

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 INFORMATION

Name of Operator: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers Phone: <u>(303) 860-5800</u> Mobile: <u>( )</u>
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>taspillremediationcontractor@pdce.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 16260 Initial Form 27 Document #: 402574838

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>333319</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>LATHAM RESERVOIR-64N65W 2SESW</u>		Latitude: <u>40.335536</u>	Longitude: <u>-104.632817</u>
		** correct Lat/Long if needed: Latitude: <u>40.335695</u>	Longitude: <u>-104.632785</u>
QtrQtr: <u>SESW</u>	Sec: <u>2</u>	Twp: <u>4N</u>	Range: <u>65W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use FWS Wetlands  
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**

Location is within FWS Wetland habitat classified as freshwater emergent wetlands. Location is within a CPW Sensitive Wildlife Habitat buffer of an active bald eagle roost and nest. An irrigation well is located approximately 1,308 feet east of the location. Occupied buildings are located approximately 1,001 feet east of the location. Lower Latham Reservoir is located approximately 991 feet northeast of the location.

**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	GROUNDWATER	Refer to Document No. 402644637	Implementation of Initial Groundwater Assessment.
Yes	SOILS	Refer to Document No. 403470372	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 September 23, 2020, a historic release was discovered while performing a pre-reclamation sub-surface survey. Groundwater was encountered at approximately 5 feet below ground surface. PDC and two other area operators utilized this location for oil & gas activities. PDC plugged and abandoned all wells and the associated production facility in 2014 and performed partial reclamation of the area where the tank battery and one well was located. Oxy had midstream gas gathering unit that collected gas from PDC and offsite Noble wells. Oxy and Noble ceased operations on this location in 2019. Quarterly groundwater monitoring and reporting activities were conducted between the third quarter of 2020 through the fourth quarter of 2022.

On January 10, 2023, supplemental source mass removal activities were initiated in the vicinity of BH04 to remove remaining hydrocarbon impacts. During excavation activities, groundwater was encountered at approximately 6 feet below ground surface (bgs). Approximately 2,390 cubic yards (CY) of impacted material were removed from the excavation. Impacted material was transported to the North Weld Waste Management and Buffalo Ridge Landfill facilities for disposal under PDC manifests. Additionally, groundwater vacuum recovery was conducted concurrent with excavation activities and approximately 10,345 barrels (bbls) of groundwater were removed. Impacted groundwater was transported to NGL C1 & NGL C3 for disposal under PDC waste manifests. On January 10, 2023, one waste characterization soil sample (WC01) was collected from the source area at approximately 3 feet bgs and submitted for laboratory analysis of the full ECMC Table 915-1 suite. Final analytical results indicate that the COCs include: BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), fluorene, 1-methylnaphthalene (M), 2-M, arsenic, and barium.

**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 ):

Between January 10 and January 31, 2023, seventy-five (75) soil samples (SS01-SS23, SS25-SS28 & SS30-SS38, SS40-SS55, SS57-SS68, SS70-SS77, & SS79-SS81) were collected from the sidewalls & base of the separator excavation at depths ranging between 3 feet to 7.5 feet bgs and were submitted for laboratory analysis of the above mentioned COCs. In addition, seven (7) soil samples (SS24, SS29, SS39, SS56, SS69, SS78, & SS82) were collected from the sidewalls of the excavation at approximately 2.5 feet bgs & submitted for laboratory analysis of pH, EC, SAR, and boron. Analytical results indicated that organic compound concentrations were below the applicable Table 915-1 SSLs in the samples collected from the final excavation extent, with the exception of the southwest sidewall.

**Proposed Groundwater Sampling**

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

Between September 14 and October 22, 2020, initial groundwater assessment activities were conducted to assess and confirm dissolved-phase hydrocarbon impacts. Groundwater samples were collected from nine monitoring wells (BH01 - BH09) and submitted to Summit Scientific Laboratories for analysis of BTEX by EPA Method 8260B. Analytical results indicated that the benzene concentration was in exceedance of the applicable ECMC Table 910-1 groundwater standard in monitoring well BH04. The remaining wells exhibited BTEX concentrations below regulatory standards.

**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 ):

Due to the sensitive nature of the adjacent HPH habitats, excavation activities were discontinued to the southeast. As such, five soil borings (SB01-SB05) were advanced using hand auger and soggy bottom sampler techniques to delineate hydrocarbon impacts beyond the southwest sidewall. Soil samples were collected from each soil boring at 1 foot and 8 feet bgs and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), fluorene, 1-M, and 2-M. Analytical results indicated that organic compound concentrations were below the applicable Table 915-1 SSLs in the soil boring samples. Due to technical difficulties soil boring logs cannot be provided at the time of this submittal.

