Federal, Indian or State Lease Number:
OGCC Facility ID Number: N/A

| | | |
|---|---|---|
| Survey Plat | | |
| Directional Survey | | |
| Surface Eqpmt Diagram | | |
| Technical Info Page | X | |
| Other | | |

Non-Facility ID # 431106

Related to Location # 418828 (nearby pad)

## General Notice

☐ CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtrqtr is substantive and requires a new permit)

| | FNL/FSL | | FEL/FWL | |
|---|---|---|---|---|
| Change of Surface Footage from Exterior Section Lines: | | | | |
| Change of Surface Footage to Exterior Section Lines: | | | | |
| Change of Bottomhole Footage from Exterior Section Lines: | | | | |
| Change of Bottomhole Footage to Exterior Section Lines: | | | | attach directional survey |

Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer

Latitude | Distance to nearest property line | Distance to nearest bldg, public rd, utility or RR

Longitude | Distance to nearest lease line | Is location in a High Density Area (rule 603b)? Yes/No

Ground Elevation | Distance to nearest well same formation | Surface owner consultation date:

GPS DATA:
Date of Measurement | PDOP Reading | Instrument Operator's Name

☐ CHANGE SPACING UNIT

| Formation | Formation Code | Spacing order number | Unit Acreage | Unit configuration |
|---|---|---|---|---|
| | | | | |

☐ Remove from surface bond — Signed surface use agreement attached

☐ CHANGE OF OPERATOR (prior to drilling):
Effective Date:
Plugging Bond: ☐ Blanket ☐ Individual

☐ CHANGE WELL NAME NUMBER
From:
To:
Effective Date:

☐ ABANDONED LOCATION:
Was location ever built? ☐ Yes ☐ No
Is site ready for inspection? ☐ Yes ☐ No
Date Ready for Inspection:

☐ NOTICE OF CONTINUED SHUT IN STATUS
Date well shut in or temporarily abandoned:
Has Production Equipment been removed from site? ☐ Yes ☐ No
MIT required if shut in longer than two years. Date of last MIT

☐ SPUD DATE:

☐ REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)

☐ SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK *submit cbl and cement job summaries

| Method used | Cementing tool setting/perf depth | Cement volume | Cement top | Cement bottom | Date |
|---|---|---|---|---|---|
| | | | | | |

☐ RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.
Final reclamation will commence on approximately
☐ Final reclamation is completed and site is ready for inspection.

## Technical Engineering/Environmental Notice

☐ Notice of Intent — Approximate Start Date:
☐ Report of Work Done — Date Work Completed:

Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

| | | |
|---|---|---|
| ☐ Intent to Recomplete (submit form 2) | ☐ Request to Vent or Flare | ☐ E&P Waste Disposal |
| ☐ Change Drilling Plans | ☐ Repair Well | ☐ Beneficial Reuse of E&P Waste |
| ☐ Gross Interval Changed? | ☐ Rule 502 variance requested | ☒ Status Update/Change of Remediation Plans for Spills and Releases |
| ☐ Casing/Cementing Program Change | ☐ Other: | |

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: Cole Kilstrom Date: 11/19/12 Email:
Print Name: Cole Kilstrom Title: ENV SPE

COGCC Approved: Title: Env. Supv. Date: 12/14/12

CONDITIONS OF APPROVAL, IF ANY:

See Attached comments

Lat: 39.45- from Figure 1 Attachment
Long: 107.55625 and is online

FORM 4 Rev 12/05



# TECHNICAL INFORMATION PAGE

FOR OGCC USE ONLY

1. OGCC Operator Number: 10079 API Number: 05-045-N/A
2. Name of Operator: Antero Resources Piceance Corp. OGCC Facility ID # N/A
3. Well/Facility Name: Castle Springs Flowline Well/Facility Number: N/A
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSE 9 7S 91W 6

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

Summary of Corrective Actions and Request for Spill Report Closure:

On August 17, 2010, an Antero excavation project discovered a faulty water line near Antero's Castle Springs facility in Garfield County that had allowed under 7 bbls of produced water to escape into surrounding soil. Antero immediately shut off the pipeline and dispatched vacuum trucks to the site. The spilled liquid did not escape the excavation trench.

COGCC Form 19 Spill Report # 2521410 stated that further remediation , beyond the initial microblaze and vacuum truck response, would be performed if confirmation sampling taken by September 1, 2010 evidenced that such further remediation would be required.

On the day of the incident, Antero replaced the faulty pipeline, deployed a vacuum truck to the site, and performed a microblaze on the area of the spill. Antero then conducted confirmation sampling. The results, also included here, released on September 28, 2010, demonstrated that the site was in compliance. Thus, per the Spill Report, no further remediation is required.

Because Antero has performed and completed all corrective actions included in the Spill Report and the site sampling demonstrates compliance, Antero respectfully requests final COGCC closure of Spill Report # 2521410 per COGCC Rule 909 (e).

COA:

Based on review of data presented, it appears that no further action is necessary at this time at this site. However, should future conditions at the site be discovered of contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be significantly impacted, COGCC may require that further investigation and/or remediation be conducted.¶

ALS Environmental

28-Sep-2010

Mark Mumby
HRL Compliance Solutions Inc.
744 Horizon Ct Suite 140
Grand Junction, CO 81506

Tel: (970) 243-3271
Fax: (970) 243-3230

Re: W Pad Access Road Water Line Work Order: **1009571**

Dear Mark,

ALS Environmental received 5 samples on 17-Sep-2010 08:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 25.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Bethany Agarwal

Electronically approved by: Mary K. Knowles

Bethany Agarwal
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-09A-TX

## ALS Environmental

Date: 28-Sep-10

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Work Order:** 1009571

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1009571-01 | Water Line Confirmation | Soil | | 9/16/2010 12:20 | 9/17/2010 08:45 | ☐ |
| 1009571-02 | Water Line Background | Soil | | 9/16/2010 12:25 | 9/17/2010 08:45 | ☐ |
| 1009571-03 | As Background 1 | Soil | | 9/16/2010 12:35 | 9/17/2010 08:45 | ☐ |
| 1009571-04 | As Background 2 | Soil | | 9/16/2010 12:45 | 9/17/2010 08:45 | ☐ |
| 1009571-05 | As Background 3 | Soil | | 9/16/2010 12:50 | 9/17/2010 08:45 | ☐ |

| | |
|---|---|
| **Client:** | HRL Compliance Solutions Inc. |
| **Project:** | W Pad Access Road Water Line |
| **Work Order:** | 1009571 |

## Case Narrative

Batch 46207, Metals, Sample 1009579-24: MS/MSD performed on an unrelated sample.

SAR, EC< and pH subcontracted to Olsen's Agricultural Laboratory.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** Water Line Confirmation
**Collection Date:** 9/16/2010 12:20 PM

