

State of Colorado  
Oil and Gas Conservation Commission

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



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.)

RECEIVED  
3/4/2013

1. OGCC Operator Number: 100185	& Contact Name: Blake Ford	Complete the Attachment Checklist DP OGCC
2. Name of Operator: Encana Oil & Gas (USA) Inc.	Phone: 970-675-4414	
3. Address: 1125 Escalante Dr City: Rangely State: CO Zip: 81648	Fax: 970-675-4433	
5. API Number: 05-103-09269	OGCC Facility ID Number: 335606	Survey Plat
6. Well/Facility Name: Hell's Hole	7. Well/Facility Number: 9107	Directional Survey
8. Location (Qtr/Otr, Sec, Twp, Rng, Meridian): NWNW, SEC 11, T2S, R104W, 6 P.M.		Surface Eqmpt Diagram
9. County: RIO BLANCO	10. Field Name: Hell's Hole Canyon	Technical Info Page
11. Federal, Indian or State Lease Number: 45216		Other <input checked="" type="checkbox"/>

General Notice

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

Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Bottomhole location Qtr/Otr, 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.)

<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input checked="" type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Casings/Cementing Program Change	<input type="checkbox"/> Other: _____	for Spills and Releases

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

Signed: Blake Ford Date: 01/30/2013 Email: blake.ford@encana.com  
Print Name: Blake Ford Title: Environmental Field Coordinator

COGCC Approved: [Signature] Title: EPS Date: 04/05/2013  
CONDITIONS OF APPROVAL, IF ANY: NW Region

**TECHNICAL INFORMATION PAGE**



FOR OGCC USE ONLY

1. OGCC Operator Number: _____ API Number: _____
2. Name of Operator: _____ OGCC Facility ID # _____
3. Well/Facility Name: _____ Well/Facility Number: _____
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): _____

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**

## Introduction

Encana Oil & Gas (USA) Inc. (Encana) is submitting this Form 4 Sundry Notice to request final closure status for the earthen pit associated with the Hell's Hole #9107 (COGCC facility #316033, COGCC remediation #5556). The site investigation was conducted by a third party contractor as authorized by Encana personnel and qualified Encana personnel. All samples were collected in accordance with Encana's Environmental Compliance Group's Sampling Procedures. The analytical results for the respective soil samples were within the COGCC Table 910-1 standards and are provided in Table 1 and Attachment A of this submittal. The text below provides the details of the site investigation. For a visual description of the site please refer to Figures 1 and 2 – Site Maps.

## Site Investigation

August 29, 2011 - The pit was characterized utilizing a photoionization detector (PID) field unit by a third party consultant. A composite sample was collected from the spoils stockpile onsite. There were minimal indicators of hydrocarbon impacts in accordance with field screen readings and visual observations. The composite sample was sent to an accredited analytical laboratory for analysis. Five (5) background samples were also collected from approximately six (6) inches beneath the grounds surface for analysis with regards to arsenic. The analytical report indicated that the spoils sample was in exceedance of the COGCC Table 910-1 standard with regards to total petroleum hydrocarbons (TPH).

July 13, 2012 – The spoils stockpile was characterized utilizing a PID field unit by a qualified Encana employee. Two (2) grab samples from the spoils pile were collected and submitted to the laboratory for analysis. The analysis indicated that the spoils were no longer in exceedance of the COGCC Table 910-1 standards.

June 22, 2012 – Grab samples were collected from the pit walls, pit bottom and the spoils pile by a qualified Encana employee. The samples were submitted to an analytical laboratory for analysis with regards to the COGCC Table 910-1 constituents. Analytical results indicated that one (1) of the spoils samples was in exceedance of the COGCC Table 910-1 total petroleum hydrocarbon (TPH) standard.

March 29, 2012 – Encana personnel had correspondence with Chris Canfield of the COGCC regarding the respective pit closure progress. Per the correspondence, a Receptor Survey of the surrounding surface water and groundwater features was stipulated for closure of the pit. Please see below for the receptor survey results.

## Receptor Survey

A receptor survey for the Hells Hole #9107 well pad, (COGCC facility #316033, COGCC remediation #5556) was conducted by a third party contractor June 20, 2012 with regards to proximity to surface water features and areas with potential ground water interaction. Please see below for a summary of the receptor survey results.

## Surface Water

There were no surface water supply areas as defined by the COGCC Series Rules 100 definition adjacent to or within a quarter mile of the well pad. The survey did not identify any surface water features within a quarter mile of the well pad. It is unlikely that a release from the facility could reach surface water; the most proximal surface water feature is located approximately 1,200 feet to the northeast. The respective feature is an unnamed intermittent/ephemeral drainage. The drainage was dry at the time of the survey. In the event of a release, the surface flow is likely to flow to the north and northeast. Any potential impact to surface water would be unlikely.

## Groundwater

The respective well pad does not currently have any pits which are holding liquid. The only pit onsite is the pit which is being closed in accordance with the documents submitted with this receptor survey. The historic pit is considered a production pit. The respective well pad is not underlain by an unconfined aquifer or recharge zone. Per the soil survey for the respective area, the underlying soil type is the Moonset-Whetrock association, 8 to 50 percent slopes. The hydraulic conductivity of the respective soil is 0.00082107 cm/sec. There are not any domestic water wells, or public water supply wells within a mile radius of the respective well pad. The well pad is not located within a 100 year floodplain. No groundwater was encountered during the excavation activities during the closure of the production pit. The survey did not identify vegetation that could be used as an indicator of shallow groundwater. There is not any well data to help determine the depth to groundwater per a search of the State Engineers Office. In accordance with the receptor survey, the potential to impact ground water is low.

