FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: CHRIS CANFIELD

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.
This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27.
This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.
Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATON

Name of Operator: CARRIZO NIOBRARA LLC Operator No: 10439
Address: 500 DALLAS STREET #2300
City: HOUSTON State: TX Zip: 77002
Contact Person: eric johansson

Phone Numbers
Phone: (713) 3586227
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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9695 Initial Form 27 Document #: 2526393

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [ ] 909.c.(2), Rule 906: Spill/Release Remediation
- [ ] 909.c.(3), Rule 907.e.: Land treatment of oily waste
- [ ] 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- [ ] 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- [ ] Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- [ ] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [x] Other PIT CLOSURE

SITE INFORMATION

N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: PIT Facility ID: 113694 API #: County Name: ADAMS
Facility Name: STATE OF COLORADO "A-B" Latitude: 39.878730 Longitude: -104.777559
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NESE Sec: 16 Twp: 2S Range: 66W Meridian: 6 Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications SM
Most Sensitive Adjacent Land Use RESIDENTIAL
Is domestic water well within 1/4 mile? Yes
Is surface water within 1/4 mile? No
Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

DWR WELL PERMIT #125 WCB, TASHIRO MASKATI, INSTALLED JAN 25, 1954, LOCATED APPROX 1088' TO THE WEST

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- ☐ **E&P Waste**
  - ☐ Produced Water
  - ☐ Oil
  - ☐ Condensate
  - ☐ Drilling Fluids
  - ☐ Drill Cuttings
- ☒ **Other E&P Waste**
  - ☐ Workover Fluids
  - ☐ Tank Bottoms
  - ☐ Pigging Waste
  - ☐ Rig Wash
  - ☐ Spent Filters
  - ☒ Pit Bottoms
  - ☐ Other (as described by EPA) _____
- ☐ **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	Historic pit	soil assessment activities

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

The production pit is approx. 10' long by 10' wide by approx. 10' deep (see attached document COGIS Pit Information) A Geoprobe track rig will be utilized to advance five soil borings, one outside of each sidewall and one within the center of the pit. Two soil samples will be collected from each sidewall soil boring, one sample at approx. 5' below ground surface (bgs) and an

additional sample at approx. 11' bgs. Two soil samples will also be collected from the center soil boring, one composite fill sample from 0-10' bgs and an additiona1 confirmation soil sample at approx. 10-11' bgs. Two additional soil samples will be collected to the west of the 10'x 10'

production pit. If impacts are observed during pit assessment activities additional borings/increased boring depths will be completed to vertically and horizontally define impacts. Soil samples collected will be submitted to Origins Laboratory for a full Table 910-1 suite analysis. In addition, three nearby non-impacted native soil samples will be collected and analyzed for inorganics and metals for purposes

of establishing background soil conditions.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

☒ Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Soil samples were collected from SB-01 through SB-11 to assess soil around former 10 x 10 pit.

Proposed Groundwater Sampling

☐ Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Proposed Surface Water Sampling

☐ Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Additional Investigative Actions

☐ Additional alternative investigative actions described in attached Site Investigation Plan (summary):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 41
Number of soil samples exceeeding 910-1: 6
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet): 9100

NA / ND

-- Highest concentration of TPH (mg/kg): 6850
-- Highest concentration of SAR: 18.16
BTEX > 910-1: Yes
Vertical Extent > 910-1 (in feet): 25

Groundwater

Number of groundwater samples collected: 0
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet): 0`
Number of groundwater monitoring wells installed: 0
Number of groundwater samples exceeding 910-1: 0

NA Highest concentration of Benzene (µg/l):
NA Highest concentration of Toluene (µg/l):
NA Highest concentration of Ethylbenzene (µg/l):
NA Highest concentration of Xylene (µg/l):
NA Highest concentration of Methane (mg/l):

Surface Water

0 Number of surface water samples collected
0 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

☒ Were background samples collected as part of this site investigation?

Background soil samples were taken outside the impacted area.

☐ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards):
Volume of liquid waste (barrels):

☒ Is further site investigation required?

Assessment activities have not yet been completed. Once laboratory analytical results are obtained a site map will be constructed illustrating sample locations. If remediation is necessary, a site map illustrating remediation activities will be included in a Form 27 remediation addendum submitted to the COGCC.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Source removal activities completed via excavation.

REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

From Feb 13 through March 9 excavation activities were completed at the site to remove any impacted soil above COGCC Table 910-1 regulatory limits.

Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other ____

☒ **Ex Situ**

- Yes — Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 4093
  - Name of Licensed Disposal Facility or COGCC Facility ID # ____
- No — Excavate and onsite remediation
  - ____ Land Treatment
  - ____ Bioremediation (or enhanced bioremediation)
  - ____ Chemical oxidation
  - ____ Other ____

Groundwater Remediation Summary

- No — Bioremediation (or enhanced bioremediation)
- No — Chemical oxidation
- No — Air sparge / Soil vapor extraction
- No — Natural Attenuation
- No — Other ____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

Groundwater was not encountered during investigation or remediation activities.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other NA

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report

☒ Other NA

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Used for overburden in landfill.

Volume of E&P Waste (solid) in cubic yards 4093

E&P waste (solid) description petroleum impacted soil

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Republic Services Tower Landfill

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description NA

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: NA

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

Do all soils meet Table 910-1 standards? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface?

Does Groundwater meet Table 910-1 standards? Yes

Is additional groundwater monitoring to be conducted? No

RECLAMATION PLAN

RECLAMATION PLANNING

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.

Reseeding for future growth of the impacted area will be conducted per Colorado Reclamation 1000 Series rules.

Is the described reclamation complete? No

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

☐ Interim? ☐ Final?

Did the Surface Owner approve the seed mix?

If NO, does the seed mix comply with local soil conservation district recommendations?

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). _____

Date of commencement of Site Investigation. 07/01/2016

Date of completion of Site Investigation. 10/06/2016

REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/13/2017

Date of completion of Remediation. 03/09/2017

SITE RECLAMATION DATES

Date of commencement of Reclamation. 03/11/2017

Date of completion of Reclamation. _____

OPERATOR COMMENT

Please see attached final report for review and approval. Carrizo requests that no futher action is required for this pit closure/removal on the State AB location in Adams County. Thank you.

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

Signed:` eric johansson

Title: ehs supervisor

Submit Date:` 04/27/2017

Email: eric.johansson@carrizo.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: CHRIS CANFIELD

Date: 05/03/2017

Remediation Project Number: 9695

COA Type	Description

Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num	Name
401268724	FORM 27-SUPPLEMENTAL-SUBMITTED
401268769	REMEDIATION PROGRESS REPORT
401268774	DISPOSAL MANIFESTS
401268802	DISPOSAL MANIFESTS
401268822	DISPOSAL MANIFESTS

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
Environmental	COGCC has reviewed, and is hereby approving, your 04-26-2017 request for No Further Action. However, should future conditions at the subject location indicate that contaminant concentrations in soils exceed COGCC standards, or if ground water is found to be impacted, further investigation and/or remediation activities may be required. Remediation Project 9695 will be closed in the COGIS database. The related Spill/Release Point 446568 was closed previously with the approval of your Form 27. Note that surface reclamation must meet the COGCC 1004 series rules.	05/03/2017

Total: 1 comment(s)