**Work Order:** 1009571
**Lab ID:** 1009571-01
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TPH DRO/ORO** | | | Method: **SW8015M** | | Prep: SW3541 / 9/21/10 | | Analyst: **RPM** |
| **TPH (Diesel Range)** | **1.3** | J | **0.50** | **1.7** | **mg/Kg** | 1 | 9/21/2010 14:32 |
| *Surr: 2-Fluorobiphenyl* | *84.5* | | | *70-130* | *%REC* | 1 | 9/21/2010 14:32 |
| **GASOLINE RANGE ORGANICS** | | | Method: **SW8015** | | | | Analyst: **KKP** |
| Gasoline Range Organics | U | | 0.020 | 0.050 | mg/Kg | 1 | 9/21/2010 05:41 |
| *Surr: 4-Bromofluorobenzene* | *82.9* | | | *70-130* | *%REC* | 1 | 9/21/2010 05:41 |
| **TRIVALENT CHROMIUM** | | | Method: **CALCULATION** | | | | Analyst: **SKS** |
| **Chromium, Trivalent** | **7.83** | | **0.70** | **5.00** | **mg/Kg** | 1 | 9/28/2010 |
| **MERCURY** | | | Method: **SW7471A** | | Prep: SW7471A / 9/22/10 | | Analyst: **JCJ** |
| **Mercury** | **0.0123** | | **0.00021** | **0.00346** | **mg/Kg** | 1 | 9/22/2010 19:42 |
| **METALS** | | | Method: **SW6020** | | Prep: SW3050A / 9/21/10 | | Analyst: **SKS** |
| **Arsenic** | **2.90** | | **0.056** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Barium** | **202** | | **0.74** | **4.63** | **mg/Kg** | 10 | 9/23/2010 17:28 |
| **Cadmium** | **0.168** | J | **0.037** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Chromium** | **7.63** | | **0.046** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Copper** | **9.81** | | **0.13** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Lead** | **8.36** | | **0.046** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Nickel** | **11.4** | | **0.056** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Selenium** | **0.402** | J | **0.23** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Silver** | **0.0379** | J | **0.037** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **Zinc** | **32.7** | | **0.23** | **0.463** | **mg/Kg** | 1 | 9/22/2010 22:53 |
| **LOW-LEVEL PAHS** | | | Method: **SW8270** | | Prep: SW3541 / 9/20/10 | | Analyst: **KMB** |
| Acenaphthene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Acenaphthylene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Anthracene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Benz(a)anthracene | U | | 0.0028 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Benzo(a)pyrene | U | | 0.0023 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Benzo(b)fluoranthene | U | | 0.0033 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Benzo(g,h,i)perylene | U | | 0.0029 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Benzo(k)fluoranthene | U | | 0.0033 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Chrysene | U | | 0.0029 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Dibenz(a,h)anthracene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Fluoranthene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Fluorene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Indeno(1,2,3-cd)pyrene | U | | 0.0035 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Naphthalene | U | | 0.0033 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| Phenanthrene | U | | 0.0030 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** Water Line Confirmation
**Collection Date:** 9/16/2010 12:20 PM

**Work Order:** 1009571
**Lab ID:** 1009571-01
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Pyrene | U | | 0.0022 | 0.0066 | mg/Kg | 1 | 9/21/2010 13:23 |
| *Surr: 2-Fluorobiphenyl* | *65.8* | | | *43-125* | *%REC* | 1 | 9/21/2010 13:23 |
| *Surr: 4-Terphenyl-d14* | *78.3* | | | *32-125* | *%REC* | 1 | 9/21/2010 13:23 |
| *Surr: Nitrobenzene-d5* | *67.6* | | | *37-125* | *%REC* | 1 | 9/21/2010 13:23 |
| **VOLATILES** | | Method: **SW8260** | | | | | Analyst: **WLR** |
| Benzene | U | | 0.00050 | 0.0050 | mg/Kg | 1 | 9/18/2010 16:56 |
| Ethylbenzene | U | | 0.00050 | 0.0050 | mg/Kg | 1 | 9/18/2010 16:56 |
| m,p-Xylene | U | | 0.0010 | 0.010 | mg/Kg | 1 | 9/18/2010 16:56 |
| o-Xylene | U | | 0.00050 | 0.0050 | mg/Kg | 1 | 9/18/2010 16:56 |
| Toluene | U | | 0.00050 | 0.0050 | mg/Kg | 1 | 9/18/2010 16:56 |
| Xylenes, Total | U | | 0.0015 | 0.015 | mg/Kg | 1 | 9/18/2010 16:56 |
| *Surr: 1,2-Dichloroethane-d4* | *105* | | | *70-128* | *%REC* | 1 | 9/18/2010 16:56 |
| *Surr: 4-Bromofluorobenzene* | *98.7* | | | *73-126* | *%REC* | 1 | 9/18/2010 16:56 |
| *Surr: Dibromofluoromethane* | *102* | | | *71-128* | *%REC* | 1 | 9/18/2010 16:56 |
| *Surr: Toluene-d8* | *97.7* | | | *73-127* | *%REC* | 1 | 9/18/2010 16:56 |
| **MISCELLANEOUS ANALYSIS** | | Method: **NA** | | | | | Analyst: **SUB** |
| **Miscellaneous Analysis** | **See Attached** | | **0** | | | 1 | 9/27/2010 |
| **HEXAVALENT CHROMIUM** | | Method: **SW7196** | | | Prep: SW3060A / 9/23/10 | | Analyst: **JBA** |
| Chromium, Hexavalent | U | | 0.70 | 2.00 | mg/Kg | 1 | 9/24/2010 18:00 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** Water Line Background
**Collection Date:** 9/16/2010 12:25 PM

**Work Order:** 1009571
**Lab ID:** 1009571-02
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **MISCELLANEOUS ANALYSIS** | | Method:NA | | | | | Analyst: **SUB** |
| Miscellaneous Analysis | See Attached | | 0 | | | 1 | 9/27/2010 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** As Background 1
**Collection Date:** 9/16/2010 12:35 PM

**Work Order:** 1009571
**Lab ID:** 1009571-03
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS** | | Method: SW6020 | | | Prep: SW3050A / 9/21/10 | | Analyst: SKS |
| Arsenic | 2.12 | | 0.053 | 0.442 | mg/Kg | 1 | 9/22/2010 22:58 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** As Background 2
**Collection Date:** 9/16/2010 12:45 PM

**Work Order:** 1009571
**Lab ID:** 1009571-04
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS** | | | Method: **SW6020** | | Prep: SW3050A / 9/21/10 | | Analyst: **SKS** |
| **Arsenic** | **1.98** | | **0.054** | **0.450** | **mg/Kg** | 1 | 9/22/2010 23:04 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Environmental

**Date:** *28-Sep-10*

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**Sample ID:** As Background 3
**Collection Date:** 9/16/2010 12:50 PM

**Work Order:** 1009571
**Lab ID:** 1009571-05
**Matrix:** SOIL

| Analyses | Result | Qual | MDL | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS** | | Method: **SW6020** | | | Prep: SW3050A / 9/21/10 | | Analyst: **SKS** |
| Arsenic | 2.01 | | 0.055 | 0.459 | mg/Kg | 1 | 9/22/2010 23:21 |

**Note:** See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 28-Sep-10

**Client:** HRL Compliance Solutions Inc.

**Work Order:** 1009571

**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46183** Instrument ID **FID-8** Method: **SW8015M**

**MBLK** Sample ID: **FBLKS1-100921-46183** Units: **mg/Kg** Analysis Date: **9/21/2010 01:54 PM**

Client ID: Run ID: **FID-8_100921A** SeqNo: **2101008** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | U | 1.7 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *3.24* | 0.10 | *3.33* | 0 | *97.3* | *70-130* | 0 | | | |

**LCS** Sample ID: **FLCSS1-100921-46183** Units: **mg/Kg** Analysis Date: **9/21/2010 02:13 PM**

Client ID: Run ID: **FID-8_100921A** SeqNo: **2101010** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 33.49 | 1.7 | 33.33 | 0 | 100 | 70-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3.554* | 0.10 | *3.33* | 0 | *107* | *70-130* | 0 | | | |

**MS** Sample ID: **1009571-01BMS** Units: **mg/Kg** Analysis Date: **9/21/2010 02:52 PM**

Client ID: **Water Line Confirmation** Run ID: **FID-8_100921A** SeqNo: **2101012** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 35.9 | 1.7 | 33.25 | 1.252 | 104 | 70-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3.534* | 0.10 | *3.322* | 0 | *106* | *70-130* | 0 | | | |

**MSD** Sample ID: **1009571-01BMSD** Units: **mg/Kg** Analysis Date: **9/21/2010 03:11 PM**

Client ID: **Water Line Confirmation** Run ID: **FID-8_100921A** SeqNo: **2101013** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH (Diesel Range) | 37.03 | 1.7 | 33.32 | 1.252 | 107 | 70-130 | 35.9 | 3.11 | 30 | |
| *Surr: 2-Fluorobiphenyl* | *3.395* | 0.10 | *3.329* | 0 | *102* | *70-130* | 3.534 | *4.03* | *30* | |

