FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: RICK ALLISON

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: PDC ENERGY INC Operator No: 69175
Address: 1775 SHERMAN STREET - STE 3000
City: DENVER State: CO Zip: 80203
Contact Person: Karen Olson Email: COGCCSpillRemediation@pdce.com

Phone Numbers
Phone: (303) 860-5800
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 7241 Initial Form 27 Document #: 2230206

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
- [x] 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.
- [x] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [ ] Other

SITE INFORMATION

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

Facility Type: LOCATION Facility ID: 309889 API #: County Name: WELD
Facility Name: ANDERSON-67N66W 34SESW Latitude: 40.527640 Longitude: -104.769220
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SESW Sec: 34 Twp: 7N Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM
Most Sensitive Adjacent Land Use CULTIVATED
Is domestic water well within 1/4 mile? Yes
Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

SURFACE WATER ~1,300' N OF TANK BATTERY. WATER WELLS ~1,200' SE OF TANK BATTERY. GROUNDWATER ~8' BGS

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [x] Produced Water
  - [x] 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
	GROUNDWATER	REFER TO FIGURE 2 & TABLE 1	GROUNDWATER SAMPLING
	SOILS	REFER TO FIGURE 2 & TABLE 2	EXCAVATION, GEOPROBING, SAMPLING

INITIAL ACTION SUMMARY

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

A FORM 19 WAS SUBMITTED ON APRIL 25, 2012, COGCC ASSIGNED SPILL TRACKING #2224260 TO THE INCIDENT. AN AERIAL MAP OF THE SITE IS INCLUDED ON FIGURE 1.

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):

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: 0

Number of soil samples exceeeding 910-1:

Was the areal and vertical extent of soil contamination delineated?:

Approximate areal extent (square feet):

NA / ND

Highest concentration of TPH (mg/kg):

Highest concentration of SAR:

BTEX > 910-1:

Vertical Extent > 910-1 (in feet):

Groundwater

Number of groundwater samples collected: 9

Was extent of groundwater contaminated delineated?: Yes

Depth to groundwater (below ground surface, in feet): 9`

Number of groundwater monitoring wells installed: 10

Number of groundwater samples exceeding 910-1: 1

-- Highest concentration of Benzene (µg/l): 39

ND Highest concentration of Toluene (µg/l):

-- Highest concentration of Ethylbenzene (µg/l): 1.6

-- Highest concentration of Xylene (µg/l): 100

NA Highest concentration of Methane (mg/l):

Surface Water

0 Number of surface water samples collected

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?

☐ 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?

NO FURTHER SITE INVESTIGATION IS REQUIRED AT THIS TIME. THE EXCAVATION EXTENTS, TEST PIT LOCATIONS, SOIL SAMPLE AND GROUNDWATER SAMPLE LOCATIONS, AND THE MONITORING WELL LOCATIONS ARE ILLUSTRATED ON FIGURE 2. GROUNDWATER ANALYTICAL RESULTS ARE SUMMARIZED ON TABLE 1 AND SOIL ANALYTICAL RESULTS ARE SUMMARIZED ON TABLE 2.

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.

Between February 16 and February 26, 2021, approximately 2,340 cubic yards of impacted material were excavated and transported to the North Weld Waste Management Facility for disposal under PDC waste manifests.

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.

Between February 16 and February 26, 2021, supplemental source mass removal activities were conducted to remove remaining hydrocarbon impacted material associated with the dump line release discovered in November 2011. During excavation activities, groundwater was encountered in the excavation at approximately 7 feet below ground surface (bgs). Groundwater vacuum recovery activities were conducted concurrent with excavation activities and approximately 1,376 barrels of groundwater were removed and transported to the NGL Energy disposal facility under PDC waste manifests. 53 soil samples were collected from the base and sidewalls of the excavation extent at depths ranging between approximately 5 feet and 10.5 feet bgs. Per COGCC directive, soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by EPA Method 8260B, and TPH - diesel range organics (DRO) by EPA Method 8015. In addition, the samples were submitted for analysis of 1, 2, 4 trimethylbenzene (TMB) and 1, 3, 5 TMB by EPA Method 8260B. Analytical results indicated that BTEX, naphthalene, TPH-GRO, and TPH-DRO concentrations were below the applicable COGCC Table 910-1 standards and 1, 2, 4 TMB and 1, 3, 5 TMB concentrations were below the applicable Table 915-1 standards in soil samples collected from the final excavation extent. Analytical results are summarized in Table 1 and GPS coordinates and volatile organic compound (VOC) concentrations are summarized in Table 2. The final excavation extent and sample locations are illustrated on Figure 1. The laboratory reports are included in Attachment A and the field notes and photo log are included in Attachment B. Based on the analytical results and guidance from the COGCC, PDC Energy is requesting a No Further Action (NFA) determination for this release.

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) 2340
  - Name of Licensed Disposal Facility or COGCC Facility ID # ____
- ____ Excavate and onsite remediation
  - ____ Land Treatment
  - ____ Bioremediation (or enhanced bioremediation)
  - ____ Chemical oxidation
  - ____ Other ____

Groundwater Remediation Summary

- ☐ Bioremediation (or enhanced bioremediation)
- ☐ Chemical oxidation
- No Air sparge / Soil vapor extraction
- Yes Natural Attenuation
- ☐ 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.

Based on the analytical results from the active source removal remediation strategy, no additional groundwater monitoring will be conducted at this location.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other No Further Action (NFA) Request

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

☒ Other No Further Action (NFA) Request

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:

No beneficial use.

Volume of E&P Waste (solid) in cubic yards 2340

E&P waste (solid) description E&P impacted material.

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: North Weld Waste Management Facility

Volume of E&P Waste (liquid) in barrels 1376

E&P waste (liquid) description Groundwater from the excavation.

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: NGL Energy Disposal Facility

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? No

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.

Following 2021 supplemental source mass removal activities, the excavation was backfilled and re-graded to match pre-existing conditions. The production facility was rebuilt and remains operational.

Is the described reclamation complete? Yes

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. 03/19/2012

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. 03/12/2012

Date of completion of Site Investigation. 09/16/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 03/12/2012

Date of completion of Remediation. 02/26/2021

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

Based on COGCC guidance and the analytical results collected during supplemental source mass removal activities, PDC Energy is requesting a No Further Action (NFA) determination for this location.

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

Signed:` Karen Olson

Title: Senior Program Manager

Submit Date:` 03/10/2021

Email: COGCCSpillRemediation@pdce.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: RICK ALLISON

Date: 03/24/2021

Remediation Project Number: 7241

COA Type	Description
	Based on the information presented, it appears that no further action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required.

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
402621228	FORM 27-SUPPLEMENTAL-SUBMITTED
402623510	ANALYTICAL RESULTS
402623513	SOIL SAMPLE LOCATION MAP
402623531	PHOTOS

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)