

State of Colorado
Energy & Carbon Management Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

403739638

Receive Date:

04/04/2024

Report taken by:

Laurel Anderson

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29948 Initial Form 27 Document #: 403423698

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: WELL	Facility ID:	API #: 123-14554	County Name: WELD
Facility Name: BRIGGS AGGREGATE 1-25		Latitude: 40.016944	Longitude: -104.841111
		** correct Lat/Long if needed: Latitude: 40.017041	Longitude: -104.841218
QtrQtr: SESW	Sec: 25	Twp: 1N	Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 327357	API #:	County Name: WELD
Facility Name: BRIGGS AGGREGATE-61N67W 25SESW		Latitude: 40.016979	Longitude: -104.841401
		** correct Lat/Long if needed: Latitude: 40.016775	Longitude: -104.841505
QtrQtr: SESW	Sec: 25	Twp: 1N	Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASEFacility ID: 485096API #:County Name: WELD

Facility Name: Briggs Aggregate 1-25Latitude: 40.016751Longitude: -104.841125

** correct Lat/Long if needed: Latitude:Longitude:

QtrQtr: SESWSec: 25Twp: 1nRange: 67WMeridian: 6Sensitive Area? Yes

Facility Type: SPILL OR RELEASEFacility ID: 485126API #:County Name: WELD

Facility Name: Briggs Aggregate 1-25 - Sales LineLatitude: 40.018607Longitude: -104.843987

** correct Lat/Long if needed: Latitude:Longitude:

QtrQtr: NWSWSec: 25Twp: 1NRange: 67WMeridian: 6Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Residential / Commercial

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

Tank Battery: Nearest Well: Monitoring / Sampling - 81' SE; Surface Water: Freshwater pond - 366' N; Occupied Building: 202' W; Livestock: 202' W; FWS Wetlands: 235' S Freshwater Emergent Wetland (PEM1C); 100-Year Floodplain 190' SSE of Tank Battery.

Wellhead (Briggs Aggregate 1-25): Monitoring / Sampling - 149' S; Surface Water: Freshwater pond - 279' NNW; Occupied Building: 298' WSW; Livestock: 298' WSW; FWS Wetlands: 293' ESE Freshwater Emergent Wetland (PEM1C); 100-Year Floodplain 275' NE of Wellhead.

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

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Between August 24 and 30, 2023, field screening and confirmation soil sampling activities were conducted in accordance with the ECMC Rule 911 during the decommissioning of the Briggs Aggregate 1-25 tank battery (TB), wellhead (WH), and associated flowline (Figures 1-4). Based on the initial analytical results, it was determined that two separate historic releases were discovered below former separator dump-line (SEP-DL) and below a bend in the gas sales line (SL). Following the discovery, mitigation activities were initiated to delineate and remove remaining hydrocarbon impacts below the former SEP-DL and SL. Approximately 1,329 CY have been removed from the SEP-DL excavation and approximately 9 CY have been removed from the SL excavation. Additionally, approximately 3 CY of potentially impacted material were removed beneath the above ground storage tanks (ASTs) onsite and approximately 9 CY of potentially impacted material were removed adjacent to the wellhead. A total of 1,341 CY of material were removed from this location and transported to North Weld Waste Management Facility, Buffalo Ridge Waste Management Facility, Front Range Landfill, and Republic Services facility for disposal under PDC manifests. Due to site access and time constraints, source mass removal activities were discontinued at the SL location. During excavation activities, groundwater was encountered in the SEP-DL excavation at approximately 10 feet bgs and during confirmation soil sampling activities at the SL at approximately 17 feet bgs. Consequently, groundwater vacuum recovery was conducted concurrent with excavation activities at the SEP-DL. A total of 3,990 barrels (bbls) of impacted groundwater were removed from the location and transported to the NGL C1 and C6 facilities for disposal under PDC waste 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 28 and September 5, 2023, three soil samples (SEP01-DL-N, SEP01-DL-B, & WC03) were collected from impacted source material adjacent to the SEP-DL at depths of approximately 3 feet, 6 feet, & 12 feet bgs, respectively. The soil samples were submitted for laboratory analysis of the full COGCC Table 915-1 analytical suite. Final analytical results indicated that site specific COCs include BTEXN, 1,2,4-TMB, 1,3,5-TMB, TPH(C6-C36), Table 915-1 PAHs (excluding anthracene, benzo(k)fluoranthene, & dibenzo(A,H)anthracene), & cadmium. Between August 30 & September 19, 2023, thirty-two (32) soil samples (SS01-SS12, SS14-SS16, SS18-SS29, & SS31-SS35) were collected from the sidewalls and base of the excavation at depths ranging between 6 feet & 13 feet bgs and were submitted for the aforementioned COC list. Laboratory analytical results indicated that organic compound concentrations were below the applicable Table 915-1 POG SSLs in all samples collected from the final excavation extent.

