

State of Colorado  
**Oil and Gas Conservation Commission**



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FOR OGCC USE ONLY  
 Rec 12/8/15  
 Doc # 2099811  
 Rem # 9469  
 OGCC Employee:  
 Spill  Complaint  
 Inspection  NOAV  
 Tracking No:

**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: <u>10084</u>	Contact Name and Telephone: <u>LaCretia White</u>
Name of Operator: <u>Pioneer Natural Resources USA, Inc.</u>	No: <u>972-969-3738</u>
Address: <u>5205 N. O'Connor Blvd., Ste 200</u>	Fax: <u>972-969-3559</u>
City: <u>Irving</u> State: <u>TX</u> Zip: <u>75039</u>	

API Number: <u>05-071-08845</u>	County: <u>Las Animas</u>
Facility Name: <u>Jeep Trail 43-36</u>	Facility Number: <u>289657</u>
Well Name: <u>Jeep Trail</u>	Well Number: <u>43-36</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>NESE, Sec. 36, T32S, R68W</u>	Latitude: <u>37.21491</u> Longitude: <u>-104.9424</u>

**TECHNICAL CONDITIONS**

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

**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.): Non-Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: LW—Littlepine-Wahatoya complex, 15 to 40 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): nearest water well - 4718' (if DWR point is accurate)  
nearest surface water - 1409' (if live water present)

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>soil within pit</u>	<u>torn liner</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

**REMEDIATION WORKPLAN**

**Describe initial action taken** (if previously provided, refer to that form or document):  
 Produced water from this well was being stored in this onsite pit. The well is no longer going to the pit.

**Describe how source is to be removed:**  
 Produced water is not being sent to this pit and it is no longer needed.

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



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.):

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 [x] 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: 7/15/15 Date Site Investigation Completed: 7/15/15 Date Remediation Plan Submitted: 12/8/15 Remediation Start Date: upon approval Anticipated Completion Date: 1st 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: Julie Webb Signed: Julie Webb Title: Regulatory Analyst Date: 12/8/15

OGCC Approved: Title: Date:

## CONDITIONS OF APPROVAL:

Notify COGCC when 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	0.87-2.0	1.7-1.9	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.

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE NORTH**

**Lab Sample ID: 280-72050-13**

**Date Collected: 07/15/15 12:29**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16		0.10		%			07/21/15 20:38	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE NORTH**

**Lab Sample ID: 280-72050-13**

**Date Collected: 07/15/15 12:29**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

**Percent Solids: 83.7**

**Method: 6020 - Total Metals by ICP-MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.2		0.11		mg/Kg	☼	07/22/15 08:15	07/23/15 06:46	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE EAST**

**Lab Sample ID: 280-72050-14**

**Date Collected: 07/15/15 12:34**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	13		0.10		%			07/21/15 20:38	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE EAST**

**Lab Sample ID: 280-72050-14**

**Date Collected: 07/15/15 12:34**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

**Percent Solids: 86.8**

**Method: 6020 - Total Metals by ICP-MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.87		0.10		mg/Kg	☼	07/22/15 08:15	07/23/15 06:50	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE SOUTH**

**Lab Sample ID: 280-72050-15**

**Date Collected: 07/15/15 12:32**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	22		0.10		%			07/21/15 20:38	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE SOUTH**

**Lab Sample ID: 280-72050-15**

**Date Collected: 07/15/15 12:32**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

**Percent Solids: 78.1**

**Method: 6020 - Total Metals by ICP-MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		0.12		mg/Kg	☼	07/22/15 08:15	07/23/15 06:53	1

- 1
- 2
- 3
- 4
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- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE WEST**

**Lab Sample ID: 280-72050-16**

**Date Collected: 07/15/15 12:43**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	10		0.10		%			07/21/15 20:38	1

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 NATIVE WEST**

**Lab Sample ID: 280-72050-16**

**Date Collected: 07/15/15 12:43**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

**Percent Solids: 89.6**

**Method: 6020 - Total Metals by ICP-MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		0.10		mg/Kg	☒	07/22/15 08:15	07/23/15 06:57	1

