

State of Colorado
Energy & Carbon Management Commission

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Receive Date:

Report taken by:

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 ECOM 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: PDC ENERGY INC	Operator No: 69175	Phone Numbers
Address: 1099 18TH STREET SUITE 1500		Phone: (303) 860-5800
City: DENVER State: CO Zip: 80202		Mobile: ()
Contact Person: Karen Olson	Email: karen.olson@chevron.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 36714 Initial Form 27 Document #: 403883475

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: SPILL OR RELEASE	Facility ID: 486891	API #: _____	County Name: ADAMS
Facility Name: Gus LD Pad	Latitude: 39.952212	Longitude: -104.885496	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENE	Sec: 21	Twps: 1S	Range: 67W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

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

Domestic Water Wells within 1/4 mile - 857' SE - Permit #227657--A, Receipt #3649660; 1303' SE - Permit #184088, Receipt #0376420J

Occupied Buildings within 1/4 mile - Residential neighborhood present 860' SE

E-470 Highway within 1/4 mile - 1320' N

City of Brighton municipal boundary within 1/4 mile - 660' S

No other potential receptors are located within ¼ mile of the Site.

Above distances are approximations.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	GROUNDWATER	Not encountered	Not encountered
Yes	SOILS	45'x60'x1.5' deep	Laboratory analyses

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 May 29, 2024, a non-reportable release was discovered at the Gus LD Pad. Approximately 0.53 barrels of produced fluids were observed at the north end of a failed bulk separator fire tube. Upon discovery, hydrovac excavation activities were initiated to assess and remove impacted material.

On May 30, 2024, the release was determined to be reportable after it was confirmed that more than 10 cubic yards of impacted material had been removed from the location. The fluid was contained entirely on-site within a steel-walled containment area; however, this containment area was not lined.

To date, approximately 24 cubic yards of impacted soil material have been excavated and properly disposed of in accordance with regulatory requirements.

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):

A waste characterization sample ("Waste Char") was collected on May 30, 2024, and later analysis indicated organic constituent exceedances. Following removal of all visually and olfactorily impacted soil, eleven confirmation samples were collected on June 3, 2024.

Samples were submitted to Summit Scientific Inc. (Golden, CO) and Origins Laboratory (Denver, CO) for analysis of ECMC Table 915-1 constituents. Results confirmed all petroleum constituents were below Table 915-1 standards.

However, exceedances were identified for pH, Sodium Adsorption Ratio (SAR), Electrical Conductivity (EC), boron, arsenic, barium, cadmium, hexavalent chromium (Cr VI), lead, and selenium. Laboratory data are summarized in Tables 1–4 and illustrated in Figures 3 and 4.

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 3

Number of soil samples exceeding 915-1 3

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

Approximate areal extent (square feet) 2700

NA / ND

ND Highest concentration of TPH (mg/kg) _____

-- Highest concentration of SAR 7.55

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 2

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

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 August 22, 2024, five background soil samples were collected both on and off location. An additional seven on-site samples were collected on November 8, 2024, followed by eight more on March 13, 2025. All samples were analyzed for ECMC Table 915-1 inorganics and metals, with the March 13 samples also analyzed for volatiles and PAHs.

Laboratory results are summarized in Tables 1 through 4. Maximum background concentrations of pH and Electrical Conductivity (EC), along with 1.25 times the maximum background concentrations for arsenic, barium, cadmium, and selenium, suggest that exceedances at the release site for these constituents are consistent with native conditions and can be considered adequately remediated. However, elevated Sodium Adsorption Ratio (SAR) values at two distinct sample locations (FS-01 and FS-02) remain above background levels.

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?

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Excavation via hydrovac trucks was completed between May 30, 2024 and June 3, 2024. Approximately 24 cubic yards of impacted soil were transported to Republic Services Tower Road Landfill in Commerce City, CO and Waste Management Buffalo Ridge Landfill in Keenesburg, CO for disposal.

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.

A remedial excavation was conducted to remove impacted soils from the firetube release within the secondary containment. This excavation adequately remediated petroleum and Table 915-1 metals constituents in the release area (see approved Form 27, Doc #403883475). However, elevated pH, SAR, EC, and boron remained to be resolved.