**The following samples were analyzed in this batch:** 1009571-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **R97464** Instrument ID **FID-9** Method: **SW8015**

**MBLK** Sample ID: **GBLKS-092010-R97464** Units: **mg/Kg** Analysis Date: **9/20/2010 09:15 PM**
Client ID: Run ID: **FID-9_100920C** SeqNo: **2095675** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | U | 0.050 | | | | | | | | |
| *Surr: 4-Bromofluorobenzene* | *0.07926* | 0.0050 | *0.1* | 0 | *79.3* | *70-130* | 0 | | | |

**LCS** Sample ID: **GLCSS-092010-R97464** Units: **mg/Kg** Analysis Date: **9/20/2010 08:40 PM**
Client ID: Run ID: **FID-9_100920C** SeqNo: **2095673** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 1.093 | 0.050 | 1 | 0 | 109 | 70-130 | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *0.09159* | 0.0050 | *0.1* | 0 | *91.6* | *70-130* | 0 | | | |

**LCSD** Sample ID: **GLCSDS-092010-R97464** Units: **mg/Kg** Analysis Date: **9/20/2010 08:58 PM**
Client ID: Run ID: **FID-9_100920C** SeqNo: **2095674** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 1.106 | 0.050 | 1 | 0 | 111 | 70-130 | 1.093 | 1.14 | 30 | |
| *Surr: 4-Bromofluorobenzene* | *0.09262* | 0.0050 | *0.1* | 0 | *92.6* | *70-130* | 0.09159 | *1.12* | *30* | |

**MS** Sample ID: **1009582-08BMS** Units: **mg/Kg** Analysis Date: **9/20/2010 10:09 PM**
Client ID: Run ID: **FID-9_100920C** SeqNo: **2095678** Prep Date: DF: **0.735**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.5872 | 0.037 | 0.735 | 0.02134 | 77 | 70-130 | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *0.07511* | 0.0037 | *0.0735* | 0 | *102* | *70-130* | 0 | | | |

**MSD** Sample ID: **1009582-08BMSD** Units: **mg/Kg** Analysis Date: **9/20/2010 10:26 PM**
Client ID: Run ID: **FID-9_100920C** SeqNo: **2095679** Prep Date: DF: **0.804**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.7222 | 0.040 | 0.804 | 0.02134 | 87.2 | 70-130 | 0.5872 | 20.6 | 30 | |
| *Surr: 4-Bromofluorobenzene* | *0.08777* | 0.0040 | *0.0804* | 0 | *109* | *70-130* | 0.07511 | *15.5* | *30* | |

**The following samples were analyzed in this batch:** 1009571-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46207** Instrument ID **ICPMS04** Method: **SW6020**

**MBLK** Sample ID: **MBLKS4-092110-46207** Units: **mg/Kg** Analysis Date: **9/23/2010 05:22 PM**
Client ID: Run ID: **ICPMS04_100922A** SeqNo: **2099600** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | U | 0.50 | | | | | | | | |
| Barium | U | 0.50 | | | | | | | | |
| Cadmium | U | 0.50 | | | | | | | | |
| Chromium | U | 0.50 | | | | | | | | |
| Copper | U | 0.50 | | | | | | | | |
| Lead | U | 0.50 | | | | | | | | |
| Nickel | U | 0.50 | | | | | | | | |
| Selenium | U | 0.50 | | | | | | | | |
| Silver | U | 0.50 | | | | | | | | |
| Zinc | 0.4316 | 0.50 | | | | | | | | J |

**LCS** Sample ID: **MLCSS4-092110-46207** Units: **mg/Kg** Analysis Date: **9/22/2010 10:31 PM**
Client ID: Run ID: **ICPMS04_100922A** SeqNo: **2098614** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 9.142 | 0.50 | 10 | 0 | 91.4 | 80-120 | 0 | | | |
| Barium | 9.226 | 0.50 | 10 | 0 | 92.3 | 80-120 | 0 | | | |
| Cadmium | 9.138 | 0.50 | 10 | 0 | 91.4 | 80-120 | 0 | | | |
| Chromium | 9.24 | 0.50 | 10 | 0 | 92.4 | 80-120 | 0 | | | |
| Copper | 9.358 | 0.50 | 10 | 0 | 93.6 | 80-120 | 0 | | | |
| Lead | 9.248 | 0.50 | 10 | 0 | 92.5 | 80-120 | 0 | | | |
| Nickel | 9.51 | 0.50 | 10 | 0 | 95.1 | 80-120 | 0 | | | |
| Selenium | 9.107 | 0.50 | 10 | 0 | 91.1 | 80-120 | 0 | | | |
| Silver | 8.929 | 0.50 | 10 | 0 | 89.3 | 80-120 | 0 | | | |
| Zinc | 9.463 | 0.50 | 10 | 0 | 94.6 | 80-120 | 0 | | | |

**MS** Sample ID: **1009579-24BMS** Units: **mg/Kg** Analysis Date: **9/23/2010 12:00 AM**
Client ID: Run ID: **ICPMS04_100922A** SeqNo: **2098686** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 10.48 | 0.47 | 9.346 | 2.125 | 89.4 | 75-125 | 0 | | | |
| Barium | 129.5 | 0.47 | 9.346 | 105.8 | 254 | 75-125 | 0 | | | SO |
| Cadmium | 7.793 | 0.47 | 9.346 | 0.03981 | 83 | 75-125 | 0 | | | |
| Chromium | 17.53 | 0.47 | 9.346 | 9.085 | 90.4 | 75-125 | 0 | | | |
| Copper | 13.94 | 0.47 | 9.346 | 6.143 | 83.4 | 75-125 | 0 | | | |
| Lead | 15.83 | 0.47 | 9.346 | 8.56 | 77.8 | 75-125 | 0 | | | |
| Nickel | 17.45 | 0.47 | 9.346 | 8.714 | 93.5 | 75-125 | 0 | | | |
| Selenium | 7.73 | 0.47 | 9.346 | 0.4114 | 78.3 | 75-125 | 0 | | | |
| Silver | 7.835 | 0.47 | 9.346 | 0.02029 | 83.6 | 75-125 | 0 | | | |
| Zinc | 26.64 | 0.47 | 9.346 | 17.03 | 103 | 75-125 | 0 | | | |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46207** Instrument ID **ICPMS04** Method: **SW6020**

**MSD** Sample ID: **1009579-24BMSD** Units: **mg/Kg** Analysis Date: **9/23/2010 12:06 AM**
Client ID: Run ID: **ICPMS04_100922A** SeqNo: **2098687** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 9.697 | 0.46 | 9.259 | 2.125 | 81.8 | 75-125 | 10.48 | 7.78 | 25 | |
| Barium | 108.7 | 0.46 | 9.259 | 105.8 | 32.2 | 75-125 | 129.5 | 17.4 | 25 | SO |
| Cadmium | 7.509 | 0.46 | 9.259 | 0.03981 | 80.7 | 75-125 | 7.793 | 3.71 | 25 | |
| Chromium | 17.7 | 0.46 | 9.259 | 9.085 | 93.1 | 75-125 | 17.53 | 0.963 | 25 | |
| Copper | 13.45 | 0.46 | 9.259 | 6.143 | 78.9 | 75-125 | 13.94 | 3.56 | 25 | |
| Lead | 15.03 | 0.46 | 9.259 | 8.56 | 69.9 | 75-125 | 15.83 | 5.16 | 25 | S |
| Nickel | 16.12 | 0.46 | 9.259 | 8.714 | 80 | 75-125 | 17.45 | 7.9 | 25 | |
| Selenium | 7.572 | 0.46 | 9.259 | 0.4114 | 77.3 | 75-125 | 7.73 | 2.06 | 25 | |
| Silver | 7.645 | 0.46 | 9.259 | 0.02029 | 82.3 | 75-125 | 7.835 | 2.45 | 25 | |
| Zinc | 25.83 | 0.46 | 9.259 | 17.03 | 95 | 75-125 | 26.64 | 3.09 | 25 | |

