



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): pit tank upgrade

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: REM #9650

OGCC Operator Number: 96705

Name of Operator: WPX Energy Production, LLC

Address: PO Box 640/ 721 S Main Street

City: Aztec State: NM Zip: 87410

Contact Name and Telephone:

Deborah Watson

No: 505.333.1880/505.386.9693

Fax: 505.333.1805

API Number: 05-067-08086

County: La Plata

Facility Name: _____

Facility Number: _____

Well Name: Ignacio 33-8

Well Number: 1A

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NENW 12 33N 8W Latitude: 37.12306 Longitude: -107.67168

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): If there is a release, produced water and minimal hydrocarbons

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.): farming/livestock

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Arboles Clay 3 to 12 percent slope

Potential receptors (water wells within 1/4 mi, surface waters, etc.): residence located 531 NNW , water well is 565 ft NNW ,

several livestock ponds located within 600 ft , closest blue line surface water is 930 ft E

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

TBD-below pit tank

How Determined:

PID, confirmation sample

REMEDIATION WORKPLAN

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

No impact to the environment anticipated since the current vessel consists of a fiberglass tank with a banded 40-mil liner. This tank is to be replaced with a double-wall and bottom steel API tank. A 40-mil liner will be installed below the tank.

Describe how source is to be removed:

Existing buried vessel to be removed by excavation of surrounding soils, removal of tank and liner, offsite disposal of tank and liner at permitted landfill. One sample will be collected from below the pit tank and the sample analyzed for Table 910-1 constituents. If any apparent soil discoloration or indications of possible leaks, additional samples will be collected from the impacted area.

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.:

If soil impact found based on soil sampling, impacted soils will be excavated to extent practical or until contamination is below regulatory limits. Excavated soils to be transported offsite to a permitted landfarm or landfill based on profile. If extent of contamination indicates impacts beyond site boundaries and/or water resources, a revised Remediation Workplan will be submitted for approval.



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

REMEDIATION WORKPLAN (Cont.)

OGCC Employee: _____

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

No impact to groundwater, see laboratory results

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.

No seeding or surface restoration is planned until site abandonment

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:

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

Tank and liner disposed of at Bondad Landfill.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 6/10/16	Date Site Investigation Completed: 6/10/16	Date Remediation Plan Submitted: TBD
Remediation Start Date: 6/10/16	Anticipated Completion Date: 5/2/16	Actual Completion Date: 6/10/16

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

Print Name: Deborah Watson Signed: Deborah Watson

Title: Environmental Specialist Date: September 8, 2016

OGCC Approved: [Signature] Title: Environmental Protection Specialist Date: 9/19/16

June 16, 2016

WPX Energy - New Mexico

Sample Delivery Group: L840840
Samples Received: 06/10/2016
Project Number:
Description: Ignacio 33-8 1A

Report To: Deborah Watson
721 South Main Ave.
Aztec, NM 87410

Entire Report Reviewed By:



Shane Gambill
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SS-1 L840840-01 Solid

Collected by
Deborah Watson

Collected date/time
06/09/16 12:00

Received date/time
06/10/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG879630	1	06/15/16 07:15	06/16/16 03:26	CCE
Calculated Results	WG880026	1	06/13/16 18:39	06/14/16 15:05	KK
Mercury by Method 7471A	WG879590	1	06/11/16 08:58	06/14/16 09:29	NJB
Metals (ICP) by Method 6010B	WG880026	1	06/13/16 18:39	06/14/16 11:35	LTB
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG879272	1	06/11/16 12:53	06/13/16 09:22	KMP
Semi-Volatile Organic Compounds (GC) by Method 3546/DRO	WG879557	1	06/11/16 08:28	06/11/16 15:10	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG879685	5	06/11/16 17:00	06/12/16 02:42	BMB
Wet Chemistry by Method 3060A/7196A	WG878845	1	06/11/16 10:03	06/14/16 15:05	KK
Wet Chemistry by Method 9045D	WG879316	1	06/14/16 10:38	06/14/16 10:38	MHM
Wet Chemistry by Method 9050AMod	WG879952	1	06/14/16 14:07	06/14/16 14:07	AMC

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

BACKGROUND-1 L840840-02 Solid

Collected by
Deborah Watson

Collected date/time
06/09/16 12:10

Received date/time
06/10/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG880026	1	06/13/16 18:39	06/14/16 11:37	LTB



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Shane Gambill
Technical Service Representative

Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

<u>ESC Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L840840-01	SS-1	9045D

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.77		1	06/16/2016 03:26	WG879630

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	15.7		2.00	1	06/14/2016 15:05	WG880026

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/14/2016 15:05	WG878845

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.25		1	06/14/2016 10:38	WG879316

Sample Narrative:

9045D L840840-01 WG879316: 6.25 at 20.9c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	188		1	06/14/2016 14:07	WG879952

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.322		0.0200	1	06/14/2016 09:29	WG879590

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.59		2.00	1	06/14/2016 11:35	WG880026
Barium	456		0.500	1	06/14/2016 11:35	WG880026
Cadmium	ND		0.500	1	06/14/2016 11:35	WG880026
Chromium	15.7		1.00	1	06/14/2016 11:35	WG880026
Copper	21.6		2.00	1	06/14/2016 11:35	WG880026
Lead	17.5		0.500	1	06/14/2016 11:35	WG880026
Nickel	12.7		2.00	1	06/14/2016 11:35	WG880026
Selenium	ND		2.00	1	06/14/2016 11:35	WG880026
Silver	ND		1.00	1	06/14/2016 11:35	WG880026
Zinc	50.2		5.00	1	06/14/2016 11:35	WG880026

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00316		0.00250	5	06/12/2016 02:42	WG879685
Toluene	ND		0.0250	5	06/12/2016 02:42	WG879685
Ethylbenzene	ND		0.00250	5	06/12/2016 02:42	WG879685
Total Xylene	ND		0.00750	5	06/12/2016 02:42	WG879685
TPH (GC/FID) Low Fraction	ND		0.500	5	06/12/2016 02:42	WG879685



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	93.6		59.0-128		06/12/2016 02:42	WG879685
(S) a,a,a-Trifluorotoluene(PID)	99.9		54.0-144		06/12/2016 02:42	WG879685

Semi-Volatile Organic Compounds (GC) by Method 3546/DRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	06/11/2016 15:10	WG879557
(S) o-Terphenyl	62.7		50.0-150		06/11/2016 15:10	WG879557

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/13/2016 09:22	WG879272
Acenaphthene	ND		0.00600	1	06/13/2016 09:22	WG879272
Acenaphthylene	ND		0.00600	1	06/13/2016 09:22	WG879272
Benzo(a)anthracene	ND		0.00600	1	06/13/2016 09:22	WG879272
Benzo(a)pyrene	ND		0.00600	1	06/13/2016 09:22	WG879272
Benzo(b)fluoranthene	ND		0.00600	1	06/13/2016 09:22	WG879272
Benzo(g,h,i)perylene	ND		0.00600	1	06/13/2016 09:22	WG879272
Benzo(k)fluoranthene	ND		0.00600	1	06/13/2016 09:22	WG879272
Chrysene	ND		0.00600	1	06/13/2016 09:22	WG879272
Dibenz(a,h)anthracene	ND		0.00600	1	06/13/2016 09:22	WG879272
Fluoranthene	ND		0.00600	1	06/13/2016 09:22	WG879272
Fluorene	ND		0.00600	1	06/13/2016 09:22	WG879272
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/13/2016 09:22	WG879272
Naphthalene	ND		0.0200	1	06/13/2016 09:22	WG879272
Phenanthrene	ND		0.00600	1	06/13/2016 09:22	WG879272
Pyrene	ND		0.00600	1	06/13/2016 09:22	WG879272
1-Methylnaphthalene	ND		0.0200	1	06/13/2016 09:22	WG879272
2-Methylnaphthalene	ND		0.0200	1	06/13/2016 09:22	WG879272
2-Chloronaphthalene	ND		0.0200	1	06/13/2016 09:22	WG879272
(S) p-Terphenyl-d14	66.3		32.2-131		06/13/2016 09:22	WG879272
(S) Nitrobenzene-d5	95.1		22.1-146		06/13/2016 09:22	WG879272
(S) 2-Fluorobiphenyl	71.4		40.6-122		06/13/2016 09:22	WG879272

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.27		2.00	1	06/14/2016 11:37	WG880026

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3143455-1 06/14/16 14:33

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.640	2.00

L840534-02 Original Sample (OS) • Duplicate (DUP)

(OS) L840534-02 06/14/16 14:46 • (DUP) R3143455-4 06/14/16 14:46

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	ND	1	0.000		20

L840751-10 Original Sample (OS) • Duplicate (DUP)

