

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)942-1100 Fax: (303)894-2109



DOCUMENT
#2216807

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
11/1/2011

1. OGCC Operator Number: 10255	4. Contact Name: Todd Hutson - Environmental Manager	Complete the Attachment Checklist OP OGCC
2. Name of Operator: Quicksilver Resources Inc.	Phone: 817-422-2883	
3. Address: 801 Cherry Street, Suite 3700, Unit 19 City: Fort Worth State: TX Zip: 76102	Fax: 817-665-4191	
5. API Number 05-081-07661-00	OGCC Facility ID Number 423933	Survey Plat
6. Well/Facility Name: Stoddard	7. Well/Facility Number 33-30	Directional Survey
8. Location (Qtr/Sec, Twp, Rng, Meridian): NW/4 SE/4 Section 30, T6N, R90W, 6th Meridian		Surface Eqmpt Diagram
9. County: Moffat	10. Field Name: Wildcat	Technical Info Page
11. Federal, Indian or State Lease Number: NA		Other Lab Results

General Notice

<input type="checkbox"/> 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"/> FNL/FSL <input type="checkbox"/> FEL/FWL
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/> attach directional survey
Bottomhole location Qtr/Sec, Twp, Rng, Mer	
Latitude	Distance to nearest property line
Longitude	Distance to nearest bldg, public rd, utility or RR
Ground Elevation	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No
	Distance to nearest well same formation
	Surface owner consultation date:
GPS DATA:	
Date of Measurement	PDOP Reading
Instrument Operator's Name	
<input type="checkbox"/> CHANGE SPACING UNIT	
Formation	Formation Code
Spacing order number	Unit Acreage
Unit configuration	
<input type="checkbox"/> Remove from surface bond	
Signed surface use agreement attached	
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	
Effective Date:	NUMBER
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	From:
	To:
	Effective Date:
<input type="checkbox"/> ABANDONED LOCATION:	
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date Ready for Inspection:	
<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS	
Date well shut in or temporarily abandoned:	
Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No	
MIT required if shut in longer than two years. Date of last MIT	
<input type="checkbox"/> SPUD DATE:	
<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)	
<input type="checkbox"/> 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
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection.	

Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent		<input type="checkbox"/> Report of Work Done	
Approximate Start Date:		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 type="checkbox"/> Status Update/Change of Remediation Plans	
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: Background	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:
Print Name: Todd Hutson

Date: 11/1/11 Email: thutson@qrrc.com
Title: Environmental Manager

OGCC Approved: Alex Fischer

Title: West Enviro.

Date: 11/2/2011

CONDITIONS OF APPROVAL, IF ANY:

Supervisor



TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number: 10255 API Number: 05-081-07661-00
2. Name of Operator: Quicksilver Resources Inc. OGCC Facility ID #
3. Well/Facility Name: Stoddard Well/Facility Number: 33-30
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): NW/4 SE/4, Section 30, T6N, R90W, 6th 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**

This COGCC Form 4 is being submitted as a request to meet the background concentration levels for arsenic at the Stoddard 33-30 pad in accordance with footnote 1 to the COGCC table 910-1.

The request is based on the analytical results presented below (see attached laboratory report).

The cuttings contained in the pit were generated from the surface hole drilling using a water-based drilling mud. One composite sample was collected from six separate locations within the pit to determine the arsenic concentration of the cuttings. The arsenic concentration was originally reported as 4.9 mg/kg. PH was reported at 12 and TPH was reported at 1481 mg/kg. All other concentrations were reported to meet the COGCC table 910-1 criteria.

The pit was excavated and waste was taken to Milner Landfill. The pit was re-sampled in two locations by Olsson Associates. The arsenic levels were reported at 3.6 mg/kg and 2.5 mg/kg. PH levels were reported at 8.2 and 7.8. TPH levels were reported at 9.0 mg/kg and 5,680 mg/kg.

The pit was excavated further and then re-sampled in the same location as the previous high TPH value. TPH was reported in this sample at "Below Detection Limits".

One grab sample was collected from nearby non-impacted, native soil to establish a background arsenic concentration. The background concentration was reported as 5.0 mg/kg.