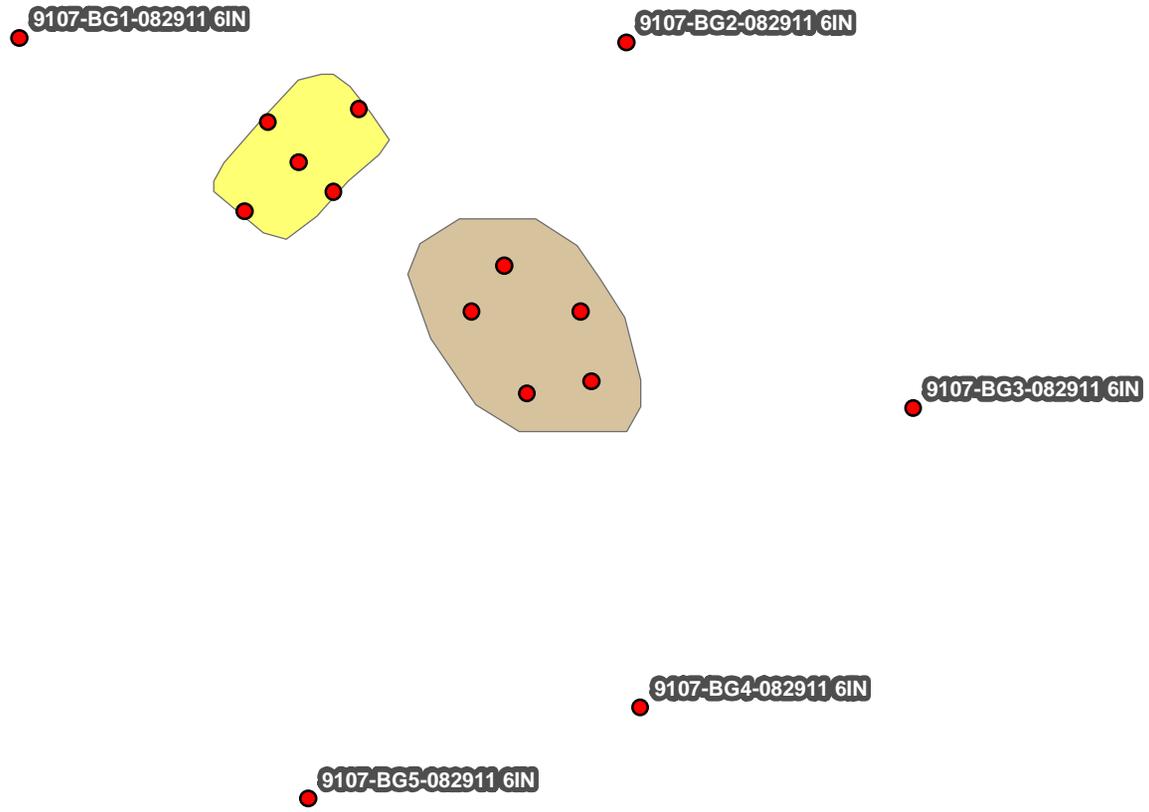
## Analytical Review

Sample results indicate that the soil within the earthen pit footprint on Encana's Hell's Hole #9107 well pad have exceedances of COGCC Table 910-1 allowable concentrations for arsenic (24.0 ppm). Though the arsenic concentration in the soil is above the allowable concentration identified in Table 910-1, the concentration is outside the range of arsenic background values (4.4-7.0 ppm) in this area as indicated by the associated background samples. Based on these results and footnote 1 to COGCC Table 910-1, Encana requests that the COGCC consider the higher range of background arsenic value(s) as the allowable concentration for this constituent. Please see Attachment A for the respective laboratory analytical results.

## Conclusion

Based on the site investigation, analytical results, Receptor Survey and the stipulations from the COGCC; the pit associated with the Hell's Hole #9107 has met the criteria required per the COGCC stipulations. Encana respectfully requests that final closure be granted for the respective pit, COGCC remediation #5556.

# Hell's Hole 9107 Site Overview Map



**Legend**

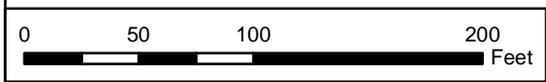
- Sample Location

**Pipeline**

- ▬ Above Ground
- ▬ Buried
- ▬ Gathering
- ▬ Other

**Other Features**

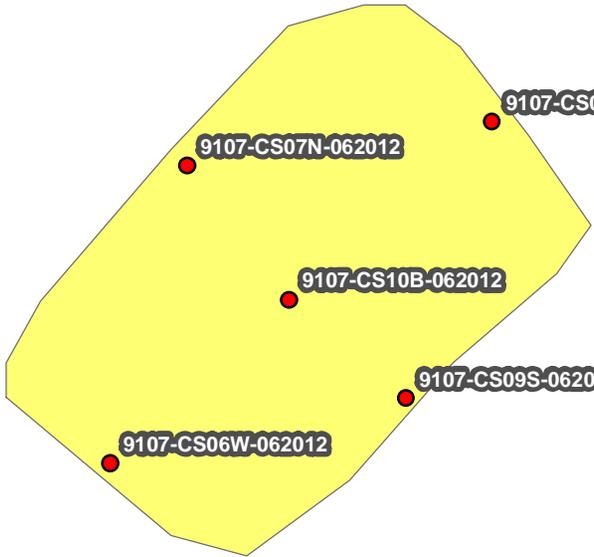
- Excavated Area
- Pit Footprint
- Equipment
- Spoils Stockpile
- Containment



# Hell's Hole 9107 Site Detail Map

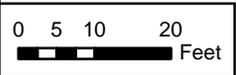


9107-BG2-082911 6IN



**Legend**

- Sample Location
- Pipeline**
  - ▬ Above Ground
  - ▬ Buried
  - ▬ Gathering
  - ▬ Other
- Other Features**
  - Excavated Area
  - Pit Footprint
  - Equipment
  - Spoils Stockpile
  - Containment







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Est. 1970

Kate Ramsay  
HRL Compliance Solutions- CO  
744 Horizon Ct., Suite 140  
Grand Junction, CO 81506

## Report Summary

Wednesday September 14, 2011

Report Number: L534270

Samples Received: 09/02/11

Client Project:

Description: Pit Closure Project

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Jared Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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REPORT OF ANALYSIS

September 14, 2011

Kate Ramsay  
 HRL Compliance Solutions- CO  
 744 Horizon Ct., Suite 140  
 Grand Junction, CO 81506

ESC Sample # : L534270-01

Date Received : September 02, 2011  
 Description : Pit Closure Project

Site ID : HELLS HOLE 9107

Sample ID : 9107-SPOILS-082911 3FT

Project # :

Collected By : Kate Ramsay  
 Collection Date : 08/29/11 11:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	09/08/11	1
Chromium,Trivalent	6.1	0.50	mg/kg	Calc.	09/06/11	1
ORP	65.		mV	2580	09/07/11	1
pH	7.4		su	9045D	09/10/11	1
Sodium Adsorption Ratio	14.			Calc.	09/06/11	1
Specific Conductance	1900		umhos/cm	9050AMod	09/11/11	1
Mercury	BDL	0.020	mg/kg	7471	09/07/11	1
Arsenic	7.3	5.0	mg/kg	6010B	09/06/11	5
Barium	240	0.25	mg/kg	6010B	09/06/11	1
Cadmium	0.26	0.25	mg/kg	6010B	09/06/11	1
Chromium	6.1	0.50	mg/kg	6010B	09/06/11	1
Copper	6.8	1.0	mg/kg	6010B	09/06/11	1
Lead	3.2	0.25	mg/kg	6010B	09/06/11	1
Nickel	7.1	5.0	mg/kg	6010B	09/06/11	5
Selenium	BDL	20.	mg/kg	6010B	09/06/11	20
Silver	BDL	0.50	mg/kg	6010B	09/06/11	1
Zinc	14.	1.5	mg/kg	6010B	09/06/11	1
Benzene	0.14	0.050	mg/kg	8021/8015	09/08/11	100
Toluene	2.4	0.50	mg/kg	8021/8015	09/08/11	100
Ethylbenzene	5.4	0.050	mg/kg	8021/8015	09/08/11	100
Total Xylene	71.	0.15	mg/kg	8021/8015	09/08/11	100
TPH (GC/FID) Low Fraction	2800	50.	mg/kg	GRO	09/09/11	500
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.0		% Rec.	8021/8015	09/09/11	500
a,a,a-Trifluorotoluene(PID)	98.7		% Rec.	8021/8015	09/08/11	100
TPH (GC/FID) High Fraction	3600	80.	mg/kg	3546/DRO	09/12/11	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	09/12/11	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/12/11	1
Acenaphthene	0.18	0.15	mg/kg	8270C-SIM	09/13/11	25
Acenaphthylene	BDL	0.15	mg/kg	8270C-SIM	09/13/11	25
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/12/11	1
Benzo(a)pyrene	0.085	0.0060	mg/kg	8270C-SIM	09/12/11	1