**DUP** Sample ID: **1009579-24BDUP** Units: **mg/Kg** Analysis Date: **9/22/2010 11:54 PM**
Client ID: Run ID: **ICPMS04_100922A** SeqNo: **2098680** Prep Date: **9/21/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 2.385 | 0.47 | 0 | 0 | 0 | 0-0 | 2.125 | 11.5 | 25 | |
| Barium | 112.2 | 0.47 | 0 | 0 | 0 | 0-0 | 105.8 | 5.93 | 25 | |
| Cadmium | U | 0.47 | 0 | 0 | 0 | 0-0 | 0.03981 | 0 | 25 | |
| Chromium | 10.38 | 0.47 | 0 | 0 | 0 | 0-0 | 9.085 | 13.3 | 25 | |
| Copper | 6.413 | 0.47 | 0 | 0 | 0 | 0-0 | 6.143 | 4.3 | 25 | |
| Lead | 8.829 | 0.47 | 0 | 0 | 0 | 0-0 | 8.56 | 3.1 | 25 | |
| Nickel | 9.083 | 0.47 | 0 | 0 | 0 | 0-0 | 8.714 | 4.15 | 25 | |
| Selenium | 0.4663 | 0.47 | 0 | 0 | 0 | 0-0 | 0.4114 | 0 | 25 | J |
| Silver | U | 0.47 | 0 | 0 | 0 | 0-0 | 0.02029 | 0 | 25 | |
| Zinc | 18.89 | 0.47 | 0 | 0 | 0 | 0-0 | 17.03 | 10.3 | 25 | |

**The following samples were analyzed in this batch:** 1009571-01B, 1009571-03A, 1009571-04A, 1009571-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46234** Instrument ID **HG02** Method: **SW7471A**

**MBLK** Sample ID: **GBLKS4-092210-46234** Units: **µg/Kg** Analysis Date: **9/22/2010 07:17 PM**
Client ID: Run ID: **HG02_100922A** SeqNo: **2097822** Prep Date: **9/22/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | U | 3.3 | | | | | | | | |

**LCS** Sample ID: **GLCSS4-092210-46234** Units: **µg/Kg** Analysis Date: **9/22/2010 07:19 PM**
Client ID: Run ID: **HG02_100922A** SeqNo: **2097824** Prep Date: **9/22/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 309.3 | 3.3 | 333.3 | 0 | 92.8 | 85-115 | 0 | | | |

**MS** Sample ID: **1009570-01BMS** Units: **µg/Kg** Analysis Date: **9/22/2010 07:24 PM**
Client ID: Run ID: **HG02_100922A** SeqNo: **2097831** Prep Date: **9/22/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 313.1 | 3.4 | 336.7 | 14.84 | 88.6 | 85-115 | 0 | | | |

**MSD** Sample ID: **1009570-01BMSD** Units: **µg/Kg** Analysis Date: **9/22/2010 07:26 PM**
Client ID: Run ID: **HG02_100922A** SeqNo: **2097833** Prep Date: **9/22/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 309.6 | 3.4 | 342.5 | 14.84 | 86.1 | 85-115 | 313.1 | 1.14 | 20 | |

**DUP** Sample ID: **1009570-01BDUP** Units: **µg/Kg** Analysis Date: **9/22/2010 07:23 PM**
Client ID: Run ID: **HG02_100922A** SeqNo: **2097829** Prep Date: **9/22/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 14.68 | 3.5 | 0 | 0 | 0 | | 14.84 | 1.07 | 20 | |

**The following samples were analyzed in this batch:** 1009571-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46160** Instrument ID **SV-6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS3-100920-46160** Units: **µg/Kg** Analysis Date: **9/21/2010 09:25 AM**
Client ID: Run ID: **SV-6_100921B** SeqNo: **2098936** Prep Date: **9/20/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | U | 6.6 | | | | | | | | |
| Acenaphthylene | U | 6.6 | | | | | | | | |
| Anthracene | U | 6.6 | | | | | | | | |
| Benz(a)anthracene | U | 6.6 | | | | | | | | |
| Benzo(a)pyrene | U | 6.6 | | | | | | | | |
| Benzo(b)fluoranthene | U | 6.6 | | | | | | | | |
| Benzo(g,h,i)perylene | U | 6.6 | | | | | | | | |
| Benzo(k)fluoranthene | U | 6.6 | | | | | | | | |
| Chrysene | U | 6.6 | | | | | | | | |
| Dibenz(a,h)anthracene | U | 6.6 | | | | | | | | |
| Fluoranthene | U | 6.6 | | | | | | | | |
| Fluorene | U | 6.6 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | U | 6.6 | | | | | | | | |
| Naphthalene | U | 6.6 | | | | | | | | |
| Phenanthrene | U | 6.6 | | | | | | | | |
| Pyrene | U | 6.6 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *129.6* | 6.6 | *166.7* | 0 | *77.8* | *43-125* | | 0 | | |
| *Surr: 4-Terphenyl-d14* | *132.3* | 6.6 | *166.7* | 0 | *79.4* | *32-125* | | 0 | | |
| *Surr: Nitrobenzene-d5* | *132.5* | 6.6 | *166.7* | 0 | *79.5* | *37-125* | | 0 | | |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46160** Instrument ID **SV-6** Method: **SW8270**

LCS Sample ID: **SLCSS3-100920-46160** Units: **µg/Kg** Analysis Date: **9/21/2010 09:45 AM**
Client ID: Run ID: **SV-6_100921B** SeqNo: **2098937** Prep Date: **9/20/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 134.5 | 6.6 | 166.7 | 0 | 80.7 | 50-120 | 0 | | | |
| Acenaphthylene | 137.5 | 6.6 | 166.7 | 0 | 82.5 | 50-120 | 0 | | | |
| Anthracene | 140 | 6.6 | 166.7 | 0 | 84 | 50-123 | 0 | | | |
| Benz(a)anthracene | 148.6 | 6.6 | 166.7 | 0 | 89.2 | 50-131 | 0 | | | |
| Benzo(a)pyrene | 149.1 | 6.6 | 166.7 | 0 | 89.5 | 50-130 | 0 | | | |
| Benzo(b)fluoranthene | 158.2 | 6.6 | 166.7 | 0 | 94.9 | 50-137 | 0 | | | |
| Benzo(g,h,i)perylene | 148.3 | 6.6 | 166.7 | 0 | 89 | 50-130 | 0 | | | |
| Benzo(k)fluoranthene | 154.4 | 6.6 | 166.7 | 0 | 92.6 | 50-143 | 0 | | | |
| Chrysene | 145.8 | 6.6 | 166.7 | 0 | 87.5 | 50-130 | 0 | | | |
| Dibenz(a,h)anthracene | 146.3 | 6.6 | 166.7 | 0 | 87.8 | 50-130 | 0 | | | |
| Fluoranthene | 141.1 | 6.6 | 166.7 | 0 | 84.6 | 50-131 | 0 | | | |
| Fluorene | 135.3 | 6.6 | 166.7 | 0 | 81.2 | 50-125 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 137.7 | 6.6 | 166.7 | 0 | 82.6 | 45-139 | 0 | | | |
| Naphthalene | 146.1 | 6.6 | 166.7 | 0 | 87.7 | 50-125 | 0 | | | |
| Phenanthrene | 136.2 | 6.6 | 166.7 | 0 | 81.7 | 50-125 | 0 | | | |
| Pyrene | 149.6 | 6.6 | 166.7 | 0 | 89.8 | 45-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *132.8* | 6.6 | *166.7* | 0 | *79.7* | *43-125* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *134* | 6.6 | *166.7* | 0 | *80.4* | *32-125* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *137.3* | 6.6 | *166.7* | 0 | *82.4* | *37-125* | 0 | | | |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46160** Instrument ID **SV-6** Method: **SW8270**

