

**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 &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>Phillip Hamlin</u>	Email: <u>Phil.Hamlin@anadarko.com</u>	Mobile: <u>( )</u>

**PROJECT, PURPOSE & SITE INFORMATION**

<b>PROJECT INFORMATION</b>	
Remediation Project #: <u>10557</u>	Initial Form 27 Document #: <u>401341141</u>
<b>PURPOSE INFORMATION</b>	
<input type="checkbox"/> 901.e. Sensitive Area Determination	<input 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 checked="" 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 _____
<b>SITE INFORMATION</b> <u>Y</u> Multiple Facilities ( in accordance with Rule 909.c. )	
Facility Type: <u>LOCATION</u>	Facility ID: <u>318129</u> API #: _____    County Name: <u>WELD</u>
Facility Name: <u>NORMAN YURK GAS UNIT B-62N67W 34SWNE</u>	Latitude: <u>40.097750</u> Longitude: <u>-104.873540</u>
** correct Lat/Long if needed: Latitude: <u>40.098123</u> Longitude: <u>-104.876429</u>	
QtrQtr: <u>SWNE</u> Sec: <u>34</u> Twp: <u>2N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>	
Facility Type: <u>LOCATION</u>	Facility ID: <u>328910</u> API #: _____    County Name: <u>WELD</u>
Facility Name: <u>UPRC-63N67W 1NESW</u>	Latitude: <u>40.252442</u> Longitude: <u>-104.836184</u>
** correct Lat/Long if needed: Latitude: <u>40.250430</u> Longitude: <u>-104.842496</u>	
QtrQtr: <u>NESW</u> Sec: <u>1</u> Twp: <u>3N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>	
Facility Type: <u>LOCATION</u>	Facility ID: <u>331745</u> API #: _____    County Name: <u>WELD</u>
Facility Name: <u>RUSCH-63N67W 15SWSE</u>	Latitude: <u>40.219598</u> Longitude: <u>-104.875230</u>
** correct Lat/Long if needed: Latitude: <u>40.221676</u> Longitude: <u>-104.874139</u>	
QtrQtr: <u>SWSE</u> Sec: <u>15</u> Twp: <u>3N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>	

Facility Type: LOCATION	Facility ID: 331909	API #:	County Name: WELD
Facility Name: SHAKLEE-62N65W 25NENE	Latitude: 40.115500	Longitude: -104.604440	
** correct Lat/Long if needed: Latitude: 40.116392		Longitude: -104.603612	
QtrQtr: NENE	Sec: 25	Twp: 2N	Range: 65W Meridian: 6 Sensitive Area? Yes
Facility Type: LOCATION	Facility ID: 336082	API #:	County Name: WELD
Facility Name: CHARLES W. LEITZ UNIT-63N67W 23SESW	Latitude: 40.206610	Longitude: -104.861540	
** correct Lat/Long if needed: Latitude: 40.206009		Longitude: -104.861243	
QtrQtr: SESW	Sec: 23	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 443616	API #:	County Name: WELD
Facility Name: Cannon Red W 3-11, 12 battery 3NWSW	Latitude: 40.165314	Longitude: -104.771114	
** correct Lat/Long if needed: Latitude: 40.162978		Longitude: -104.770126	
QtrQtr: NWSW	Sec: 3	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 443623	API #:	County Name: WELD
Facility Name: CANNON RED W-62N66W 3NESW	Latitude: 40.165809	Longitude: -104.766315	
** correct Lat/Long if needed: Latitude: 40.162731		Longitude: -104.770302	
QtrQtr: NESW	Sec: 3	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

**SITE CONDITIONS**

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Agriculture

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

Is groundwater less than 20 feet below ground surface? No

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

NA

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> E&P Waste       | <input type="checkbox"/> Other E&P Waste                   | <input checked="" type="checkbox"/> Non-E&P Waste |
| <input type="checkbox"/> Produced Water  | <input type="checkbox"/> Workover Fluids                   | No Waste Generated _____                          |
| <input type="checkbox"/> Oil             | <input type="checkbox"/> Tank Bottoms                      |   |
| <input 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
No	GROUNDWATER	NA	Groundwater sample results provided, if applicable.
No	SOILS	Refer to Sump Closure Report	Soil sample results provided in Sump Closure Report.

## INITIAL ACTION SUMMARY

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

The objective of the soil and groundwater (if present) sampling was to determine if petroleum hydrocarbon impact to the subsurface media resulted from Kerr-McGee operating a produced water sump at the site.

## 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 sampling was conducted to determine if petroleum hydrocarbon impact to subsurface soil resulted from Kerr-McGee operating a produced water sump at the respective sites. For each sump closure site, one or more soil samples were collected for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH), pH, and specific conductivity (EC). The soil sampling activities, laboratory analytical results, and conclusions are summarized in the attached Sump Closure Reports.

### Proposed Groundwater Sampling

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

If groundwater was encountered in the sump excavation, a groundwater sample was collected and submitted for laboratory analysis of BTEX. The groundwater sampling activities are summarized in the attached Sump Closure Reports, as applicable.

### 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) 0

### NA / ND

--            Highest concentration of TPH (mg/kg) 114.3  
           5

NA            Highest concentration of SAR           

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet)           

Number of groundwater monitoring wells installed           

Number of groundwater samples exceeding 910-1           

           Highest concentration of Benzene (µg/l)           

           Highest concentration of Toluene (µg/l)           

           Highest concentration of Ethylbenzene (µg/l)           

           Highest concentration of Xylene (µg/l)           

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?

# 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.

Soil samples were collected from the sump excavation for laboratory analysis of TPH, BTEX, pH, and EC. Impacted soil, if encountered, was transported to either the Kerr-McGee Land Treatment Facility in Weld County, Colorado, or to a licensed disposal facility, as applicable. The Sump Closure Reports are attached.

## 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.

Source removal, as applicable, has been completed at the sump closure sites as summarized in the attached Sump Closure Reports. Groundwater impact was not encountered. No further action is required for these sites.

## 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  
No \_\_\_\_\_ Natural Attenuation  
No \_\_\_\_\_ 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.

NA

# REMEDATION PROGRESS UPDATE

## PERIODIC REPORTING

**Frequency:**  Quarterly  Semi-Annually  Annually  Other Water Vessel Closure

**Report Type:**  Groundwater Monitoring  Land Treatment Progress Report  O&M Report  
 Other Water Vessel Closure

## 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? Yes

Do all soils meet Table 910-1 standards? No

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? Yes

Does Groundwater meet Table 910-1 standards? Yes

Is additional groundwater monitoring to be conducted? No

## 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.

Sump closure sites have been reclaimed (interim) or are in the process of being reclaimed (final) 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. \_\_\_\_\_

### **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 02/07/2017

Date of commencement of Site Investigation. 02/07/2017

Date of completion of Site Investigation. 05/22/2017

### **REMEDIAL ACTION DATES**

Date of commencement of Remediation. \_\_\_\_\_

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: Phillip Hamlin \_\_\_\_\_

Title: Senior HSE Representative \_\_\_\_\_

Submit Date: 10/27/2017 \_\_\_\_\_

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: PETER GINTAUTAS \_\_\_\_\_

Date: 10/30/2017 \_\_\_\_\_

Remediation Project Number: 10557 \_\_\_\_\_

**COA Type****Description**

	Based on the information presented, it appears that no further action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if ground water is found to be impacted, then further investigation and/or further remediation activities may be required. In addition, the surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules.
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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.

**Att Doc Num****Name**

401419041	FORM 27-SUPPLEMENTAL-SUBMITTED
401419067	SITE INVESTIGATION REPORT
401419081	SITE INVESTIGATION REPORT
401419087	SITE INVESTIGATION REPORT
401419097	SITE INVESTIGATION REPORT
401419102	SITE INVESTIGATION REPORT
401419109	SITE INVESTIGATION REPORT
401423466	SITE INVESTIGATION REPORT

Total Attach: 8 Files

**General Comments****User Group****Comment****Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)