

State of Colorado
Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY
Rec 10/6/2016
Rem #9867
Doc #200440414

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	_____	_____

REMEDIALTION 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.:

FORM
27
Rev 6/99

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax: (303)894-2109



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

Page 2

REMEDIATION WORKPLAN (Cont.)

OGCC Employee: _____

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

It is not expected that produced water stored in this pit communicated with nor affected 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.

If back berm of pit exists, this material will be utilized to backfill pit. Native fill material may be collected from the recontouring of cut and fill slopes. Fill material will be brought onsite, if needed, to adequately backfill pit. The top 3 feet of the pit will be filled with at least 25% native soil. If topsoil exists, this material will be overlain on the fill material. Backfilled material may be contoured in a manner to be utilized as a stormwater BMP.

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:

No impact to the surrounding environment occurred from the use of this pit.

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

Produced water may be surface discharged under a CDPS permit, disposed of in a Class II UIC injection well, or utilized for dust suppression.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 6/29/16	Date Site Investigation Completed: 6/29/16	Date Remediation Plan Submitted: 10/4/16
Remediation Start Date: upon approval	Anticipated Completion Date: 4th qtr 2016	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: LaCretia White

Signed: LaCretia White

Title: Staff Environmental Specialist

Date: 10/4/16

OGCC Approved: _____ Title: _____ Date: _____

CONDITIONS OF APPROVAL:

Notify COGCC when pit closure process is completed.

METALS

Analytical results demonstrate that background concentrations of arsenic (As) exceed Table 910-1 concentration levels. Analytical results demonstrate that concentrations of As in soils in the pit also exceed Table 910-1 concentration levels and the pit concentrations are less than or within analytical uncertainty of being equal to the background concentrations. The analytical results are summarized below:

METAL	BACKGROUND CONCENTRATION (MG/KG)	PIT CONTENTS, SOIL/BEDROCK BELOW PIT OR IMPACTED MEDIA (MG/KG)	TABLE 910-1 CONCENTRATION LEVELS (MG/KG)
Arsenic	2.4-3.7	2.0-4.0	0.39

COGCC and CDPHE have consulted and agree that operators do not need to request variances from CDPHE for instances where the concentrations of metals in impacted soils are equal to or less than background concentrations, but do not meet Table 910-1 concentration values. Operators must ensure that remaining pit contents are covered with a minimum of 3 feet of backfill and soil. The soil horizons must be replaced in their original relative position, and reclaimed in accordance with 1000 Series Rules.