The elevated boron concentration in sample SS-01, collected at a depth of 1 ft, was 3.71 mg/L. This location was resampled on November 8, 2024, with soil samples collected at depths of 1 ft and 2 ft. Boron concentrations were below the applicable Table 915-1 standard; therefore, PDC proposed that boron be considered adequately remediated. This proposal was approved by ECMC under Doc #403996864.

The maximum background concentrations of pH (9.39), EC (30.8 mmhos/cm) and SAR (17.4) are greater than all confirmation samples collected in the release area except for SAR values in samples FS-01 and FS-02. This indicates that elevated pH, EC and SAR are naturally occurring in the native soil thus eliminating such constituents as contaminants of concern. Confirmation soil samples FS-02(2) and FS-02(3) were collected on 11/25/24 and 1/29/25 to confirm inorganic data in soil sample FS-02. Analytical results for FS-02(2) and FS-02(3) indicated inorganic values are below background concentrations.

PDC prepared a Reclamation Plan to vertically and horizontally delineate SAR exceedances exhibited in FS-01 in order to leave such constituents in place. Vertical delineation of SAR was achieved through soil sample FS-01 2 FT. Horizontal delineation was completed via soil samples SS-02 (north), BG-E (east), FS-04 (south) and FS-05 (west). Thus, All ECMC Table 915-1 inorganic constituents have been delineated and/or remediated below background soil sample values and the site can be considered adequately remediated.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 24

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ Natural Attenuation

No _____ 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.

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 ECMC 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.

The Gus LD Pad is an active facility and there are no current plans for decommissioning or reclamation activities. The Gus facility will be reclaimed in accordance with ECMC 1000 Series rules upon final decommissioning. An adequate amount of background samples will be collected at that time to determine whether inorganic constituents in excess of Table 915 are attributed to native soil conditions.

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. _____

Proposed date of completion of Reclamation. _____

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. 05/30/2024

Actual Spill or Release date, or date of discovery. 05/30/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/29/2024

Proposed site investigation commencement. 05/30/2024

Proposed completion of site investigation. 03/13/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/30/2024

Proposed date of completion of Remediation. 03/13/2025

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

A remedial excavation was conducted to remove impacted soils from the firetube release within the secondary containment. This excavation adequately remediated petroleum and Table 915-1 metals constituents in the release area (see approved Form 27, Doc #403883475).

The maximum background concentrations of pH (9.39), EC (30.8 mmhos/cm) and SAR (17.4) are greater than all confirmation samples collected in the release area except for SAR values in samples FS-01. This indicates that elevated pH, EC and SAR are naturally occurring in the native soil thus eliminating such constituents as contaminants of concern. Confirmation soil samples FS-02(2) and FS-02(3) were collected on 11/25/24 and 1/29/25 to confirm inorganic data in soil sample FS-02. Analytical results for FS-02(2) and FS-02(3) indicated inorganic values are below background concentrations.

PDC prepared a Reclamation Plan to vertically and horizontally delineate SAR exceedances exhibited in FS-01 - see attached Reclamation Plan. PDC proposes to leave elevated SAR in place as such exceedances do not pose a threat to nearby vegetation or soil suitability. Upon final reclamation of the Gus facility, all imported fill material will be removed and properly disposed of. The Gus facility will be reclaimed in accordance with ECMC 1000 Series rules upon final decommissioning. An adequate amount of background samples will be collected at that time to determine whether inorganic constituents in excess of Table 915 are attributed to native soil conditions.

PDC asserts that the extent of impacts have been fully delineated and all contaminated material has been adequately remediated at this site. PDC respectfully requests closure of Remediation Project Number: 36714.

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

Signed: Michelle Bartoszek

Title: HSE Advisor

Submit Date: _____

Email: michelle.bartoszek@chevron.com

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

ECMC Approved: _____

Date: _____

Remediation Project Number: 36714

COA Type	Description
0 COA	

ATTACHMENT 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
404192952	ANALYTICAL RESULTS
404192955	ANALYTICAL RESULTS
404201358	REMEDICATION PROGRESS REPORT
404201359	RECLAMATION PLAN

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)