Quicksilver is requesting this approval in order to proceed with closure and reclamation of the cuttings pit located at the Stoddard 33-30 pad.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Mr Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

Report Summary

Wednesday August 10, 2011

Report Number: L529548

Samples Received: 08/05/11

Client Project: 2011054010

Description: Stoddard 33-30

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:

T. Alan Harvill , 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.

REPORT OF ANALYSIS

Mr Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

August 10, 2011

Date Received : August 05, 2011
Description : Stoddard 33-30

Sample ID : SURFACE MUD PIT

Collected By : David Chavira
Collection Date : 08/04/11 00:00

ESC Sample # : L529548-01

Site ID : CO

Project # : 2011054010

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	600	10.	mg/kg	9056	08/06/11	1
Sulfate	440	50.	mg/kg	9056	08/06/11	1
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	08/06/11	1
Chromium, Trivalent	9.1	0.50	mg/kg	Calc.	08/06/11	1
ORP	-150		mV	2580	08/09/11	1
pH	12.		su	9045D	08/06/11	1
Sodium Adsorption Ratio	53.			Calc.	08/09/11	1
Specific Conductance	2900		umhos/cm	9050AMod	08/09/11	1
Mercury	0.013	0.020	mg/kg	7471	08/08/11	1
Arsenic	4.9	1.0	mg/kg	6010B	08/06/11	1
Barium	440	0.25	mg/kg	6010B	08/06/11	1
Boron	BDL	10.	mg/kg	6010B	08/06/11	1
Cadmium	BDL	0.25	mg/kg	6010B	08/06/11	1
Chromium	9.1	0.50	mg/kg	6010B	08/06/11	1
Copper	7.8	1.0	mg/kg	6010B	08/06/11	1
Lead	6.6	0.25	mg/kg	6010B	08/06/11	1
Nickel	7.2	1.0	mg/kg	6010B	08/06/11	1
Selenium	BDL	1.0	mg/kg	6010B	08/06/11	1
Silver	BDL	0.50	mg/kg	6010B	08/06/11	1
Zinc	32.	1.5	mg/kg	6010B	08/06/11	1
TPH (GC/FID) Low Fraction	81.	5.0	mg/kg	8015D/GRO	08/08/11	50
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	97.7		% Rec.	602/8015	08/08/11	50
Benzene	BDL	0.10	mg/kg	8260B	08/05/11	100
Toluene	BDL	0.50	mg/kg	8260B	08/05/11	100
Ethylbenzene	0.29	0.10	mg/kg	8260B	08/05/11	100
Total Xylenes	1.8	0.30	mg/kg	8260B	08/05/11	100
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	08/05/11	100
Dibromofluoromethane	108.		% Rec.	8260B	08/05/11	100
a,a,a-Trifluorotoluene	103.		% Rec.	8260B	08/05/11	100
4-Bromofluorobenzene	110.		% Rec.	8260B	08/05/11	100
TPH (GC/FID) High Fraction	1400	80.	mg/kg	3546/DRO	08/08/11	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

L529548-01 (V8260BTEX) - Non-target compounds too high to run at a lower dilution.

L529548-01 (PH) - 12@20.2c



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REPORT OF ANALYSIS

Mr Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

August 10, 2011

Date Received : August 05, 2011
Description : Stoddard 33-30

Sample ID : SURFACE MUD PIT

Collected By : David Chavira
Collection Date : 08/04/11 00:00

ESC Sample # : L529548-01

Site ID : CO

Project # : 2011054010

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	08/08/11	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.042	0.0060	mg/kg	8270C-SIM	08/08/11	1
Acenaphthene	0.10	0.0060	mg/kg	8270C-SIM	08/08/11	1
Acenaphthylene	0.066	0.0060	mg/kg	8270C-SIM	08/08/11	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Fluorene	0.092	0.0060	mg/kg	8270C-SIM	08/08/11	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	08/08/11	1
Naphthalene	0.48	0.12	mg/kg	8270C-SIM	08/09/11	20
Phenanthrene	0.029	0.0060	mg/kg	8270C-SIM	08/08/11	1
Pyrene	0.042	0.0060	mg/kg	8270C-SIM	08/08/11	1
1-Methylnaphthalene	0.50	0.12	mg/kg	8270C-SIM	08/09/11	20
2-Methylnaphthalene	0.63	0.12	mg/kg	8270C-SIM	08/09/11	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	08/09/11	20
Surrogate Recovery						
Nitrobenzene-d5	0.00		% Rec.	8270C-SIM	08/09/11	20
2-Fluorobiphenyl	104.		% Rec.	8270C-SIM	08/08/11	1
p-Terphenyl-d14	75.5		% Rec.	8270C-SIM	08/08/11	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: 08/10/11 15:49 Printed: 08/10/11 16:22

L529548-01 (V8260BTEX) - Non-target compounds too high to run at a lower dilution.

