

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
404131603  
Receive Date:  
03/19/2025

Report taken by:  
Collin Metz

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 INFORMATION

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 18732 Initial Form 27 Document #: 402721552

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

Yes  Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>336534</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Niles Miller 3N66W20Y</u>	Latitude: <u>40.204907</u>	Longitude: <u>-104.793668</u>	
	** correct Lat/Long if needed: Latitude: <u>40.203401</u>	Longitude: <u>-104.793862</u>	
QtrQtr: <u>SESE</u>	Sec: <u>20</u>	Twp: <u>3N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>480367</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Miller 5</u>	Latitude: <u>40.203428</u>	Longitude: <u>-104.793702</u>	
	** correct Lat/Long if needed: Latitude: _____	Longitude: _____	
QtrQtr: <u>SESE</u>	Sec: <u>20</u>	Twp: <u>3N</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? No

Is groundwater less than 20 feet below ground surface? Yes

### **Other Potential Receptors within 1/4 mile**

Nearest Well: Domestic - 760 feet W-NW, Occupied Buildings: 736 feet NW

# 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 Document No. 403732449	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 August 6, 2021, field screening and confirmation soil sampling was conducted in accordance with the ECMC Rule 911 during the decommissioning and closure of the Miller 5, Tank Battery. Based on initial results, it was determined that a historic release was discovered below the former produced water vessel. Following the discovery, mitigation activities were initiated to delineate and remove hydrocarbon impacts. To date, approximately 1,910 cubic yards (CY) of impacted material were removed and transported to the Buffalo Ridge Waste Management Facility for disposal under PDC 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 ):

On August 6, 2021, one soil sample (SS01) was collected from the source area at approximately 5 feet below ground surface (bgs) and submitted to Summit Scientific Laboratories for analysis of the full ECMC Table 915-1 analyte list. Preliminary analytical results indicate that contaminants of concern (COCs) include benzene, toluene, ethylbenzene, xylene(s) (BTEX), naphthalene (N), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, total petroleum hydrocarbons (TPH), arsenic, lead, and selenium. Between August 11 and 26, 2021, eighty-nine soil samples (SS02-SS14, SS16-SS87, SS89-SS92) were collected from the sidewalls and base of the excavation at depths ranging from 5 to 14 feet bgs and were submitted for laboratory analysis of the above referenced COCs as well as electrical conductivity (EC) and sodium adsorption ratio (SAR) per the request of the ECMC. In addition, one soil sample (Soil Suitability) was collected at 2.5 feet bgs and submitted for Table 915 soil suitability constituents.

### 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 closure activities conducted on August 6, 2021, 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 and/or adjacent to the above ground storage tanks (AST), separator flowline (SEP-FL), and separator dump line (SEP-DL). Samples were submitted for analysis of BTEX, N, 1,2,4-TMB, 1,3,5-TMB, and TPH. Analytical results indicated that constituents were in compliance with the applicable ECMC Table 915-1 standards in all laboratory sample locations.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 115 -- Highest concentration of TPH (mg/kg) 53.1  
 Number of soil samples exceeding 915-1 13 -- Highest concentration of SAR 6.16  
 Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 Yes  
 Approximate areal extent (square feet) 5019 Vertical Extent > 915-1 (in feet) 15

**Groundwater**

Number of groundwater samples collected 2 NA Highest concentration of Benzene (µg/l) \_\_\_\_\_  
 Was extent of groundwater contaminated delineated? No NA Highest concentration of Toluene (µg/l) \_\_\_\_\_  
 Depth to groundwater (below ground surface, in feet) 29 NA Highest concentration of Ethylbenzene (µg/l) \_\_\_\_\_  
 Number of groundwater monitoring wells installed 1 NA Highest concentration of Xylene (µg/l) \_\_\_\_\_  
 Number of groundwater samples exceeding 915-1 0 NA Highest concentration of Methane (mg/l) \_\_\_\_\_

**Surface Water**

0 Number of surface water samples collected  
0 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 25, 2021, six background soil samples (BKG01) were collected. On May 13, 2022, twenty four (24) background soil samples (BKG02-BKG05) were collected. Additionally on April 12, 2023 and June 7, 2023, thirty-one (31) background soil samples (BKG06-BKG09) were collected. All background soil samples were collected at depths ranging between 2.5 feet & 14 feet bgs, from native material topographically up-gradient of the tank battery & submitted for various analysis of the Table 915-1 metals, pH, EC, & SAR. Analytical results indicated that pH, arsenic, barium, cadmium lead, nickel & 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) 1910 Volume of liquid waste (barrels) 0

Is further site investigation required?  
 Based on the final analytical results for soil samples collected during the supplemental site investigations, lead and selenium constituents remain in exceedance of the Table 915-1 Protection of Groundwater Site Soil Screening Levels (SSLs) in multiple locations. However, all soils are within background concentrations or below EPA Residential Screening Levels (RSLs).  
 In accordance to a conversation held with the ECMC EPS on September 21, 2023, one temporary monitoring well was advanced on December 4, 2023, in the vicinity of elevated soil lead and selenium concentrations on-site.  
 Based on groundwater analytical results, four additional monitoring wells were installed in each cardinal direction surrounding the former excavation extent to delineate the dissolved selenium exceedance, establish local groundwater flow direction, and assess background dissolved selenium concentrations on site.

