

State of Colorado
Oil and Gas Conservation Commission

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



#8309

FOR OGCC USE ONLY

RECEIVED
2/26/2014

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): _____

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____
API Number: _____	County: _____
Facility Name: _____	Facility Number: _____
Well Name: _____	Well Number: _____
Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): _____

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): _____

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: _____

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	_____	_____
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Describe how source is to be removed:

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

There are no impacts to groundwater.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Figure 1 shows the approximate extent of the impacted area within the Ritchie lease boundaries and the locations of the two surficial (0-4") soil samples collected on February 15, 2014. Sample Allison-BA-1 had a sodium adsorption ratio (SAR) of 100 and conductivity of 2.4 mmhos/cm and sample Allison-BA-2 had SAR of 180 and conductivity of 3.6 mmhos/cm. The SAR results are above the Table 910-1 standard of 12 indicating sodic conditions. Both conductivity results are below the Table 910-1 standard of 4 mmhos/cm. The laboratory report is attached.

A reclamation plan will be prepared following additional investigation of soil and other conditions in the area below the permitted outfall.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.**Is further site investigation required?** ☒ Y ☐ N If yes, describe:

Additional samples will be collected and analyzed for SAR and other parameters to evaluate potential reclamation options and costs.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

To be determined.

IMPLEMENTATION SCHEDULEDate Site Investigation Began: February 15, 2014 Date Site Investigation Completed: _____ Date Remediation Plan Submitted: _____
Remediation Start Date: _____ Anticipated Completion Date: July 31, 2014 Actual Completion Date: _____

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

Print Name: David K Nicholson

Signed:

Title: Consultant to Ritchie Exploration, Inc.

Date: February 26, 2014

OGCC Approved: _____ Title: _____ Date: _____

Conditions of approval in correspondence to operator filed under
remediation project.



Figure 1

February
2014

GeoSolutions
NICHOLSON

Legend

- Soil Sample Location
- Disturbed Area (5.57 Acres)

0 62.5 125 250 375 Feet 1" = 200'

Ritchie Exploration, Inc.

Ann Allison Lease
Disturbed Area Below Outfall



12065 Lebanon Rd.
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Est. 1970

Dave Nicholson
Ritchie Exploration, Inc.- Wichita, KS
8100 E. 22th St. North
Wichita, KS 67226

Report Summary

Tuesday February 25, 2014

Report Number: L683915

Samples Received: 02/20/14

Client Project:

Description:

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 - 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, IA Lab #364, EPA - TN002

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

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REPORT OF ANALYSIS

February 25, 2014

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

Date Received : February 20, 2014
Description :
Sample ID : ALLISON-BA-1
Collected By : DK Nicholson
Collection Date : 02/15/14 14:00

ESC Sample # : L683915-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.6		su	9045D	02/21/14	1
Sodium Adsorption Ratio	100			Calc.	02/22/14	1
Specific Conductance	2400		umhos/cm	9050AMod	02/21/14	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: 02/25/14 16:20 Printed: 02/25/14 16:21
L683915-01 (PH) - 8.6@22.1c



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REPORT OF ANALYSIS

February 25, 2014

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
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Wichita, KS 67226

Date Received : February 20, 2014
Description :
Sample ID : ALLISON-BA-2
Collected By : DK Nicholson
Collection Date : 02/15/14 14:10

ESC Sample # : L683915-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.6		su	9045D	02/21/14	1
Sodium Adsorption Ratio	180			Calc.	02/22/14	1
Specific Conductance	3600		umhos/cm	9050AMod	02/21/14	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: 02/25/14 16:20 Printed: 02/25/14 16:21
L683915-02 (PH) - 8.6@21.8c

Summary of Remarks For Samples Printed
02/25/14 at 16:21:22

TSR Signing Reports: 134
R4 - Rush: Three Day

Sample: L683915-01 Account: RITEXPWKS Received: 02/20/14 09:30 Due Date: 02/25/14 00:00 RPT Date: 02/25/14 16:20

Sample: L683915-02 Account: RITEXPWKS Received: 02/20/14 09:30 Due Date: 02/25/14 00:00 RPT Date: 02/25/14 16:20



YOUR LAB OF CHOICE

Ritchie Exploration, Inc.- Wichita, KS
Dave Nicholson
8100 E. 22th St. North

Wichita, KS 67226

Quality Assurance Report
Level II

L683915

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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Specific Conductance	1.50	umhos/cm			WG707447	02/21/14 13:31

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Specific Conductance	umhos/cm	380.	370.	2.67	20	L683157-01	WG707447
Specific Conductance	umhos/cm	3600	3600	0.554	20	L683915-02	WG707447
pH	su	5.60	5.60	0.357	1	L683882-01	WG707425
pH	su	8.60	8.60	0.116	1	L684075-12	WG707425

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Specific Conductance	umhos/cm	510	520.	102.	85-115	WG707447
pH	su	5.93	5.90	99.5	98.3-101.7	WG707425

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Specific Conductance	umhos/	520.	520.	102.	85-115	0.0	20	WG707447
pH	su	5.90	5.90	99.0	98.3-101.7	0.0	20	WG707425

Batch number /Run number / Sample number cross reference

WG707447: R2886925: L683915-01 02
WG707352: R2887077: L683915-01 02
WG707425: R2887347: L683915-01 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.