**MS** Sample ID: **1009571-01BMS** Units: **µg/Kg** Analysis Date: **9/21/2010 01:43 PM**

Client ID: **Water Line Confirmation** Run ID: **SV-6_100921B** SeqNo: **2098939** Prep Date: **9/20/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 115.4 | 6.6 | 166.6 | 0 | 69.3 | 50-120 | 0 | | | |
| Acenaphthylene | 122.5 | 6.6 | 166.6 | 0 | 73.6 | 50-120 | 0 | | | |
| Anthracene | 135.6 | 6.6 | 166.6 | 0 | 81.4 | 50-123 | 0 | | | |
| Benz(a)anthracene | 153 | 6.6 | 166.6 | 0 | 91.8 | 50-131 | 0 | | | |
| Benzo(a)pyrene | 148.3 | 6.6 | 166.6 | 0 | 89.1 | 50-130 | 0 | | | |
| Benzo(b)fluoranthene | 159.6 | 6.6 | 166.6 | 0 | 95.8 | 50-137 | 0 | | | |
| Benzo(g,h,i)perylene | 147.3 | 6.6 | 166.6 | 0 | 88.4 | 50-130 | 0 | | | |
| Benzo(k)fluoranthene | 147.9 | 6.6 | 166.6 | 0 | 88.8 | 50-143 | 0 | | | |
| Chrysene | 145.1 | 6.6 | 166.6 | 0 | 87.1 | 50-130 | 0 | | | |
| Dibenz(a,h)anthracene | 144.3 | 6.6 | 166.6 | 0 | 86.6 | 50-130 | 0 | | | |
| Fluoranthene | 141.4 | 6.6 | 166.6 | 0 | 84.9 | 50-131 | 0 | | | |
| Fluorene | 126.1 | 6.6 | 166.6 | 0 | 75.7 | 50-125 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 138.1 | 6.6 | 166.6 | 0 | 82.9 | 45-139 | 0 | | | |
| Naphthalene | 121.5 | 6.6 | 166.6 | 0 | 72.9 | 50-125 | 0 | | | |
| Phenanthrene | 132.7 | 6.6 | 166.6 | 0 | 79.7 | 50-125 | 0 | | | |
| Pyrene | 152.9 | 6.6 | 166.6 | 0 | 91.8 | 45-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *111.1* | 6.6 | *166.6* | 0 | *66.7* | *43-125* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *133.9* | 6.6 | *166.6* | 0 | *80.4* | *32-125* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *110.5* | 6.6 | *166.6* | 0 | *66.4* | *37-125* | 0 | | | |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46160** Instrument ID **SV-6** Method: **SW8270**

**MSD** Sample ID: **1009571-01BMSD** Units: **µg/Kg** Analysis Date: **9/21/2010 02:03 PM**
Client ID: **Water Line Confirmation** Run ID: **SV-6_100921B** SeqNo: **2098940** Prep Date: **9/20/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 115.6 | 6.6 | 166.3 | 0 | 69.5 | 50-120 | 115.4 | 0.213 | 30 | |
| Acenaphthylene | 122.4 | 6.6 | 166.3 | 0 | 73.6 | 50-120 | 122.5 | 0.0923 | 30 | |
| Anthracene | 132.8 | 6.6 | 166.3 | 0 | 79.9 | 50-123 | 135.6 | 2.07 | 30 | |
| Benz(a)anthracene | 146.2 | 6.6 | 166.3 | 0 | 87.9 | 50-131 | 153 | 4.52 | 30 | |
| Benzo(a)pyrene | 145.6 | 6.6 | 166.3 | 0 | 87.6 | 50-130 | 148.3 | 1.84 | 30 | |
| Benzo(b)fluoranthene | 149 | 6.6 | 166.3 | 0 | 89.6 | 50-137 | 159.6 | 6.68 | 30 | |
| Benzo(g,h,i)perylene | 142.9 | 6.6 | 166.3 | 0 | 85.9 | 50-130 | 147.3 | 3.04 | 30 | |
| Benzo(k)fluoranthene | 144.9 | 6.6 | 166.3 | 0 | 87.1 | 50-143 | 147.9 | 2.06 | 30 | |
| Chrysene | 141.5 | 6.6 | 166.3 | 0 | 85.1 | 50-130 | 145.1 | 2.52 | 30 | |
| Dibenz(a,h)anthracene | 140.4 | 6.6 | 166.3 | 0 | 84.5 | 50-130 | 144.3 | 2.73 | 30 | |
| Fluoranthene | 137.9 | 6.6 | 166.3 | 0 | 82.9 | 50-131 | 141.4 | 2.5 | 30 | |
| Fluorene | 124.9 | 6.6 | 166.3 | 0 | 75.1 | 50-125 | 126.1 | 0.968 | 30 | |
| Indeno(1,2,3-cd)pyrene | 142.3 | 6.6 | 166.3 | 0 | 85.6 | 45-139 | 138.1 | 3.01 | 30 | |
| Naphthalene | 124.9 | 6.6 | 166.3 | 0 | 75.1 | 50-125 | 121.5 | 2.76 | 30 | |
| Phenanthrene | 131.5 | 6.6 | 166.3 | 0 | 79.1 | 50-125 | 132.7 | 0.885 | 30 | |
| Pyrene | 147.6 | 6.6 | 166.3 | 0 | 88.7 | 45-130 | 152.9 | 3.53 | 30 | |
| *Surr: 2-Fluorobiphenyl* | *113.9* | 6.6 | *166.3* | 0 | *68.5* | *43-125* | 111.1 | *2.51* | *30* | |
| *Surr: 4-Terphenyl-d14* | *127.3* | 6.6 | *166.3* | 0 | *76.6* | *32-125* | 133.9 | *5.03* | *30* | |
| *Surr: Nitrobenzene-d5* | *115.7* | 6.6 | *166.3* | 0 | *69.6* | *37-125* | 110.5 | *4.58* | *30* | |

**The following samples were analyzed in this batch:** 1009571-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **R97342** Instrument ID **VOA5** Method: **SW8260**

**MBLK** Sample ID: **VBLKS1-091810-R97342** Units: **µg/Kg** Analysis Date: **9/18/2010 11:24 AM**
Client ID: Run ID: **VOA5_100918A** SeqNo: **2093438** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | U | 5.0 | | | | | | | | |
| Ethylbenzene | U | 5.0 | | | | | | | | |
| m,p-Xylene | U | 10 | | | | | | | | |
| o-Xylene | U | 5.0 | | | | | | | | |
| Toluene | U | 5.0 | | | | | | | | |
| Xylenes, Total | U | 15 | | | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *47.77* | 0 | *50* | 0 | *95.5* | *70-128* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *49.22* | 0 | *50* | 0 | *98.4* | *73-126* | 0 | | | |
| *Surr: Dibromofluoromethane* | *48.82* | 0 | *50* | 0 | *97.6* | *71-128* | 0 | | | |
| *Surr: Toluene-d8* | *50.12* | 0 | *50* | 0 | *100* | *73-127* | 0 | | | |

