

State of Colorado Oil and Gas Conservation Commission

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401198354

Receive Date:

01/31/2017

Report taken by:

PETER GINTAUTAS

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 #: 7595 Initial Form 27 Document #: 2232172

PURPOSE INFORMATION

- | | |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination | <input checked="" type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water |
| <input checked="" 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 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

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

Facility Type: <u>LOCATION</u>	Facility ID: <u>332811</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Korwick 6-I</u>		Latitude: <u>40.284370</u>	Longitude: <u>-104.788760</u>
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWNW</u>	Sec: <u>28</u>	Twp: <u>4N</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 CULTIVATED

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

SURFACE WATER IMMEDIATELY S OF TANK BATTERY. RES. BLDG ~805' NE. WATER WELL ~710' NW. GRNDWTR 17'.

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
	GROUNDWATER	REFER TO FIGURE 3 AND TABLE 2	GROUNDWATER SAMPLING
	SOILS	REFER TO FIGURE 2 AND TABLE 1	EXCAVATION, DIRECT PUSH DRILLING

INITIAL ACTION SUMMARY

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

A FORM 19 WAS SUBMITTED ON SEPTEMBER 5, 2012. TO DATE, NO SPILL NUMBER HAS BEEN ASSIGNED BY THE COGC. AN AERIAL MAP OF THE SITE IS INCLUDED ON FIGURE 1.

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):

quarterly monitoring of MW still underway as part on site investigation plan as submitted in initial form 27 prior to eForms.

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 0
Number of soil samples exceeding 910-1
Was the areal and vertical extent of soil contamination delineated?
Approximate areal extent (square feet)

NA / ND

 Highest concentration of TPH (mg/kg)
 Highest concentration of SAR
 BTEX > 910-1
 Vertical Extent > 910-1 (in feet)

Groundwater

Number of groundwater samples collected 5
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 15`
Number of groundwater monitoring wells installed 5
Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 12
ND Highest concentration of Toluene (µg/l)
-- Highest concentration of Ethylbenzene (µg/l) 140
-- Highest concentration of Xylene (µg/l) 230
NA 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?

NO FURTHER SITE INVESTIGATION IS REQUIRED AT THIS TIME. THE EXCAVATION EXTENTS, SOIL SAMPLE LOCATIONS, AND BOREHOLE/MONITORING WELL LOCATIONS ARE ILLUSTRATED ON FIGURE 2. SOIL ANALYTICAL RESULTS ARE SUMMARIZED ON TABLE 1, GROUNDWATER ANALYTICAL RESULTS ARE SUMMARIZED ON TABLE 2 AND THE LAB ANALYTICAL REPORTS ARE INCLUDED AS ATTACHMENT A.

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.

THE SOURCE AREA WAS PREVIOUSLY EXCAVATED AND IMPACTED MATERIAL WAS TRANSPORTED AND DISPOSED OF AS DESCRIBED IN THE FORM 19.

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.

Monitored natural attenuation (MNA) was implemented as the selected remediation strategy during the fourth quarter 2015 and will remain as the selected remediation strategy for the site through the first quarter 2017. Quarterly groundwater monitoring will continue until four consecutive quarters of monitoring data indicate BTEX concentrations are in compliance with the applicable COGCC Table 910-1 groundwater standards.

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
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.

PDC WILL CONTINUE TO SAMPLE THE FOUR MONITORING WELLS ON A QUARTERLY BASIS TO ASSESS THE DISSOLVED PHASE PETROLEUM HYDROCARBON IMPACTS IN GROUNDWATER USING USEPA METHOD 8260. GROUNDWATER SAMPLING WILL CONTINUE UNTIL FOUR CONSECUTIVE QUARTERS OF GROUNDWATER MONITORING DATA INDICATE THAT BTEX COCNETRATIONS ARE BELOW THE COGC TABLE 910-1 GROUNDWATER LIMITS.

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? 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: _____

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.

THE AREA WHERE THE EXCAVATION IS LOCATED IS USED AS AN EQUIPMENT ACCESS AREA TO THE TANK BATTERY LOCATION AND CONSISTS OF ROAD BASE. THE EXCAVATION HAS BEEN BACKFILLED AND COMPACTED WITH CLEAN MATERIAL AND THE GROUND SURFACE WAS CONTOURED TO MATCH PRE-EXISTING CONDITIONS.

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). _____

Date of commencement of Site Investigation. 08/15/2012

Date of completion of Site Investigation. 09/10/2012

REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/04/2012

Date of completion of Remediation. 10/01/2013

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

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: 01/31/2017

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: PETER GINTAUTAS

Date: 02/02/2017

Remediation Project Number: 7595

COA Type

Description

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Attachment Check List

Att Doc Num

Name

401198354	FORM 27-SUPPLEMENTAL-SUBMITTED
401198370	MONITORING REPORT

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	on Site Investigation paln tab, the check box to indicate groundwater monitoring and sampling was changed from No to Yes as a monitoring well network already in place as part of initial form 27 submittal prior to eForm supplemental.	02/02/2017
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Total: 1 comment(s)