Proposed Groundwater Sampling

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

On August 30, 2023, groundwater was encountered in the SEP-DL excavation at approximately 10 feet bgs. On September 21, 2023, groundwater was encountered in the SL test pit at approximately 17 feet bgs. Consequently, one groundwater sample (GW01) was collected from the SEP-DL excavation, and one groundwater sample (GW02) was collected from the SL test pit. Both samples were submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB. Analytical results for GW01 indicated that organic compounds were observed in exceedance of the applicable Table 915-1 Standards. Analytical results for GW02 indicated that all analyzed constituents were below the applicable Table 915-1 Standards. The groundwater sample locations are illustrated on Figure 3 and Figure 5 and the analytical results are summarized on Table 5.

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):

On August 30, 2023, two soil samples (SL01-06-S & SL01-06-B) were collected from impacted source material adjacent to the SL at depths of approximately 6 feet and 7 feet bgs, respectively. The soil samples were submitted for laboratory analysis of the Table 915-1 organic compounds in soil (BTEXN, 1,2,4-TMB, 1,3,5-TMB, TPH(C6-C36) and PAHs). Final analytical results indicated that site specific COCs include BTEXN, 1,2,4-TMB, 1,3,5-TMB, TPH(C6-C36), benzo(b)fluoranthene, fluorene, pyrene, 1-M, and 2-M. The above requested COC list was limited to Table 915-1 organic compounds in accordance with Rule 915.E.(2).C. guidance of the released E&P waste being oil. Following initial mitigation activities, one test pit (TP05) was advanced at the location of the release and one soil sample (TP05) was collected at approximately 16 feet bgs and submitted for the aforementioned COCs. Analytical results indicated organic concentrations were in exceedance of applicable Table 915-1 standards.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 72

Number of soil samples exceeding 915-1 15

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

Approximate areal extent (square feet) 3500

NA / ND

-- Highest concentration of TPH (mg/kg) 4070

-- Highest concentration of SAR 4.19

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 16

Groundwater

Number of groundwater samples collected 2

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 10

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 26

-- Highest concentration of Toluene (µg/l) 20

-- Highest concentration of Ethylbenzene (µg/l) 89

-- Highest concentration of Xylene (µg/l) 370

NA 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 24 and September 19, 2023, nine (9) soil samples (BKG01-BKG03) were collected from native material adjacent to the former tank battery locations and were submitted for laboratory analysis of the Table 915-1 metals. Analytical results indicated that arsenic, barium, cadmium, lead, selenium, and silver were in exceedance of the applicable table 915-1 standards in native material.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 1341

Volume of liquid waste (barrels) 3990

☒ Is further site investigation required?

Eight (8) groundwater monitoring wells will be installed to delineate dissolved-phase hydrocarbon impacts within and surrounding the SEP-DL excavation extent. VOC concentrations using a PID and lithologic descriptions will be recorded for each borehole. If elevated VOC concentrations are encountered during the investigation, a sample will be collected from the interval exhibiting the highest VOC concentration from the borehole and submitted for laboratory analysis of the ECMC approved SEP-DL release COCs. Proposed monitoring well locations are illustrated on Figure 8.

Additionally, analytical results indicated organic exceedances in soil borings SB01, SB04, SB05, SB07, SB08, SB10-SB14. As such, up to nine (9) additional soil borings will be advanced to vertically and horizontally delineate the hydrocarbon impacts. Proposed soil boring locations are illustrated on Figure 9.

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 24 and September 19, 2023, a total of 1,341 CY of material were removed from this location and transported to North Weld Waste Management Facility, Buffalo Ridge Waste Management Facility, Front Range Landfill, and Republic Services facility for disposal under PDC manifests. Additionally, A total of 3,990 barrels (bbls) of impacted groundwater were removed from the location and transported to the NGL C1 and C6 facilities for disposal under PDC waste manifests. Any future hydrocarbon impacted material removed will be transported off-site to a licensed disposal facility in accordance with Rules 905 and 906.

During initial site investigative activities, soil impacts in exceedance of the applicable Table 915-1 SSLs were discovered at the SL excavation at 16 feet bgs and in the vicinity of active third-party infrastructure. Due to the depth of the remaining impacts and proximity of active infrastructure, source mass removal activities were discontinued. Between November 20 & 22, 2023, fourteen (14) soil borings were advanced to vertically and horizontally delineate hydrocarbon impacts. Volatile organic compound (VOC) concentrations using a photoionization detector (PID) and lithologic descriptions were recorded for each borehole. Soil samples were collected from each soil boring at the highest observed VOC concentration, and at the terminus of each borehole and submitted for laboratory analysis of the proposed COCs at the SL. Soil boring locations are illustrated on Figure 7. A remediation strategy for the SL release location will be determined following review of site investigation analytical results.