L529548-01 (PH) - 12@20.2c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L529548-01	WG549403	SAMP	Nitrobenzene-d5	R1807191	J7
	WG549187	SAMP	Mercury	R1806511	J
	WG549274	SAMP	o-Terphenyl	R1806151	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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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Ken Kreie
Olsson Associates - GJ, CO
826 21 1/2 Road
Grand Junction, CO 81505

Report Summary

Thursday September 08, 2011

Report Number: L534310

Samples Received: 09/03/11

Client Project:

Description: Stoddard Pit

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:

Daphne Richards , 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.

REPORT OF ANALYSIS

Ken Kreie
Olsson Associates - GJ, CO
826 21 1/2 Road
Grand Junction, CO 81505

September 08, 2011

Date Received : September 03, 2011
Description : Stoddard Pit

Sample ID : SPIT 1

Collected By : Jessica Sutrina
Collection Date : 09/01/11 13:10

ESC Sample # : L534310-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	09/08/11	1
Chromium, Trivalent	7.3	2.0	mg/kg	Calc.	09/06/11	1
ORP	57.		mV	2580	09/07/11	1
pH	8.2		su	9045D	09/08/11	1
Sodium Adsorption Ratio	0.80			Calc.	09/05/11	1
Specific Conductance	390		umhos/cm	9050AMod	09/06/11	1
Mercury	BDL	0.020	mg/kg	7471	09/06/11	1
Arsenic	3.6	1.0	mg/kg	6010B	09/06/11	1
Barium	75.	0.25	mg/kg	6010B	09/06/11	1
Cadmium	0.40	0.25	mg/kg	6010B	09/06/11	1
Chromium	7.3	0.50	mg/kg	6010B	09/06/11	1
Copper	7.5	1.0	mg/kg	6010B	09/06/11	1
Lead	7.2	0.25	mg/kg	6010B	09/06/11	1
Nickel	7.0	1.0	mg/kg	6010B	09/06/11	1
Selenium	BDL	1.0	mg/kg	6010B	09/06/11	1
Silver	BDL	0.50	mg/kg	6010B	09/06/11	1
Zinc	28.	1.5	mg/kg	6010B	09/06/11	1
Benzene	BDL	0.0025	mg/kg	8021/8015	09/06/11	5
Toluene	BDL	0.025	mg/kg	8021/8015	09/06/11	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	09/06/11	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	09/06/11	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	09/06/11	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	94.7		% Rec.	8021/8015	09/06/11	5
a,a,a-Trifluorotoluene(PID)	99.0		% Rec.	8021/8015	09/06/11	5
TPH (GC/FID) High Fraction	9.0	4.0	mg/kg	3546/DRO	09/06/11	1
Surrogate recovery(%)						
o-Terphenyl	75.0		% Rec.	3546/DRO	09/06/11	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L534310-01 (PH) - 8.23@20.4c



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REPORT OF ANALYSIS

Ken Kreie
Olsson Associates - GJ, CO
826 21 1/2 Road
Grand Junction, CO 81505

September 08, 2011

Date Received : September 03, 2011
Description : Stoddard Pit

Sample ID : SPIT 1

Collected By : Jessica Sutrina
Collection Date : 09/01/11 13:10

ESC Sample # : L534310-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Naphthalene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
1-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
2-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Surrogate Recovery						
Nitrobenzene-d5	67.8		% Rec.	8270C-SIM	09/08/11	1
2-Fluorobiphenyl	87.6		% Rec.	8270C-SIM	09/08/11	1
p-Terphenyl-d14	92.6		% Rec.	8270C-SIM	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/08/11 17:40 Printed: 09/08/11 19:02
L534310-01 (PH) - 8.23@20.4c

