

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:  
401935517

Receive Date:

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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	<b>Phone Numbers</b>
Address: P O BOX 173779		Phone: (970) 336-3500
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Gregory Hamilton	Email: Gregory.Hamilton@anadarko.com	Mobile: (970) 515-1698

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**  
Remediation Project #: \_\_\_\_\_ Initial Form 27 Document #: 401935517

**PURPOSE INFORMATION**

<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 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**      Y Multiple Facilities ( in accordance with Rule 909.c. )

Facility Type: LOCATION	Facility ID: 327230	API #: _____	County Name: WELD
Facility Name: CAMP 28C-25HZ	Latitude: 40.190981	Longitude: -104.722875	
** correct Lat/Long if needed: Latitude: 40.191469		Longitude: -104.718847	
QtrQtr: SWSE	Sec: 25	Twp: 3N	Range: 66W    Meridian: 6    Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 329584	API #: _____	County Name: WELD
Facility Name: HOUSTON-63N67W 17NWNE	Latitude: 40.231810	Longitude: -104.911420	
** correct Lat/Long if needed: Latitude: 40.230319		Longitude: -104.907783	
QtrQtr: NWNE	Sec: 17	Twp: 3N	Range: 67W    Meridian: 6    Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 332637	API #: _____	County Name: WELD
Facility Name: BELL-63N66W 12SWNW	Latitude: 40.241510	Longitude: -104.732800	
** correct Lat/Long if needed: Latitude: 40.246567		Longitude: -104.733004	
QtrQtr: SWNW	Sec: 12	Twp: 3N	Range: 66W    Meridian: 6    Sensitive Area? Yes

Facility Type: TANK BATTERY	Facility ID: 426009	API #:	County Name: WELD
Facility Name: SEKICH TANK BATTERY 14-19	Latitude: 40.211015	Longitude: -104.932469	
** correct Lat/Long if needed: Latitude: 40.210732		Longitude: -104.931916	
QtrQtr: NWSE	Sec: 19	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 442155	API #:	County Name: WELD
Facility Name: DOLPH TANK BATTERY 15C-1HZ	Latitude: 40.171760	Longitude: -104.729806	
** correct Lat/Long if needed: Latitude: 40.171996		Longitude: -104.730036	
QtrQtr: NENW	Sec: 1	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 445465	API #:	County Name: WELD
Facility Name: BREWER POOLING UNIT-63N67W 36SESE	Latitude: 40.176688	Longitude: -104.832250	
** correct Lat/Long if needed: Latitude: 40.176913		Longitude: -104.832509	
QtrQtr: SESE	Sec: 36	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 446267	API #:	County Name: WELD
Facility Name: VARRA COMPANIES-63N67W 31SESW	Latitude: 40.183056	Longitude: -104.932722	
** correct Lat/Long if needed: Latitude: 40.182918		Longitude: -104.932719	
QtrQtr: SENW	Sec: 31	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 446382	API #:	County Name: WELD
Facility Name: BENJAMIN TRUNZO GAS UNIT- 62N67W 13NWNE	Latitude: 40.142812	Longitude: -104.835677	
** correct Lat/Long if needed: Latitude: 40.142830		Longitude: -104.835710	
QtrQtr: NWNE	Sec: 13	Twp: 2N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 446859	API #:	County Name: WELD
Facility Name: CHADBURN WARREN TRUE-63N67W 29SESW	Latitude: 40.200343	Longitude: -104.917366	
** correct Lat/Long if needed: Latitude: 40.200331		Longitude: -104.917354	
QtrQtr: SENW	Sec: 29	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: TANK BATTERY	Facility ID: 447591	API #:	County Name: WELD
Facility Name: ACORD 29-15L, WARREN 29-10L O SA 36149563	Latitude: 40.194240	Longitude: -104.912765	
** correct Lat/Long if needed: Latitude: 40.194238		Longitude: -104.912854	
QtrQtr: NWSE	Sec: 29	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes

### SITE CONDITIONS

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

Various

# 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 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	No impacts encountered	Groundwater sampling and laboratory analysis
No	SOILS	15' (N-S) x 15' (E-W) x 9'	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.

As required by COGCC rule 905.b, soil and groundwater (if present) samples will be collected when buried or partially-buried produced water vessels are removed from service. One soil sample will be collected for laboratory analysis from the area most likely to be impacted directly beneath the water vessel upon removal. If groundwater is encountered below the water vessel, a groundwater sample will be collected for laboratory analysis. Additionally, if groundwater is encountered, four sidewall samples will be collected for field screening. The sidewall sample exhibiting the highest apparent impacts will be submitted for laboratory analysis. Soil samples will be analyzed for total petroleum hydrocarbons (TPH-C6-C36); benzene, toluene, ethylbenzene, total xylenes (BTEX); electrical conductivity (EC); and pH. Analysis for sodium adsorption ratio (SAR) will be conducted should the initial EC concentration exceed the Table 910-1 standards. Groundwater samples will be analyzed for BTEX.

## 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 each Site and submitted for laboratory analysis. The soil samples were analyzed for total petroleum hydrocarbons (TPH-C6-C36); BTEX; EC; and pH.

### Proposed Groundwater Sampling

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

If groundwater was encountered below the produced water vessel, a groundwater sample (GW01) was collected for analysis of BTEX.

### 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 27

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 10800

### NA / ND

--            Highest concentration of TPH (mg/kg) 410.8

NA            Highest concentration of SAR           

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 9

### Groundwater

Number of groundwater samples collected 2

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 4'

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 910-1 0

ND            Highest concentration of Benzene (µg/l)           

ND            Highest concentration of Toluene (µg/l)           

ND            Highest concentration of Ethylbenzene (µg/l)           

ND            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

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Any impacted soils above the concentration levels listed in Table 910-1 will be removed from the excavation. Impacted soils exceeding Table 910-1 standards for only EC, pH, and SAR will not be removed below the root zone, established as 3 feet below ground surface (per COGCC guidance).

## 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.

Impacted soils (if present) will be taken to either a licensed disposal facility or to Kerr-McGee's land treatment facility. A site-specific groundwater monitoring plan will be developed for COGCC approval (as appropriate) in the event that groundwater impacts exceeding the Table 910-1 standards are detected.

## 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) \_\_\_\_\_ 10  
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

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )  
 \_\_\_\_\_ Chemical oxidation  
 \_\_\_\_\_ Air sparge / Soil vapor extraction  
 \_\_\_\_\_ Natural Attenuation  
 \_\_\_\_\_ 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.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

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

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

Other Produced Water Vessel Closure Report

## 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 10

E&P waste (solid) description Hydrocarbon impacted soil.

COGCC Disposal Facility ID #, if applicable: 149007

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

Volume of E&P Waste (liquid) in barrels 0

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

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

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.

If the facility remains in place, reclamation will not be necessary. If a facility is removed, the site will be restored as closely as possible to its pre-existing grade and reclaimed in accordance with COGCC 1004 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). 05/05/2017

Date of commencement of Site Investigation. 05/05/2017

Date of completion of Site Investigation. 01/28/2019

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 10/16/2017

Date of completion of Remediation. 10/16/2017

### 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: Gregory Hamilton \_\_\_\_\_

Title: Senior Staff Env Rep \_\_\_\_\_

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

Email: Gregory.Hamilton@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: \_\_\_\_\_

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

**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.

<b><u>Att Doc Num</u></b>	<b><u>Name</u></b>

Total Attach: 0 Files

**General Comments**

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

Total: 0 comment(s)