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.

During initial decommissioning activities conducted between August 24 & September 19, 2023, soil encountered on-site and below production equipment was visually inspected and field screened for VOC concentrations using a PID. Per the approved proposed soil sampling plan, one soil sample (SEP01-FL) was collected beneath the flowline riser at the separator, one soil sample (SLR01) was collected beneath the sales flowline riser, and five soil samples (SL01-03, SL01-05, & SL01-07) and were submitted for analysis of BTEX, N, 1,2,4-TMB, 1,3,5-TMB, and TPH.

Due to elevated PID readings observed below the wellhead, approximately 9 CY of impacted material was removed from the location and disposed under a PDC waste manifest. Two soil samples (WH01-W & WH01-B) were collected at approximately 4 ft & 6 ft bgs from the wellhead excavation base and sidewall which exhibited the highest PID reading. Due to elevated PID readings observed below the AST, approximately 3 CY of impacted material was removed from the location and disposed under a PDC waste manifest. Two soil samples (AST01-N & AST01-B) were collected at approximately 2 ft & 4 ft bgs from the AST excavation base and sidewall which exhibited the highest PID reading. Soil samples from the two excavations were submitted for laboratory analysis of the Full 915-1 analytical suite. Analytical results indicated all organic, inorganic, and metal compound concentrations were below Table 915-1 standards or background concentrations in the aforementioned decommissioning samples.

Between November 20 & 22, 2023, fourteen (14) soil borings (SB01-SB14) were advanced to vertically and horizontally delineate hydrocarbon impacts. Soil samples were collected from each soil boring at the highest observed VOC concentration, and at the borehole terminus and submitted for laboratory analysis of the proposed COCs at the SL. Analytical results indicated organic exceedances in soil borings SB01, SB04, SB05, SB07, SB08, SB10-SB14.

Soil Remediation Summary

☐ In Situ

☒ Ex Situ

Bioremediation (or enhanced bioremediation)

Yes Excavate and offsite disposal

Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) 1341

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

_____ 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.

Based on the analytical data collected during source mass removal activities, PDC will conduct quarterly groundwater monitoring at the eight proposed monitoring wells until closure criteria are met. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB by EPA Method 8260B, as well as total dissolved solids (TDS), chlorides, and sulfates in accordance with Table 915-1.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☒ Quarterly☐ Semi-Annually☐ Annually☒ Other

Confirmation Sample Summary, Supplemental Site Investigation Proposal, 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 Confirmation Sample Summary, Supplemental Site Investigation Proposal, 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.

- SEP-DL release: Investigation and delineation has been completed in soil.
- Monitoring wells will be installed, and groundwater will be monitored.
- SL Release: Additional organic delineation activities are needed.
- 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 1341

E&P waste (solid) description Hydrocarbon impacted soils

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: North Weld Waste Management

Volume of E&P Waste (liquid) in barrels 3990

E&P waste (liquid) description Hydrocarbon impacted groundwater

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: NGL C1, C6

REMEDATION COMPLETION REPORT

REMEDATION 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 wellhead and tank battery decommissioning and source mass removal activities, the location will be backfilled, compacted, and re-contoured to match preexisting 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. 08/24/2023

Proposed date of completion of Reclamation. 11/28/2028

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. 03/13/2023

Actual Spill or Release date, or date of discovery. 08/29/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/26/2023

Proposed site investigation commencement. 04/14/2024

Proposed completion of site investigation. 09/30/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/24/2023

Proposed date of completion of Remediation. 11/22/2028

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

Between November 20 & 22, 2023, supplemental site investigation activities were conducted to delineate historic hydrocarbon impacts along the Sales Line at the source area. Fourteen soil borings (SB01-SB14) were advanced adjacent to the sales line source area and submitted for the ECMC approved list of COCs (Document No. 403725936). Based on the analytical results, soil borings (SB01, SB04, SB05, & SB07) located in the vicinity of the gas sales line release exhibited staining, elevated PID readings, and organic compound exceedances at depths ranging between 16 feet to 20 feet below ground surface (bgs). During the site investigation, soil borings (SB08, SB10-SB14) located south of the release location, exhibited staining, elevated PID readings, and higher TPH concentrations at deeper intervals.

Additionally, the previous Supplemental Form 27 contained six COAs which have been addressed as follows:

To address the first two COAs issued on the previously approved Supplemental Form 27 (Document No. 403725936), a review of the historical satellite imagery was conducted to determine if the BKG03 location was disturbed or undisturbed. Based off of the review, it was determined that the BKG03 location was undisturbed. Please see Attachment D for a brief review of historical satellite imagery for location BKG03. Based on this evidence, BKG03 was collected from undisturbed native material on-site and is applicable to the native concentrations of metals.