(OS) L840751-10 06/14/16 14:58 • (DUP) R3143455-8 06/14/16 15:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143455-2 06/14/16 14:34 • (LCSD) R3143455-3 06/14/16 14:34

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Chromium,Hexavalent	56.9	47.8	47.8	84.0	84.0	80.0-120			0.000	20

L840534-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840534-02 06/14/16 14:46 • (MS) R3143455-5 06/14/16 14:47 • (MSD) R3143455-6 06/14/16 14:47

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	19.1	18.8	95.0	94.0	1	75.0-125			1.00	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



L840408-01 Original Sample (OS) • Duplicate (DUP)

(OS) L840408-01 06/14/16 10:38 • (DUP) WG879316-3 06/14/16 10:38						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	1.85	1.84	1	0.542		1

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L840856-04 Original Sample (OS) • Duplicate (DUP)

(OS) L840856-04 06/14/16 10:38 • (DUP) WG879316-4 06/14/16 10:38						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.62	8.61	1	0.116		1

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG879316-1 06/14/16 10:38 • (LCSD) WG879316-2 06/14/16 10:38									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD
Analyte	su	su	su	%	%	%			%
pH	6.12	6.07	6.12	99.2	100	98.4-102			0.820

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) WG879952-5 06/14/16 14:07

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	2.00			

L840814-01 Original Sample (OS) • Duplicate (DUP)

(OS) L840814-01 06/14/16 14:07 • (DUP) WG879952-1 06/14/16 14:07

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	318	319	1	0.314		20

L841086-05 Original Sample (OS) • Duplicate (DUP)

(OS) L841086-05 06/14/16 14:07 • (DUP) WG879952-2 06/14/16 14:07

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	10100	10100	1	0.395		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG879952-3 06/14/16 14:07 • (LCSD) WG879952-4 06/14/16 14:07

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
Specific Conductance	653	665	664	102	102	90.0-110			0.150	20

1	Cp
2	Tc
3	Ss
4	Cn
5	Sr
6	Qc
7	Gl
8	Al
9	Sc



Method Blank (MB)

(MB) R3143332-1 06/14/16 08:20

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.0028	0.0200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143332-2 06/14/16 08:22 • (LCSD) R3143332-3 06/14/16 08:25

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.300	0.269	0.258	90	86	80-120			4	20

L840484-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840484-21 06/14/16 08:27 • (MS) R3143332-4 06/14/16 08:30 • (MSD) R3143332-5 06/14/16 08:33

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.343	0.0338	0.385	0.379	102	101	1	75-125			2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3143346-1 06/14/16 10:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.65	2.00
Barium	U		0.17	0.500
Cadmium	U		0.07	0.500
Chromium	U		0.14	1.00
Copper	U		0.53	2.00
Lead	U		0.19	0.500
Nickel	U		0.49	2.00
Selenium	U		0.74	2.00
Silver	U		0.28	1.00
Zinc	3.07	J	0.59	5.00

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143346-2 06/14/16 10:16 • (LCSD) R3143346-3 06/14/16 10:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	105	105	105	105	80-120			0	20
Barium	100	107	107	107	107	80-120			0	20
Cadmium	100	105	105	105	105	80-120			1	20
Chromium	100	102	102	102	102	80-120			0	20
Copper	100	105	104	105	104	80-120			1	20
Lead	100	104	103	104	103	80-120			1	20
Nickel	100	104	103	104	103	80-120			1	20
Selenium	100	106	106	106	106	80-120			0	20
Silver	100	102	101	102	101	80-120			1	20
Zinc	100	105	105	105	105	80-120			0	20

L840563-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840563-16 06/14/16 10:21 • (MS) R3143346-6 06/14/16 10:29 • (MSD) R3143346-7 06/14/16 10:32

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	123	18.3	133	138	93	97	1	75-125			3	20
Barium	123	129	272	276	116	119	1	75-125			1	20
Cadmium	123	ND	119	122	96	99	1	75-125			3	20
Chromium	123	25.1	135	141	89	94	1	75-125			4	20
Copper	123	22.6	143	148	98	102	1	75-125			3	20
Lead	123	17.8	142	146	101	104	1	75-125			3	20



L840563-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840563-16 06/14/16 10:21 • (MS) R3143346-6 06/14/16 10:29 • (MSD) R3143346-7 06/14/16 10:32

