

**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 5/31/16  
Rem 9730  
Doc 200439854

**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 Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 10084

Name of Operator: Pioneer Natural Resources USA, Inc.

Address: 5205 N. O'Connor Blvd., Ste 200

City: Irving State: TX Zip: 75039

Contact Name and Telephone:

LaCretia White

No: 972-969-3738

Fax: 972-969-3559

API Number: 05-071-08947

County: Las Animas

Facility Name: Loveland Pass 14-20 onsite pit

Facility Number: 300968

Well Name: Loveland Pass

Well Number: 14-20 37.323402 -104.812211

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSW 20 31S 66W Latitude: ~~37.323402~~ Longitude: ~~-104.812211~~

**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: Gulnare-Rock outcrop complex

Potential receptors (water wells within 1/4 mi, surface waters, etc.): nearest water well - 3954' (if DWR point is accurate)

nearest surface water - 556' (if live water present)

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

Impacted Media (check):

- ☒ Soils  
☐ Vegetation  
☐ Groundwater  
☐ Surface Water

Extent of Impact:

soil within pit

How Determined:

soil sampling

**REMEDIALTION 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: \_\_\_\_\_

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 lined 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.

Pit liner has been removed for soil sampling and properly disposed of. 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 lined 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: 1/19/16 Date Site Investigation Completed: 1/19/16 Date Remediation Plan Submitted: 5/31/16  
Remediation Start Date: upon approval Anticipated Completion Date: 3rd quarter 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: \_\_\_\_\_

Title: Staff Environmental Specialist

Date: 5/31/16

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<br>CONCENTRATION<br>(MG/KG) | PIT CONTENTS,<br>SOIL/BEDROCK BELOW PIT<br>OR IMPACTED MEDIA<br>(MG/KG) | TABLE 910-1<br>CONCENTRATION<br>LEVELS<br>(MG/KG) |
|---------|--|---|---|
| Arsenic | 1.2-2.0                                | 1.1-1.3   | 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<br>NATURAL RESOURCES |                                |                                   |                                  |                                 |                                  |                                 |
|--|------------------------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|
| CONCENTRATION LEVELS                             |                        |                              |                                |                                   |                                  |                                 |                                  |                                 |
| Contaminant of Concern                           | Concentrations         | Units                        | LOVELAND PASS 14-20 TOP OF PIT | LOVELAND PASS 14-20 BOTTOM OF PIT | LOVELAND PASS 14-20 NATIVE SOUTH | LOVELAND PASS 14-20 NATIVE WEST | LOVELAND PASS 14-20 NATIVE NORTH | LOVELAND PASS 14-20 NATIVE EAST |
| Organic Compounds in Soil                        |                        |                              |                                |                                   |                                  |                                 |                                  |                                 |
| TPH (Gasoline Range Organics)                    |                        | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| TPH (Diesel Range Organics)                      |                        | mg/kg                        |                                | 5.2                               |                                  |                                 |                                  |                                 |
| 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                        |                                |                                   |                                  |                                 |                                  |                                 |
| 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                     | 430                            | 600                               |                                  |                                 |                                  |                                 |
| Sodium Adsorption Ratio (SAR)                    | <12                    | NA                           | 2.8                            | 3.6                               |                                  |                                 |                                  |                                 |
| pH   | 6.0-9.0                | NA                           | 7.21                           | 7.71                              |                                  |                                 |                                  |                                 |
| 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                        | 1.3                            | 1.1                               | 1.3                              | 2.0                             | 1.5                              | 1.2                             |
| Barium Total                                     | 15,000                 | mg/kg                        |                                | 86                                |                                  |                                 |                                  |                                 |
| Boron  | NA                     | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| Boron (Hot Water Soluble)                        | 2                      | mg/L                         |                                | NT                                |                                  |                                 |                                  |                                 |
| Cadmium  | 70                     | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| Chromium (III)                                   | 120,000                | mg/kg                        |                                | NT                                |                                  |                                 |                                  |                                 |
| Chromium (VI)                                    | 23                     | mg/kg                        |                                | NT                                |                                  |                                 |                                  |                                 |
| Copper   | 3,100                  | mg/kg                        |                                | 7.8                               |                                  |                                 |                                  |                                 |
| Lead   | 400                    | mg/kg                        |                                | 4.9                               |                                  |                                 |                                  |                                 |
| Mercury  | 23                     | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| Nickel   | 1,600                  | mg/kg                        |                                | 5.2                               |                                  |                                 |                                  |                                 |
| Selenium   | 390                    | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| Silver   | 390                    | mg/kg                        |                                | ND                                |                                  |                                 |                                  |                                 |
| Zinc   | 23,000                 | mg/kg                        |                                | 22                                |                                  |                                 |                                  |                                 |
| Chromium   | NA                     | mg/kg                        |                                | 5.2                               |                                  |                                 |                                  |                                 |
| Liquid Hydrocarbons in Soils and Ground Water    |                        |                              |                                |                                   |                                  |                                 |                                  |                                 |
| Liquid hydrocarbons including condensate and oil | Below detection level  | NA                           |                                | ND                                |                                  |                                 |                                  |                                 |

