

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:

401951505

Receive Date:

03/20/2019

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>KERR MCGEE OIL & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers
Address: <u>P O BOX 173779</u>		Phone: <u>(970) 336-3500</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Phil Hamlin</u>	Email: <u>Phil.Hamlin@Anadarko.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9644 Initial Form 27 Document #: 200439512

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 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

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

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>444847</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>		Latitude: <u>40.225381</u>	Longitude: <u>-104.727598</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SENW</u>	Sec: <u>13</u>	Twp: <u>3N</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 Agriculture

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

Water well approximately 875 feet (ft) northeast, surface water approximately 100 ft northeast, occupied building approximately 510 ft east, livestock approximately 980 ft northeast, and groundwater approximately 7 ft below ground surface (bgs).

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	See Attached Data	Groundwater Samples/Lab Analysis
Yes	SOILS	25' N-S X 35' E-W X 8' bgs	Soil Samples/Lab Analysis

INITIAL ACTION SUMMARY

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

In February 2016, a negative trend on the partially-buried produced water vessel was detected by the operator during a site visit at the HSR-63N66W/13SENW tank battery facility. Upon examination, a corrosion hole in the water dump line was discovered. The petroleum hydrocarbon impacted soil was excavated.

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 February 8 and March 17, 2016, eight soil samples were collected from the excavation base and sidewalls for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and specific conductivity (EC). Laboratory analytical results indicated that TPH, BTEX, pH, and EC concentrations and levels were in full compliance with COGCC Table 910-1 allowable levels at the extent of the excavation.

Proposed Groundwater Sampling

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

Groundwater was encountered in the excavation at approximately 7 ft bgs. On February 8, 2016, groundwater sample GW01 was collected from the excavation and submitted for BTEX analysis. Laboratory analytical results indicated sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene, toluene, and total xylenes at concentrations of 3,630 micrograms per liter (µg/L), 6,090 µg/L, and 3,200 µg/L, respectively. Following the removal of 31 barrels of impacted groundwater, a second groundwater sample (GW02) was collected excavation and submitted for analysis of BTEX. Laboratory analytical results for sample GW02 indicated that benzene, toluene, and total xylene concentrations exceeded the COGCC Table 910-1 allowable levels for benzene, toluene, and total xylenes at concentrations of 603 µg/L, 1,930 µg/L, and 3,040 µg/L, respectively. The excavation groundwater sample locations are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 1.

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 exceeding 910-1 1
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 875

NA / ND

-- Highest concentration of TPH (mg/kg) 3430
NA Highest concentration of SAR
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 7

Groundwater

Number of groundwater samples collected 44
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 7'
Number of groundwater monitoring wells installed 23
Number of groundwater samples exceeding 910-1 26

-- Highest concentration of Benzene (µg/l) 16900
-- Highest concentration of Toluene (µg/l) 19900
-- Highest concentration of Ethylbenzene (µg/l) 2870
-- Highest concentration of Xylene (µg/l) 32200
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?

Petroleum hydrocarbon impacts to groundwater were identified in the field west of the former tank battery.

☒ Were background samples collected as part of this site investigation?

A background soil sample was submitted to the laboratory and placed on hold for analysis. Laboratory analytical results indicated that pH and EC levels were compliant at the extent of the excavation; therefore, the background soil sample was not submitted for laboratory analysis.

☐ 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?

The extent of groundwater contamination has not yet been delineated. Additional monitoring wells will be installed to the west to establish points of compliance.

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.

Approximately 190 cubic yards of petroleum hydrocarbon impacted soil was transported to Buffalo Ridge Landfill in Keenesburg, Colorado, for disposal. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Approximately 31 barrels of impacted groundwater were removed from the excavation and transported to a licensed injection facility for disposal. The general site layout and excavation footprint are depicted on the Excavation Site Map provided as Figure 1.

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.

While backfilling the excavation, 800 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons.

During the December 2018 monitoring event, free product was measured in monitoring wells MW02, MW06, and MW09. Remedial options are under evaluation.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☒ Ex Situ

Yes _____ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) _____ 190

Name of Licensed Disposal Facility or COGCC Facility ID # _____ 149007

No _____ Excavate and onsite remediation

_____ Land Treatment

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Other _____

Groundwater Remediation Summary

Yes _____ Bioremediation (or enhanced bioremediation)

Yes _____ Chemical oxidation

No _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes Other _____ Groundwater Removal and
COGAC® Application

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.

Between April and November 2018, groundwater monitoring wells MW01 through MW23 were installed at the site. Boring logs with well completion diagrams are included as an attachment.

Groundwater monitoring wells MW01 through MW23 are sampled on a quarterly basis and submitted for laboratory analysis for BTEX by United States Environmental Protection Agency Method 8260C. The monitoring well locations are depicted on Figure 1. A Groundwater Elevation Contour Map generated using the December 2018 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the groundwater monitoring events are attached.

Groundwater monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

REMEDIATION 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? Yes _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

The petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 190

E&P waste (solid) description Petroleum hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels 31

E&P waste (liquid) description Petroleum hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable: 159443

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

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

Do all soils meet Table 910-1 standards? Yes _____

Does the previous reply indicate consideration of background concentrations? No _____

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? No _____

Is additional groundwater monitoring to be conducted? Yes _____

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 site was restored to its pre-release grade. The Kerr-McGee tank battery was deconstructed.

Is the described reclamation complete? No _____

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. 02/09/2016

Actual Spill or Release date, if known. 02/09/2016

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/08/2016

Date of commencement of Site Investigation. 02/08/2016

Date of completion of Site Investigation.

REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/09/2016

Date of completion of Remediation.

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Phil Hamlin

Title: Senior Environmental Rep.

Submit Date: 03/20/2019

Email: Phil.Hamlin@Anadarko.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: 03/20/2019

Remediation Project Number: 9644

COA Type

Description

	Additional monitoring well installation to gain POC are needed
	Submit reports of site investigation and progress of remediation including results of sampling and analysis on an annual basis or more often until remediation is closed.

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

401951505	FORM 27-SUPPLEMENTAL-SUBMITTED
401978552	ANALYTICAL RESULTS
401978553	LOGS
401978557	SITE MAP
401978559	GROUND WATER ELEVATION MAP

Total Attach: 5 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
--	--	---------------------

Total: 0 comment(s)