REPORT OF ANALYSIS

Ken Kreie
Olsson Associates - GJ, CO
826 21 1/2 Road
Grand Junction, CO 81505

September 08, 2011

Date Received : September 03, 2011
Description : Stoddard Pit

Sample ID : SPIT 2

Collected By : Jessica Sutrina
Collection Date : 09/01/11 13:20

ESC Sample # : L534310-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	09/08/11	1
Chromium, Trivalent	8.6	2.0	mg/kg	Calc.	09/06/11	1
ORP	62.		mV	2580	09/07/11	1
pH	7.8		su	9045D	09/08/11	1
Sodium Adsorption Ratio	2.2			Calc.	09/05/11	1
Specific Conductance	1800		umhos/cm	9050AMod	09/06/11	1
Mercury	BDL	0.020	mg/kg	7471	09/06/11	1
Arsenic	2.5	1.0	mg/kg	6010B	09/06/11	1
Barium	240	0.25	mg/kg	6010B	09/06/11	1
Cadmium	0.60	0.25	mg/kg	6010B	09/06/11	1
Chromium	8.6	0.50	mg/kg	6010B	09/06/11	1
Copper	9.8	1.0	mg/kg	6010B	09/06/11	1
Lead	8.7	0.25	mg/kg	6010B	09/06/11	1
Nickel	8.2	1.0	mg/kg	6010B	09/06/11	1
Selenium	BDL	5.0	mg/kg	6010B	09/06/11	5
Silver	BDL	0.50	mg/kg	6010B	09/06/11	1
Zinc	33.	1.5	mg/kg	6010B	09/06/11	1
Benzene	BDL	0.025	mg/kg	8021/8015	09/06/11	50
Toluene	BDL	0.25	mg/kg	8021/8015	09/06/11	50
Ethylbenzene	0.73	0.025	mg/kg	8021/8015	09/06/11	50
Total Xylene	3.2	0.075	mg/kg	8021/8015	09/06/11	50
TPH (GC/FID) Low Fraction	180	5.0	mg/kg	GRO	09/06/11	50
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.2		% Rec.	8021/8015	09/06/11	50
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	09/06/11	50
TPH (GC/FID) High Fraction	5500	200	mg/kg	3546/DRO	09/06/11	50
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	09/06/11	50
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.18	0.0060	mg/kg	8270C-SIM	09/08/11	1
Acenaphthene	BDL	0.12	mg/kg	8270C-SIM	09/08/11	20
Acenaphthylene	BDL	0.12	mg/kg	8270C-SIM	09/08/11	20
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

L534310-02 (PH) - 7.84@20.1c

L534310-02 (BTEXGRO) - Non-target compounds too high to run at a lower dilution.

REPORT OF ANALYSIS

Ken Kreie
Olsson Associates - GJ, CO
826 21 1/2 Road
Grand Junction, CO 81505

September 08, 2011

Date Received : September 03, 2011
Description : Stoddard Pit

Sample ID : SPIT 2

Collected By : Jessica Sutrina
Collection Date : 09/01/11 13:20

ESC Sample # : L534310-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Fluorene	BDL	0.12	mg/kg	8270C-SIM	09/08/11	20
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/08/11	1
Naphthalene	0.71	0.12	mg/kg	8270C-SIM	09/08/11	20
Phenanthrene	0.15	0.0060	mg/kg	8270C-SIM	09/08/11	1
Pyrene	0.23	0.0060	mg/kg	8270C-SIM	09/08/11	1
1-Methylnaphthalene	0.91	0.12	mg/kg	8270C-SIM	09/08/11	20
2-Methylnaphthalene	1.2	0.12	mg/kg	8270C-SIM	09/08/11	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	09/08/11	20
Surrogate Recovery						
Nitrobenzene-d5	0.00		% Rec.	8270C-SIM	09/08/11	20
2-Fluorobiphenyl	0.00		% Rec.	8270C-SIM	09/08/11	20
p-Terphenyl-d14	107.		% Rec.	8270C-SIM	09/08/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

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Reported: 09/08/11 17:40 Printed: 09/08/11 19:02

L534310-02 (PH) - 7.84@20.1c

L534310-02 (BTEXGRO) - Non-target compounds too high to run at a lower dilution.

