

State of Colorado Oil and Gas Conservation Commission

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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@oxy.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9670Initial Form 27 Document #: 200439560

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>LOCATION</u>	Facility ID: <u>318952</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>WARNER-62N66W 24NWNE</u>		Latitude: <u>40.128030</u>	Longitude: <u>-104.720690</u>
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWNE</u>	Sec: <u>24</u>	Twp: <u>2N</u>	Range: <u>66W</u>
Meridian: <u>6</u>		Sensitive Area? <u>Yes</u>	

SITE CONDITIONS

General soil type - USCS Classifications SCMost Sensitive Adjacent Land Use Non-Crop LandIs domestic water well within 1/4 mile? YesIs surface water within 1/4 mile? YesIs groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

A livestock pen is located approximately 1,075 feet northwest of the release location. A building is located approximately 1,125 feet northwest of the release location.

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 sampling and laboratory analysis
Yes	SOILS	70' (N-S) x 60' (E-W) x 26' bgs	Soil boring, soil sampling, and laboratory 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.

Between March 13 and 15, 2013, a Limited Phase II Site Assessment was conducted at the Warner 1 production facility. Historical petroleum hydrocarbon impacts to soil and groundwater were discovered during this investigation, and groundwater was encountered in soil borings at approximately 26 feet below ground surface (bgs). The Colorado Oil and Gas Conservation Commission (COGCC) has issued Spill/Release Point ID 2232616 for this release.

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 March 2013 and April 2014, soil samples were collected during the Limited Phase II Site Assessment and subsequent soil boring activities, as described in the Initial Form 27 (COGCC Doc. No. 2526257). Based on the subsurface soil assessment, impacted soil remained at the site adjacent to soil boring locations SB02, SB03, and SB07.

Between September 11 and October 23, 2019, the impacted soil was excavated. Sixty-two soil samples were collected from the excavation for analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and naphthalene. The base soil samples were also analyzed for pH, specific conductivity (EC), and sodium adsorption ratio (SAR). Laboratory results indicated the samples 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):

Between March 13, 2013 and February 11, 2019, twenty-three (23) temporary monitoring wells (SB01 - SB18, SB03R, SB04R, SB04R2, SB05R, SB06R) were installed to assess the extent of groundwater impacts. Quarterly groundwater monitoring was initiated on August 5, 2013. The groundwater monitoring wells were removed from the site prior to the September 2019 excavation activities and reinstalled in May and June 2020 following completion of excavation activities. Groundwater monitoring resumed on a quarterly basis in June 2020.

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 79

Number of soil samples exceeding 910-1 9

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

Approximate areal extent (square feet) 15300

NA / ND

-- Highest concentration of TPH (mg/kg) 3309

-- Highest concentration of SAR 37.77

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 30

Groundwater

Number of groundwater samples collected 295

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 28'

Number of groundwater monitoring wells installed 47

Number of groundwater samples exceeding 910-1 92

-- Highest concentration of Benzene (µg/l) 730

-- Highest concentration of Toluene (µg/l) 31

-- Highest concentration of Ethylbenzene (µg/l) 1160

-- Highest concentration of Xylene (µg/l) 12700

NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

0 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?

Soil impacts have been identified in off-site soil borings SB02 and SB07. Impacted groundwater has been detected in off-site temporary groundwater monitoring wells SB02, SB04R, SB07, SB08, and SB10 through SB12.

☐ 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.

In September and October 2019, approximately 6,140 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to Buffalo Ridge Landfill in Keenesburg, Colorado, for disposal. The petroleum hydrocarbon impacted soil was excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. The excavation footprint is depicted on the 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.

Between August 4 and 8, 2014, an initial round of in-situ chemical oxidation (chemox) injections was performed at temporary monitoring wells SB02, SB03, and SB09 through SB12. Chemox injections were suspended due to formation back-pressure and oxidant surfacing at SB03 and SB09. In the fourth quarter of 2014, light non-aqueous phase liquid (LNAPL) was observed in well SB07. A passive LNAPL recovery bailer was installed in well SB07; bi-weekly LNAPL gauging and recovery events were initiated on December 3, 2014 and ended prior to 2019 excavation activities. Approximately 1.8 gallons of LNAPL were removed from temporary monitoring well SB07 via LNAPL bailing.

Soil Remediation Summary

☒ In Situ

No Bioremediation (or enhanced bioremediation)

Yes Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

No Other _____

☒ Ex Situ

Yes Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) 6140

Name of Licensed Disposal Facility or COGCC Facility ID # _____

No Excavate and onsite remediation

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other _____

Groundwater Remediation Summary

No Bioremediation (or enhanced bioremediation)

Yes Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

Yes Other LNAPL Recovery _____

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.

Groundwater monitoring wells SB01R, SB02R, SB03R2, SB04R3, SB05R2, SB06R2, SB07R through SB18R, and SB19 through SB24 are sampled on a quarterly basis. The groundwater samples were submitted for analysis of BTEX by United States Environmental Protection Agency Method 8260D through the December 2020 monitoring event. Per the January 15, 2021 rule changes, groundwater samples were submitted for the full list of analytes for groundwater in Table 915-1 as of the March 2021 monitoring event. Upgradient and compliant groundwater monitoring well SB06R2 was established as a representative background sample for calculating the inorganic parameters in Table 915-1. Based on a comparison to background concentrations, point-of-compliance (POC) monitoring well SB23 was above the Table 915-1 standards for inorganic constituents during the March 2021 monitoring event. Kerr-McGee will continue to evaluate POC for Table 915-1 on a quarterly basis based on the site-specific local background concentrations. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the March 2021 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the December 2020 and March 2021 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:

Approximately 1.8 gallons of LNAPL were removed from temporary monitoring well SB07 via LNAPL bailing and transported to the Aggregate Recycle Facility in Weld County, Colorado.

Volume of E&P Waste (solid) in cubic yards 6140

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

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Buffalo Ridge Landfill in Keenesburg, Colorado

Volume of E&P Waste (liquid) in barrels 1

E&P waste (liquid) description Bailed LNAPL (1.8 gallons)

COGCC Disposal Facility ID #, if applicable: 434766

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? _____

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? 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 Kerr-McGee facility was decommissioned. The site will be reclaimed in accordance with COGCC 1000 Series Reclamation Rules.

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. _____

Actual Spill or Release date, if known. 03/25/2013

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/13/2013

Date of commencement of Site Investigation. 03/13/2013

Date of completion of Site Investigation. 09/08/2020

REMEDIAL ACTION DATES

Date of commencement of Remediation. 08/04/2014

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: 04/14/2021

Email: Phil_Hamlin@oxy.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: 04/14/2021

Remediation Project Number: 9670

Condition of Approval

COA Type

Description

	Submit reports of site investigation and progress of remediation including results of quarterly groundwater sampling and analysis on an annual basis or more often until the remediation project is closed.
1 COA	

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

402657680	FORM 27-SUPPLEMENTAL-SUBMITTED
402657696	SITE MAP
402657697	GROUND WATER ELEVATION MAP
402657720	ANALYTICAL RESULTS

Total Attach: 4 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)