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nickel	123	27.8	150	158	99	106	1	75-125			5	20
Selenium	123	ND	118	123	96	100	1	75-125			4	20
Silver	123	ND	119	123	97	99	1	75-125			3	20
Zinc	123	79.7	192	196	91	94	1	75-125			2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3143023-5 06/11/16 14:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000284	⬇	0.000150	0.00500
Ethylbenzene	0.000128	⬇	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	93.5			59.0-128
(S) a,a,a-Trifluorotoluene(PID)	100			54.0-144

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143023-1 06/11/16 12:34 • (LCSD) R3143023-2 06/11/16 12:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.60	5.52	102	100	63.5-137			1.34	20
(S) a,a,a-Trifluorotoluene(FID)				103	103	59.0-128				
(S) a,a,a-Trifluorotoluene(PID)				111	110	54.0-144				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143023-3 06/11/16 13:19 • (LCSD) R3143023-4 06/11/16 13:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0439	0.0477	87.7	95.3	70.0-130			8.29	20
Toluene	0.0500	0.0446	0.0470	89.2	94.0	70.0-130			5.19	20
Ethylbenzene	0.0500	0.0448	0.0484	89.6	96.7	70.0-130			7.68	20
Total Xylene	0.150	0.136	0.146	90.5	97.0	70.0-130			6.96	20
(S) a,a,a-Trifluorotoluene(FID)				93.1	93.2	59.0-128				
(S) a,a,a-Trifluorotoluene(PID)				98.6	99.0	54.0-144				

L840836-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840836-10 06/11/16 20:42 • (MS) R3143023-6 06/11/16 18:51 • (MSD) R3143023-7 06/11/16 19:13

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.00382	0.173	0.191	67.5	75.0	5	49.7-127			10.4	23.5
Toluene	0.0500	ND	0.163	0.180	63.1	70.1	5	49.8-132			10.1	23.5
Ethylbenzene	0.0500	ND	0.162	0.179	64.2	71.1	5	40.8-141			10.1	23.8
Total Xylene	0.150	ND	0.485	0.537	63.7	70.7	5	41.2-140			10.2	23.7
(S) a,a,a-Trifluorotoluene(FID)					93.3	93.3		59.0-128				



L840836-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840836-10 06/11/16 20:42 • (MS) R3143023-6 06/11/16 18:51 • (MSD) R3143023-7 06/11/16 19:13												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
(S) a,a,a-Trifluorotoluene(PID)					99.1	99.0		54.0-144				

L840836-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840836-10 06/11/16 20:42 • (MS) R3143023-8 06/11/16 19:35 • (MSD) R3143023-9 06/11/16 19:57												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
TPH (GC/FID) Low Fraction	5.50	ND	21.3	23.5	76.4	84.5	5	28.5-138			9.91	23.6
(S) a,a,a-Trifluorotoluene(FID)					101	101		59.0-128				
(S) a,a,a-Trifluorotoluene(PID)					109	109		54.0-144				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3142997-1 06/11/16 12:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	72.6			50.0-150

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3142997-2 06/11/16 13:06 • (LCSD) R3142997-3 06/11/16 13:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	60.0	39.0	38.5	65.0	64.2	50.0-150			1.32	20
(S) o-Terphenyl				68.5	72.1	50.0-150				

L840840-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840840-01 06/11/16 15:10 • (MS) R3142997-4 06/11/16 15:21 • (MSD) R3142997-5 06/11/16 15:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	60.0	ND	37.6	36.3	60.4	58.2	1	50.0-150			3.57	20
(S) o-Terphenyl					65.7	56.6		50.0-150				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3143124-3 06/13/16 09:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) p-Terphenyl-d14	51.5			32.2-131
(S) Nitrobenzene-d5	65.0			22.1-146
(S) 2-Fluorobiphenyl	50.0			40.6-122