BDL - Below Detection Limit  
 Det. Limit - Practical Quantitation Limit(PQL)  
 L534270-01 (PH) - 7.35@20.6c



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REPORT OF ANALYSIS

September 14, 2011

Kate Ramsay
HRL Compliance Solutions- CO
744 Horizon Ct., Suite 140
Grand Junction, CO 81506

ESC Sample # : L534270-01

Date Received : September 02, 2011
Description : Pit Closure Project

Site ID : HELLS HOLE 9107

Sample ID : 9107-SPOILS-082911 3FT

Project # :

Collected By : Kate Ramsay
Collection Date : 08/29/11 11:45

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include various polycyclic aromatic hydrocarbons (PAHs) and surrogate recovery results.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 09/14/11 11:26 Printed: 09/14/11 11:26
L534270-01 (PH) - 7.35@20.6c



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REPORT OF ANALYSIS

September 14, 2011

Kate Ramsay  
HRL Compliance Solutions- CO  
744 Horizon Ct., Suite 140  
Grand Junction, CO 81506

Date Received : September 02, 2011  
Description : Pit Closure Project  
Sample ID : 9107-BG1-082911 6IN  
Collected By : Kate Ramsay  
Collection Date : 08/29/11 12:00

ESC Sample # : L534270-02  
Site ID : HELLS HOLE 9107  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.4	1.0	mg/kg	6010B	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/14/11 11:26 Printed: 09/14/11 11:26



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September 14, 2011

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HRL Compliance Solutions- CO  
744 Horizon Ct., Suite 140  
Grand Junction, CO 81506

Date Received : September 02, 2011  
Description : Pit Closure Project  
Sample ID : 9107-BG2-082911 6IN  
Collected By : Kate Ramsay  
Collection Date : 08/29/11 12:10

ESC Sample # : L534270-03  
Site ID : HELLS HOLE 9107  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	7.0	1.0	mg/kg	6010B	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Date Received : September 02, 2011  
Description : Pit Closure Project  
Sample ID : 9107-BG3-082911 6IN  
Collected By : Kate Ramsay  
Collection Date : 08/29/11 12:20

ESC Sample # : L534270-04  
Site ID : HELLS HOLE 9107  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.4	1.0	mg/kg	6010B	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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September 14, 2011

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744 Horizon Ct., Suite 140  
Grand Junction, CO 81506

Date Received : September 02, 2011  
Description : Pit Closure Project  
Sample ID : 9107-BG4-082911 6IN  
Collected By : Kate Ramsay  
Collection Date : 08/29/11 12:30

ESC Sample # : L534270-05

Site ID : HELLS HOLE 9107

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.6	1.0	mg/kg	6010B	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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September 14, 2011

Kate Ramsay  
HRL Compliance Solutions- CO  
744 Horizon Ct., Suite 140  
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Date Received : September 02, 2011  
Description : Pit Closure Project  
Sample ID : 9107-BG5-082911 6IN  
Collected By : Kate Ramsay  
Collection Date : 08/29/11 12:40

ESC Sample # : L534270-06  
Site ID : HELLS HOLE 9107  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.8	1.0	mg/kg	6010B	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L534270-01	WG553618	SAMP	Selenium	R1846232	O
	WG554477	SAMP	Nitrobenzene-d5	R1852932	J7
	WG554477	SAMP	2-Fluorobiphenyl	R1852932	J7
	WG554075	SAMP	o-Terphenyl	R1853860	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed  
09/14/11 at 11:26:41

TSR Signing Reports: 358  
R5 - Desired TAT

Accounting - pending credit application. TSR - pending info release authorization.

Sample: L534270-01 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26

Sample: L534270-02 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26

Sample: L534270-03 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26

Sample: L534270-04 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26

Sample: L534270-05 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26

Sample: L534270-06 Account: HRLCSCO Received: 09/02/11 09:00 Due Date: 09/12/11 00:00 RPT Date: 09/14/11 11:26



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HRL Compliance Solutions- CO  
 Kate Ramsay  
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Quality Assurance Report  
 Level II

L534270

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 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 14, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Arsenic	< 1	mg/kg			WG553618	09/06/11 14:44
Barium	< .25	mg/kg			WG553618	09/06/11 14:44
Cadmium	< .25	mg/kg			WG553618	09/06/11 14:44
Chromium	< .5	mg/kg			WG553618	09/06/11 14:44
Copper	< 1	mg/kg			WG553618	09/06/11 14:44
Lead	< .25	mg/kg			WG553618	09/06/11 14:44
Nickel	< 1	mg/kg			WG553618	09/06/11 14:44
Selenium	< 1	mg/kg			WG553618	09/06/11 14:44
Silver	< .5	mg/kg			WG553618	09/06/11 14:44
Zinc	< 1.5	mg/kg			WG553618	09/06/11 14:44
Mercury	< .02	mg/kg			WG553632	09/07/11 11:16
Benzene	< .0005	mg/kg			WG553911	09/07/11 17:56
Ethylbenzene	< .0005	mg/kg			WG553911	09/07/11 17:56
Toluene	< .005	mg/kg			WG553911	09/07/11 17:56
Total Xylene	< .0015	mg/kg			WG553911	09/07/11 17:56
a,a,a-Trifluorotoluene(FID)		% Rec.	95.69	59-128	WG553911	09/07/11 17:56
a,a,a-Trifluorotoluene(PID)		% Rec.	100.5	54-144	WG553911	09/07/11 17:56
Chromium,Hexavalent	< 2	mg/kg			WG553536	09/08/11 15:27
Arsenic	< 1	mg/kg			WG553917	09/08/11 17:28
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG554123	09/09/11 02:41
a,a,a-Trifluorotoluene(FID)		% Rec.	97.15	59-128	WG554123	09/09/11 02:41
a,a,a-Trifluorotoluene(PID)		% Rec.	102.3	54-144	WG554123	09/09/11 02:41
1-Methylnaphthalene	< .006	mg/kg			WG554477	09/11/11 22:41
2-Chloronaphthalene	< .006	mg/kg			WG554477	09/11/11 22:41
2-Methylnaphthalene	< .006	mg/kg			WG554477	09/11/11 22:41
Acenaphthene	< .006	mg/kg			WG554477	09/11/11 22:41
Acenaphthylene	< .006	mg/kg			WG554477	09/11/11 22:41
Anthracene	< .006	mg/kg			WG554477	09/11/11 22:41
Benzo(a)anthracene	< .006	mg/kg			WG554477	09/11/11 22:41
Benzo(a)pyrene	< .006	mg/kg			WG554477	09/11/11 22:41
Benzo(b)fluoranthene	< .006	mg/kg			WG554477	09/11/11 22:41
Benzo(g,h,i)perylene	< .006	mg/kg			WG554477	09/11/11 22:41
Benzo(k)fluoranthene	< .006	mg/kg			WG554477	09/11/11 22:41
Chrysene	< .006	mg/kg			WG554477	09/11/11 22:41
Dibenz(a,h)anthracene	< .006	mg/kg			WG554477	09/11/11 22:41
Fluoranthene	< .006	mg/kg			WG554477	09/11/11 22:41
Fluorene	< .006	mg/kg			WG554477	09/11/11 22:41
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG554477	09/11/11 22:41
Naphthalene	< .006	mg/kg			WG554477	09/11/11 22:41
Phenanthrene	< .006	mg/kg			WG554477	09/11/11 22:41
Pyrene	< .006	mg/kg			WG554477	09/11/11 22:41
2-Fluorobiphenyl		% Rec.	84.51	34-129	WG554477	09/11/11 22:41
Nitrobenzene-d5		% Rec.	77.44	14-141	WG554477	09/11/11 22:41
p-Terphenyl-d14		% Rec.	76.13	25-139	WG554477	09/11/11 22:41
pH	5.20	su			WG553639	09/10/11 11:08

