

**State of Colorado  
Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109



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401815013

Receive Date:

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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>(720) 336-3500</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Gregory Hamilton</u>	Email: <u>Gregory.Hamilton@anadarko.com</u>	Mobile: <u>(970) 515-1698</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 11889 Initial Form 27 Document #: 401475283

#### 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 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 _____   |

#### SITE INFORMATION

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

Facility Type: <u>LOCATION</u>	Facility ID: <u>318054</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>RICHARDSON-62N67W 3NENE</u>	Latitude: <u>40.171500</u>	Longitude: <u>-104.871500</u>	
	** correct Lat/Long if needed: Latitude: <u>40.171210</u>	Longitude: <u>-104.871650</u>	
QtrQtr: <u>NENE</u>	Sec: <u>3</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>318794</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>UPRR 62 PAN AM C-62N65W 13SWSE</u>	Latitude: <u>40.134570</u>	Longitude: <u>-104.608750</u>	
	** correct Lat/Long if needed: Latitude: <u>40.134703</u>	Longitude: <u>-104.607956</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>13</u>	Twp: <u>2N</u>	Range: <u>65W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>LOCATION</u>	Facility ID: <u>328163</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>CAMENISCH-63N67W 4SWNW</u>	Latitude: <u>40.256600</u>	Longitude: <u>-104.901840</u>	
	** correct Lat/Long if needed: Latitude: <u>40.259180</u>	Longitude: <u>-104.899220</u>	
QtrQtr: <u>SWNW</u>	Sec: <u>4</u>	Twp: <u>3N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: LOCATION Facility ID: 336192 API #: County Name: WELD  
Facility Name: WELD COUNTY B UNIT-62N67W 26NENE Latitude: 40.113711 Longitude: -104.850926  
\*\* correct Lat/Long if needed: Latitude: 40.111690 Longitude: -104.855700  
QtrQtr: NENE Sec: 26 Twp: 2N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 442144 API #: County Name: WELD  
Facility Name: POWERS TANK BATTERY 2C-23HZ Latitude: 40.119667 Longitude: -104.628406  
\*\* correct Lat/Long if needed: Latitude: 40.119631 Longitude: -104.628243  
QtrQtr: SWSE Sec: 23 Twp: 2N Range: 65W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 446398 API #: County Name: WELD  
Facility Name: MAGNESS-63N67W 26NESE Latitude: 40.193095 Longitude: -104.850161  
\*\* correct Lat/Long if needed: Latitude: 40.192857 Longitude: -104.850555  
QtrQtr: NESE Sec: 26 Twp: 3N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 446820 API #: County Name: WELD  
Facility Name: HEIN W19-11, 12 O SA 36159173 Latitude: 40.120792 Longitude: -104.827971  
\*\* correct Lat/Long if needed: Latitude: 40.120778 Longitude: -104.827916  
QtrQtr: Sec: 19 Twp: 2N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 446896 API #: County Name: WELD  
Facility Name: LORENZ L30-3, 5#2-30 O SA 36149578 Latitude: 40.199518 Longitude: -104.827126  
\*\* correct Lat/Long if needed: Latitude: 40.199574 Longitude: -104.827134  
QtrQtr: SWNW Sec: 30 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 446900 API #: County Name: WELD  
Facility Name: INOUYE 12-31/VYNCKIE O SA 34002848 Latitude: 40.090474 Longitude: -104.825042  
\*\* correct Lat/Long if needed: Latitude: 40.090445 Longitude: -104.825053  
QtrQtr: SWSW Sec: 31 Twp: 2N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: TANK BATTERY Facility ID: 451589 API #: County Name: WELD  
Facility Name: Magness Red 6-4, 6-6 & 6-2D battery Latitude: 40.169484 Longitude: -104.827160  
\*\* correct Lat/Long if needed: Latitude: 40.169497 Longitude: -104.827221  
QtrQtr: SWNW Sec: 6 Twp: 2N Range: 66W 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
Yes	SOILS	19' (E-W) x 13' (N-S) x 5' bgs.	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. The 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); benzene, toluene, ethylbenzene, total xylenes (BTEX); electrical conductivity (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 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 12

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 247

### NA / ND

--          Highest concentration of TPH (mg/kg) 153.3  
         1

NA          Highest concentration of SAR         

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 5

### Groundwater

Number of groundwater samples collected 3

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

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.

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).

## **REMEDICATION 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 Concentrations Levels are detected.

## **Soil Remediation Summary**

In Situ

Ex Situ

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

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

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

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 20

\_\_\_\_\_ 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**

\_\_\_\_\_ 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 20

E&P waste (solid) description Impacted soil.

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

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

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

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

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

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

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

Do all soils meet Table 910-1 standards? Yes

Does the previous reply indicate consideration of background concentrations? No

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? 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.

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. 09/29/2017

## **REMEDIAL ACTION DATES**

Date of commencement of Remediation. 06/13/2017

Date of completion of Remediation. 06/13/2017

## **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: Sr. Staff HSE Rep \_\_\_\_\_

Submit Date: 11/08/2018 \_\_\_\_\_

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

Date: 11/08/2018 \_\_\_\_\_

Remediation Project Number: 11889 \_\_\_\_\_

**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**

401815013	FORM 27-SUPPLEMENTAL-SUBMITTED
401818360	OTHER
401818363	OTHER
401818364	OTHER
401818367	OTHER
401818371	OTHER
401818374	OTHER
401818376	OTHER
401818382	OTHER
401818384	OTHER
401832649	OTHER

Total Attach: 11 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)