**LCS** Sample ID: **VLCSS1-091810-R97342** Units: **µg/Kg** Analysis Date: **9/18/2010 10:17 AM**
Client ID: Run ID: **VOA5_100918A** SeqNo: **2093437** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 52.26 | 5.0 | 50 | 0 | 105 | 79-120 | 0 | | | |
| Ethylbenzene | 52.97 | 5.0 | 50 | 0 | 106 | 80-122 | 0 | | | |
| m,p-Xylene | 105.7 | 10 | 100 | 0 | 106 | 79-122 | 0 | | | |
| o-Xylene | 51.76 | 5.0 | 50 | 0 | 104 | 80-123 | 0 | | | |
| Toluene | 51.87 | 5.0 | 50 | 0 | 104 | 79-120 | 0 | | | |
| Xylenes, Total | 157.5 | 15 | 150 | 0 | 105 | 80-120 | 0 | | | |
| *Surr: 1,2-Dichloroethane-d4* | *49.51* | 0 | *50* | 0 | *99* | *70-128* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *49.73* | 0 | *50* | 0 | *99.5* | *73-126* | 0 | | | |
| *Surr: Dibromofluoromethane* | *49.67* | 0 | *50* | 0 | *99.3* | *71-128* | 0 | | | |
| *Surr: Toluene-d8* | *50.19* | 0 | *50* | 0 | *100* | *73-127* | 0 | | | |

**LCSD** Sample ID: **VLCSDS1-091810-R97342** Units: **µg/Kg** Analysis Date: **9/18/2010 10:40 AM**
Client ID: Run ID: **VOA5_100918A** SeqNo: **2093461** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 51.23 | 5.0 | 50 | 0 | 102 | 79-120 | 52.26 | 1.98 | 30 | |
| Ethylbenzene | 52.84 | 5.0 | 50 | 0 | 106 | 80-122 | 52.97 | 0.251 | 30 | |
| m,p-Xylene | 103.3 | 10 | 100 | 0 | 103 | 79-122 | 105.7 | 2.33 | 30 | |
| o-Xylene | 51.69 | 5.0 | 50 | 0 | 103 | 80-123 | 51.76 | 0.128 | 30 | |
| Toluene | 51.93 | 5.0 | 50 | 0 | 104 | 79-120 | 51.87 | 0.125 | 30 | |
| Xylenes, Total | 155 | 15 | 150 | 0 | 103 | 80-120 | 157.5 | 1.6 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *49.73* | 0 | *50* | 0 | *99.5* | *70-128* | 49.51 | *0.434* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *49.5* | 0 | *50* | 0 | *99* | *73-126* | 49.73 | *0.47* | *30* | |
| *Surr: Dibromofluoromethane* | *51.28* | 0 | *50* | 0 | *103* | *71-128* | 49.67 | *3.17* | *30* | |
| *Surr: Toluene-d8* | *50.48* | 0 | *50* | 0 | *101* | *73-127* | 50.19 | *0.563* | *30* | |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **R97342** Instrument ID **VOA5** Method: **SW8260**

**MS** Sample ID: **1009563-02AMS** Units: **µg/Kg** Analysis Date: **9/18/2010 12:08 PM**
Client ID: Run ID: **VOA5_100918A** SeqNo: **2093440** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 54.11 | 5.0 | 50 | 0 | 108 | 79-120 | 0 | | | |
| Ethylbenzene | 54.56 | 5.0 | 50 | 0 | 109 | 80-122 | 0 | | | |
| m,p-Xylene | 108.1 | 10 | 100 | 0 | 108 | 79-122 | 0 | | | |
| o-Xylene | 53.48 | 5.0 | 50 | 0 | 107 | 80-123 | 0 | | | |
| Toluene | 53.67 | 5.0 | 50 | 0 | 107 | 79-120 | 0 | | | |
| Xylenes, Total | 161.6 | 15 | 150 | 0 | 108 | 80-120 | 0 | | | |
| *Surr: 1,2-Dichloroethane-d4* | *50.37* | 0 | *50* | 0 | *101* | *70-128* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *49.72* | 0 | *50* | 0 | *99.4* | *73-126* | 0 | | | |
| *Surr: Dibromofluoromethane* | *51.04* | 0 | *50* | 0 | *102* | *71-128* | 0 | | | |
| *Surr: Toluene-d8* | *49.78* | 0 | *50* | 0 | *99.6* | *73-127* | 0 | | | |

**MSD** Sample ID: **1009563-02AMSD** Units: **µg/Kg** Analysis Date: **9/18/2010 12:30 PM**
Client ID: Run ID: **VOA5_100918A** SeqNo: **2093441** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 51.01 | 5.0 | 50 | 0 | 102 | 79-120 | 54.11 | 5.89 | 30 | |
| Ethylbenzene | 50.85 | 5.0 | 50 | 0 | 102 | 80-122 | 54.56 | 7.03 | 30 | |
| m,p-Xylene | 101.2 | 10 | 100 | 0 | 101 | 79-122 | 108.1 | 6.63 | 30 | |
| o-Xylene | 50.47 | 5.0 | 50 | 0 | 101 | 80-123 | 53.48 | 5.8 | 30 | |
| Toluene | 50.4 | 5.0 | 50 | 0 | 101 | 79-120 | 53.67 | 6.28 | 30 | |
| Xylenes, Total | 151.7 | 15 | 150 | 0 | 101 | 80-120 | 161.6 | 6.36 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *50.35* | 0 | *50* | 0 | *101* | *70-128* | 50.37 | *0.0409* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *49.68* | 0 | *50* | 0 | *99.4* | *73-126* | 49.72 | *0.0741* | *30* | |
| *Surr: Dibromofluoromethane* | *51.52* | 0 | *50* | 0 | *103* | *71-128* | 51.04 | *0.949* | *30* | |
| *Surr: Toluene-d8* | *49.47* | 0 | *50* | 0 | *98.9* | *73-127* | 49.78 | *0.61* | *30* | |

**The following samples were analyzed in this batch:** 1009571-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Work Order:** 1009571
**Project:** W Pad Access Road Water Line

# QC BATCH REPORT

Batch ID: **46344** Instrument ID **UV-2450** Method: **SW7196**

**MBLK** Sample ID: **WBLKS1-092310-46344** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2100988** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | U | 2.0 | | | | | | | | |

**LCS** Sample ID: **WLCSS1-092310-46344** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2100989** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 10.32 | 2.0 | 10 | 0 | 103 | 80-120 | 0 | | | |

**LCSD** Sample ID: **WLCSDS1-092310-46344** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2100990** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 10 | 2.0 | 10 | 0 | 100 | 80-120 | 10.32 | 3.15 | 20 | |

**MS** Sample ID: **1009685-02BMS** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2100999** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 9.276 | 2.0 | 9.995 | -1.268 | 105 | 75-125 | 0 | | | |

**MSD** Sample ID: **1009685-02BMSD** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2101000** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | 9.665 | 2.0 | 9.944 | -1.268 | 110 | 75-125 | 9.276 | 4.11 | 20 | |

**DUP** Sample ID: **1009685-02BDUP** Units: **mg/kg** Analysis Date: **9/24/2010 06:00 PM**
Client ID: Run ID: **UV-2450_100924A** SeqNo: **2100997** Prep Date: **9/23/2010** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | U | 2.0 | 0 | 0 | 0 | 0-0 | -1.268 | 0 | 20 | |

**The following samples were analyzed in this batch:** 1009571-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** HRL Compliance Solutions Inc.
**Project:** W Pad Access Road Water Line
**WorkOrder:** 1009571