Table 910-1		PIONEER NATURAL RESOURCES								
CONCENTRATION LEVELS										
Contaminant of Concern	Concentrations	Units	PENCIL 32-20 TOP OF PIT	PENCIL 32-20 BOTTOM OF PIT	PENCIL 32-20 NATIVE WEST	PENCIL 32-20 NATIVE NORTH	PENCIL 32-20 NATIVE EAST	PENCIL 32-20 NATIVE SOUTH	PENCIL 32-20TR TOP OF PIT	PENCIL 32-20TR BOTTOM OF PIT
Organic Compounds in Soil										
TPH (Gasoline Range Organics)		mg/kg		ND						ND
TPH (Diesel Range Organics)	500	mg/kg		11						50
Benzene	0.17	mg/kg		ND						ND
Toluene	85	mg/kg		ND						ND
Ethylbenzene	100	mg/kg		ND						ND
Xylenes (total)	175	mg/kg		ND						ND
Acenaphthene	1000	mg/kg								
Anthracene	1000	mg/kg								
Benzo(A)anthracene	0.22	mg/kg								
Benzo(B)fluoranthene	0.22	mg/kg								
Benzo(K)fluoranthene	2.2	mg/kg								
Benzo(A)pyrene	0.022	mg/kg								
Chrysene	22	mg/kg								
Dibenzo(A,H)anthracene	0.022	mg/kg								
Fluoranthene	1000	mg/kg								
Fluorene	1000	mg/kg								
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg								
Napthalene	23	mg/kg								
Pyrene	1000	mg/kg								
Organic Compounds in Ground Water										
Benzene	5	µg/l								
Toluene	560 to 1000	µg/l								
Ethylbenzene	700	µg/l								
Xylenes (total)	1400 to 10,000	µg/l								
Inorganics in Soils										
Electrical Conductivity (EC)	<4000 or 2x background	umhos/cm	670	610					180	380
Sodium Adsorption Ratio (SAR)	<12	NA	5.3	8.3					ND	2.3
pH	6.0-9.0	NA	8.12	7.74					8.00	8.02
Inorganics in Ground Water										
Total Dissolved Solids (TDS)	<1.25 x background	NA								
Chlorides	<1.25 x background	NA								
Sulfates	<1.25 x background	NA								
Metals in Soils										
Arsenic	0.39	mg/kg	2.4	3.7	3.1	2.0	2.5	4.0	3.5	3.7
Barium Total	15,000	mg/kg		210						270
Boron	NA	mg/kg		ND						ND
Boron (Hot Water Soluble)	2	mg/L		NT						NT
Cadmium	70	mg/kg		ND						0.53
Chromium (III)	120,000	mg/kg		30						28
Chromium (VI)	23	mg/kg		ND						ND
Copper	3,100	mg/kg		50						63
Lead	400	mg/kg		17						19
Mercury	23	mg/kg		0.051						0.059
Nickel	1,600	mg/kg		22						27
Selenium	390	mg/kg		0.36						0.53
Silver	390	mg/kg		ND						ND
Zinc	23,000	mg/kg		120						140
Chromium		mg/kg		30						28
Liquid Hydrocarbons in Soils and Ground Water										
Liquid hydrocarbons including condensate and oil	Below detection level	NA		NA						NA

NA - not applicable

NT - not tested

ND - below the method detection limit

Cr - if Total Cr is >23 mg/kg, an analysis is completed for Cr VI, to facilitate calculation of Cr III

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 TOP OF PIT

Lab Sample ID: 280-85140-1

Date Collected: 06/29/16 12:31

Matrix: Solid

Date Received: 07/01/16 09:45

Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	5.3		1.2		No Unit		07/05/16 14:46	07/19/16 19:10	10
Sodium	360		10		mg/Kg		07/05/16 14:46	07/19/16 19:10	10
Calcium	110		2.0		mg/Kg		07/05/16 14:46	07/19/16 19:10	10
Magnesium	140		2.0		mg/Kg		07/05/16 14:46	07/19/16 19:10	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17.2		0.1		%			07/06/16 09:20	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.12		0.100		SU		07/07/16 16:40	07/15/16 10:38	1
Specific Conductance (25C)	670		10		umhos/cm		07/07/16 16:40	07/11/16 14:00	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 TOP OF PIT

Lab Sample ID: 280-85140-1

Date Collected: 06/29/16 12:31

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 82.8

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.4		0.085		mg/Kg	☼	07/13/16 14:30	07/14/16 03:38	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 BOTTOM OF PIT

Lab Sample ID: 280-85140-2

Date Collected: 06/29/16 12:34

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 79.1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0065		mg/Kg	☼	07/09/16 15:00	07/10/16 09:33	1
Ethylbenzene	ND		0.0065		mg/Kg	☼	07/09/16 15:00	07/10/16 09:33	1
Toluene	ND		0.0065		mg/Kg	☼	07/09/16 15:00	07/10/16 09:33	1
Xylenes, Total	ND		0.0065		mg/Kg	☼	07/09/16 15:00	07/10/16 09:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		58 - 140	07/09/16 15:00	07/10/16 09:33	1
Toluene-d8 (Surr)	95		80 - 126	07/09/16 15:00	07/10/16 09:33	1
4-Bromofluorobenzene (Surr)	95		76 - 127	07/09/16 15:00	07/10/16 09:33	1
Dibromofluoromethane (Surr)	94		75 - 121	07/09/16 15:00	07/10/16 09:33	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		1.5		mg/Kg	☼	07/13/16 11:34	07/13/16 22:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	76	X	77 - 123	07/13/16 11:34	07/13/16 22:34	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	11		4.8		mg/Kg	☼	07/06/16 09:42	07/13/16 06:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		49 - 115	07/06/16 09:42	07/13/16 06:27	1

Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	8.3		1.2		No Unit		07/05/16 14:46	07/19/16 19:12	10

Method: 6010B - Total Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	210		1.1		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Boron	ND		11		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Cadmium	ND		0.54		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Calcium	10000		54		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Magnesium	4000		22		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Molybdenum	ND		2.2		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Silver	ND		1.1		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1
Sodium	550		540		mg/Kg	☼	07/13/16 14:30	07/14/16 01:26	1

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.7		0.095		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Chromium	30		0.19		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Copper	50		0.24		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Lead	17		0.095		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Nickel	22		0.14		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Selenium	0.36		0.19		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1
Zinc	120		0.95		mg/Kg	☼	07/06/16 08:00	07/06/16 15:25	1

TestAmerica Denver

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 BOTTOM OF PIT

Lab Sample ID: 280-85140-2

Date Collected: 06/29/16 12:34

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 79.1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.051		0.023		mg/Kg	☼	07/19/16 14:20	07/19/16 22:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.50		mg/Kg	☼	07/13/16 15:00	07/14/16 13:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (III)	30		2.0		mg/Kg	—		07/21/16 12:24	1
Percent Moisture	20.9		0.1		%			07/06/16 09:20	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.74		0.100		SU	—	07/07/16 16:40	07/15/16 10:38	1
Specific Conductance (25C)	610		10		umhos/cm		07/07/16 16:40	07/11/16 14:00	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE WEST

Lab Sample ID: 280-85140-3

Date Collected: 06/29/16 12:41

Matrix: Solid

Date Received: 07/01/16 09:45

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	6.5		0.1		%			07/06/16 09:20	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE WEST

Lab Sample ID: 280-85140-3

Date Collected: 06/29/16 12:41

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 93.5

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.1		0.092		mg/Kg	☼	07/13/16 14:30	07/14/16 03:56	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE NORTH

Lab Sample ID: 280-85140-4

Date Collected: 06/29/16 12:45

Matrix: Solid

Date Received: 07/01/16 09:45

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.3		0.1		%			07/06/16 09:20	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE NORTH

Lab Sample ID: 280-85140-4

Date Collected: 06/29/16 12:45

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 92.7

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		0.087		mg/Kg	☼	07/13/16 14:30	07/14/16 04:00	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE EAST

Lab Sample ID: 280-85140-5

Date Collected: 06/29/16 12:47

Matrix: Solid

Date Received: 07/01/16 09:45

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	6.0		0.1		%			07/06/16 09:20	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE EAST

Lab Sample ID: 280-85140-5

Date Collected: 06/29/16 12:47

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 94.0

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.5		0.085		mg/Kg	☼	07/13/16 14:30	07/14/16 04:26	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE SOUTH

Lab Sample ID: 280-85140-6

Date Collected: 06/29/16 12:50

Matrix: Solid

Date Received: 07/01/16 09:45

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	11.8		0.1		%			07/06/16 09:20	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20 NATIVE SOUTH

Lab Sample ID: 280-85140-6

Date Collected: 06/29/16 12:50

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 88.2

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.0		0.099		mg/Kg	☼	07/13/16 14:30	07/14/16 04:29	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20TR TOP OF PIT