\* Performance of this Analyte is outside of established criteria.  
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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Specific Conductance	1.20	umhos/cm			WG554532	09/11/11 11:55
TPH (GC/FID) High Fraction	< 4	ppm			WG554075	09/09/11 21:55
o-Terphenyl		% Rec.	77.45	50-150	WG554075	09/09/11 21:55

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Selenium	mg/kg	0	0	0	20	L534310-02	WG553618
Arsenic	mg/kg	2.80	2.50	13.1	20	L534310-02	WG553618
Barium	mg/kg	2000	240.	158.*	20	L534310-02	WG553618
Cadmium	mg/kg	0.510	0.600	16.0	20	L534310-02	WG553618
Chromium	mg/kg	8.80	8.60	1.96	20	L534310-02	WG553618
Copper	mg/kg	11.0	9.80	9.71	20	L534310-02	WG553618
Lead	mg/kg	7.60	8.70	13.8	20	L534310-02	WG553618
Nickel	mg/kg	7.20	8.20	13.1	20	L534310-02	WG553618
Silver	mg/kg	0	0	0	20	L534310-02	WG553618
Zinc	mg/kg	34.0	33.0	4.15	20	L534310-02	WG553618
Mercury	mg/kg	6.80	5.20	26.1*	20	L534269-01	WG553632
ORP	mV	75.0	66.0	12.8	20	L533650-04	WG553916
ORP	mV	62.0	63.0	1.60	20	L533974-10	WG553916
Chromium,Hexavalent	mg/kg	0	0	0	20	L533944-11	WG553536
Chromium,Hexavalent	mg/kg	0	0	0	20	L534302-06	WG553536
Arsenic	mg/kg	4.70	4.40	6.81	20	L534276-02	WG553917
pH	su	8.50	8.50	0.352	1	L534278-01	WG553639
Specific Conductance	umhos/cm	3000	3000	0	20	L534133-51	WG554532
Specific Conductance	umhos/cm	2000	1900	5.13	20	L534276-01	WG554532

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Arsenic	mg/kg	92.6	91.6	98.9	82.9-117	WG553618
Barium	mg/kg	169	165.	97.6	82.8-117	WG553618
Cadmium	mg/kg	61.8	60.9	98.5	83.3-117	WG553618
Chromium	mg/kg	71.3	72.5	102.	81.8-118	WG553618
Copper	mg/kg	81.2	91.0	112.	83.9-116	WG553618
Lead	mg/kg	92.4	95.2	103.	83.3-117	WG553618
Nickel	mg/kg	59.1	62.1	105.	83.8-116	WG553618
Selenium	mg/kg	89.5	90.6	101.	79-121	WG553618
Silver	mg/kg	34.4	35.1	102.	66.3-134	WG553618
Zinc	mg/kg	141	136.	96.5	80.9-119	WG553618
Mercury	mg/kg	3.77	4.24	112.	71.6-128	WG553632

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0542	108.	76-113	WG553911
Ethylbenzene	mg/kg	.05	0.0550	110.	78-115	WG553911
Toluene	mg/kg	.05	0.0567	113.	76-114	WG553911
Total Xylene	mg/kg	.15	0.161	108.	81-118	WG553911
a,a,a-Trifluorotoluene(PID)				98.49	54-144	WG553911
ORP	mV	229	220.	96.1	95.6-104.37	WG553916
Chromium,Hexavalent	mg/kg	132	94.4	71.5	50-150	WG553536
Arsenic	mg/kg	92.6	92.7	100.	82.9-117	WG553917
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.34	115.	67-135	WG554123
a,a,a-Trifluorotoluene(FID)				96.62	59-128	WG554123
a,a,a-Trifluorotoluene(PID)				103.2	54-144	WG554123
1-Methylnaphthalene	mg/kg	.033	0.0277	84.1	48-113	WG554477
2-Chloronaphthalene	mg/kg	.033	0.0280	84.8	51-114	WG554477
2-Methylnaphthalene	mg/kg	.033	0.0286	86.7	44-109	WG554477
Acenaphthene	mg/kg	.033	0.0288	87.2	52-108	WG554477
Acenaphthylene	mg/kg	.033	0.0289	87.6	51-110	WG554477
Anthracene	mg/kg	.033	0.0302	91.7	58-120	WG554477
Benzo(a)anthracene	mg/kg	.033	0.0303	91.9	54-110	WG554477
Benzo(a)pyrene	mg/kg	.033	0.0305	92.3	56-118	WG554477
Benzo(b)fluoranthene	mg/kg	.033	0.0303	91.8	55-114	WG554477
Benzo(g,h,i)perylene	mg/kg	.033	0.0296	89.6	48-130	WG554477
Benzo(k)fluoranthene	mg/kg	.033	0.0311	94.4	55-122	WG554477
Chrysene	mg/kg	.033	0.0304	92.2	57-118	WG554477
Dibenz(a,h)anthracene	mg/kg	.033	0.0289	87.6	53-122	WG554477
Fluoranthene	mg/kg	.033	0.0312	94.5	58-118	WG554477
Fluorene	mg/kg	.033	0.0305	92.4	54-109	WG554477
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0295	89.4	51-125	WG554477
Naphthalene	mg/kg	.033	0.0274	83.0	45-105	WG554477
Phenanthrene	mg/kg	.033	0.0312	94.5	53-114	WG554477
Pyrene	mg/kg	.033	0.0295	89.5	53-121	WG554477
2-Fluorobiphenyl				84.06	34-129	WG554477
Nitrobenzene-d5				76.82	14-141	WG554477
p-Terphenyl-d14				81.57	25-139	WG554477
pH	su	9.04	9.00	99.6	98-101	WG553639
Specific Conductance	umhos/cm	427	430.	101.	85-115	WG554532
TPH (GC/FID) High Fraction	ppm	60	50.4	84.0	50-150	WG554075
o-Terphenyl				83.39	50-150	WG554075

