

State of Colorado Oil and Gas Conservation Commission

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



Document Number:

401230277

Receive Date:

03/10/2017

Report taken by:

RICK ALLISON

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 COGCC 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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 SHERMAN STREET - STE 3000</u>		Phone: <u>(303) 860-5800</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>Karen Olson</u>	Email: <u>Karen.Olson@pdce.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 10072 Initial Form 27 Document #: 401218426

PURPOSE INFORMATION

- | | |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination | <input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste | <input type="checkbox"/> Rule 906.c.: Director request |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input type="checkbox"/> Other _____ |

SITE INFORMATION

Y Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: <u>TANK BATTERY</u>	Facility ID: <u>446866</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Carlson 33</u>		Latitude: <u>40.493393</u>	Longitude: <u>-104.592685</u>
		** correct Lat/Long if needed: Latitude: <u>40.493460</u>	Longitude: <u>-104.592760</u>
QtrQtr: <u>SWSE</u>	Sec: <u>7</u>	Twp: <u>6N</u>	Range: <u>64W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>448023</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>State 6525 13-32</u>		Latitude: <u>40.440500</u>	Longitude: <u>-104.467290</u>
		** correct Lat/Long if needed: Latitude: <u>40.440500</u>	Longitude: <u>-104.467290</u>
QtrQtr: <u>NWSW</u>	Sec: <u>32</u>	Twp: <u>6N</u>	Range: <u>63W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>448350</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Foe 33-20</u>		Latitude: <u>40.468490</u>	Longitude: <u>-104.564910</u>
		** correct Lat/Long if needed: Latitude: <u>40.468490</u>	Longitude: <u>-104.564910</u>
QtrQtr: <u>NWSE</u>	Sec: <u>20</u>	Twp: <u>6N</u>	Range: <u>64W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type:	SPILL OR RELEASE	Facility ID:	448351	API #:		County Name:	WELD					
Facility Name:		State 13,14-16		Latitude:	40.480500	Longitude:	-104.564140					
				** correct Lat/Long if needed: Latitude:		Longitude:						
QtrQtr:		SWSW	Sec:	16	Twp:	6N	Range:	64W	Meridian:	6	Sensitive Area?	Yes

Facility Type:	SPILL OR RELEASE	Facility ID:	448365	API #:		County Name:	WELD					
Facility Name:		Wells Ranch 23-11		Latitude:	40.412350	Longitude:	-104.406450					
				** correct Lat/Long if needed: Latitude:		Longitude:						
QtrQtr:		NESW	Sec:	11	Twp:	5N	Range:	63W	Meridian:	6	Sensitive Area?	Yes

SITE CONDITIONS

General soil type - USCS Classifications	SM	Most Sensitive Adjacent Land Use	Various
Is domestic water well within 1/4 mile?	Yes	Is surface water within 1/4 mile?	No
Is groundwater less than 20 feet below ground surface?	No		

Other Potential Receptors within 1/4 mile

Various

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
No	SOILS	No impacted material encountered.	Site investigation and 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.

Following the discovery of the produced water releases, the dump lines were shut-in and the produced water vessels were bottomed out. The produced water production lines and tank drains will remain shut-in until the vessels are repaired. A limited sub-surface investigation was conducted at each site following the release. Between five and six soil borings were advanced adjacent to the release location and outside of secondary containment. Soil analytical data is summarized in the attached analytical tables. Soil boring locations are illustrated on the attached figures.

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):

During vessel repair activities, soil encountered around the vessel will be field screened for volatile organic compound (VOC) concentrations using photoionization detector (PID). One soil sample will be collected below the produced water vessel and submitted to Summit Scientific Laboratories for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260B, and TPH - diesel range organics (DRO) by EPA Method 8015.

Proposed Groundwater Sampling

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

Proposed Surface Water Sampling

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

Additional Investigative Actions

☐ Additional alternative investigative actions described in attached Site Investigation Plan (summary):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 27

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 100

NA / ND

ND Highest concentration of TPH (mg/kg)

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 8

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 910-1

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 910-1

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?

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

Volume of solid waste (cubic yards)

Volume of liquid waste (barrels)

☐ Is further site investigation required?

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Any soil impacted above COGCC Table 910-1 standards will be removed from the excavation area and a site-specific remediation work plan will be submitted via Form 27.

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.

The produced water production line and tank drain will remain shut in until the tank may be repaired. PDC will repair and replace or remove the vessel from service within approximately one year of the release date. Corrective actions specific to this release will be established upon vessel repair and final determination of the root cause. Upon repair of the vessel, field screening for volatile organic compound (VOC) concentrations below the vessel will be conducted. Should hydrocarbon impacts be encountered during the repair, additional sampling and reporting will be conducted in accordance with COGCC 900 Series regulations. If the produced water vessel is removed from service, a confirmation soil or groundwater sample will be collected below the vessel in accordance with COGCC Rule 905.b. Should laboratory data indicate organic compound concentrations and geochemical parameters are in compliance with COGCC Table 910-1 standards, a Produced Water Vessel Closure Request will be submitted under Blanket Remediation #9440.

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 COGCC 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.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other _____

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report
☐ Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? _____

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 _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No _____

Do all soils meet Table 910-1 standards? _____

Does the previous reply indicate consideration of background concentrations? _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? _____

Does Groundwater meet Table 910-1 standards? _____

Is additional groundwater monitoring to be conducted? _____

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 vessel repair activities, the excavation will be backfilled, compacted, and re-contoured to match pre-existing conditions. If the facility is decommissioned, the location will be reclaimed in accordance with COGCC Rule 1004.

Is the described reclamation complete? _____

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

☐ Interim? ☐ Final?

Did the Surface Owner approve the seed mix? _____

If NO, does the seed mix comply with local soil conservation district recommendations? _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/13/2016

Date of commencement of Site Investigation. 10/13/2016

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/07/2017

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

In accordance with the COA directive, analytical data and site figures have been uploaded for the five release locations.

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 EHS Manager

Submit Date: 03/10/2017

Email: Karen.Olson@pdce.com

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

COGCC Approved: RICK ALLISON

Date: 03/23/2017

Remediation Project Number: 10072

COA Type**Description**

--	--

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**

2615511	SITE MAP
401230277	FORM 27-SUPPLEMENTAL-SUBMITTED
401230301	ANALYTICAL RESULTS
401230305	SITE MAP
401230315	SITE MAP
401230317	ANALYTICAL RESULTS
401230327	ANALYTICAL RESULTS
401230333	SITE MAP
401230354	ANALYTICAL RESULTS
401230371	ANALYTICAL RESULTS
401230374	SITE MAP

Total Attach: 11 Files

General Comments**User Group****Comment****Comment Date**

Environmental	COGCC replaced corrupt file attachment for the Carlson 33 location.	03/23/2017
---------------	---	------------

Total: 1 comment(s)