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L534310-01	WG553915	SAMP	ORP	R1847892	T8
L534310-02	WG553618	SAMP	Barium	R1846232	J3V
	WG553618	SAMP	Selenium	R1846232	O
	WG554009	SAMP	Nitrobenzene-d5	R1849419	J7
	WG554009	SAMP	2-Fluorobiphenyl	R1849419	J7
	WG553915	SAMP	ORP	R1847892	T8
	WG553613	SAMP	Specific Conductance	R1846354	J3
	WG553674	SAMP	o-Terphenyl	R1846132	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
O	(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.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

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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Tax I.D. 62-0814289

Est. 1970

September 08, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG553627	09/06/11 03:52
TPH (GC/FID) High Fraction	< 4	ppm			WG553674	09/06/11 15:18
o-Terphenyl		% Rec.	62.72	50-150	WG553674	09/06/11 15:18
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
Specific Conductance	1.50	umhos/cm			WG553613	09/06/11 16:46
Benzene	< .0005	mg/kg			WG553729	09/06/11 06:28
Ethylbenzene	< .0005	mg/kg			WG553729	09/06/11 06:28
Toluene	< .005	mg/kg			WG553729	09/06/11 06:28
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG553729	09/06/11 06:28
Total Xylene	< .0015	mg/kg			WG553729	09/06/11 06:28
a,a,a-Trifluorotoluene(FID)		% Rec.	95.61	59-128	WG553729	09/06/11 06:28
a,a,a-Trifluorotoluene(PID)		% Rec.	100.2	54-144	WG553729	09/06/11 06:28
1-Methylnaphthalene	< .006	mg/kg			WG554009	09/08/11 10:43
2-Chloronaphthalene	< .006	mg/kg			WG554009	09/08/11 10:43
2-Methylnaphthalene	< .006	mg/kg			WG554009	09/08/11 10:43
Acenaphthene	< .006	mg/kg			WG554009	09/08/11 10:43
Acenaphthylene	< .006	mg/kg			WG554009	09/08/11 10:43
Anthracene	< .006	mg/kg			WG554009	09/08/11 10:43
Benzo(a)anthracene	< .006	mg/kg			WG554009	09/08/11 10:43
Benzo(a)pyrene	< .006	mg/kg			WG554009	09/08/11 10:43
Benzo(b)fluoranthene	< .006	mg/kg			WG554009	09/08/11 10:43
Benzo(g,h,i)perylene	< .006	mg/kg			WG554009	09/08/11 10:43
Benzo(k)fluoranthene	< .006	mg/kg			WG554009	09/08/11 10:43
Chrysene	< .006	mg/kg			WG554009	09/08/11 10:43
Dibenz(a,h)anthracene	< .006	mg/kg			WG554009	09/08/11 10:43
Fluoranthene	< .006	mg/kg			WG554009	09/08/11 10:43
Fluorene	< .006	mg/kg			WG554009	09/08/11 10:43
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG554009	09/08/11 10:43
Naphthalene	< .006	mg/kg			WG554009	09/08/11 10:43
Phenanthrene	< .006	mg/kg			WG554009	09/08/11 10:43
Pyrene	< .006	mg/kg			WG554009	09/08/11 10:43
2-Fluorobiphenyl		% Rec.	84.71	34-129	WG554009	09/08/11 10:43
Nitrobenzene-d5		% Rec.	79.66	14-141	WG554009	09/08/11 10:43
p-Terphenyl-d14		% Rec.	93.82	25-139	WG554009	09/08/11 10:43
pH	5.00	su			WG553640	09/08/11 14:36
Chromium,Hexavalent	< 2	mg/kg			WG553536	09/08/11 15:27

* 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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Est. 1970

September 08, 2011

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate	Duplicate				
Mercury	mg/kg	0.0290	0.0420		35.3*	20	L534302-03	WG553627
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
Specific Conductance	umhos/cm	940.	820.		13.1	20	L533944-10	WG553613
Specific Conductance	umhos/cm	1500	1800		20.9*	20	L534310-02	WG553613
ORP	mV	51.0	52.0		1.94	20	L533651-01	WG553915
ORP	mV	56.0	54.0		3.64	20	L534302-05	WG553915
pH	su	12.0	12.0		3.28*	1	L534295-01	WG553640
pH	su	8.30	8.30		0.362	1	L534345-01	WG553640
Chromium, Hexavalent	mg/kg	0	0		0	20	L533944-11	WG553536
Chromium, Hexavalent	mg/kg	0	0		0	20	L534302-06	WG553536