Analyte	Units	Laboratory Control		Sample Duplicate	Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/kg	0.0482	0.0542	96.0	76-113	11.7	20	WG553911
Ethylbenzene	mg/kg	0.0495	0.0550	99.0	78-115	10.6	20	WG553911

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Level II

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L534270

Analyte	Units	Laboratory Control		Sample Duplicate		Limit	RPD	Limit	Batch
		Result	Ref	%Rec					
Toluene	mg/kg	0.0516	0.0567	103.		76-114	9.45	20	WG553911
Total Xylene	mg/kg	0.147	0.161	98.0		81-118	8.98	20	WG553911
a,a,a-Trifluorotoluene (PID)				98.00		54-144			WG553911
ORP	mV	220.	220.	96.0		95.6-104.37	0	20	WG553916
Chromium, Hexavalent	mg/kg	87.8	94.4	66.0		50-150	7.24	20	WG553536
TPH (GC/FID) Low Fraction	mg/kg	6.29	6.34	114.		67-135	0.760	20	WG554123
a,a,a-Trifluorotoluene (FID)				96.58		59-128			WG554123
a,a,a-Trifluorotoluene (PID)				103.3		54-144			WG554123
1-Methylnaphthalene	mg/kg	0.0295	0.0277	89.0		48-113	6.07	24	WG554477
2-Chloronaphthalene	mg/kg	0.0299	0.0280	91.0		51-114	6.56	24	WG554477
2-Methylnaphthalene	mg/kg	0.0297	0.0286	90.0		44-109	3.74	24	WG554477
Acenaphthene	mg/kg	0.0298	0.0288	90.0		52-108	3.48	22	WG554477
Acenaphthylene	mg/kg	0.0301	0.0289	91.0		51-110	3.93	21	WG554477
Anthracene	mg/kg	0.0309	0.0302	94.0		58-120	2.01	20	WG554477
Benzo(a)anthracene	mg/kg	0.0314	0.0303	95.0		54-110	3.59	22	WG554477
Benzo(a)pyrene	mg/kg	0.0308	0.0305	93.0		56-118	1.28	21	WG554477
Benzo(b)fluoranthene	mg/kg	0.0312	0.0303	94.0		55-114	2.92	20	WG554477
Benzo(g,h,i)perylene	mg/kg	0.0293	0.0296	89.0		48-130	0.785	20	WG554477
Benzo(k)fluoranthene	mg/kg	0.0305	0.0311	92.0		55-122	1.92	25	WG554477
Chrysene	mg/kg	0.0310	0.0304	94.0		57-118	2.04	20	WG554477
Dibenz(a,h)anthracene	mg/kg	0.0287	0.0289	87.0		53-122	0.605	20	WG554477
Fluoranthene	mg/kg	0.0313	0.0312	95.0		58-118	0.245	20	WG554477
Fluorene	mg/kg	0.0312	0.0305	94.0		54-109	2.28	20	WG554477
Indeno(1,2,3-cd)pyrene	mg/kg	0.0295	0.0295	89.0		51-125	0.0208	21	WG554477
Naphthalene	mg/kg	0.0270	0.0274	82.0		45-105	1.45	24	WG554477
Phenanthrene	mg/kg	0.0302	0.0312	92.0		53-114	3.06	20	WG554477
Pyrene	mg/kg	0.0307	0.0295	93.0		53-121	3.92	20	WG554477
2-Fluorobiphenyl				91.75		34-129			WG554477
Nitrobenzene-d5				78.84		14-141			WG554477
p-Terphenyl-d14				82.77		25-139			WG554477
pH	su	9.00	9.00	100.		98-101	0	20	WG553639
Specific Conductance	umhos/	430.	430.	101.		85-115	0	20	WG554532
TPH (GC/FID) High Fraction	ppm	49.2	50.4	82.0		50-150	2.36	20	WG554075
o-Terphenyl				84.72		50-150			WG554075

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Selenium	mg/kg	52.6	0	10	105.	75-125	L534310-02	WG553618
Arsenic	mg/kg	49.6	2.50	50	94.2	75-125	L534310-02	WG553618
Barium	mg/kg	822.	240.	50	1160*	75-125	L534310-02	WG553618
Cadmium	mg/kg	44.1	0.600	50	87.0	75-125	L534310-02	WG553618
Chromium	mg/kg	57.5	8.60	50	97.8	75-125	L534310-02	WG553618
Copper	mg/kg	63.5	9.80	50	107.	75-125	L534310-02	WG553618
Lead	mg/kg	55.2	8.70	50	93.0	75-125	L534310-02	WG553618

