

State of Colorado  
Oil and Gas Conservation Commission

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Document Number:  
401502037

Receive Date:  
\_\_\_\_\_

Report taken by:  
\_\_\_\_\_

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 INFORMATION

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers
Address: P O BOX 173779		
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Phillip Hamlin	Email: Phil.Hamlin@anadarko.com	
		Phone: (970) 336-3500
		Mobile: (970) 515-1161

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**

Remediation Project #: \_\_\_\_\_ Initial Form 27 Document #: 401502037

**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: SPILL OR RELEASE	Facility ID: 437084	API #: _____	County Name: WELD
Facility Name: SPILL/RELEASE POINT	Latitude: 40.017826	Longitude: -104.870207	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SESE	Sec: 27	Twp: 1N	Range: 67W    Meridian: 6    Sensitive Area? Yes

**SITE CONDITIONS**

General soil type - USCS Classifications   CL        Most Sensitive Adjacent Land Use   Crop land  

Is domestic water well within 1/4 mile?   Yes        Is surface water within 1/4 mile?   No  

Is groundwater less than 20 feet below ground surface?   Yes  

**Other Potential Receptors within 1/4 mile**

An occupied building is located approximately 300 feet southeast of the release location.

# 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 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 sampling and laboratory analysis
Yes	SOILS	55' (E-W) x 15' (N-S) x 7' bgs	Excavation, 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.

On May 1, 2014, historical impacts were discovered during tank battery removal activities at the Howard 25C-22HZ production facility. The facility was shut in, and excavation activities were initiated. Groundwater was initially encountered in the excavation at approximately 4 feet below ground surface (bgs). The COGCC has issued Spill/Release Point ID 437084 for this release. A Form 27 Site Investigation and Remediation Workplan was originally submitted to the COGCC on January 14, 2016. Please note, this eForm 27-Initial is being submitted to refile the information contained in the original Form 27 at the request of the COGCC. It only contains the information that was presented in the original January 14, 2016 Form 27.

## 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 ):

Soil samples were collected from the base and sidewalls of the final extent of the excavation area at approximately 7 feet and 5 feet bgs, respectively. The soil samples were submitted to eAnalytics Laboratory for analysis BTEX, TPH - GRO by USEPA Method 8260C, and TPH - DRO and ORO by USEPA Method 8015. Laboratory analytical results indicated that constituent concentrations in the soil samples collected from the final extent of the excavation area were in full compliance with State standards. Soils were excavated into the phreatic zone and below the initial occurrence of groundwater to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Soil sample analytical data is presented in Table 1, and soil sample locations are illustrated on Figure 1. Laboratory analytical reports are included as Attachment A.

### Proposed Groundwater Sampling

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

Groundwater was initially encountered in the excavation area at approximately 4 feet bgs. A groundwater sample (GW01) was collected from the excavation and submitted to eAnalytics Laboratory for analysis of BTEX by USEPA Method 8260. Groundwater analytical results indicated that the benzene concentration in sample GW01 was not in compliance with the State standard. Approximately 50 barrels of groundwater were subsequently removed from the excavation via vacuum truck. Groundwater did not return into the excavation following vacuum removal.

### 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 ):

Concurrent with the investigation and remediation actions described in this Site Investigation and Remediation Workplan, a partially-buried produced water sump was removed from this site as part of unrelated, separate excavation activities. This partially-buried sump removal was reported to the COGCC via eForm 4-Sundry Document Number 400848016, approved by the COGCC on September 21, 2015.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 6  
Number of soil samples exceeding 910-1 0  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 825

### NA / ND

-- Highest concentration of TPH (mg/kg) 52.2  
NA Highest concentration of SAR           
BTEX > 910-1 No  
Vertical Extent > 910-1 (in feet) 7

### Groundwater

Number of groundwater samples collected 4  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 5'  
Number of groundwater monitoring wells installed 3  
Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 311  
-- Highest concentration of Toluene (µg/l) 21.3  
-- Highest concentration of Ethylbenzene (µg/l) 5.8  
-- Highest concentration of Xylene (µg/l) 20.7  
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?

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?

On November 10, 2014, three (3) temporary groundwater monitoring wells (BH01 - BH03) were installed to further assess the extent of groundwater impacts. Quarterly groundwater monitoring was initiated on November 20, 2014, and is ongoing. The temporary groundwater monitoring wells will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with State standards for four consecutive quarters.

# REMEDIAL ACTION PLAN

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Between May 1 and 7, 2014, approximately 220 cubic yards of impacted material were excavated and transported to the Front Range Regional Landfill in Erie, Colorado. Approximately 50 barrels of impacted groundwater were removed from the excavation area via vacuum truck and transported to a licensed disposal facility.

## 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.

Laboratory data indicate that impacted soils in the excavation area were remediated to be in full compliance with State standards. Temporary groundwater monitoring wells were installed to further assess the extent of groundwater impacts. The wells will be sampled quarterly and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with State standards for four consecutive quarters. Estimated time to attain NFA is TBD based on the review of groundwater concentrations, the extent of impacted groundwater, and the efficacy of selected remedial technologies.

## Soil Remediation Summary

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 220

\_\_\_\_\_ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ 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 Vacuum truck 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.

On November 10, 2014, three temporary groundwater monitoring wells were installed to assess the extent of groundwater impacts. The temporary groundwater monitoring wells will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with State standards for four consecutive quarters. Groundwater sample locations are illustrated on Figure 2, and a potentiometric surface contour map for the Fourth Quarter 2014 is presented as Figure 3. Well completion logs for the temporary monitoring wells are included as Attachment B.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

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

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

Other Re-file of original pre-eForm Form 27 Site Investigation and Remediation Workplan

## 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:

NA

Volume of E&P Waste (solid) in cubic yards 220

E&P waste (solid) description Hydrocarbon impacted soil

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

Non-COGCC Disposal Facility: Front Range Regional Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 50

E&P waste (liquid) description Hydrocarbon impacted groundwater

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

Non-COGCC Disposal Facility: Licensed 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 site has been restored to its pre-release grade. Kerr-McGee will consult with the surface owner to determine reclamation specifics to properly conduct reclamation activities in accordance with COGCC 1000 Series 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. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/01/2014

Date of commencement of Site Investigation. 05/01/2014

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

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 05/01/2014

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: Phillip Hamlin

Title: Senior HSE Representative

Submit Date: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: \_\_\_\_\_

### COA Type

### Description

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### 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.

<u>Att Doc Num</u>	<u>Name</u>
401525261	LOGS
401525265	ANALYTICAL RESULTS
401525266	ANALYTICAL RESULTS
401525267	ANALYTICAL RESULTS
401529486	SOIL SAMPLE LOCATION MAP
401529487	GROUND WATER SAMPLE LOCATION
401529488	GROUND WATER ELEVATION MAP

Total Attach: 7 Files

### General Comments

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

Total: 0 comment(s)