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

Soil	NA / ND
Number of soil samples collected <u>93</u>	-- Highest concentration of TPH (mg/kg) <u>3500</u>
Number of soil samples exceeding 915-1 <u>28</u>	-- Highest concentration of SAR <u>10.1</u>
Was the areal and vertical extent of soil contamination delineated? <u>No</u>	BTEX > 915-1 <u>Yes</u>
Approximate areal extent (square feet) <u>9716</u>	Vertical Extent > 915-1 (in feet) <u>8</u>
<b>Groundwater</b>	
Number of groundwater samples collected <u>10</u>	-- Highest concentration of Benzene (µg/l) <u>990</u>
Was extent of groundwater contaminated delineated? <u>Yes</u>	ND Highest concentration of Toluene (µg/l) <u>          </u>
Depth to groundwater (below ground surface, in feet) <u>5</u>	-- Highest concentration of Ethylbenzene (µg/l) <u>110</u>
Number of groundwater monitoring wells installed <u>9</u>	-- Highest concentration of Xylene (µg/l) <u>630</u>
Number of groundwater samples exceeding 915-1 <u>2</u>	NA Highest concentration of Methane (mg/l) <u>          </u>
<b>Surface Water</b>	
<u>0</u> Number of surface water samples collected	
<u>0</u> 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 17 and 31, 2023, five background soil borings (BKG01-BKG05) were advanced topographically up-gradient adjacent to the excavation extent. Soil samples were collected from each background soil boring at 2.5 feet, 3 feet, 6.5 feet, 7 feet, 7.5 feet, and 8 feet bgs and submitted for analysis of ECMC Table 915-1 metals, pH, and SAR. Soil sample BKG01 @ 3' was submitted for additional analysis of EC and boron. Analytical results indicated that arsenic, barium, cadmium, selenium, silver, pH, EC, and SAR 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) 2390      Volume of liquid waste (barrels) 10345

Is further site investigation required?

During source mass removal activities, impacted soils were observed on the southwest sidewall of the excavation. Due to the presence of a HPH habitats, source mass removal activities were discontinued along the southwest sidewall. A Flood Hazard Development Permit (FHDP) has been submitted to Weld County, Colorado. Supplemental source mass removal activities will resume pending the approval of the FHDP, crew availability, favorable site conditions, and landowner approval. A remediation strategy will be determined following supplemental source mass removal activities.

Up to three (3) additional background soil boring will be advanced adjacent to the former excavation extent in order to evaluate arsenic and barium in native material. The proposed soil boring location map was included on the previously submitted Supplemental Form 27 Document No. 403470372.

Pending the completion of supplemental source mass removal activities, additional groundwater monitoring wells will be installed to reestablish and expand the monitoring network in order to confirm absence of dissolved phase hydrocarbon impacts. Monitoring well locations will be proposed in a forthcoming Supplemental Form 27.



# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly    Semi-Annually    Annually    Other   First Quarter 2024 - Timeline Update

### 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 2024 - 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.

- Partial source mass removal has been completed. Removal activities will continue following FHDP approval and landowner approval.
- Investigation and delineation is on-going for soil and groundwater.
- Monitoring wells will be installed and groundwater will be monitored for natural attenuation.
- 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: \$ 100000

## 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   2930

E&P waste (solid) description   Hydrocarbon impacted soil

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

Non-ECMC Disposal Facility: North Weld Waste Management & Buffalo Ridge Landfill

Volume of E&P Waste (liquid) in barrels   10345

E&P waste (liquid) description   Hydrocarbon impacted groundwater

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

Non-ECMC Disposal Facility: NGL C1 & NGL C3

# 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 supplemental source mass removal activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the 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. 09/02/2020

Proposed date of completion of Reclamation. 12/22/2026

## 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. 09/23/2020

Actual Spill or Release date, or date of discovery. 09/23/2020

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/02/2020

Proposed site investigation commencement. 01/24/2024

Proposed completion of site investigation. 03/31/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/02/2020

Proposed date of completion of Remediation. 12/22/2026

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.

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

Basis for change in implementation schedule:

Based on the evaluation of the soil analytical results and the need for supplemental source mass removal, the proposed date of site investigation commencement and the proposed date of the completion of site investigation was adjusted to span through the first quarter of 2024.

## **OPERATOR COMMENT**

This form is being submitted as a first quarter 2024 timeline update for the Latham 2-31, Latham Reservoir 1 tank battery. Per ECMC request, tables and figures previously submitted have not been included with this form submittal. Please refer to ECMC document no. 403470372 for previously submitted tables and figures.

PDC will conduct supplemental source mass removal activities via mechanical excavation to address the hydrocarbon impacts identified adjacent to the former Latham 2-31, Latham Reservoir 1 tank battery. Supplemental source mass removal activities are tentatively scheduled to begin the week of January 24, 2024. Field activities and final analytical results from the supplemental source mass removal activities will be summarized in a forthcoming Supplemental Form 27 within 90 days of completion. Supplemental Form 27s will be prepared and submitted on a quarterly schedule to provide updates and progress of the remediation until closure criteria has been achieved.

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 Project Manager

Submit Date: 01/29/2024

Email: taspillremediationcontractor@pdce.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: 04/08/2024

Remediation Project Number: 16260

### **COA Type**

### **Description**

<b><u>COA Type</u></b>	<b><u>Description</u></b>
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**

403662902	FORM 27-SUPPLEMENTAL-SUBMITTED
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Total Attach: 1 Files

## **General Comments**

### **User Group**

### **Comment**

### **Comment Date**

<b><u>User Group</u></b>	<b><u>Comment</u></b>	<b><u>Comment Date</u></b>
		Stamp Upon Approval

Total: 0 comment(s)