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Analyte	Units	MS Res	Matrix Spike			% Rec	Limit	Ref Samp	Batch
			Ref Res	TV					
Nickel	mg/kg	55.7	8.20	50	95.0	75-125	L534310-02	WG553618	
Silver	mg/kg	50.5	0	50	101.	75-125	L534310-02	WG553618	
Zinc	mg/kg	78.4	33.0	50	90.8	75-125	L534310-02	WG553618	
Mercury	mg/kg	7.75	5.20	.0125	1020*	70-130	L534269-01	WG553632	
Benzene	mg/kg	0.247	0.0110	.05	94.4	32-137	L534118-09	WG553911	
Ethylbenzene	mg/kg	0.240	0.00540	.05	94.0	10-150	L534118-09	WG553911	
Toluene	mg/kg	0.257	0	.05	103.	20-142	L534118-09	WG553911	
Total Xylene	mg/kg	0.718	0.0150	.15	93.8	16-141	L534118-09	WG553911	
a,a,a-Trifluorotoluene(PID)					97.51	54-144		WG553911	
Chromium,Hexavalent	mg/kg	4.72	0	20	23.6*	50-150	L534302-03	WG553536	
Arsenic	mg/kg	45.3	4.40	50	81.8	75-125	L534276-02	WG553917	
TPH (GC/FID) Low Fraction	mg/kg	22.8	0	5.5	83.0	55-109	L534181-01	WG554123	
a,a,a-Trifluorotoluene(FID)					99.95	59-128		WG554123	
a,a,a-Trifluorotoluene(PID)					100.0	54-144		WG554123	
TPH (GC/FID) High Fraction	ppm	43.8	0	60	73.0	50-150	L534150-05	WG554075	
o-Terphenyl					70.98	50-150		WG554075	
1-Methylnaphthalene	mg/kg	0.0255	0	.033	77.3	25-155	L534221-06	WG554477	
2-Chloronaphthalene	mg/kg	0.0260	0	.033	78.6	31-153	L534221-06	WG554477	
2-Methylnaphthalene	mg/kg	0.0280	0	.033	84.7	22-172	L534221-06	WG554477	
Acenaphthene	mg/kg	0.0255	0	.033	77.3	43-133	L534221-06	WG554477	
Acenaphthylene	mg/kg	0.0266	0	.033	80.6	42-146	L534221-06	WG554477	
Anthracene	mg/kg	0.0265	0	.033	80.4	38-153	L534221-06	WG554477	
Benzo(a)anthracene	mg/kg	0.0257	0	.033	77.9	31-142	L534221-06	WG554477	
Benzo(a)pyrene	mg/kg	0.0243	0	.033	73.6	26-152	L534221-06	WG554477	
Benzo(b)fluoranthene	mg/kg	0.0242	0	.033	73.2	10-188	L534221-06	WG554477	
Benzo(g,h,i)perylene	mg/kg	0.0270	0	.033	81.8	10-176	L534221-06	WG554477	
Benzo(k)fluoranthene	mg/kg	0.0218	0	.033	65.9	22-163	L534221-06	WG554477	
Chrysene	mg/kg	0.0228	0	.033	69.1	26-146	L534221-06	WG554477	
Dibenz(a,h)anthracene	mg/kg	0.0220	0	.033	66.6	10-160	L534221-06	WG554477	
Fluoranthene	mg/kg	0.0272	0	.033	82.4	23-160	L534221-06	WG554477	
Fluorene	mg/kg	0.0275	0	.033	83.4	44-143	L534221-06	WG554477	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0248	0	.033	75.3	10-157	L534221-06	WG554477	
Naphthalene	mg/kg	0.0242	0	.033	73.3	22-156	L534221-06	WG554477	
Phenanthrene	mg/kg	0.0286	0	.033	86.5	23-164	L534221-06	WG554477	
Pyrene	mg/kg	0.0252	0	.033	76.4	12-170	L534221-06	WG554477	
2-Fluorobiphenyl					71.94	34-129		WG554477	
Nitrobenzene-d5					73.89	14-141		WG554477	
p-Terphenyl-d14					72.38	25-139		WG554477	

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Arsenic	mg/kg	48.2	49.6	91.4	75-125	2.86	20	L534310-02	WG553618
Barium	mg/kg	1310	822.	2140*	75-125	45.8*	20	L534310-02	WG553618
Cadmium	mg/kg	42.7	44.1	84.2	75-125	3.23	20	L534310-02	WG553618

\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

HRL Compliance Solutions- CO  
 Kate Ramsay  
 744 Horizon Ct., Suite 140  
 Grand Junction, CO 81506

Quality Assurance Report  
 Level II

L534270

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
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 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 14, 2011

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Chromium	mg/kg	56.6	57.5	96.0	75-125	1.58	20	L534310-02	WG553618
Copper	mg/kg	62.5	63.5	105.	75-125	1.59	20	L534310-02	WG553618
Lead	mg/kg	54.0	55.2	90.6	75-125	2.20	20	L534310-02	WG553618
Nickel	mg/kg	54.6	55.7	92.8	75-125	1.99	20	L534310-02	WG553618
Silver	mg/kg	49.0	50.5	98.0	75-125	3.02	20	L534310-02	WG553618
Zinc	mg/kg	77.5	78.4	89.0	75-125	1.15	20	L534310-02	WG553618
Selenium	mg/kg	47.0	52.6	94.0	75-125	11.2	20	L534310-02	WG553618
Mercury	mg/kg	7.99	7.75	1120*	70-130	3.05	20	L534269-01	WG553632
Benzene	mg/kg	0.246	0.247	93.9	32-137	0.530	39	L534118-09	WG553911
Ethylbenzene	mg/kg	0.222	0.240	86.6	10-150	7.94	44	L534118-09	WG553911
Toluene	mg/kg	0.248	0.257	99.3	20-142	3.58	42	L534118-09	WG553911
Total Xylene	mg/kg	0.689	0.718	89.9	16-141	4.15	46	L534118-09	WG553911
a,a,a-Trifluorotoluene(PID)				98.66	54-144				WG553911
Chromium,Hexavalent	mg/kg	7.36	4.72	36.8*	50-150	43.7*	20	L534302-03	WG553536
Arsenic	mg/kg	43.0	45.3	77.2	75-125	5.21	20	L534276-02	WG553917
TPH (GC/FID) Low Fraction	mg/kg	24.0	22.8	87.4	55-109	5.07	20	L534181-01	WG554123
a,a,a-Trifluorotoluene(FID)				101.5	59-128				WG554123
a,a,a-Trifluorotoluene(PID)				102.5	54-144				WG554123
TPH (GC/FID) High Fraction	ppm	44.2	43.8	73.6	50-150	0.844	20	L534150-05	WG554075
o-Terphenyl				73.11	50-150				WG554075
1-Methylnaphthalene	mg/kg	0.0297	0.0255	90.0	25-155	15.1	27	L534221-06	WG554477
2-Chloronaphthalene	mg/kg	0.0304	0.0260	92.2	31-153	15.9	22	L534221-06	WG554477
2-Methylnaphthalene	mg/kg	0.0317	0.0280	96.0	22-172	12.5	29	L534221-06	WG554477
Acenaphthene	mg/kg	0.0284	0.0255	86.2	43-133	10.9	26	L534221-06	WG554477
Acenaphthylene	mg/kg	0.0296	0.0266	89.6	42-146	10.6	22	L534221-06	WG554477
Anthracene	mg/kg	0.0290	0.0265	87.8	38-153	8.83	27	L534221-06	WG554477
Benzo(a)anthracene	mg/kg	0.0285	0.0257	86.4	31-142	10.3	31	L534221-06	WG554477
Benzo(a)pyrene	mg/kg	0.0258	0.0243	78.2	26-152	6.04	32	L534221-06	WG554477
Benzo(b)fluoranthene	mg/kg	0.0285	0.0242	86.2	10-188	16.3	33	L534221-06	WG554477
Benzo(g,h,i)perylene	mg/kg	0.0281	0.0270	85.2	10-176	4.07	30	L534221-06	WG554477
Benzo(k)fluoranthene	mg/kg	0.0244	0.0218	74.0	22-163	11.5	29	L534221-06	WG554477
Chrysene	mg/kg	0.0257	0.0228	77.8	26-146	11.9	30	L534221-06	WG554477
Dibenz(a,h)anthracene	mg/kg	0.0234	0.0220	70.8	10-160	6.08	39	L534221-06	WG554477
Fluoranthene	mg/kg	0.0306	0.0272	92.6	23-160	11.7	22	L534221-06	WG554477
Fluorene	mg/kg	0.0294	0.0275	89.0	44-143	6.58	23	L534221-06	WG554477
Indeno(1,2,3-cd)pyrene	mg/kg	0.0257	0.0248	77.9	10-157	3.38	40	L534221-06	WG554477
Naphthalene	mg/kg	0.0280	0.0242	84.9	22-156	14.7	27	L534221-06	WG554477
Phenanthrene	mg/kg	0.0310	0.0286	94.0	23-164	8.29	25	L534221-06	WG554477
Pyrene	mg/kg	0.0294	0.0252	89.2	12-170	15.6	24	L534221-06	WG554477
2-Fluorobiphenyl				80.98	34-129				WG554477
Nitrobenzene-d5				84.58	14-141				WG554477
p-Terphenyl-d14				83.24	25-139				WG554477

