

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 3541 Initial Form 27 Document #: 1140804

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: <u>LOCATION</u>	Facility ID: <u>318587</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>PAUL SCHMIDT GAS UNIT B-62N66W 20NENE</u>		Latitude: <u>40.128090</u>	Longitude: <u>-104.795620</u>
		** correct Lat/Long if needed: Latitude: <u>40.130349</u>	Longitude: <u>-104.794704</u>
QtrQtr: <u>NENE</u>	Sec: <u>20</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 CL Most Sensitive Adjacent Land Use Surface Water

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

Domestic water well and an occupied building approximately 650 feet (ft) northeast, surface water (irrigation ditch) approximately 35 ft southwest, wetlands approximately 350 ft southeast, livestock approximately 940 ft northwest, and groundwater approximately 6 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 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 Samples/Lab Analysis
Yes	SOILS	60ft N-S x 105ft E-W x 15ft bgs	Soil Samples/Lab 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.

The Paul Schmidt "B" GU #1 facility is a former Amoco facility, which was acquired by HS Resources/Kerr-McGee in 2003. Kerr-McGee has no information (date, cause volume, etc.) on the source of the release. On April 9, 2003, a Kerr-McGee foreman discovered five groundwater monitoring wells at the site. Two of the five groundwater monitoring wells had measurable free product. During site excavation activities in September 2009, a crushed concrete sump was uncovered. The Excavation Site Map depicting the general site layout and excavation area is attached as Figure 1.

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):

Please refer to the Form 27 submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on August 1, 2003. In September 2009, 18 soil samples were collected from the base and sidewalls of the excavation and submitted for laboratory analysis of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Laboratory analytical results indicated that TPH and BTEX concentrations were in compliance with Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 allowable levels at the extent of the excavation. The excavation dimensions and soil sample locations are depicted on the Excavation Site Map provided as Figure 1. The 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):

Groundwater monitoring has been conducted on a quarterly basis since April 2003. During the September 2009 excavation activities, groundwater was encountered in the southwestern portion of the excavation at approximately 15 ft bgs. On September 29, 2009, one groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated sample GW01 exceeded the COGCC Table 910-1 allowable level for benzene at 970 micrograms per liter (µg/L). The excavation groundwater sample location is depicted on Figure 1, and the 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):

Surface water monitoring from the irrigation ditch has been conducted periodically since June 2003 and on a quarterly basis since August 2011.

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 29

Number of soil samples exceeding 910-1 7

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

Approximate areal extent (square feet) 6300

Groundwater

Number of groundwater samples collected 834

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 6'

Number of groundwater monitoring wells installed 42

Number of groundwater samples exceeding 910-1 293

Surface Water

18 Number of surface water samples collected

1 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

NA / ND

-- Highest concentration of TPH (mg/kg) 9200

NA Highest concentration of SAR

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 11

-- Highest concentration of Benzene (µg/l) 75000

-- Highest concentration of Toluene (µg/l) 67000

-- Highest concentration of Ethylbenzene (µg/l) 4160

-- Highest concentration of Xylene (µg/l) 15000
0

NA Highest concentration of Methane (mg/l)

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?

Additional remedial options are under evaluation.

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.

Please refer to the Form 27 submitted to the COGCC on August 1, 2003. In 2009, approximately 5,560 cubic yards of petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The 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. The general site layout and excavation footprint are depicted on the Excavation Site Map provided as Figure 1.

Free product recovery (bailing) is conducted bi-monthly in monitoring well MW05. Measurable product was last observed in monitoring wells MW01, MW02, and MW04 in December 2006, in monitoring wells MW03 and MW21 in March 2006, and in monitoring wells MW20 and MW24 in June 2009. Additional remedial options are under evaluation.

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.

In September 2009, while backfilling the excavation, 500 pounds of BOS 200®, a carbon-based remediation product, was applied to the excavation groundwater immediately prior to backfilling. The excavation area was restored to its pre-release grade, and the Kerr-McGee facility was reconstructed.

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) 5560

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

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 MW01R through MW05, MW07 through MW11R, MW16R, MW18R, MW20R through MW22R, and MW25 through MW28 and surface water sample Ditch-1 are sampled on a quarterly basis and submitted for laboratory analysis of BTEX by United States Environmental Protection Agency (USEPA) Method 8260C. The monitoring well locations and surface water sample location are depicted on Figure 2. The Groundwater Elevation Contour Map generated using the November 2017 survey data is provided as Figure 3. The groundwater and surface water analytical results are summarized in Table 2 and Table 3, respectively. The laboratory analytical report for the November 2017 groundwater monitoring event is attached.

Groundwater and surface water monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

REMEDATION 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:

NA

Volume of E&P Waste (solid) in cubic yards 5560

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 1

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

COGCC Disposal Facility ID #, if applicable: 159443

Non-COGCC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

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? No

Is additional groundwater monitoring to be conducted? Yes

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 was restored to its pre-release grade. The Kerr-McGee facility remains at the site.

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. 04/09/2003

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/09/2003

Date of commencement of Site Investigation. 04/09/2003

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 04/09/2003

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: Phil Hamlin

Title: Senior HSE Representative

Submit Date: 01/23/2018

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: 01/26/2018

Remediation Project Number: 3541

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.

<u>Att Doc Num</u>	<u>Name</u>
401487517	FORM 27-SUPPLEMENTAL-SUBMITTED
401487528	LOGS
401502395	SOIL SAMPLE LOCATION MAP
401502396	SITE MAP
401502397	GROUND WATER ELEVATION MAP
401507135	ANALYTICAL RESULTS

Total Attach: 6 Files

General Comments

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

Total: 0 comment(s)