**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 August 6 and 25, 2021, and on April 12, 2023, a total of approximately 1,910 cubic yards (CY) of impacted material were excavated adjacent to the tank battery and transported to the Buffalo Ridge Landfill for disposal under PDC waste manifests.  
 Following source mass removal activities conducted on April 12, 2023, six soil samples (SS93-SS98) were collected from the base and sidewalls of the final excavation extent between depths of approximately 12 feet and 14 feet bgs. The soil samples were submitted for laboratory analysis of the approved COC analyte list: benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) [C6-C36], 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, arsenic, lead, selenium, sodium absorption ratio (SAR) and electrical conductivity (EC). Analytical results indicated all soil samples were below the Table 915-1 SSLs or respective background concentrations.

**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.

On April 12, 2023, one soil boring (TP01) was advanced in the vicinity of soil sample SS08 to vertically delineate lead exceedances recorded during the 2021 excavation. Four soil samples were collected at 11 feet, 12 feet, 13 feet and 14 feet bgs and were submitted for laboratory analysis of lead. The sample collected from 11 feet bgs were submitted for additional laboratory analysis of selenium. Analytical results indicated lead and selenium concentrations were below the applicable table 915-1 SSLs.

In accordance to a COA issued on the previously approved SF27, previous background soil boring BKG05 was collected within the well pad area and may not be used to achieve compliance. Consequently on April 12, 2023 and June 7, 2023, thirty-one (31) background soil samples (BKG06-BKG09) were collected at depths ranging between 2.5 feet & 14 feet bgs from native material topographically up-gradient of the tank battery & submitted for laboratory analysis of arsenic, lead, and selenium. Analytical results indicated arsenic, lead, and selenium were observed in exceedance of applicable Table 915-1 Protection of Groundwater SSLs in native material. Following evaluation of native material metal concentrations, all excavation extent and soil boring soil samples are below native material concentrations for arsenic and nine (9) soil samples remain in exceedance of the highest observed background selenium concentration.

On December 4, 2023, PDC advanced one temporary monitoring well in the vicinity of elevated soil lead and selenium concentrations on-site. Based on the results of the December 2023 and February 2024 groundwater sampling events, protection of groundwater has been demonstrated for lead. Consequently, the RSL was used to compare to site lead soil concentrations. All confirmation soil samples exhibit lead concentrations below the applicable RSLs.

### 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) _____ 1910
_____ Air sparge / Soil vapor extraction	Name of Licensed Disposal Facility or ECMC 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

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.

On December 29, 2023 and February 28, 2023, groundwater sampling activities were conducted at the one site monitoring well (BH01). Groundwater samples were collected from the monitoring well and submitted to Summit Scientific Laboratory for analysis of dissolved lead and dissolved selenium by EPA Method 200.8.

Groundwater analytical results indicated that the dissolved lead concentration was in compliance of the applicable CDPHE Domestic Water Supply Standard in monitoring well BH01 during both sampling events. The dissolved selenium concentration was in exceedance of the CDPHE Agricultural Standard during both sampling events. Based on the data, four additional monitoring wells will be installed in each cardinal direction surrounding the former excavation extent to delineate the dissolved selenium exceedance, establish local groundwater flow direction, and assess background dissolved selenium concentrations on site.

Following monitoring well installation, groundwater samples will be collected from the one site monitoring well (BH01) and four proposed monitoring wells and submitted for laboratory analysis of dissolved selenium.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

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  
 Other First Quarter 2025 Timeline Update

## 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 of organic compounds and soil suitability for reclamation is complete.
- Investigation and delineation of Table 915-1 metals are ongoing.
- Facility and infrastructure were decommissioned, and the location will be reclaimed in accordance with the ECMC 1000 Series.

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? Yes

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

Volume of E&P Waste (solid) in cubic yards 1910

E&P waste (solid) description Hydrocarbon impacted soils

ECMC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-ECMC Disposal Facility: Buffalo Ridge Waste Management Facility

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

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.

Following tank battery decommissioning activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with ECMC 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. 08/06/2021

Proposed date of completion of Reclamation. 08/10/2027

## 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. 05/20/2021

Actual Spill or Release date, or date of discovery. 08/06/2021

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/12/2021

Proposed site investigation commencement. 10/28/2024

Proposed completion of site investigation. 10/29/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/06/2021

Proposed date of completion of Remediation. 11/22/2027

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:

Based on groundwater analytical results, four additional monitoring wells were installed in each cardinal direction surrounding the former excavation extent to delineate the dissolved selenium exceedance, establish local groundwater flow direction, and assess background dissolved selenium concentrations on site.

**OPERATOR COMMENT**

This Supplemental Form 27 represents a first quarter 2025 timeline update for the monitoring well installation activities and groundwater monitoring activities conducted at the former Miller 5 tank battery location. This form was originally submitted on December 18, 2024, and was returned to draft on January 28, 2025, to confirm the security of the laboratory reports attached. A secured analytical data report is pending. Upon receipt of a secured report, analytical findings will be summarized and provided. Supplemental Form 27s will continue to be submitted on a quarterly basis.

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

Signed: Jesse Marcus

Title: Environmental Consultant

Submit Date: 03/19/2025

Email: Tas-Chevron-2@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: Collin Metz

Date: 07/28/2025

Remediation Project Number: 18732

**COA Type**

**Description**

	A more recent form, Document #404032293, has been submitted. The COAs/comments on that form take precedence.
1 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**

404131603	FORM 27-SUPPLEMENTAL-SUBMITTED
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Total Attach: 1 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)