

State of Colorado
Oil and Gas Conservation Commission

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401276606
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Report taken by:
PETER GINTAUTAS

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 & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers
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>Paul Schwarz</u>	Email: <u>Paul.Schwarz@Anadarko.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 10192 Initial Form 27 Document #: 401276606

PURPOSE INFORMATION

- 901.e. Sensitive Area Determination
- 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- 909.c.(1), Rule 905: Pit or PW vessel closure
- Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- 909.c.(2), Rule 906: Spill/Release Remediation
- Rule 909.e.(2)B.: Closure of remediation project
- 909.c.(3), Rule 907.e.: Land treatment of oily waste
- Rule 906.c.: Director request
- 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- Other _____

SITE INFORMATION

N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>449643</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>	Latitude: <u>40.132073</u>	Longitude: <u>-104.793805</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SESE</u>	Sec: <u>17</u>	Twp: <u>2N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Agriculture
 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 located approximately 400 feet (ft) northwest, surface water and wetlands located approximately 520 ft south, livestock located approximately 1,050 ft west, building located approximately 320 ft southeast, and groundwater encountered in the excavation at a depth of approximately 13 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 submitted for laboratory analysis
Yes	SOILS	50ft N-S x 26ft E-W x 15ft bgs	Soil submitted for 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.

While excavating a nonreportable release at the Nesmith 15-17, UPRR 42 Pan Am AQ True #1 tank battery, historical impacts were encountered beneath the oil tank. The volume of the release is unknown. The petroleum hydrocarbon impacted soil was excavated. Groundwater was encountered in the excavation at approximately 13 ft bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). Laboratory analytical results received on March 7, 2017, indicated petroleum hydrocarbon impact to groundwater.

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):

Between March 6 and 16, 2017, 9 soil samples were collected from the excavation sidewalls and submitted for laboratory analysis of BTEX, total petroleum hydrocarbons (TPH), pH, and specific conductivity (EC). Laboratory analytical results indicated that BTEX, TPH, and EC concentrations and levels were in compliance with COGCC Table 910-1 allowable levels at the lateral extent of the excavation. Sidewall soil samples N01@10', N02@10', N03@10', E01@10', S01@10', and W02@10' exceeded the COGCC allowable level for pH at levels ranging from 9.02 standard units (su) to 9.56 su. However, these samples were collected below the root zone (depth greater than 3 feet below ground surface), so no further excavation was necessary. The general site layout, excavation dimensions, and excavation soil sample locations are depicted on the Excavation Site Map provided as Figure 1. The excavation 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 March 6, 2017, groundwater sample GW01 was collected from the excavation for laboratory analysis of BTEX. Laboratory analytical results indicated that the benzene concentration in GW01 exceeded the COGCC Table 910-1 allowable level at 1,680 micrograms per liter ($\mu\text{g/L}$). The general site layout, excavation dimensions, and excavation groundwater sample location are depicted on the Excavation Site Map provided as Figure 1. The excavation 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 9
Number of soil samples exceeding 910-1 3
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 1300

NA / ND

-- Highest concentration of TPH (mg/kg) 5050
NA Highest concentration of SAR
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 10

Groundwater

Number of groundwater samples collected 1
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 13'
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 1680
ND Highest concentration of Toluene (µg/l)
-- Highest concentration of Ethylbenzene (µg/l) 205
-- Highest concentration of Xylene (µg/l) 627
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?

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

REMEDIATION 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 400 barrels of impacted groundwater were removed from the excavation and transported to a licensed injection facility for disposal using a vacuum truck. Impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Approximately 410 cubic yards of impacted soil were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The general site layout and excavation footprint are depicted on the Excavation Site Map provided as Figure 1.

REMIATION 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.

While backfilling the excavation, 5 gallons of MicroBlaze®, a bioremediation amendment, and 140 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons. The excavation area was restored to its pre-release grade, and the Kerr-McGee facility was reconstructed.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) _____ 410

_____ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or COGCC Facility ID # _____ 149007

_____ Natural Attenuation

No _____ Excavate and onsite remediation

_____ Other _____

_____ Land Treatment

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Other _____

Groundwater Remediation Summary

Yes _____ Bioremediation (or enhanced bioremediation)

Yes _____ 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. Quarterly groundwater monitoring activities will be conducted 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 _____

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 soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado.

Volume of E&P Waste (solid) in cubic yards 410

E&P waste (solid) description Petroleum hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels 400

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

COGCC Disposal Facility ID #, if applicable: 159443

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 facility was reconstructed and the site was restored to pre-release grade.

Is the described reclamation complete? Yes

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. 03/07/2017

Actual Spill or Release date, if known. 03/07/2017

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/06/2017

Date of commencement of Site Investigation. 03/07/2017

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 03/06/2016

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: Paul Schwarz

Title: HSE Representative

Submit Date: 05/19/2017

Email: Paul.Schwarz@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: 05/31/2017

Remediation Project Number: 10192

COA Type

Description

	Submit reports of site investigation and progress of remediation including results of sampling and analysis on an annual basis or more often until remediation is closed.
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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

401276606	FORM 27-INITIAL-SUBMITTED
401276685	SOIL SAMPLE LOCATION MAP
401288153	ANALYTICAL RESULTS

Total Attach: 3 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)