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| M | Manually integrated, see raw data for justification |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| SD | Serial Dilution |
| SDL | Sample Detection Limit |
| TRRP | Texas Risk Reduction Program |

| Units Reported | Description |
|---|---|
| mg/Kg | Milligrams per Kilogram |

# ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 202r8

WORKORDER # 100457

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

| | | | |
|---|---|---|---|
| PROJECT NAME | ANTERO W PAD ACCESS ROAD WATER LINE | SAMPLER | CASEY RICHARDSON |
| PROJECT No. | | SITE ID | |
| | | EDD FORMAT | |
| | | PURCHASE ORDER | |
| COMPANY NAME | HRL COMPLIANCE SOLUTIONS INC | BILL TO COMPANY | ANTERO RESOURCES |
| SEND REPORT TO | MARK MUMBY | INVOICE ATTN TO | JERRY ALBERTS |
| ADDRESS | 744 HORIZON CT. SUITE 140 | ADDRESS | 1625 17TH ST. SUITE 300 |
| CITY / STATE / ZIP | GRAND JCT, CO, 81506 | CITY / STATE / ZIP | DENVER, CO 80202 |
| PHONE | 970.243.3271 | PHONE | 303-357-7341 |
| FAX | 970.243.3280 | FAX | 303-357-7315 |
| E-MAIL | mmumby@hrlcomp.com | E-MAIL | jalberts@anteroresources.com |
| DATE | 9-16-10 | | |
| TURNAROUND | STANDARD | | |

| Lab ID | Field ID | Matrix | Sample Date | Sample Time | # Bottles | Pres | QC | BTEX | TVPH | TEPH | TOTAL METALS - TABLE 910.1 (See Comment) | SEMI VOLS - PAH | SAR | EC | pH | ARSENIC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WATER LINE CONFIRMATION | SOIL | 9-16-10 | 1220 | 3 | 4°C | | X | X | X | X | X | X | X | X | |
| | WATER LINE BACKGROUND | SOIL | | 1225 | 1 | 4°C | | | | | | | X | X | X | |
| | AS BACKGROUND 1 | SOIL | | 1235 | 1 | 4°C | | | | | | | | | | X |
| | AS BACKGROUND 2 | SOIL | | 1240 | 1 | 4°C | | | | | | | | | | X |
| | AS BACKGROUND 3 | SOIL | | 1250 | 1 | 4°C | | | | | | | | | | X |

*Time Zone (Circle): EST CST MST PST Matrix O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

**Comments:**

RUN FOR TOTAL BARIUM AND NO BORON.

| QC PACKAGE (check below) | |
|---|---|
| X | LEVEL II (Standard QC) |
| | LEVEL III (Std QC + forms) |
| | LEVEL IV (Std QC + forms + raw data) |

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

| | SIGNATURE | PRINTED NAME | DATE | TIME |
|---|---|---|---|---|
| RELINQUISHED BY | | CASEY RICHARDSON | 9-16-10 | 1730 |
| RECEIVED BY | | RISHEL NARAN | 9-17-10 | 0845 |
| RELINQUISHED BY | | | | |
| RECEIVED BY | | | | |
| RELINQUISHED BY | | | | |
| RECEIVED BY | | | | |

ALS Environmental

## Sample Receipt Checklist

Client Name: HRL COMPLIANCE
Date/Time Received: 17-Sep-10 08:45

Work Order: 1009571
Received by: RSZ

Checklist completed by RidaSada 17-Sep-10 (eSignature / Date)
Reviewed by: BilayAgui 20-Sep-10 (eSignature / Date)

Matrices: soil
Carrier name: FedEx

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.7c | 002 | |
| Cooler(s)/Kit(s): | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

# Olsen's Agricultural Laboratory, Inc.

210 East 1st / PO Box 370 / McCook, Nebraska 69001
Office: 308-345-3670 / FAX: 308-345-7880
www.olsenlab.com

40365
ALS LABORATORY GROUP
10450 STANCLIFF RD STE 210
HOUSTON TX 77099

NAME : 1009571

DATE RECEIVED: 09/21/2010 DATE REPORTED: 09/28/2010

## SOIL TEST RESULTS

| LAB NUMBER | FIELD IDENTIFICATION | SAMPLE IDENTIFICATION | Depth Inches | pH 1 : 1 Soil | pH Buffer Woodruff | LIME REC T/A 60% ECCE Legume | LIME REC T/A 60% ECCE Non Legume | EL | SOLUBLE SALTS mod. SP mmhos/cm | OM LOI % | NITRATE-N (FIA) ppm | NITRATE-N (FIA) lbs/A | PHOSPHORUS P1 ppm | PHOSPHORUS Bicarb ppm | PHOSPHORUS P2 ppm | PHOSPHORUS M2 ppm | PHOSPHORUS M3 ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 903880 | 1009571 01C | | 0-8 | 8.3 | | | | H | 1.32 | | | | | | | | |
| 903881 | 1009571 02A | | 0-8 | 6.7 | | | | N | 0.70 | | | | | | | | |

| LAB NUMBER | SULFATE-S Ca-P ppm | NH4OAc (Exchangeable) K ppm | NH4OAc (Exchangeable) Ca ppm | NH4OAc (Exchangeable) Mg ppm | NH4OAc (Exchangeable) Na ppm | DTPA Zn ppm | DTPA Fe ppm | DTPA Mn ppm | DTPA Cu ppm | BORON Sorbitol ppm | EST. CATION EXCHANGE CAPACITY (CEC) me/100g | % SATURATION BASE | % SATURATION H | % SATURATION Ca | % SATURATION Mg | % SATURATION K | % SATURATION Na |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 903880 | | | | | | | | | | 0.2 | | | | | | | |
| 903881 | | | | | | | | | | 0.6 | | | | | | | |

| LAB NUMBER | SOLUBLE (SAT. EXT.) Ca me/L | SOLUBLE (SAT. EXT.) Mg me/L | SOLUBLE (SAT. EXT.) Na me/L | SODIUM ADSORPTION RATIO (SAR) | EXCH. SODIUM PERCENT (ESP) | GYPSUM REQ T/A | PARTICLE SIZE ANALYSIS SAND % | SILT % | CLAY % | SOIL TEXTURE | CHLORIDE ppm | CHLORIDE lbs/A | EXCH. NH4-N ppm | EXCH. NH4-N lbs/A | ALUMINUM ppm | TOTAL N % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 903880 | 4.61 | 3.52 | 6.23 | 3.09 | 3 | 0.0 | | | | | | | | | | |
| 903881 | 3.21 | 1.52 | 0.96 | 0.62 | 1 | 0.0 | | | | | | | | | | |

## SUGGESTED FERTILIZER RECOMMENDATIONS

| LAB NUMBER | FIELD IDENTIFICATION | SAMPLE IDENTIFICATION | CROP TO BE GROWN | YIELD GOAL | N lbs/A | P2O5 lbs/A | K2O lbs/A | S lbs/A | Zn lbs/A | MgO lbs/A | Fe lbs/A | Mn lbs/A | Cu lbs/A | B lbs/A | Cl lbs/A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 903880 | 1009571 01C | | | | | | | | | | | | | | |
| 903881 | 1009571 02A | | | | | | | | | | | | | | |

Analysis By: Olsen's Ag. Lab

Recommendations By: Olsen's Ag. Lab

# PRIOR HISTORY

Received 8/27/2010

S. 1425341

FORM 19 Rev 6/99

# State of Colorado
# Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

FOR OGCC USE ONLY

RECEIVED

AUG 27 2010

COGCC/Rifle Office

Spill report taken by:

FACILITY ID:

## SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

## OPERATOR INFORMATION

Name of Operator: Antero Resources Piceance Corporation OGCC Operator No: 10079

Address: 1625 17th Street Suite 300

City: Denver State: CO Zip: 80202

Contact Person: Gerard G. Alberts

Phone Numbers

No: 303-357-7341

Fax: 303-357-7315

E-Mail: jalberts@anteroresources.com

## DESCRIPTION OF SPILL OR RELEASE

Date of Incident: 8/17/2010 Facility Name & No.: N/A: pipeline C.S.F. D Pad -C.S.F. W Pad

Type of Facility (well, tank battery, flow line, pit): Produced/frac water flow line

Well Name and Number: N/A CSF 23C-09-07-91

API Number: N/A 045 19817 (2)

County: Garfield County

QtrQtr: SWSE Section: 9

Township: 7S Range: 91W

Meridian: 6th

Specify volume spilled and recovered (in bbls) for the following materials:

Oil spilled: ~0.006 Oil recov'd: ~0.003 Water spilled: ~6.994 Water recov'd: ~3 Other spilled: N/A Other recov'd: Soil ~ 3-4

