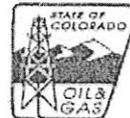


State of Colorado  
Oil and Gas Conservation Commission



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

FOR OGCC USE ONLY

**REM 9711**  
**Document 2526778**

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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): Form 27 Addendum to Remediation #9711

OGCC Operator Number: <u>10439</u>	Contact Name and Telephone: <u>Eric Johansson</u>
Name of Operator: <u>Carrizo Niobrara LLC</u>	No: <u>(713) 358-6227</u>
Address: <u>500 Dallas Street Suite 2300</u>	Fax: _____
City: <u>Houston</u> State: <u>TX</u> Zip: <u>77002</u>	

API Number: <u>05-001-08293</u>	County: <u>Adams</u>
Facility Name: <u>Custy-62S66W / 15SWSW</u>	Facility Number: <u>320170</u>
Well Name: <u>Custy #1</u>	Well Number: <u>Custy #1</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SWSW, 15, 2S, 66W, 6</u>	Latitude: <u>39.87267</u> Longitude: <u>-104.76956</u>

**TECHNICAL CONDITIONS**

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

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.): residential, cultivated

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: monte-ascalon loamy sands, 3 to 9 percent slopes and platner loam, 0 to 3 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): DWR well permit #105682, Kenneth J Custy, domestic well, ~425 feet to the NW, well is perforated from 220 to 360 feet below ground surface

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>See attached.</u>	<u>Visual observations and laboratory results</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>See attached.</u>	<u>Laboratory results</u>
<input type="checkbox"/> Surface Water	_____	_____

**REMEDIATION WORKPLAN**

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

Facility was shut-in, documented on Form 19 submitted on 6/17/16. The portion of the dump line that contained a small hole was identified, removed, and capped. A Form 27 was submitted and approved (Remediation #9711) on June 24, 2016 by the COGCC. This is an addendum to that original Form 27.

Describe how source is to be removed:

Source removal excavation activities were completed at the site from 6/17/16 through 6/22/16. In addition, vac trucks were used to remove any impacted groundwater that accumulated within the base of the excavation.

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.:

A groundwater amendment was applied to the excavation prior to back-filling activities to address any residual adsorbed/dissolved phase impacts remaining beneath the site. Fourteen soil borings/monitoring wells (MW-01 through MW-14) have been advanced/installed at the site. Based on laboratory analytical results, soil/groundwater impacts have been defined onsite. Quarterly groundwater monitoring will be completed at the site. Following the completion of additional quarterly groundwater monitoring events, the dissolved phase impacts will be evaluated to determine if additional remedial action is necessary or continue monitored natural attenuation as the remedial approach.



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.):**

Based on laboratory analytical results, dissolved phase impacts have been defined on site. Monitoring wells MW-01 through MW-10, MW-13, and MW-14 will be monitored quarterly. Monitoring wells MW-03 through MW-05 define dissolved phase impacts to the south, therefore monitoring wells MW-11 and MW-12 will not be included in the sampling plan. However, if concentrations within MW-03 through MW-05 increase to exceed the COGCC Table 910-1 regulatory limits, MW-11 and MW-12 will be sampled to ensure groundwater impacts are defined each quarter. Groundwater will be analyzed for BTEX following EPA Method 8260. Soil and groundwater analytical figures are attached.

**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.

The excavation was backfilled with clean fill to grade. The environmental footprint will be assessed following plug and abandonment activities and remediation activities and will be detailed in a separate report.

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:

Besides quarterly groundwater monitoring, further site investigation is not warranted at this time. If remediation is determined to be necessary other than monitored natural attenuation, a supplemental Form 27 submitted to the COGCC.

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

Any soil generated during source removal, assessment and/or remediation activities will be disposed of at a certified disposal facility.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: 06/17/16 Date Site Investigation Completed: 6/27/16 Date Remediation Plan Submitted: 08/17/16  
Remediation Start Date: 6/17/16 Anticipated Completion Date: TBD Actual Completion Date: TBD

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

Print Name: CAROL A. PRUITT Signed: [Signature]  
Title: REGULATORY COMPLIANCE Date: 8/18/16

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

LEASE ROAD

MW-09

MW-08  
6/27/2016  
5-7.5'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
G = <0.200  
D = <50.0

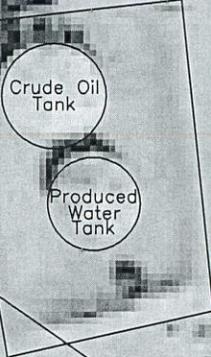
MW-07  
6/27/2016  
5-7.5'  
B = **1.83**  
T = 0.074  
E = 0.770  
X = 13.0  
G = 250  
D = <50.0

SS N  
6/20/2016  
8'  
B = 0.062  
T = 0.031  
E = <0.0050  
X = 0.027  
G = <0.50  
D = <50

MW-01  
6/27/2016  
10-12.5'  
B = 0.060  
T = 0.247  
E = 0.127  
X = 1.02  
G = 26.6  
D = 110

MW-13  
7/26/2016  
10-12.5'  
B = 0.038  
T = <0.002  
E = <0.002  
X = <0.002  
G = <0.200  
D = <50.0

Sidewall West  
6/22/2016  
12'  
B = **19.1**  
T = 69.6  
E = 7.98  
X = 104  
G = **1,930**  
D = **305**



MW-13

MW-07

MW-06

MW-02

MW-01

MW-02  
6/27/2016  
5-7.5'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
G = <0.200  
D = <50.0

SS W  
6/20/2016  
8'  
B = **0.17**  
T = 0.12  
E = 0.021  
X = 0.29  
G = 5.0  
D = <50

Sidewall South  
6/22/2016  
11'  
B = **0.652**  
T = 4.89  
E = 1.36  
X = 12.0  
G = 274  
D = <50.0

MW-04  
6/27/2016  
12.5-15'  
B = <0.050  
T = <0.050  
E = 0.110  
X = 0.238  
G = **150**  
D = **454**

MW-03

MW-04

MW-03  
6/27/2016  
5-7.5'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
G = <0.200  
D = <50.0

MW-12  
6/27/2016  
5-7.5'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
G = <0.200  
D = <50.0

AGRICULTURE



MW-09  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

LEASE ROAD

MW-09

MW-08  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-08

Crude Oil Tank

Produced Water Tank

MW-07  
B = 445  
T = 39.2  
E = 32.8  
X = 51.1

MW-06

MW-13  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-13

MW-07

MW-01  
B = 1,800  
T = 611  
E = 42.0  
X = 281

MW-01

GW-01

MW-02

MW-02  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

GW-01  
B = 3,800  
T = 5,400  
E = 210  
X = 5,000

Separator

MW-03

MW-04

MW-03  
B = <1.00  
T = <1.00  
E = <1.00  
X = 1.53

MW-04  
B = <1.00  
T = <1.00  
E = 2.65  
X = 3.73

AGRICULTURE

MW-12  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW