FORM
27
Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Document Number: 401932449
Receive Date: 02/21/2019
Report taken by: RICK ALLISON

Site Investigation and Remediation Workplan (Initial 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 INFORMATON

Name of Operator: PDC ENERGY INC Operator No: 69175
Address: 1775 SHERMAN STREET - STE 3000
City: DENVER State: CO Zip: 80203
Contact Person: Karen Olson Email: Karen.Olson@pdce.com

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 12694 Initial Form 27 Document #: 401932449

PURPOSE INFORMATION

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

SITE INFORMATION

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

Facility Type: LOCATION Facility ID: 302219 API #: County Name: WELD
Facility Name: ROTHARMEL-67N66W 32NWNW Latitude: 40.536720 Longitude: -104.810330
** correct Lat/Long if needed: Latitude: 40.537052 Longitude: -104.810122
QtrQtr: NWNW Sec: 32 Twp: 7N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 305550 API #: County Name: WELD
Facility Name: WELLS RANCH-66N63W 15NESE Latitude: 40.484280 Longitude: -104.416560
** correct Lat/Long if needed: Latitude: 40.482678 Longitude: -104.418021
QtrQtr: NESE Sec: 15 Twp: 6N Range: 63W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 309884 API #: County Name: WELD
Facility Name: COOK-66N63W 20SWSE Latitude: 40.466310 Longitude: -104.458640
** correct Lat/Long if needed: Latitude: 40.465962 Longitude: -104.460438
QtrQtr: SWSE Sec: 20 Twp: 6N Range: 63W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 446712 API #: County Name: WELD

Facility Name: Etter 30-32 Latitude: 40.453563 Longitude: -104.831483

** correct Lat/Long if needed: Latitude: 40.453610 Longitude: -104.831525

QtrQtr: SESW Sec: 30 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 447151 API #: County Name: WELD

Facility Name: Grady Dyer 14 Latitude: 40.513857 Longitude: -104.583232

** correct Lat/Long if needed: Latitude: 40.513892 Longitude: -104.583263

QtrQtr: NWSW Sec: 5 Twp: 6N Range: 64W 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? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

Various.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
- [x] Produced Water
- [ ] Oil
- [ ] 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
No	SOILS	No impacted material encountered.	Site investigation and confirmation 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.

As required by COGCC Rule 905.B, a soil sample will be collected when buried or partially buried produced water vessels are removed from service. One soil sample will be collected below the removed water vessel and submitted for laboratory analysis of identified Table 910-1 chemicals-of-concern (COC's) which include benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) – gasoline range organics (GRO), TPH – diesel range organics (DRO), electrical conductivity (EC), and pH. The soil sample will be analyzed for sodium adsorption ratio (SAR) should initial EC concentrations exceed Table 910-1 soil standards. Excavation sidewalls will be field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Should elevated PID readings be observed on the excavation sidewalls, soil samples will be collected and analyzed for the above referenced organic and inorganic compounds. If shallow groundwater is encountered during the produced water vessel removal, a groundwater sample will be collected and submitted for laboratory analysis of BTEX.

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):

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 8

Number of soil samples exceeeding 910-1 0

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

Approximate areal extent (square feet) 100

NA / ND

-- Highest concentration of TPH (mg/kg) 109

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 6

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

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

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

As previously described, the confirmation soil samples collected from the final extent of the excavation indicated that hydrocarbon impacts were not encountered during the removal of the produced water vessel.

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.

No impacts were encountered during the removal of the produced water vessels.

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.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Produced Water Vessel Closure

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

☒ Other Produced Water Vessel Closure

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

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:

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 excavation activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The facility was decommissioned, and the location will be reclaimed in accordance with the COGCC 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 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). 01/07/2019

Date of commencement of Site Investigation. 01/07/2019

Date of completion of Site Investigation. 01/31/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 01/07/2019

Date of completion of Remediation. 01/31/2019

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

PDC Energy is submitting site investigation details for the following locations: Wells Ranch 34-15; Etter 30-33; Grady Dyer 14, 23-5; Cook 34-20; and Rotharmel 11, 21-32.

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 Program Manager

Submit Date:` 02/21/2019 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: 03/11/2019

Remediation Project Number: 12694

COA Type	Description
	Based on the information presented, it appears that no further action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required. In addition, the surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. Operator is directed to submit a Form 27 Supplemental Report to request project closure.

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
401932449	FORM 27-INITIAL-SUBMITTED
401940348	SITE INVESTIGATION REPORT
401940351	SITE INVESTIGATION REPORT
401940383	SITE INVESTIGATION REPORT
401940397	SITE INVESTIGATION REPORT
401940436	SITE INVESTIGATION REPORT

Total Attach: 6 Files

General Comments

User Group	Comment	Comment Date
Environmental	Returned to Draft: Operator is directed to emove the McIntosh facility (331978) and its attachment from this Form 27. Submit a separate, single site From 27 for the McIntosh spill (Spill ID 461665) that includes both the initial sampling results from January 11 showing compliance and the site investigation results from the release excavation to date.	02/21/2019
Environmental	Changed related Location ID 302216 to 302219, where Lat/Lon provided by Operator plots Changed related Location ID 331672 to 446712, where Lat/Lon provided by Operator plots	02/21/2019

Total: 2 comment(s)