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	3.77	3.95	105.	71.6-128	WG553627
TPH (GC/FID) High Fraction	ppm	60	41.6	69.3	50-150	WG553674
o-Terphenyl				73.64	50-150	WG553674
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
Specific Conductance	umhos/cm	427	420.	98.4	85-115	WG553613
Benzene	mg/kg	.05	0.0493	98.5	76-113	WG553729
Ethylbenzene	mg/kg	.05	0.0508	102.	78-115	WG553729
Toluene	mg/kg	.05	0.0516	103.	76-114	WG553729
Total Xylene	mg/kg	.15	0.152	101.	81-118	WG553729

* Performance of this Analyte is outside of established criteria.

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Est. 1970

September 08, 2011

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
a,a,a-Trifluorotoluene(PID)				96.71	54-144	
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.76	105.	67-135	WG553729
a,a,a-Trifluorotoluene(FID)				101.0	59-128	WG553729
ORP	mV	229	220.	96.1	95.6-104.37	WG553915
1-Methylnaphthalene	mg/kg	.033	0.0241	73.0	48-113	WG554009
2-Chloronaphthalene	mg/kg	.033	0.0247	74.8	51-114	WG554009
2-Methylnaphthalene	mg/kg	.033	0.0246	74.6	44-109	WG554009
Acenaphthene	mg/kg	.033	0.0257	77.9	52-108	WG554009
Acenaphthylene	mg/kg	.033	0.0265	80.3	51-110	WG554009
Anthracene	mg/kg	.033	0.0274	83.0	58-120	WG554009
Benzo(a)anthracene	mg/kg	.033	0.0270	81.9	54-110	WG554009
Benzo(a)pyrene	mg/kg	.033	0.0267	80.8	56-118	WG554009
Benzo(b)fluoranthene	mg/kg	.033	0.0267	81.0	55-114	WG554009
Benzo(g,h,i)perylene	mg/kg	.033	0.0293	88.9	48-130	WG554009
Benzo(k)fluoranthene	mg/kg	.033	0.0265	80.2	55-122	WG554009
Chrysene	mg/kg	.033	0.0268	81.3	57-118	WG554009
Dibenz(a,h)anthracene	mg/kg	.033	0.0289	87.6	53-122	WG554009
Fluoranthene	mg/kg	.033	0.0277	83.9	58-118	WG554009
Fluorene	mg/kg	.033	0.0271	82.2	54-109	WG554009
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0290	87.9	51-125	WG554009
Naphthalene	mg/kg	.033	0.0230	69.6	45-105	WG554009
Phenanthrene	mg/kg	.033	0.0261	79.1	53-114	WG554009
Pyrene	mg/kg	.033	0.0272	82.5	53-121	WG554009
2-Fluorobiphenyl				72.20	34-129	WG554009
Nitrobenzene-d5				61.30	14-141	WG554009
p-Terphenyl-d14				82.98	25-139	WG554009
pH	su	9.04	9.00	99.6	98-101	WG553640
Chromium,Hexavalent	mg/kg	132	94.4	71.5	50-150	WG553536

Analyte	Units	Laboratory Control Sample Duplicate		%Rec	Limit	RPD	Limit	Batch
		Result	Ref					
TPH (GC/FID) High Fraction	ppm	48.4	41.6	81.0	50-150	15.1	25	WG553674
o-Terphenyl				78.80	50-150			WG553674
Specific Conductance	umhos/	420.	420.	98.0	85-115	0	20	WG553613
Benzene	mg/kg	0.0512	0.0493	102.	76-113	3.96	20	WG553729
Ethylbenzene	mg/kg	0.0516	0.0508	103.	78-115	1.70	20	WG553729
Toluene	mg/kg	0.0526	0.0516	105.	76-114	1.96	20	WG553729
Total Xylene	mg/kg	0.154	0.152	103.	81-118	1.45	20	WG553729
a,a,a-Trifluorotoluene(PID)				97.44	54-144			WG553729
TPH (GC/FID) Low Fraction	mg/kg	5.61	5.76	102.	67-135	2.66	20	WG553729
a,a,a-Trifluorotoluene(FID)				100.4	59-128			WG553729
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG553915

