

State of Colorado  
Oil and Gas Conservation Commission

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401457288  
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Report taken by:  
CHRIS CANFIELD

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: <u>KERR MCGEE OIL &amp; GAS ONSHORE LP</u>	Operator No: <u>47120</u>	<b>Phone Numbers</b>
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 #: 10773 Initial Form 27 Document #: 401457288

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 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 Facilites ( in accordance with Rule 909.c. )

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>453123</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>August Lambrecht GU #2</u>	Latitude: <u>40.068969</u>	Longitude: <u>-104.845728</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWNW</u>	Sec: <u>12</u>	Twp: <u>1N</u>	Range: <u>67W</u>
Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>		

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Agriculture and Surface Water

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 500 feet (ft) east, surface water approximately 80 ft south, livestock approximately 1,260 ft southwest, an occupied building approximately 580 ft southwest, and excavation groundwater approximately 4 ft below ground surface (bgs).

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste      | <input type="checkbox"/> Other E&P Waste             | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids             | _____                                  |
| <input checked="" type="checkbox"/> Oil            | <input type="checkbox"/> Tank Bottoms                |  |
| <input checked="" type="checkbox"/> Condensate     | <input type="checkbox"/> Pigging Waste               |  |
| <input type="checkbox"/> Drilling Fluids           | <input type="checkbox"/> Rig Wash                    |  |
| <input type="checkbox"/> Drill Cuttings            | <input type="checkbox"/> Spent Filters               |  |
|  | <input type="checkbox"/> Pit Bottoms                 |  |
|  | <input type="checkbox"/> 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
No	SOILS	38ft E-W x 22ft N-S x 4ft 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.

During abandonment activities at the August Lambrecht GU #2 tank battery, historical petroleum hydrocarbon impacts were encountered beneath the partially-buried produced water vessel. The volume of the release is unknown.

## 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 ):

On September 8 and 15, 2017, seven soil samples were collected from the excavation and submitted for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and specific conductivity (EC). Analytical results indicated that BTEX, TPH, pH, and EC concentrations and levels were compliant with COGCC Table 910-1 allowable levels at the lateral extent of the excavation. The excavation dimensions and soil sample locations are depicted on the Excavation Site Map provided as Figure 1. The soil sample analytical results are summarized in Table 1.

### Proposed Groundwater Sampling

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

On September 8, 2017, one groundwater sample (GW01) was collected from the excavation and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene at 18.7 micrograms per liter (µg/L). On September 15, 2017, following the removal of approximately 80 barrels of impacted groundwater from the excavation, groundwater sample GW02 was collected for BTEX analysis. Laboratory analytical results for sample GW02 indicated that BTEX concentrations were compliant with COGCC Table 910-1 allowable levels and were less than the laboratory reporting limit of 4.00 µg/L. The excavation groundwater sample locations are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 2.

### 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 7  
Number of soil samples exceeding 910-1 0  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 836

### NA / ND

-- Highest concentration of TPH (mg/kg) 77.9  
NA Highest concentration of SAR           
BTEX > 910-1 No  
Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 2  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 4'  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 18.7  
-- Highest concentration of Toluene (µg/l) 18.6  
-- Highest concentration of Ethylbenzene (µg/l) 2.28  
-- Highest concentration of Xylene (µg/l) 16.5  
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?

A background soil sample was collected. 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?

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the residual dissolved-phase groundwater impact.

# REMEDIAL ACTION PLAN

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Based on excavation groundwater samples exceeding COGCC Table 910-1 allowable levels, approximately 80 barrels of impacted groundwater were removed from the excavation using a vacuum truck and transported to the Aggregate Recycle Facility in Weld County, Colorado. The general site layout and excavation footprint are depicted on the Excavation Site Map provided as Figure 1.

## REMEDATION 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 excavation area was backfilled and restored to its pre-release grade. The Kerr-McGee facility was abandoned.

## 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

No Bioremediation ( or enhanced bioremediation )  
 No Chemical oxidation  
 No Air sparge / Soil vapor extraction  
 Yes Natural Attenuation  
 Yes Other Groundwater Removal \_\_\_\_\_

## 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 will be installed at the site to fully define the extent and magnitude of the residual dissolved-phase groundwater impact. The monitoring wells will be surveyed to determine the groundwater flow direction. Groundwater monitoring activities will be conducted on a quarterly schedule and samples will be submitted for laboratory analysis of BTEX.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

Frequency:  Quarterly  Semi-Annually  Annually  Other \_\_\_\_\_

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? Yes

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

The petroleum hydrocarbon impacted groundwater was transported to the Aggregate Recycle Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards \_\_\_\_\_ 0

E&P waste (solid) description \_\_\_\_\_

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 80

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

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_ 434766

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.

The tank battery was abandoned and the excavation was restored to pre-release grade.

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. 09/11/2017

Actual Spill or Release date, if known. 09/11/2017

## SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/08/2017

Date of commencement of Site Investigation. 09/08/2017

Date of completion of Site Investigation. \_\_\_\_\_

## REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/11/2017

Date of completion of Remediation. \_\_\_\_\_

## SITE RECLAMATION DATES

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

## OPERATOR COMMENT

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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 HSE Representative

Submit Date: 11/30/2017

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: CHRIS CANFIELD

Date: 12/11/2017

Remediation Project Number: 10773

## COA Type

## Description

<u>COA Type</u>	<u>Description</u>

## **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

401457288	FORM 27-INITIAL-SUBMITTED
401457446	SOIL SAMPLE LOCATION MAP
401457450	ANALYTICAL RESULTS

Total Attach: 3 Files

## **General Comments**

### User Group

### Comment

### Comment Date

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)