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143124-1 06/13/16 02:29 • (LCSD) R3143124-2 06/13/16 02:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0592	0.0570	74.0	71.2	50.3-130			3.81	20
Acenaphthene	0.0800	0.0568	0.0561	71.0	70.1	52.4-120			1.30	20
Acenaphthylene	0.0800	0.0548	0.0599	68.5	74.8	49.6-120			8.78	20
Benzo(a)anthracene	0.0800	0.0490	0.0489	61.2	61.2	46.7-125			0.0900	20
Benzo(a)pyrene	0.0800	0.0485	0.0475	60.7	59.4	42.3-119			2.18	20
Benzo(b)fluoranthene	0.0800	0.0483	0.0485	60.4	60.7	43.6-124			0.390	20
Benzo(g,h,i)perylene	0.0800	0.0494	0.0532	61.7	66.5	45.1-132			7.36	20
Benzo(k)fluoranthene	0.0800	0.0545	0.0510	68.2	63.7	46.1-131			6.71	20
Chrysene	0.0800	0.0514	0.0534	64.2	66.7	49.5-131			3.80	20
Dibenz(a,h)anthracene	0.0800	0.0502	0.0548	62.8	68.5	44.8-133			8.74	20
Fluoranthene	0.0800	0.0630	0.0551	78.8	68.9	49.3-128			13.4	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3143124-1 06/13/16 02:29 • (LCSD) R3143124-2 06/13/16 02:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	0.0800	0.0638	0.0526	79.8	65.7	50.6-121			19.3	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0495	0.0547	61.9	68.3	46.1-135			9.93	20
Naphthalene	0.0800	0.0532	0.0559	66.5	69.9	49.6-115			5.01	20
Phenanthrene	0.0800	0.0503	0.0509	62.9	63.7	48.8-121			1.23	20
Pyrene	0.0800	0.0536	0.0535	67.0	66.9	44.7-130			0.0800	20
1-Methylnaphthalene	0.0800	0.0585	0.0766	73.2	95.8	50.6-122		J3	26.8	20
2-Methylnaphthalene	0.0800	0.0582	0.0750	72.8	93.8	50.4-120		J3	25.3	20
2-Chloronaphthalene	0.0800	0.0552	0.0545	69.0	68.1	53.9-121			1.30	20
(S) p-Terphenyl-d14				59.5	60.1	32.2-131				
(S) Nitrobenzene-d5				80.3	83.0	22.1-146				
(S) 2-Fluorobiphenyl				76.0	68.0	40.6-122				

L840840-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L840840-01 06/13/16 09:22 • (MS) R3143124-4 06/13/16 09:44 • (MSD) R3143124-5 06/13/16 10:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0593	0.0580	74.1	72.5	1	26.5-141			2.23	21.2
Acenaphthene	0.0800	ND	0.0591	0.0591	73.9	73.9	1	31.9-130			0.0200	20
Acenaphthylene	0.0800	ND	0.0586	0.0557	73.3	69.7	1	33.7-129			5.11	20
Benzo(a)anthracene	0.0800	ND	0.0503	0.0492	62.9	61.5	1	18.3-136			2.28	24.6
Benzo(a)pyrene	0.0800	ND	0.0563	0.0555	70.3	69.4	1	16.9-135			1.28	25.2
Benzo(b)fluoranthene	0.0800	ND	0.0469	0.0472	57.8	58.1	1	10.0-134			0.560	30.9
Benzo(g,h,i)perylene	0.0800	ND	0.0505	0.0506	63.1	63.2	1	14.1-140			0.130	25.5
Benzo(k)fluoranthene	0.0800	ND	0.0566	0.0547	70.8	68.3	1	18.2-138			3.51	25.6
Chrysene	0.0800	ND	0.0537	0.0522	67.1	65.2	1	17.1-145			2.80	24.2
Dibenz(a,h)anthracene	0.0800	ND	0.0528	0.0537	66.0	67.1	1	18.5-138			1.75	24.3
Fluoranthene	0.0800	ND	0.0684	0.0665	85.5	83.1	1	15.4-144			2.88	27.1
Fluorene	0.0800	ND	0.0584	0.0599	73.0	74.8	1	23.5-136			2.46	20
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0516	0.0531	64.5	66.3	1	14.5-142			2.71	25.8
Naphthalene	0.0800	ND	0.0558	0.0576	69.8	71.9	1	29.2-128			3.02	20
Phenanthrene	0.0800	ND	0.0555	0.0559	67.9	68.3	1	20.1-134			0.590	23.6
Pyrene	0.0800	ND	0.0597	0.0583	74.6	72.8	1	11.0-148			2.35	26.1
1-Methylnaphthalene	0.0800	ND	0.0564	0.0614	70.5	76.8	1	28.4-137			8.58	20
2-Methylnaphthalene	0.0800	ND	0.0573	0.0607	71.6	75.9	1	26.6-137			5.70	20
2-Chloronaphthalene	0.0800	ND	0.0505	0.0515	63.2	64.4	1	38.6-126			1.91	20
(S) p-Terphenyl-d14					61.6	59.6		32.2-131				
(S) Nitrobenzene-d5					90.4	94.1		22.1-146				
(S) 2-Fluorobiphenyl					69.5	66.8		40.6-122				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