* Performance of this Analyte is outside of established criteria.
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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1-Methylnaphthalene	mg/kg	0.0273	0.0241	83.0	48-113	12.4	24	WG554009
2-Chloronaphthalene	mg/kg	0.0277	0.0247	84.0	51-114	11.5	24	WG554009
2-Methylnaphthalene	mg/kg	0.0282	0.0246	85.0	44-109	13.4	24	WG554009
Acenaphthene	mg/kg	0.0281	0.0257	85.0	52-108	9.01	22	WG554009
Acenaphthylene	mg/kg	0.0285	0.0265	86.0	51-110	7.35	21	WG554009
Anthracene	mg/kg	0.0306	0.0274	93.0	58-120	11.1	20	WG554009
Benzo(a)anthracene	mg/kg	0.0291	0.0270	88.0	54-110	7.26	22	WG554009
Benzo(a)pyrene	mg/kg	0.0290	0.0267	88.0	56-118	8.54	21	WG554009
Benzo(b)fluoranthene	mg/kg	0.0294	0.0267	89.0	55-114	9.70	20	WG554009
Benzo(g,h,i)perylene	mg/kg	0.0316	0.0293	96.0	48-130	7.41	20	WG554009
Benzo(k)fluoranthene	mg/kg	0.0281	0.0265	85.0	55-122	6.01	25	WG554009
Chrysene	mg/kg	0.0288	0.0268	87.0	57-118	6.95	20	WG554009
Dibenz(a,h)anthracene	mg/kg	0.0309	0.0289	94.0	53-122	6.77	20	WG554009
Fluoranthene	mg/kg	0.0295	0.0277	89.0	58-118	6.34	20	WG554009
Fluorene	mg/kg	0.0299	0.0271	91.0	54-109	9.85	20	WG554009
Indeno(1,2,3-cd)pyrene	mg/kg	0.0316	0.0290	96.0	51-125	8.46	21	WG554009
Naphthalene	mg/kg	0.0265	0.0230	80.0	45-105	14.4	24	WG554009
Phenanthrene	mg/kg	0.0292	0.0261	88.0	53-114	11.1	20	WG554009
Pyrene	mg/kg	0.0297	0.0272	90.0	53-121	8.60	20	WG554009
2-Fluorobiphenyl				80.67	34-129			WG554009
Nitrobenzene-d5				73.46	14-141			WG554009
p-Terphenyl-d14				88.90	25-139			WG554009
pH	su	9.00	9.00	100.	98-101	0	20	WG553640
Chromium, Hexavalent	mg/kg	87.8	94.4	66.0	50-150	7.24	20	WG553536

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Mercury	mg/kg	0.177	0.0420	.25	54.0*	70-130	L534302-03	WG553627
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
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
TPH (GC/FID) High Fraction	ppm	44.3	0	60	73.9	50-150	L534302-02	WG553674
o-Terphenyl					71.40	50-150		WG553674
Benzene	mg/kg	0.0254	0.00200	.05	46.9	32-137	L534150-06	WG553729
Ethylbenzene	mg/kg	0.0267	0.000560	.05	52.2	10-150	L534150-06	WG553729
Toluene	mg/kg	0.0282	0.00270	.05	51.1	20-142	L534150-06	WG553729
Total Xylene	mg/kg	0.0820	0.000520	.15	54.3	16-141	L534150-06	WG553729
a,a,a-Trifluorotoluene(PID)					96.97	54-144		WG553729
TPH (GC/FID) Low Fraction	mg/kg	4.24	0	5.5	77.0	55-109	L534150-06	WG553729
a,a,a-Trifluorotoluene(FID)					95.27	59-128		WG553729

* 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

Olsson Associates - GJ, CO
Ken Kreie
826 21 1/2 Road

Grand Junction, CO 81505

Quality Assurance Report
Level II

L534310

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

September 08, 2011

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Chromium,Hexavalent	mg/kg	4.72	0	20	23.6*	50-150	L534302-03	WG553536

