

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.

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> | | Mobile: <u>()</u> |
| Contact Person: <u>Karen Olson</u> | Email: <u>COGCCSpillRemediation@pdce.com</u> | |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20868 Initial Form 27 Document #: 402851151

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>LOCATION</u> | Facility ID: <u>477812</u> | API #: _____ | County Name: <u>WELD</u> |
| Facility Name: <u>Gerry 3</u> | Latitude: <u>40.471477</u> | Longitude: <u>-104.716247</u> | |
| | ** correct Lat/Long if needed: Latitude: <u>40.471467</u> | Longitude: <u>-104.716322</u> | |
| QtrQtr: <u>NESE</u> | Sec: <u>24</u> | Twp: <u>6N</u> | Range: <u>66W</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: Domestic - 738 feet N / 981 feet NNE, Surface Water: Graham Seep - 896 feet NE, Occupied Buildings: 316 feet NW, Livestock: 333 feet NW, FWS Wetlands: Riverine (R4SBCx) - 896 feet NE

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 1-4 and 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 20, 2022, field screening and confirmation soil sampling was conducted in accordance with the COGCC Rule 911 during the decommissioning and closure of the Gerry 3 tank battery (Figure 1). Based on analytical results, it was determined that a historic release was discovered below the above ground storage tank (AST).

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):

On January 20, 2022, one soil sample (AST01) was collected from impacted source material beneath the AST between ground surface and 6 inches bgs and submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results indicate that the COCs include BTEX, 1,2,4-TMB, 1,3,5-TMB, naphthalene, and TPH (C6-C36).

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):

During initial decommissioning activities conducted on January 20, 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, samples were collected below the separator dump line, separator flowline, and from the base and sidewall sample exhibiting the highest field screened PID reading of the produced water vessel (PWV). The samples were submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36). Samples PWV01-B and PWV01-N were submitted for additional laboratory analysis of boron, pH, EC, SAR, and boron. Analytical results indicated that organic compound concentrations were below the applicable COGCC Table 915-1 Protection of Groundwater SSLs. Field screened soil sample locations are illustrated on Figure 1.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 5
Number of soil samples exceeding 915-1 1
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 285

NA / ND

-- Highest concentration of TPH (mg/kg) 73
-- Highest concentration of SAR 2.47
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 1

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 20, 2022, two (2) background soil samples (BKG01) were collected at approximately 2.5 feet and 4 feet bgs from native material topographically up-gradient of the tank battery. Background samples were submitted for analysis of COGCC Table 915-1 metals. Analytical results indicated that arsenic, barium, and selenium were in exceedance of the applicable regulatory standards in native soil.

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?

Based on the final analytical results, supplemental source mass removal activities will be conducted to remove remaining hydrocarbon impacted material via mechanical excavation.

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.

Any hydrocarbon impacted material will be transported off-site to a licensed disposal facility in accordance with Rules 905 and 906.

REMEDICATION 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.

During supplemental source mass removal activities, confirmation soil samples will be collected from the base and sidewalls of the final excavation extent. The soil samples will be submitted for laboratory analysis of the COGCC approved COC analyte suite. Supplemental source mass removal activities will be scheduled following landowner approval and final analytical results will be summarized in a forthcoming Supplemental Form 27 within 90 days of completing the proposed scope of work.

Soil Remediation Summary

In Situ Ex Situ

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

_____ Excavate and offsite disposal
_____ If Yes: Estimated Volume (Cubic Yards) _____
_____ 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
_____ 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 decommissioning activities conducted on January 20, 2022, at the Gerry 3 tank battery.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

Quarterly Semi-Annually Annually Other Analyte Reduction Request, Timeline Update, Supplemental Source Mass Removal Proposal

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 Analyte Reduction Request, Timeline Update, Supplemental Source Mass Removal Proposal

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

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

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

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

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? _____

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? _____

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 abandonment 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? _____

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. 01/20/2022

Proposed date of completion of Reclamation. 04/21/2027

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. 07/08/2021

Actual Spill or Release date, or date of discovery. 02/03/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/20/2022

Proposed site investigation commencement. 11/17/2021

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/20/2022

Proposed date of completion of Remediation. 04/21/2027

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

Following the approval of this form and landowner approval, PDC will conduct supplemental source mass removal activities at the Gerry 3 tank battery to remove remaining petroleum hydrocarbon impacts observed in the above ground storage tank soil sample (AST01). Based on analytical results for the waste characterization sample (ATS01), PDC is requesting that the COCs for the historic release discovered at the Gerry 3 tank battery be reduced to the following: BTEX, 1,2,4-TMB, 1,3,5-TMB, naphthalene, and TPH (C6-C36).

Supplemental source mass removal activities will be completed by the end of the third quarter 2022.

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: 04/25/2022

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: 05/12/2022

Remediation Project Number: 20868

Condition of Approval**COA Type****Description**

| | |
|--------|--|
| | On the next quarterly Form 27 Supplemental (due in 90 days, May 10, 2022) Operator will provide a revised Proposed date of Remediation Completion. |
| | Per Rule 913.d.(2) Operator shall submit a Supplemental Form 27 with an updated Implementation Schedule at least 14 days in advance of any schedule changes. |
| | Operator will analyze confirmation soil samples for Table 915-1 Organic Compounds in Soil and TPH in soil. |
| 3 COAs | |

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**

| | |
|-----------|--------------------------------|
| 403023486 | FORM 27-SUPPLEMENTAL-SUBMITTED |
| 403023622 | PHOTO DOCUMENTATION |
| 403023624 | SOIL SAMPLE LOCATION MAP |
| 403024902 | ANALYTICAL RESULTS |

Total Attach: 4 Files

General Comments**User Group****Comment****Comment Date**

| | | |
|--|--|---------------------|
| | | Stamp Upon Approval |
|--|--|---------------------|

Total: 0 comment(s)