Ground Water impacted? ☐ Yes ☑ No Surface Water impacted? ☐ Yes ☑ No

Contained within berm? ☐ Yes ☑ No Area and vertical extent of spill: 8 ft x 30 ft x 4 inches deep

Current land use: Oil & Gas, Forest Weather conditions: Sunny (91° - 54°), calm, dry

Soil/geology description: Soil Series Number 12. Bucklon-Inchau loams, 25-30 percent slopes

IF LESS THAN A MILE, report distance IN FEET to nearest.... Surface water: 100 ft wetlands: >5280 buildings: >5280 ft

Livestock: <5280 water wells: >5280 ft Depth to shallowest ground water: ~200 ft

Cause of spill (e.g., equipment failure, human error, etc.): Equipment Failure: Pipeline hole Detailed description of the spill/release incident:

Antero was excavating soil to install a new waterline in the Castle Springs Area from D Pad to the W Pad. During excavation a contractor noticed that the soil in the area was wet. More soil was excavated to identify the source of the liquid was from the water line that transports produced water to the W Pad injection well. Upon discovery the water line was shut off and Vac trucks were sent to the site. The liquid leaking from the pipe was contained to the trench that was dug out to install the new water line.

## CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):

Upon discovery Antero immediately shut down the water flow line the clay based excavated trench contained the water Vac trucks were sent to the location to vacuum the surface water

Describe any emergency pits constructed:

The liquid was contained in the clay based trench.

How was the extent of contamination determined:

Visually estimated extent of surface water and visual observation of wet soil.

Further remediation activities proposed (attach separate sheet if needed):

Microblaze was applied the day of the incident. A confirmation sample will be taken by 9/1/2010 to determine if further treatment is necessary.

Describe measures taken to prevent problem from reoccurring:

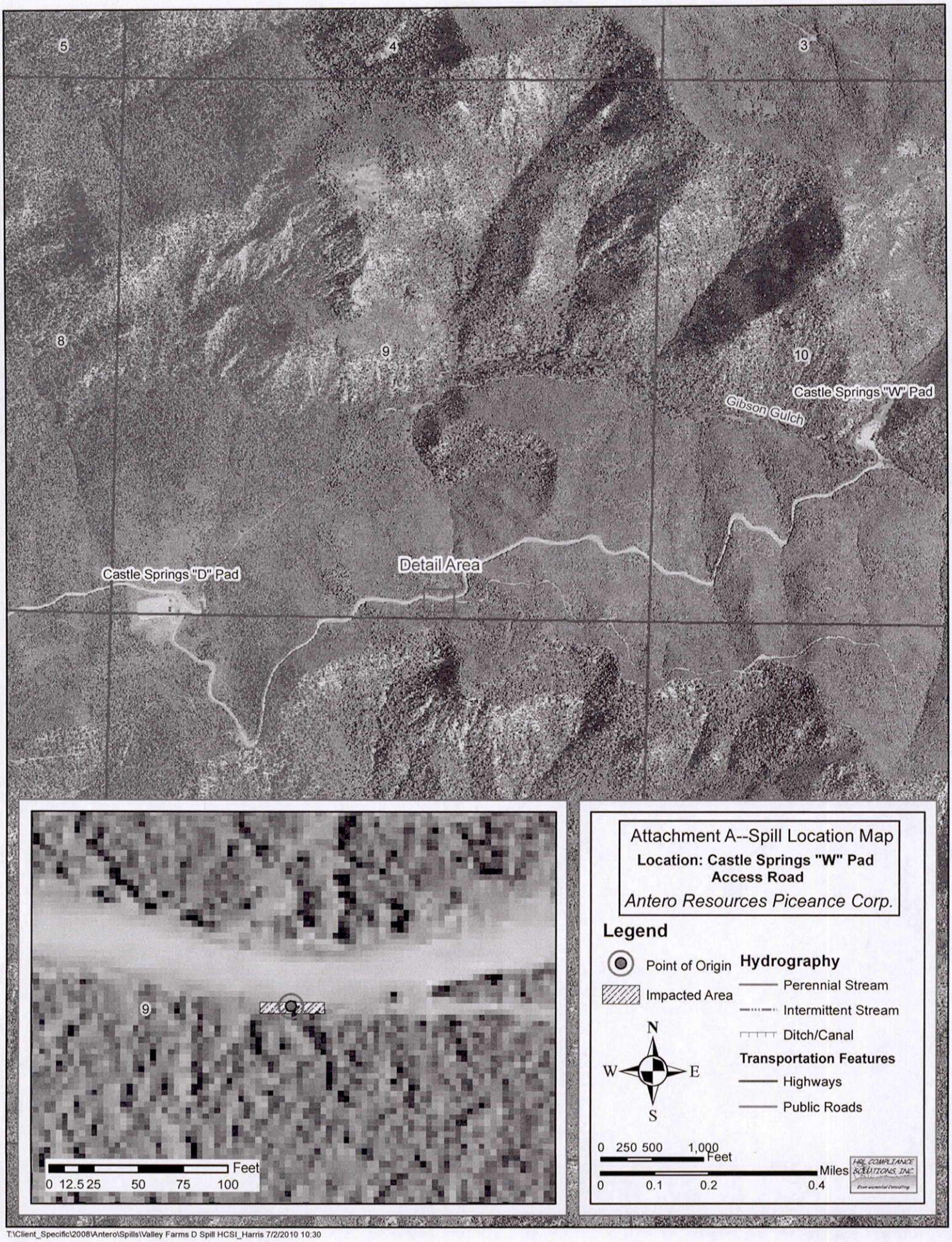
Pipeline was replaced on 8/17/2010. Pipelines in the field will be tested for integrity.

## OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

| Date | Agency | Contact | Phone | Response |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Spill/Release Tracking No: _____




T:\Client_Specific\2008\Antero\Spills\Valley Farms D Spill HCSI_Harris 7/2/2010 10:30

Antero Castle Springs Pipeline Spill 8/17/2010

The following table provides the average BTEX and hexane concentrations observed in the pond water and the reportable quantity thresholds for these compounds. The number of BBLs that would have to be released to exceed the RQs are also included and were calculated based on the average analytical.

| *Compound* | *RQ (lbs)* | *BBL released to Exceed RQ based on Ave. Conc.* | *Average Concentration mg/l* |
|---|---|---|---|
| **Benzene** | **10** | 6,634 | 4.3 |
| **Ethylbenzene** | **1000** | 5,705,647 | 0.5 |
| **Toluene** | **1000** | 285,282 | 10 |
| **Xylene** | **100** | 36,112 | 7.9 |
| **Hexane** | **5000** | 28,528,237 | 0.5 |

**Amount of "Oil" Released**

| | | |
|---|---|---|
| TVH + TPH Concentration | 604 | mg/l |
| Water Released (bbl) | 7 | bbl |
| Specific Gravity of Condensate (@60F) | 0.7582 | |
| Conden Density (based on water @60F 8.3378 lbs/gal) | 6.32 | lbs/gal |
| Amount of "Oil" (based on TVH + TPH concentration) | 0.006 | bbl |

**Amount of "Oil" that left site**

| | | |
|---|---|---|
| TVH + TPH Concentration | 604 | mg/l |
| Water Spilled and Off-site (bbl) | 7 | bbl |
| Specific Gravity of Condensate (@60F) | 0.7582 | |
| Conden Density (based on water @60F 8.3378 lbs/gal) | 6.32 | lbs/gal |
| Amount of "Oil" (based on TVH + TPH concentration) | 0.006 | bbl |

BBL Oil released = (10 barrels)x (42 gal/barrel)x(3.785 l/gal)x (conc. mg/l)x(0.001 g/mg)x(0.002205 lbs/g)/ (6.32 lbs/gal)(42 gal/bbl)