"Per Form 19s (Doc #403598295) for Spill ID #485126 (Briggs Aggregate 1-25 - Sales Line Release): "PDC is investigating to confirm the release source." On the subsequent Supplemental Form 27 Operator shall provide an update on the source of the historic release discovered at the sales line."

The above request for a source is still being investigated, however, one confirmed source is the bend in the gas sales line north of the meter house.

"During soil boring and monitoring well installation at the Separator DL release (Spill ID 485096), Operator shall collect confirmation soil samples from the interval(s) displaying the highest degree of impacts or in the absence of apparent impacts from the interval in which organic compounds were previously detected or the soil-groundwater interface from each boring during monitoring well installation."

Monitoring well installation is pending and PDC will adhere to the above COA during monitoring well installation at the separator dump line release.

Additionally, the establishment of a monitoring well network will be proposed following delineation and additional supplemental source mass removal activities at the sales line release.

To address the final COA issued on the previously approved Supplemental Form 27, the Spill IDs 485096 & 485126 have been included in this report along with selecting Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912 and Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.

Following the approval of this form and landowner approval, PDC will conduct a supplemental site investigation to further delineate the hydrocarbon exceedances observed at the gas sales line location. Additionally, PDC will install and conduct quarterly groundwater monitoring at the eight proposed monitoring wells at the SEP-DL release.

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: Remediation Advisor

Submit Date: 04/04/2024

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: Laurel Anderson

Date: 08/09/2024

Remediation Project Number: 29948

<u>COA Type</u>	<u>Description</u>
	<p>Groundwater is unclassified and therefore must be protected for all uses. Concentrations of benzo(a)anthracene, fluorene, 1-Methylnaphthalene and 2-Methylnaphthalene exceeded the Table 915-1 Groundwater Protection Soil Screening Level and were in contact with groundwater therefore Operator shall include benzo (a)anthracene, fluorene, 1-Methylnaphthalene, 2-Methylnaphthalene in their quarterly groundwater monitoring in addition to the previously proposed contaminants of concern.</p> <p>The applicable Water Quality Control Commission Regulation 41 standard for benzo (a)anthracene is 0.0048 micrograms per liter, Regulation 41 Table A Ground Water Organic Chemical Standards.</p> <p>The applicable Water Quality Control Commission Regulation 41 standard for fluorene is 280 micrograms per liter, Regulation 41 Table A Ground Water Organic Chemical Standards.</p> <p>There is no numerical standard in WQCC Regulation 41 for 1-Methylnaphthalene or 2-Methylnaphthalene. Therefore, in order for the Operator to achieve project closure pursuant to Rule 913.h.(3), ECMC implements a narrative groundwater quality standard for 1-Methylnaphthalene and 2-Methylnaphthalene. The narrative groundwater quality standards are taken from the EPA Regional Screening Levels (RSLs) for Tapwater, as incorporated by reference in Rule 901.b, tables for Target Risk ("TR") = 1x10-6 and Target Hazard Quotient ("THQ")=0.1.</p> <p>The EPA RSL for Tapwater, and resultant narrative groundwater quality standard, for 1-Methylnaphthalene is 1.1 µg/l (0.0011 mg/l).</p> <p>The EPA RSL for Tapwater, and resultant narrative groundwater quality standard, for 2-Methylnaphthalene is 3.6 µg/l (0.0036 mg/l).</p>
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.

<u>Att Doc Num</u>	<u>Name</u>
403739638	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403740660	SOIL SAMPLE LOCATION MAP
403740662	SITE INVESTIGATION PLAN
403740665	PHOTO DOCUMENTATION
403740674	LOGS
403740676	OTHER
403740679	SOIL SAMPLE LOCATION MAP
403740682	SOIL SAMPLE LOCATION MAP
403740683	SITE INVESTIGATION PLAN
403740709	SOIL SAMPLE LOCATION MAP
403740710	SOIL SAMPLE LOCATION MAP
403740711	SOIL SAMPLE LOCATION MAP
403740723	SOIL SAMPLE LOCATION MAP
403740733	ANALYTICAL RESULTS
403884221	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 15 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	<p>Separator Dumpline - Spill ID 485096 - Analyze groundwater samples for: 1-Methylnaphthalene, 2-Methylnaphthalene and benzo(a)anthracene in addition to full Table 915-1 Contaminants of concern (WC03@12' exceeded the respective Table 915-1 protection of groundwater soil screening levels for the above contaminants of concern and was in contact with shallow groundwater)</p> <p>Sales Line - Spill ID 485096 - Analyze groundwater samples for: 1-Methylnaphthalene, 2-Methylnaphthalene and fluorene in addition to full Table 915-1 Contaminants of concern (Multiple samples exceeded the respective Table 915-1 protection of groundwater soil screening levels for one or more of the contaminants of concern listed above and were in contact with shallow groundwater)</p>	08/09/2024

Total: 1 comment(s)