\* Performance of this Analyte is outside of established criteria.  
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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September 14, 2011

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Batch number /Run number / Sample number cross reference

WG553618: R1846232: L534270-01  
WG553721: R1848152: L534270-01  
WG553632: R1848274: L534270-01  
WG553911: R1849132: L534270-01  
WG553916: R1849497: L534270-01  
WG553536: R1850152: L534270-01  
WG553917: R1851281: L534270-02 03 04 05 06  
WG554123: R1851695: L534270-01  
WG554477: R1852932: L534270-01  
WG553639: R1853232: L534270-01  
WG554532: R1853655: L534270-01  
WG554075: R1853860: L534270-01

\* \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

## Report Summary

Monday July 16, 2012

Report Number: L584484

Samples Received: 07/12/12

Client Project:

Description: Pit Closure Project

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

July 16, 2012

Date Received : July 12, 2012  
Description : Pit Closure Project  
Sample ID : 9107-SPOILS05-071112  
Collected By : Blake Ford  
Collection Date : 07/11/12 10:17

ESC Sample # : L584484-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	50.	4.0	mg/kg	3546/DRO	07/13/12	1
Surrogate recovery(%) o-Terphenyl	60.4		% Rec.	3546/DRO	07/13/12	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/16/12 15:22 Printed: 07/16/12 15:22



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REPORT OF ANALYSIS

Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

July 16, 2012

Date Received : July 12, 2012  
Description : Pit Closure Project  
Sample ID : 9107-SPOILS06-071112  
Collected By : Blake Ford  
Collection Date : 07/11/12 10:20

ESC Sample # : L584484-02  
Site ID :  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	5.4	4.0	mg/kg	3546/DRO	07/16/12	1
Surrogate recovery(%) o-Terphenyl	43.0		% Rec.	3546/DRO	07/16/12	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:

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Reported: 07/16/12 15:22 Printed: 07/16/12 15:22  
L584484-02 (DRO) - Previous run also had low IS/SURR recovery. Matrix effect.

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L584484-02	WG602634	SAMP	o-Terphenyl	R2256653	J2

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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EnCana Oil & Gas - Rangely, CO  
 Blake Ford  
 1125 Escalante Drive

Rangely, CO 81648-3600

Quality Assurance Report  
 Level II

L584484

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July 16, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	ppm			WG602313	07/13/12 08:51
o-Terphenyl		% Rec.	76.21	50-150	WG602313	07/13/12 08:51
TPH (GC/FID) High Fraction	< 4	ppm			WG602634	07/16/12 12:54
o-Terphenyl		% Rec.	76.16	50-150	WG602634	07/16/12 12:54

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	ppm	60	57.0	95.0	50-150	WG602313
o-Terphenyl				92.16	50-150	WG602313
TPH (GC/FID) High Fraction	ppm	60	47.0	78.3	50-150	WG602634
o-Terphenyl				72.88	50-150	WG602634

Analyte	Units	Result	Laboratory Control Sample Duplicate		Limit	RPD	Limit	Batch
			Ref	%Rec				
TPH (GC/FID) High Fraction	ppm	53.1	57.0	88.0	50-150	7.06	25	WG602313
o-Terphenyl				83.04	50-150			WG602313
TPH (GC/FID) High Fraction	ppm	49.8	47.0	83.0	50-150	5.76	25	WG602634
o-Terphenyl				79.71	50-150			WG602634

Analyte	Units	MS Res	Matrix Spike			Limit	Ref Samp	Batch
			Ref Res	TV	% Rec			
TPH (GC/FID) High Fraction	ppm	49.0	0	60	81.7	50-150	L584354-01	WG602313
o-Terphenyl					63.40	50-150		WG602313

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) High Fraction	ppm	58.1	49.0	96.8	50-150	16.8	40	L584354-01	WG602313
o-Terphenyl				76.39	50-150				WG602313

Batch number /Run number / Sample number cross reference

WG602313: R2253695: L584484-01  
 WG602634: R2256653: L584484-02

\* \* Calculations are performed prior to rounding of reported values.  
 \* Performance of this Analyte is outside of established criteria.  
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Blake Ford  
1125 Escalante Drive

Rangely, CO 81648-3600

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July 16, 2012

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Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

### Report Summary

Thursday July 05, 2012

Report Number: L581820

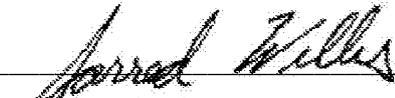
Samples Received: 06/22/12

Client Project: PIT CLOSURE

Description: Pit Closure Project 9107

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

#### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979

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REPORT OF ANALYSIS

July 05, 2012

Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

Date Received : June 22, 2012  
Description : Pit Closure Project 9107  
Sample ID : 9107-CS06W-062012  
Collected By : Aaron Stacy  
Collection Date : 06/20/12 10:30

ESC Sample # : L581820-01  
Site ID : 9107  
Project # : PIT CLOSURE

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	06/25/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	90.1		% Rec.	602/8015	06/25/12	5
TPH (GC/FID) High Fraction	82.	4.0	mg/kg	3546/DRO	07/03/12	1
Surrogate recovery(%) o-Terphenyl	46.4		% Rec.	3546/DRO	07/03/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/03/12 18:09 Revised: 07/05/12 10:12

L581820-01 (DRO) - Previous run also had low IS/SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

July 05, 2012

Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

Date Received : June 22, 2012  
Description : Pit Closure Project 9107  
Sample ID : 9107-CS07N-062012  
Collected By : Aaron Stacy  
Collection Date : 06/20/12 10:35

ESC Sample # : L581820-02  
Site ID : 9107  
Project # : PIT CLOSURE

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	06/25/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	90.2		% Rec.	602/8015	06/25/12	5
TPH (GC/FID) High Fraction	20.	4.0	mg/kg	3546/DRO	07/03/12	1
Surrogate recovery(%) o-Terphenyl	48.6		% Rec.	3546/DRO	07/03/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/03/12 18:09 Revised: 07/05/12 10:12

L581820-02 (DRO) - Previous run also had low IS/SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

July 05, 2012

Blake Ford
EnCana Oil & Gas - Rangely, CO
1125 Escalante Drive
Rangely, CO 81648-3600

Date Received : June 22, 2012
Description : Pit Closure Project 9107
Sample ID : 9107-CS08E-062012
Collected By : Aaron Stacy
Collection Date : 06/20/12 10:40

ESC Sample # : L581820-03
Site ID : 9107
Project # : PIT CLOSURE

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include TPH (GC/FID) Low Fraction, Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID), TPH (GC/FID) High Fraction, and Surrogate recovery(%) o-Terphenyl.