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* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
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Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
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Nebraska	NE-OS-15-05		

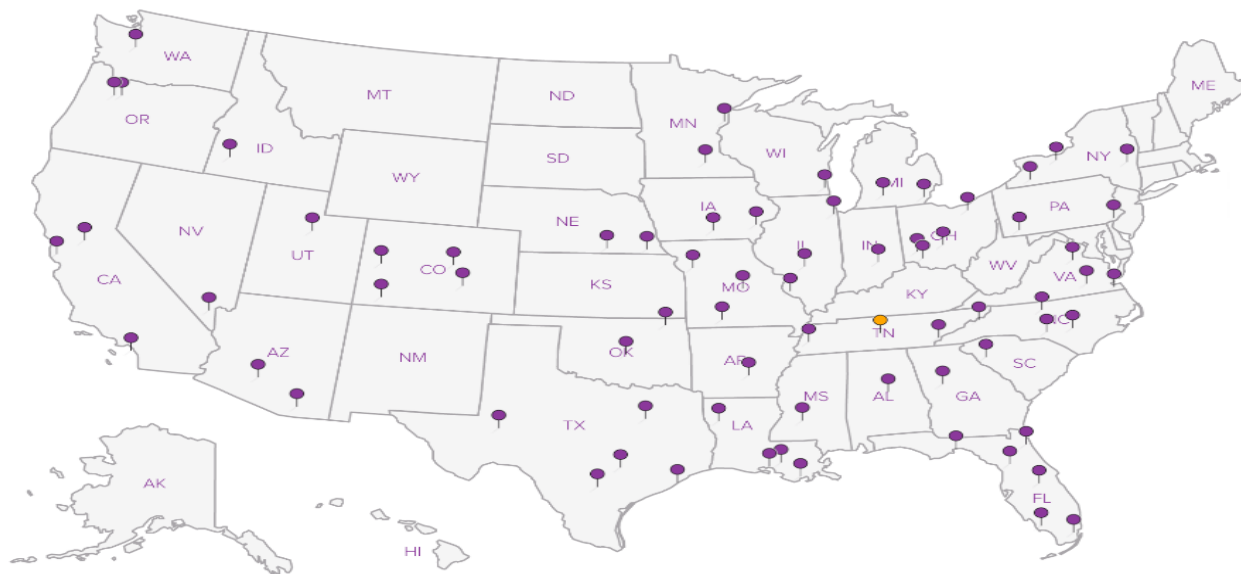
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:

WPX Energy721 South Main Ave.
Aztec, NM 87410

Billing Information:

Deborah Watson
721 S Main
Aztec, NM 87410

Analysis / Container / Preservative

Chain of Custody

Page ____ of ____



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # 1840840

G181

Acctnum: WPXANM

Template:

Prelogin:

TSR: Alan Harvill
PB: Shane Gambill

Shipped Via:

Rem./Contaminant Sample # (lab only)

Report to:

Debbie Watson

Email To: deborah.watson@wpxenergy.com

Debbie.Watson@esc-labs.com

Project

Description: Ignacio 33-8 #1A

City/State

Collected:

Phone: 505.333.1893

Fax:

Client Project #

Lab Project #

WPXANM-WATSON

Collected by (print):

Deborah Watson

Site/Facility ID #

P.O. #

Collected by (signature):

Deborah Watson

Rush? (Lab MUST Be Notified)

___ Same Day200%

___ Next Day100%

___ Two Day50%

___ Three Day25%

Date Results Needed

Email? ___ No ☒ Yes

FAX? ___ No ___ Yes

No.
of
CntrsImmediately
Packed on Ice N ___ Y ☒

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

No.
of
Cntrs

SS-1

Grab

SS

6.9.16

1200

5

X

Background - 1

Grab

SS

6.9.16

1210

1

X

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

6711 0832 9516

Hold #

Relinquished by: (Signature)

Deborah Watson

Date:

6.9.16

Time:

1400

Received by: (Signature)

Samples returned via: ☐ UPS☐ FedEx ☐ Courier ☐ _____

Condition: (lab use only)

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

3.1 6-9-16

OR

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

6-10-16 9:00

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked:

NCF:



Ignacio 33-8 #1A
Pit Sample Location
Section 12, Township 33N, Range 08W
N37.123740, W107.672258
La Plata County, CO