FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Kilian Collins

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 ECMC 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 INFORMATON

Name of Operator: PDC ENERGY INC Operator No: 69175
Address: 1099 18TH STREET SUITE 1500
City: DENVER State: CO Zip: 80202
Contact Person: Karen Olson Email: karen.olson@chevron.com

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 36700 Initial Form 27 Document #: 403875266

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [X] Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- [X] 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.
- [X] 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

Yes Multiple Facilities

Facility Type: LOCATION Facility ID: 469636 API #: County Name: WELD
Facility Name: Dunham Pad Latitude: 40.087345 Longitude: -104.455326
** correct Lat/Long if needed: Latitude: 40.087357 Longitude: -104.455248
QtrQtr: 1 Sec: 5 Twp: 1N Range: 63W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 488608 API #: County Name: WELD
Facility Name: Dunham 41-5 Latitude: 40.087352 Longitude: -104.455257
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NENE Sec: 5 Twp: 1N Range: 63W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Grassland

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? No

Other Potential Receptors within 1/4 mile

Freshwater Emergent Wetland 0.04mi S
Lake 0.16mi S
Riverine 0.01mi W, 0.19mi SW
Residential 0.24mi SW

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [X] 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
UNDETERMINED	GROUNDWATER	NA	Lab Analysis or Field Screening, if encountered
Yes	SOILS	Refer to Tables and Figures	Lab Analysis and Field Screening

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 site investigation was conducted on 09/05/24 pursuant to ECMC Rule 911 at the Dunham 41-5 Tank Battery location. Grab confirmation soil samples were collected from beneath the above-ground storage tank (AST01@0-6"), at the flowline riser of the separator (SEP01-FL@3'), and from the bottom and south side of the dump line of the separator (SEP01-DL-B@3', SEP01-DL-S@1.5'). Additional grab soil samples collected from the dump line of the separator (SEP01-DL-N@1.5', SEP01-DL-E@1.5', SEP01-DL-W@1.5') were placed on-hold. The on-site dump lines located between the separator and tank battery were removed by pulling from either end. Field screening samples were collected beneath the meter house (MH01@0-6"), the flare (FLARE01@0-6"), and the vapor recovery unit (VRU01@0-6").

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

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

Sampling deviated from the the sampling plan in the approved Initial Form 27 due to infrastructure at the facility that was/was not in the 2016 imagery used to generate the sampling map. Upon arrival, field personnel noted the presence of a flare not present on the sampling map. The produced water vessel (PWV) on the sampling map is not in aerial imagery from 2019 and therefore must have been decommissioned prior to the rules for sampling at PWVs were implemented. Also, only one sample was designated for the separator. All sampling was conducted in accordance with the Initial Action Summary. Soil samples were analyzed by a certified laboratory for the full extent of Table 915-1, including but not limited to: TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons) organic compounds in soil per ECMC Table 915-1, EC, SAR, pH, metals, and boron. All samples collected were analyzed by a certified laboratory using approved ECMC laboratory analysis methods.

Proposed Groundwater Sampling

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

If groundwater is encountered during the site investigation a grab groundwater will be collected and analyzed for all organic and inorganic compounds per ECMC Table 915-1; this sample analysis includes, but is not limited to BTEX, naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

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):

Visual inspection at the tank battery area occurred during abandonment activities. Field personnel screened all disturbed areas using visual and olfactory senses. Additionally, discrete soil samples were collected from the base of the separator dump lines excavation and excavation sidewall in areas most likely to be impacted and exhibiting the highest field screened VOC concentration. A detailed summary of decommissioning activities, including field notes, site photos, figures, and laboratory analytical results, were attached to a previous Form 27 Document No. 403941064.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 14

Number of soil samples exceeeding 915-1: 2

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet): 200

NA / ND

ND — Highest concentration of TPH (mg/kg)

-- — Highest concentration of SAR: 3.26

BTEX > 915-1: No

Vertical Extent > 915-1 (in feet): 5

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?

A total of 23 background soil samples were collected from six discrete background locations (BKG01-BK06) adjacent to the tank battery location on 09/05/24 and 11/27/24. Samples were collected from 0 to 5 feet below ground surface and the lithology observed at both site and background locations were observed to be a combination of well graded and poorly graded sands. The maximum background concentration for pH was observed to be 8.78. The maximum background concentrations with a 1.25x multiplier applied for arsenic, barium, cadmium, and lead were calculated to be 7.21 mg/kg, 276 mg/kg, 0.520 mg/kg, and 14.4 mg/kg, respectively. All pH, arsenic and cadmium concentrations in site samples are observed to be below background concentrations.

☐ 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?

A remedial path forward for the barium exceedance encountered during supplemental site investigation activities in soil sample SEP01-DL-ER@3-4' is under evaluation and will be provided in a subsequent Form 27. Should the need for further site investigation be required, a supplemental site investigation proposal will be submitted on a subsequent Supplemental Form 27 at least 14 days prior to commencement.

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.