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 Testing Suite

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 TOP OF PIT**

**Lab Sample ID: 280-79103-7**

**Date Collected: 01/19/16 12:13**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

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

| Analyte                 | Result | Qualifier | RL  | RL | Unit    | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------|--------|-----------|-----|----|---------|---|----------------|----------------|---------|
| Sodium Adsorption Ratio | 2.8    |           | 1.2 |    | No Unit |   | 01/25/16 10:41 | 01/29/16 20:31 | 10      |

## General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 12     |           | 0.10 |    | %    |   |          | 01/25/16 08:22 | 1       |

## General Chemistry - Soluble

| Analyte                    | Result | Qualifier | RL    | RL | Unit     | D | Prepared       | Analyzed       | Dil Fac |
|----------------------------|--------|-----------|-------|----|----------|---|----------------|----------------|---------|
| pH                         | 7.21   |           | 0.100 |    | SU       |   | 01/29/16 11:36 | 01/29/16 16:45 | 1       |
| Specific Conductance (25C) | 430    |           | 10    |    | umhos/cm |   | 01/29/16 11:36 | 02/02/16 15:26 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 TOP OF PIT**

**Lab Sample ID: 280-79103-7**

**Date Collected: 01/19/16 12:13**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 87.6**

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

| Analyte | Result | Qualifier | RL    | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|-------|-----|-------|---|----------------|----------------|---------|
| Arsenic | 1.3    |           | 0.099 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:18 | 1       |

# Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 BOTTOM OF PIT**

**Lab Sample ID: 280-79103-8**

**Date Collected: 01/19/16 12:15**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 85.0**

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

| Analyte        | Result | Qualifier | RL     | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------------|--------|-----------|--------|-----|-------|---|----------------|----------------|---------|
| Benzene        | ND     |           | 0.0051 |     | mg/Kg | ☼ | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| Ethylbenzene   | ND     |           | 0.0051 |     | mg/Kg | ☼ | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| Toluene        | ND     |           | 0.0051 |     | mg/Kg | ☼ | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| Xylenes, Total | ND     |           | 0.0051 |     | mg/Kg | ☼ | 01/25/16 16:00 | 01/26/16 00:09 | 1       |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 88        |           | 58 - 140 | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| Toluene-d8 (Surr)            | 93        |           | 80 - 126 | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| 4-Bromofluorobenzene (Surr)  | 99        |           | 76 - 127 | 01/25/16 16:00 | 01/26/16 00:09 | 1       |
| Dibromofluoromethane (Surr)  | 102       |           | 75 - 121 | 01/25/16 16:00 | 01/26/16 00:09 | 1       |

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

| Analyte                                  | Result | Qualifier | RL  | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|--|--------|-----------|-----|-----|-------|---|----------------|----------------|---------|
| Gasoline Range Organics (GRO)<br>-C6-C10 | ND     |           | 1.4 |     | mg/Kg | ☼ | 01/26/16 12:01 | 01/27/16 17:01 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| a,a,a-Trifluorotoluene | 90        |           | 77 - 123 | 01/26/16 12:01 | 01/27/16 17:01 | 1       |

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

| Analyte                         | Result | Qualifier | RL  | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------------------------------|--------|-----------|-----|-----|-------|---|----------------|----------------|---------|
| Diesel Range Organics [C10-C28] | 5.2    |           | 4.4 |     | mg/Kg | ☼ | 01/25/16 17:30 | 01/27/16 20:45 | 1       |

| Surrogate   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-------------|-----------|-----------|----------|----------------|----------------|---------|
| o-Terphenyl | 85        |           | 49 - 115 | 01/25/16 17:30 | 01/27/16 20:45 | 1       |

