

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

02/21/2023

Report taken by:

Laurel Anderson

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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 SHERMAN STREET - STE 3000</u>		Phone: <u>(303) 860-5800</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>Karen Olson</u>	Email: <u>tasfillremediationcontractor@pdce.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 19952 Initial Form 27 Document #: 402795478

PURPOSE INFORMATION

- ☐ Rule 913.c.(1): Pit or Cuttings Trench closure.
- ☐ Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- ☐ Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- ☐ Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- ☐ Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- ☐ Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- ☐ Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- ☐ Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- ☒ Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- ☐ Rule 913.g: Changes of Operator.
- ☐ Rule 915.b: Request to leave elevated inorganics in situ.
- ☐ Other: _____

SITE INFORMATION

No Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-22729</u>	County Name: <u>WELD</u>
Facility Name: <u>WELLS RANCH 42-30</u>		Latitude: <u>40.459280</u>	Longitude: <u>-104.473310</u>
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SENE</u>	Sec: <u>30</u>	Twp: <u>6N</u>	Range: <u>63W</u>
Meridian: <u>6</u>		Sensitive Area? <u>Yes</u>	

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Agriculture

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

Nearest Well: Irrigation / Domestic – 1,210 feet NW, Surface Water: Unnamed Lake – 38 feet E, Occupied Buildings: 1,366 feet NW, FWS Wetlands: Freshwater Pond (PUBFx) – 438 feet SW, HPH: Located within Pronghorn Winter Range Concentration - 0 feet

Flowline conflict as flowline, wellhead, and related facility are all located within Pronghorn Winter Concentration; COGIS lake layer also shows a historic lake approximately 38 feet east that appears to have dried up and now appears to be used for cropland / agriculture

SITE INVESTIGATION PLAN

TYPE OF WASTE:

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

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	Refer to Tables 1-5 & Figure 1	Confirmation Soil 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.

On January 26, 2022, field screening and confirmation soil sampling was conducted in accordance with the COGCC Rule 911 during the decommissioning and closure of the former Wells Ranch 42-30 Wellhead (Figure 1) and associated flowline (Figure 2). On February 15, 2022, following the receipt of preliminary analytical results, historic hydrocarbon impacts were discovered at the wellhead. Following this discovery, mitigation activities were initiated to delineate and remove remaining hydrocarbon impacts. Approximately 20 cubic yards (CY) of impacted material were excavated and transported to the North Weld Waste Management Facility for disposal under PDC waste manifests.

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):

During decommissioning, two soil samples (WH01 and FLR01) were collected adjacent to the cut and capped well casing at approximately 6 feet bgs and below the flowline riser at approximately 4 feet bgs. The samples were submitted for the Table 915-1 Organic Compounds in soil, TPH (C6-C36), and soil suitability for reclamation. Analytical results indicated that organic compound concentrations were in exceedance of the COGCC Table 915-1 standards in WH01. Following this discovery, soil sample WH01 was submitted for additional analysis of Table 915-1 metals. Analytical results indicated that the site-specific COCs include: BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), chrysene, pyrene, 1-M, 2-M, arsenic, barium, cadmium, copper, lead & selenium. On February 28, 2022, 5 soil samples (SS01, SS03, SS05, SS07, & SS09) were collected from the sidewalls & base of the excavation at depths of 6 feet and 7 feet bgs and were submitted for laboratory analysis of the above referenced COCs.

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):

One soil sample (SS02) was collected from the sidewall of the excavation at approximately 2.5 feet bgs and submitted for laboratory analysis of pH, EC, SAR, and boron. Analytical results indicated that inorganic compound concentrations were below the applicable COGCC Table 915-1 standards

During initial closure activities conducted on January 26, 2022, soil encountered on-site and below production equipment was visually inspected and field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Per the approved proposed soil sampling plan, a sample was collected beneath the flowline at a significant direction change (FL01-01). Field screened soil samples were collected every 250 feet along the flowline as well as between ground surface and 6 inches in the four cardinal directions surrounding the wellhead.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 17
Number of soil samples exceeding 915-1 10
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 185

NA / ND

-- Highest concentration of TPH (mg/kg) 240
-- Highest concentration of SAR 0.764
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 7

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet)
Number of groundwater monitoring wells installed
Number of groundwater samples exceeding 915-1

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

Surface Water

0 Number of surface water samples collected
 Number of surface water samples exceeding 915-1
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?

On January 26, 2022, two background soil samples (BKG01) were collected at approximately 4 feet and 6 feet bgs from native material & submitted for analysis of COGCC Table 915-1 metals & pH. Analytical results indicated that arsenic and selenium were in exceedance of the applicable regulatory standards in native soil.