Lab Sample ID: 280-85140-7

Date Collected: 06/29/16 13:00

Matrix: Solid

Date Received: 07/01/16 09:45

Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	ND		1.2		No Unit		07/05/16 14:46	07/19/16 19:15	10
Sodium	22		10		mg/Kg		07/05/16 14:46	07/19/16 19:15	10
Calcium	26		2.0		mg/Kg		07/05/16 14:46	07/19/16 19:15	10
Magnesium	3.8		2.0		mg/Kg		07/05/16 14:46	07/19/16 19:15	10

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.3		0.1		%			07/06/16 09:20	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.00		0.100		SU		07/07/16 16:40	07/15/16 10:38	1
Specific Conductance (25C)	180		10		umhos/cm		07/07/16 16:40	07/11/16 14:00	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20TR TOP OF PIT

Lab Sample ID: 280-85140-7

Date Collected: 06/29/16 13:00

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 92.7

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.5		0.089		mg/Kg	☼	07/13/16 14:30	07/14/16 04:33	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20TR BOTTOM OF PIT

Lab Sample ID: 280-85140-8

Date Collected: 06/29/16 13:04

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 91.5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0062		mg/Kg	☼	07/09/16 15:00	07/10/16 09:55	1
Ethylbenzene	ND		0.0062		mg/Kg	☼	07/09/16 15:00	07/10/16 09:55	1
Toluene	ND		0.0062		mg/Kg	☼	07/09/16 15:00	07/10/16 09:55	1
Xylenes, Total	ND		0.0062		mg/Kg	☼	07/09/16 15:00	07/10/16 09:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		58 - 140	07/09/16 15:00	07/10/16 09:55	1
Toluene-d8 (Surr)	85		80 - 126	07/09/16 15:00	07/10/16 09:55	1
4-Bromofluorobenzene (Surr)	99		76 - 127	07/09/16 15:00	07/10/16 09:55	1
Dibromofluoromethane (Surr)	101		75 - 121	07/09/16 15:00	07/10/16 09:55	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		1.3		mg/Kg	☼	07/08/16 12:25	07/09/16 17:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	80		77 - 123	07/08/16 12:25	07/09/16 17:27	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	50		4.3		mg/Kg	☼	07/06/16 09:42	07/13/16 06:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	98		49 - 115	07/06/16 09:42	07/13/16 06:51	1

Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	2.3		1.2		No Unit		07/05/16 14:46	07/19/16 19:23	10

Method: 6010B - Total Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	270		0.98		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Boron	ND		9.8		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Cadmium	0.53		0.49		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Calcium	6100		49		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Magnesium	3500		20		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Molybdenum	ND		2.0		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Silver	ND		0.98		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1
Sodium	ND		490		mg/Kg	☼	07/13/16 14:30	07/14/16 01:29	1

Method: 6020 - Total Metals by ICP-MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.7		0.10		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Chromium	28		0.21		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Copper	63		0.26		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Lead	19		0.10		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Nickel	27		0.16		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Selenium	0.53		0.21		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1
Zinc	140		1.0		mg/Kg	☼	07/06/16 08:00	07/06/16 15:28	1

TestAmerica Denver

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Soil Suite

TestAmerica Job ID: 280-85140-1

Client Sample ID: PENCIL 32-20TR BOTTOM OF PIT

Lab Sample ID: 280-85140-8

Date Collected: 06/29/16 13:04

Matrix: Solid

Date Received: 07/01/16 09:45

Percent Solids: 91.5

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.059		0.020		mg/Kg	☼	07/19/16 14:20	07/19/16 22:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.43		mg/Kg	☼	07/13/16 15:00	07/14/16 13:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (III)	28		2.0		mg/Kg	—		07/21/16 12:24	1
Percent Moisture	8.5		0.1		%			07/06/16 09:20	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.02		0.100		SU	—	07/07/16 16:40	07/15/16 10:38	1
Specific Conductance (25C)	380		10		umhos/cm		07/07/16 16:40	07/11/16 14:00	1