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
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Reported: 07/03/12 18:09 Revised: 07/05/12 10:12



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REPORT OF ANALYSIS

July 05, 2012

Blake Ford  
EnCana Oil & Gas - Rangely, CO  
1125 Escalante Drive  
Rangely, CO 81648-3600

Date Received : June 22, 2012  
Description : Pit Closure Project 9107  
Sample ID : 9107-CS09S-062012  
Collected By : Aaron Stacy  
Collection Date : 06/20/12 10:45

ESC Sample # : L581820-04  
Site ID : 9107  
Project # : PIT CLOSURE

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	06/25/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	90.5		% Rec.	602/8015	06/25/12	5
TPH (GC/FID) High Fraction	50.	4.0	mg/kg	3546/DRO	06/28/12	1
Surrogate recovery(%) o-Terphenyl	51.3		% Rec.	3546/DRO	06/28/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

July 05, 2012

Blake Ford
EnCana Oil & Gas - Rangely, CO
1125 Escalante Drive
Rangely, CO 81648-3600

Date Received : June 22, 2012
Description : Pit Closure Project 9107
Sample ID : 9107-CS10B-062012
Collected By : Aaron Stacy
Collection Date : 06/20/12 10:50

ESC Sample # : L581820-05
Site ID : 9107
Project # : PIT CLOSURE

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include TPH (GC/FID) Low Fraction, Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID), TPH (GC/FID) High Fraction, and Surrogate recovery(%) o-Terphenyl.

BDL - Below Detection Limit
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REPORT OF ANALYSIS

July 05, 2012

Blake Ford
EnCana Oil & Gas - Rangely, CO
1125 Escalante Drive
Rangely, CO 81648-3600

Date Received : June 22, 2012
Description : Pit Closure Project 9107
Sample ID : 9107-SPOILS03-062012
Collected By : Aaron Stacy
Collection Date : 06/20/12 11:00

ESC Sample # : L581820-06
Site ID : 9107
Project # : PIT CLOSURE

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include TPH (GC/FID) Low Fraction, Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID), TPH (GC/FID) High Fraction, and Surrogate recovery(%) o-Terphenyl.

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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REPORT OF ANALYSIS

July 05, 2012

Blake Ford
EnCana Oil & Gas - Rangely, CO
1125 Escalante Drive
Rangely, CO 81648-3600

Date Received : June 22, 2012
Description : Pit Closure Project 9107
Sample ID : 9107-SPOILS04-062012
Collected By : Aaron Stacy
Collection Date : 06/20/12 11:05

ESC Sample # : L581820-07
Site ID : 9107
Project # : PIT CLOSURE

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include TPH (GC/FID) Low Fraction, Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID), TPH (GC/FID) High Fraction, and Surrogate recovery(%) o-Terphenyl.

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L581820-01	WG600778	SAMP	o-Terphenyl	R2238133	J2
L581820-02	WG599416	SAMP	TPH (GC/FID) Low Fraction	R2227853	J5J3
	WG600778	SAMP	o-Terphenyl	R2238133	J2

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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Quality Assurance Report  
 Level II

L581820

July 05, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) Low Fraction a,a,a-Trifluorotoluene(FID)	< .1	mg/kg			WG599416	06/25/12 15:24
		% Rec.	91.38	59-128	WG599416	06/25/12 15:24
TPH (GC/FID) High Fraction o-Terphenyl	< 4	ppm			WG599673	06/28/12 10:05
		% Rec.	82.73	50-150	WG599673	06/28/12 10:05
TPH (GC/FID) High Fraction o-Terphenyl	< 4	ppm			WG600325	06/29/12 11:01
		% Rec.	63.92	50-150	WG600325	06/29/12 11:01
TPH (GC/FID) High Fraction o-Terphenyl	< 4	ppm			WG600778	07/03/12 09:23
		% Rec.	98.25	50-150	WG600778	07/03/12 09:23

Analyte	Units	Laboratory Control		% Rec	Limit	Batch
		Known Val	Sample Result			
TPH (GC/FID) Low Fraction a,a,a-Trifluorotoluene(FID)	mg/kg	5.5	7.31	133.	67-135	WG599416
				107.2	59-128	WG599416
TPH (GC/FID) High Fraction o-Terphenyl	ppm	60	50.5	84.2	50-150	WG599673
				80.79	50-150	WG599673
TPH (GC/FID) High Fraction o-Terphenyl	ppm	60	37.4	62.3	50-150	WG600325
				60.57	50-150	WG600325
TPH (GC/FID) High Fraction o-Terphenyl	ppm	60	50.7	84.4	50-150	WG600778
				85.88	50-150	WG600778

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction a,a,a-Trifluorotoluene(FID)	mg/kg	7.26	7.31	132.	67-135	0.750	20	WG599416
				107.5	59-128			WG599416
TPH (GC/FID) High Fraction o-Terphenyl	ppm	48.9	50.5	82.0	50-150	3.23	25	WG599673
				78.95	50-150			WG599673
TPH (GC/FID) High Fraction o-Terphenyl	ppm	37.4	37.4	62.0	50-150	0.152	25	WG600325
				66.36	50-150			WG600325
TPH (GC/FID) High Fraction o-Terphenyl	ppm	52.8	50.7	88.0	50-150	4.07	23	WG600778
				89.19	50-150			WG600778

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) Low Fraction a,a,a-Trifluorotoluene(FID)	mg/kg	31.8	0	5.5	116.*	55-109	L581820-02	WG599416
					105.2	59-128		WG599416
TPH (GC/FID) High Fraction	ppm	177.	110.	60	111.	50-150	L581822-07	WG599673

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
o-Terphenyl					33.14*	50-150			
Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	25.9	31.8	94.2	55-109	20.4*	20	L581820-02	WG599416
a,a,a-Trifluorotoluene(FID)				101.1	59-128				WG599416
TPH (GC/FID) High Fraction	ppm	215.	177.	175.*	50-150	19.6	25	L581822-07	WG599673
o-Terphenyl				36.18*	50-150				WG599673

Batch number /Run number / Sample number cross reference

WG599416: R2227853: L581820-01 02 03 04 05 06 07  
 WG599673: R2233194: L581820-03 04  
 WG600325: R2233474: L581820-05 06 07  
 WG600778: R2238133: L581820-01 02

\* \* Calculations are performed prior to rounding of reported values.  
 \* Performance of this Analyte is outside of established criteria.  
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.