On February 28, 2022, six background soil samples (BKG02-BKG03) were collected between approximately 2.5 feet, 6 feet and 7 feet bgs from native material & submitted for analysis of Table 915-1 metals & pH. Analytical results indicated that arsenic, barium, selenium, and pH were in exceedance of the applicable regulatory standards in native soil.

On February 28, 2022, twelve background soil samples (BKG04-BKG05) were collected between approximately 2.5 feet & 8 feet bgs from native material & submitted for analysis of barium & selenium. Analytical results indicated that barium & selenium were in exceedance of the applicable regulatory standard in native soil.

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

Volume of solid waste (cubic yards) 20 Volume of liquid waste (barrels) 0

☐ Is further site investigation required?

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.

On February 28, 2022, approximately 20 cubic yards of impacted material were excavated adjacent to the wellhead and transported to North Weld Waste Management Facility in Ault, Colorado 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.

On December 8, 2022, a supplemental site investigation was conducted at the former Wells Ranch 42-30 wellhead location. Eight soil borings (SB01-SB08) were advanced via hand auger adjacent to & surrounding the former wellhead excavation to delineate the vertical & horizontal extents of the barium & selenium exceedances observed in soil sample SS05 @ 6' as well as the selenium exceedance observed in soil sample SS07 @ 6'. One soil boring (SB01) was advanced adjacent to soil sample SS05 and three soil samples were collected at approximately 6 feet, 7 feet, & 8 feet bgs. Horizontal delineation soil borings (SB02-SB04) were advanced north, east, & south of SB01. One soil sample was collected from each horizontal delineation soil boring at 6 feet bgs. All soil samples collected from soil borings SB01 through SB04 were submitted for laboratory analysis of barium & selenium. Analytical results indicated that barium & selenium were in exceedance of the Table 915-1 applicable standards in soil sample SB01 @ 6', additionally barium was in exceedance of the Table 915-1 standards in soil sample SB02 @ 6'. One soil boring (SB05) was advanced adjacent to soil sample SS07 & three soil samples were collected at approximately 6 feet, 7 feet, & 8 feet bgs. Horizontal delineation soil borings (SB05-SB08) were advanced north, west, & south of SB05. One soil sample was collected from each horizontal delineation soil boring at 6 feet bgs. All soil samples collected from soil borings SB05 through SB08 were submitted for laboratory analysis of selenium. Analytical results indicated that selenium was within 1.25x the background concentrations & indicative of native soil conditions, as referenced in footnote 11 of the Table 915-1 for all soil samples with the exception of soil samples SB01 @ 6' & SB06 @ 6'. Additionally, twelve background soil samples (BKG04-BKG05) were collected between approximately 2.5 feet & 8 feet bgs from native material & submitted for analysis of barium & selenium.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation (or enhanced bioremediation)	Yes _____ Excavate and offsite disposal
_____ Chemical oxidation	_____ If Yes: Estimated Volume (Cubic Yards) _____ 20
_____ Air sparge / Soil vapor extraction	_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
_____ Natural Attenuation	_____ Excavate and onsite remediation
_____ Other _____	_____ Land Treatment
	_____ Bioremediation (or enhanced bioremediation)
	_____ Chemical oxidation
	_____ Other _____

Groundwater Remediation Summary

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ 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.

Groundwater was not encountered during wellhead decommissioning, supplemental source mass removal activities, or supplemental site investigation activities.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☐ Quarterly☐ Semi-Annually☐ Annually☒ Other

Confirmation Sample Summary, Wellhead Decommissioning Closure Request

☐ Request Alternative Reporting Schedule:

☐ Semi-Annually☐ Annually☐ Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

Report Type:

☐ Groundwater Monitoring☐ Land Treatment Progress Report☐ O&M Report☒ Other Confirmation Sample Summary, Wellhead Decommissioning Closure Request

Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Operator does not have site-specific financial assurance for this project; however, Operator has inactive well, blanket, and surface bonding including Surety IDs 106077122, 106473808, and 106473820, as well as commercial general liability and/or umbrella/excess insurance meeting the requirements of Rule 705.b. Operator does not anticipate making an insurance claim for this project.

- Investigation and delineation has been completed in soil.
- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the COGCC 1000 Series.
- The project has been completed and no further assessment or remediation is required at this time.

Costs included herein are estimates only and may change over time based on numerous factors. Accordingly, Operator makes no guarantees as to the accuracy of such cost estimates, thus providing an estimate for the next year below.

Operator anticipates the remaining cost for this project to be: \$ 1000

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 20

E&P waste (solid) description Hydrocarbon impacted soils

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: North Weld Waste Management

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

E&P waste (liquid) description

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility:

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

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

If YES:

☒ Compliant with Rule 913.h.(1).

☐ Compliant with Rule 913.h.(2).

☐ Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

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 wellhead and flowline decommissioning activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the COGCC 1000 series.

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 provide the seed mix? _____

If YES, does the seed mix comply with local soil conservation district recommendations? _____

Did the local soil conservation district provide the seed mix? _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 01/26/2022

Proposed date of completion of Reclamation. 01/26/2023

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 07/16/2021

Actual Spill or Release date, or date of discovery. 02/15/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/20/2021

Proposed site investigation commencement. 12/07/2022

Proposed completion of site investigation. 12/07/2022

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/28/2022

Proposed date of completion of Remediation. 12/08/2022

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

☐ Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

OPERATOR COMMENT

On December 8, 2022, a supplemental site investigation was conducted at the former Wells Ranch 42-30 wellhead location. Eight soil borings (SB01-SB08) were advanced adjacent to & surrounding the former wellhead excavation to delineate the vertical & horizontal extents of the barium & selenium exceedances observed in soil sample SS05 @ 6' as well as the selenium exceedance observed in soil sample SS07 @ 6'. Analytical results indicated that barium & selenium were in exceedance of the Table 915-1 Protection of Groundwater Soil Screening Levels (SSLs) and the mean background concentration in three of twelve soil boring samples collected.

Consequently, twelve background soil samples (BKG04-BKG05) were collected between approximately 2.5 feet & 8 feet bgs from native material & submitted for analysis of barium & selenium. Analytical results indicated that barium was in exceedance of Table 915-1 SSLs in two of the twelve background soil samples collected, & selenium was in exceedance of Table 915-1 SSLs in all twelve background soil samples collected. Based on the analytical results collected during previous background site investigations & the additional background soil samples, the average selenium concentration in native material is 0.435 mg/kg & 1.25x the background selenium concentration is 0.544 mg/kg. Additionally, the average barium concentration in native material is 59.7 mg/kg & 1.25x the background barium concentration is 74.6 mg/kg.

Soil samples SS05 @ 6', SB01 @ 6', SS07 @ 6', SB06 @ 6', SB02 @ 6' were observed to remain in exceedance of the SSLs and the mean background concentrations for barium and/or selenium. Consequently, a statistical analysis of the data for the barium and selenium concentrations observed in confirmation & background soil samples was conducted. This analysis indicated that background barium concentrations were observed to be within 16.4 mg/kg & 130 mg/kg. Confirmation soil sample barium concentrations were observed to be within 14.1 mg/kg & 114 mg/kg. Additionally, this statistical analysis indicated that background selenium concentrations were observed to be within 0.287 mg/kg & 0.620 mg/kg. Confirmation soil sample selenium concentrations were observed to be within 0.176 mg/kg & 0.615 mg/kg.

Although soil samples SB01 @ 6', SB06 @ 6', & SB02 @ 6' exhibit metal concentrations greater than 1.25x the mean native material concentration, the statistical analysis demonstrates the following about both the barium & selenium confirmation soil sample datasets:

- All soil boring sample concentrations are present within the range of native material concentrations.
- This statistical analysis demonstrates similar averages concentrations between confirmation & native material datasets.
- All soil boring sample concentrations are less than highest barium or selenium concentration observed in native material.

The graphical representation of this statistical analysis is provided as attachment C.

Finally, soil boring sample SB01 @ 6' was collected immediately adjacent to the excavation sidewall sample SS05 @ 6' which exhibited barium & selenium concentrations in exceedance of 1.25x the range of native material. Additionally, soil boring sample SB06 @ 6' was collected immediately adjacent to the excavation sidewall sample SS07 @ 6' which exhibited selenium concentrations in exceedance of 1.25x the range of native material. However, the analytical results for SB01 @ 6' & SB06 @ 6' did not replicate the initial observed exceedances. Based on the results, the initial barium & selenium exceedances recorded during excavation activities were discrete locations & native soil below & adjacent to the former wellhead excavation location was in compliance with the Table 915-1 Protection of Groundwater Soil Screening Levels or representative of native soil conditions as demonstrated above. Based on the information described herein, PDC is submitting a No Further Action (NFA) request for the wells Ranch 42-30 wellhead.

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: 02/21/2023

Email: taspillremediationcontractor@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: BOB CHESSON

Date: 02/23/2023

Remediation Project Number: 19952

COA Type

Description

0 COA	

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

403265470	FORM 27-SUPPLEMENTAL-SUBMITTED
403278928	OTHER
403278940	ANALYTICAL RESULTS

403278946	SOIL SAMPLE LOCATION MAP
403323054	LOGS

Total Attach: 5 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	<p>Based on the information presented no further remedial 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.</p> <p>The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.</p>	02/23/2023

Total: 1 comment(s)