A sample was collected at the separator dump line (SEP01-DL). Soil sample SEP01-DL-B@3' was analyzed for the full ECMC Table 915-1 analysis on 09/07/24, and results from this report (Report ID 2409063) indicated the 1-methylnaphthalene (M) (Batch ID BHI0159) concentration was in exceedance of Table 915-1 standards. This sample was re-analyzed for 1-M on 9/13/24 (Batch ID BHI0425) and results from this report (Report ID 2409063R) indicated the 1-M concentration was non-detect. Due to this discrepancy, PDC requested the soil at sample location SEP01-DL-B be resampled and submitted for full Table 915-1 lab analysis.

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 site assessment was conducted on 11/27/24 to delineate impacted media, during which five soil borings were advanced (SEP01-DL-BR, SEP01-DL-ER, SEP01-DL-NR, SEP01-DL-SR, SEP01-DL-WR). Soil boring samples were submitted for laboratory analysis of the ECMC Table 915-1 constituents. Groundwater was not encountered during this assessment. Soil boring SEP01-DL-BR was advanced at the same location as the decommissioning sample SEP01-DL-B@3' in order to vertically delineate the impacts at that location. Four borings were advanced surrounding SEP-01-DL-BR to vertically and laterally delineate the impacts identified at SEP01-DL-B@3'. The 1-methylnaphthalene (M) and lead concentrations exceeding ECMC Table 915-1 standards at sample location SEP01-DL-B@3' could not be replicated and all constituents were in compliance with ECMC standards in soil sample SEP01-DL-BR@3-4'.

Soil Remediation Summary

☐ **In Situ**

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☐ **Ex Situ**

_____ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) _____

Name of Licensed Disposal Facility or ECMC 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 the initial decommissioning or subsequent site investigation activities completed to date.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] Quarterly [ ] Semi-Annually [ ] Annually [ ] Other

[ ] **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

[X] Other Site Assessment Report

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.

- Further soil investigation is required.

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: $ 15000

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

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC 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 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.

Reclamation will be in accordance with ECMC 1000 Series Rules.

Is the described reclamation complete? Yes

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

[X] 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. 09/05/2024

Proposed date of completion of Reclamation. 10/25/2026

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. 06/27/2024

Actual Spill or Release date, or date of discovery. 09/05/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/05/2024

Proposed site investigation commencement. 01/27/2025

Proposed completion of site investigation. 10/27/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/27/2025

Proposed date of completion of Remediation. 04/25/2026

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.

[X] Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

The implementation schedule has been changed due to the decommissioning of the Dunham 41-5 Tank Battery and necessity for a remedial path froward.

OPERATOR COMMENT

This Form 27 is being submitted to include the supplemental site investigation (SSI) results for the former Dunham 41-5 Tank Battery location. A comprehensive data packet summarizing the SSI activities is attached to this Form 27.

On November 27, 2024, a SSI was conducted to delineate 1-M and lead exceedances recorded during decommissioning activities and five soil borings were advanced. Soil boring samples were submitted for laboratory analysis of the ECMC Table 915-1 constituents. Groundwater was not encountered during this assessment. Soil boring SEP01-DL-BR was advanced at the same location as the decommissioning sample SEP01-DL-B@3' in order to vertically delineate the impacts at that location. Four borings were advanced surrounding SEP-01-DL-BR to vertically and laterally delineate the impacts identified at SEP01-DL-B@3'. Analytical results indicated the 1-methylnaphthalene (M) and lead concentrations exceeding ECMC Table 915-1 standards at sample location SEP01-DL-B@3' could not be replicated and all constituents were in compliance with ECMC standards in soil sample SEP01-DL-BR@3-4'.

In addition, a total of 23 background soil samples were collected from six discrete background locations (BKG01-BK06) adjacent to the tank battery location on 09/05/24 and 11/27/24. Samples were collected from 0 to 5 feet below ground surface and the lithology observed at both site and background locations were observed to be a combination of well graded and poorly graded sands. The maximum background concentration for pH was observed to be 8.78. The maximum background concentrations with a 1.25x multiplier applied for arsenic, barium, cadmium, and lead were calculated to be 7.21 mg/kg, 276 mg/kg, 0.520 mg/kg, and 14.4 mg/kg, respectively. All pH, arsenic and cadmium concentrations in site samples were observed to be below background concentrations.

A remedial path forward for the barium exceedance encountered during supplemental site investigation activities in soil sample SEP01-DL-ER@3-4' is under evaluation and will be provided in a subsequent Form 27. Quarterly reporting will be conducted until closure criteria are achieved for the remediation project.

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

Signed: Brock Nelson Title: Environmental Consultant

Submit Date: 01/28/2025 Email: tas-chevron-5@tasman-geo.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: Kilian Collins Date: 07/08/2025

Remediation Project Number: 36700

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
404014382	FORM 27-SUPPLEMENTAL-SUBMITTED
404070748	ANALYTICAL RESULTS
404072089	OTHER

Total Attach: 3 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)