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.189	0.177	58.8*	70-130	6.56	20	L534302-03	WG553627
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
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
TPH (GC/FID) High Fraction	ppm	40.6	44.3	67.7	50-150	8.71	25	L534302-02	WG553674
o-Terphenyl				68.61	50-150				WG553674
Benzene	mg/kg	0.0401	0.0254	76.2	32-137	44.8*	39	L534150-06	WG553729
Ethylbenzene	mg/kg	0.0409	0.0267	80.7	10-150	42.1	44	L534150-06	WG553729
Toluene	mg/kg	0.0422	0.0282	79.0	20-142	39.6	42	L534150-06	WG553729
Total Xylene	mg/kg	0.124	0.0820	82.0	16-141	40.4	46	L534150-06	WG553729
a,a,a-Trifluorotoluene(PID)				97.47	54-144				WG553729
TPH (GC/FID) Low Fraction	mg/kg	4.81	4.24	87.4	55-109	12.6	20	L534150-06	WG553729
a,a,a-Trifluorotoluene(FID)				94.49	59-128				WG553729
Chromium,Hexavalent	mg/kg	7.36	4.72	36.8*	50-150	43.7*	20	L534302-03	WG553536

Batch number /Run number / Sample number cross reference

WG553249: R1844832: L534310-01 02
WG553627: R1844975: L534310-01 02
WG553674: R1846132: L534310-01 02
WG553618: R1846232: L534310-01 02
WG553613: R1846354: L534310-01 02
WG553729: R1847452: L534310-01 02
WG553915: R1847892: L534310-01 02
WG554009: R1849419: L534310-01 02
WG553640: R1850035: L534310-01 02
WG553536: R1850152: L534310-01 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.



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Mr. Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

Report Summary

Tuesday October 25, 2011

Report Number: L542781

Samples Received: 10/21/11

Client Project:

Description: Stoddard 33-30 Pit

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:

Craig Cothron , 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, 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

Mr. Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

October 25, 2011

Date Received : October 21, 2011
Description : Stoddard 33-30 Pit

Sample ID : 5-PIT 3

Collected By : Jared Black
Collection Date : 10/18/11 15:15

ESC Sample # : L542781-01

Site ID : STODDARD 33-30

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	89.		%	2540G	10/25/11	1
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	10/21/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	97.5		% Rec.	602/8015	10/21/11	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	10/24/11	1
Surrogate recovery(%) o-Terphenyl	72.5		% Rec.	3546/DRO	10/24/11	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: 10/25/11 13:18 Printed: 10/25/11 13:19

Summary of Remarks For Samples Printed
10/25/11 at 13:19:15

TSR Signing Reports: 034
R3 - Rush: Two Day

Acct- pending credit app.

Sample: L542781-01 Account: QUIFWTX Received: 10/21/11 09:00 Due Date: 10/25/11 00:00 RPT Date: 10/25/11 13:18



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Tax I.D. 62-0814289

Est. 1970

Mr. Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

Report Summary

Thursday August 11, 2011

Report Number: L529770

Samples Received: 08/06/11

Client Project: 2011054010

Description: Stoddard 33-30

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:

Mark W. Beasley , 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.

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Est. 1970

REPORT OF ANALYSIS

Mr. Jared Black
Quicksilver Resources, Inc.
801 Cherry Street, Suite 3700
Fort Worth, TX 76102

August 11, 2011

Date Received : August 06, 2011
Description : Stoddard 33-30
Sample ID : STODDARD BACKGROUND

ESC Sample # : L529770-01

Site ID :

Collected By : David Chavira
Collection Date : 08/05/11 07:00

Project # : 2011054010

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	99.			%		2540G	08/11/11	1
Arsenic	5.0	0.32	1.0	mg/kg		6010B	08/07/11	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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The reported analytical results relate only to the sample submitted

Reported: 08/11/11 13:03 Printed: 08/11/11 13:03

Summary of Remarks For Samples Printed
08/11/11 at 13:03:38

TSR Signing Reports: 034
R4 - Rush: Three Day

Acct- pending credit app.

Sample: L529770-01 Account: QUIFWTX Received: 08/06/11 09:00 Due Date: 08/11/11 00:00 RPT Date: 08/11/11 13:03
QCTX