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

| Analyte                 | Result | Qualifier | RL  | RL | Unit    | D | Prepared       | Analyzed       | Dil Fac |
|-------------------------|--------|-----------|-----|----|---------|---|----------------|----------------|---------|
| Sodium Adsorption Ratio | 3.6    |           | 1.2 |    | No Unit |   | 01/25/16 10:41 | 01/29/16 20:34 | 10      |

## Method: 6010B - Total Metals

| Analyte    | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Barium     | 86     |           | 1.2  |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Boron      | ND     |           | 12   |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Cadmium    | ND     |           | 0.58 |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Calcium    | 2200   | B         | 58   |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Magnesium  | 1500   |           | 23   |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Molybdenum | ND     |           | 2.3  |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Silver     | ND     |           | 1.2  |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |
| Sodium     | ND     |           | 580  |     | mg/Kg | ☼ | 01/26/16 14:10 | 01/26/16 23:38 | 1       |

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

| Analyte  | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Arsenic  | 1.1    |           | 0.12 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Chromium | 5.2    |           | 0.23 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Copper   | 7.8    |           | 0.29 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Lead     | 4.9    |           | 0.12 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Nickel   | 5.2    |           | 0.18 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Selenium | ND     |           | 0.23 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |
| Zinc     | 22     |           | 1.2  |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:22 | 1       |

TestAmerica Denver

# Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 BOTTOM OF PIT**

**Lab Sample ID: 280-79103-8**

**Date Collected: 01/19/16 12:15**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 85.0**

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL    | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|-------|-----|-------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.021 |     | mg/Kg | ☼ | 01/26/16 12:35 | 01/26/16 17:33 | 1       |

## General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 15     |           | 0.10 |    | %    | — |          | 01/25/16 08:22 | 1       |

## General Chemistry - Soluble

| Analyte                    | Result | Qualifier | RL    | RL | Unit     | D | Prepared       | Analyzed       | Dil Fac |
|----------------------------|--------|-----------|-------|----|----------|---|----------------|----------------|---------|
| pH                         | 7.71   |           | 0.100 |    | SU       | — | 01/29/16 11:36 | 01/29/16 16:45 | 1       |
| Specific Conductance (25C) | 600    |           | 10    |    | umhos/cm | — | 01/29/16 11:36 | 02/02/16 15:26 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE SOUTH**

**Lab Sample ID: 280-79103-9**

**Date Collected: 01/19/16 12:17**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

### General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 19     |           | 0.10 |    | %    |   |          | 01/25/16 08:22 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE SOUTH**

**Lab Sample ID: 280-79103-9**

**Date Collected: 01/19/16 12:17**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 81.4**

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

| Analyte | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Arsenic | 1.3    |           | 0.11 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:26 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE WEST**

**Lab Sample ID: 280-79103-10**

**Date Collected: 01/19/16 12:21**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

### General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 25     |           | 0.10 |    | %    |   |          | 01/25/16 08:22 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE WEST**

**Lab Sample ID: 280-79103-10**

**Date Collected: 01/19/16 12:21**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 75.5**

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

| Analyte | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Arsenic | 2.0    |           | 0.11 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:29 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE NORTH**

**Lab Sample ID: 280-79103-11**

**Date Collected: 01/19/16 12:22**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

### General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 21     |           | 0.10 |    | %    |   |          | 01/25/16 08:22 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE NORTH**

**Lab Sample ID: 280-79103-11**

**Date Collected: 01/19/16 12:22**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 78.5**

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

| Analyte | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Arsenic | 1.5    |           | 0.12 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:33 | 1       |

# Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE EAST**

**Lab Sample ID: 280-79103-12**

**Date Collected: 01/19/16 12:24**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

## General Chemistry

| Analyte          | Result | Qualifier | RL   | RL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------|--------|-----------|------|----|------|---|----------|----------------|---------|
| Percent Moisture | 20     |           | 0.10 |    | %    |   |          | 01/25/16 08:22 | 1       |

## Client Sample Results

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

TestAmerica Job ID: 280-79103-1

**Client Sample ID: LOVELAND PASS 14-20 NATIVE EAST**

**Lab Sample ID: 280-79103-12**

**Date Collected: 01/19/16 12:24**

**Matrix: Solid**

**Date Received: 01/22/16 09:40**

**Percent Solids: 79.5**

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

| Analyte | Result | Qualifier | RL   | MDL | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|------|-----|-------|---|----------------|----------------|---------|
| Arsenic | 1.2    |           | 0.12 |     | mg/Kg | ☼ | 01/26/16 08:05 | 01/27/16 00:37 | 1       |