- 1
- 2
- 3
- 4
- 5
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- 7
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- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 TOP OF PIT**

**Lab Sample ID: 280-72050-17**

Date Collected: 07/15/15 12:48

Matrix: Solid

Date Received: 07/18/15 10:15

## Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	1.4		1.2		No Unit		07/21/15 18:00	07/29/15 16:36	10

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.8		0.10		%			07/21/15 20:38	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.59		0.100		SU		07/22/15 20:13	08/04/15 18:26	1
Specific Conductance (25C)	170		10		umhos/cm		07/22/15 20:13	08/03/15 07:42	1

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 TOP OF PIT**

**Lab Sample ID: 280-72050-17**

**Date Collected: 07/15/15 12:48**

**Matrix: Solid**

**Date Received: 07/18/15 10:15**

**Percent Solids: 95.2**

**Method: 6020 - Total Metals by ICP-MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9		0.10		mg/Kg	☒	07/22/15 08:15	07/23/15 07:00	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

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

TestAmerica Job ID: 280-72050-1

**Client Sample ID: JEEPTRAIL 43-36 BOTTOM OF PIT**

**Lab Sample ID: 280-72050-18**

Date Collected: 07/15/15 12:55

Matrix: Solid

Date Received: 07/18/15 10:15

## Method: 20B - Sodium Adsorption Ratio - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	8.6		1.2		No Unit		07/21/15 18:00	07/29/15 16:39	10

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	24		0.10		%			07/21/15 20:38	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.80		0.100		SU		07/22/15 20:13	08/04/15 18:26	1
Specific Conductance (25C)	620		10		umhos/cm		07/22/15 20:13	08/03/15 07:42	1

**Table 910-1**



**CONCENTRATION LEVELS**

Contaminant of Concern	Concentrations	Units	JEEPTRAIL 43-36 NATIVE NORTH	JEEPTRAIL 43-36 NATIVE EAST	JEEPTRAIL 43-36 NATIVE SOUTH	JEEPTRAIL 43-36 NATIVE WEST	JEEPTRAIL 43-36 TOP OF PIT	JEEPTRAIL 43-36 BOTTOM OF PIT
<b>Organic Compounds in Soil</b>								
TPH (Gasoline Range Organics)		mg/kg						ND
TPH (Diesel Range Organics)		mg/kg						9.8
Benzene	0.17	mg/kg						ND
Toluene	85	mg/kg						ND
Ethylbenzene	100	mg/kg						ND
Xylenes (total)	175	mg/kg						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						
<b>Organic Compounds in Ground Water</b>								
Benzene	5	µg/l						
Toluene	560 to 1000	µg/l						
Ethylbenzene	700	µg/l						
Xylenes (total)	1400 to 10,000	µg/l						
<b>Inorganics in Soils</b>								
Electrical Conductivity (EC)	<4000 or 2x background	umhos/cm					170	620
Sodium Adsorption Ratio (SAR)	<12	NA					1.4	8.6
pH	6.0-9.0	NA					7.59	7.80
<b>Inorganics in Ground Water</b>								
Total Dissolved Solids (TDS)	<1.25 x background	NA						
Chlorides	<1.25 x background	NA						
Sulfates	<1.25 x background	NA						
<b>Metals in Soils</b>								
Arsenic	0.39	mg/kg	1.2	0.87	2.0	2.0	1.9	1.7
Barium Total	15,000	mg/kg						140
Boron	NA	mg/kg						ND
Boron (Hot Water Soluble)	2	mg/L						NT
Cadmium	70	mg/kg						ND
Chromium	NA	mg/kg						5.7
Chromium (III)	120,000	mg/kg						NA
Chromium (VI)	23	mg/kg						NA
Copper	3,100	mg/kg						7.9
Lead	400	mg/kg						5.8
Mercury	23	mg/kg						0.026
Nickel	1,600	mg/kg						6.4
Selenium	390	mg/kg						0.25
Silver	390	mg/kg						ND
Zinc	23,000	mg/kg						21
<b>Liquid Hydrocarbons in Soils and Ground Water</b>								
Liquid hydrocarbons including condensate and oil	Below detection level	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