

State of Colorado  
Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

received 03/15/2016  
Project 9558  
Facility 445076  
Document #: 2211945

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

<input type="checkbox"/> Spill	<input type="checkbox"/> Complaint
<input type="checkbox"/> Inspection	<input type="checkbox"/> NOAV

Tracking No: \_\_\_\_\_

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release     Plug & Abandon     Central Facility Closure     Site/Facility Closure     Other (describe): NFA

**GENERAL INFORMATION**

<b>OGCC Operator Number:</b> <u>47120</u>	Contact Name and Telephone
Name of Operator: <u>Kerr-McGee Oil and Gas Onshore, LP</u>	Name: <u>Phillip Hamlin</u>
Address: <u>1099 18th Street, Suite 1800</u>	No: <u>970-336-3500</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	Fax: <u>970-336-3656</u>
API/Facility No: <u>318878</u> <b>445076</b>	County: <u>Weld</u>
Facility Name: <u>Ft St Vrain</u>	Facility Number: <u>63N67W9SESE</u>
Well Name: <u>Ft St Vrain</u>	Well Number: <u>2</u>
Location (Qtr, Sec, Twp, Rng, Meridian): <u>SESE S9 T3N R67W</u>	Latitude: <u>40.23557</u> Longitude: <u>-104.89112</u>

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Crude Oil and Produced Water

Site Conditions: Is location within a sensitive area (according to Rule 901e)?  Y  N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Silt with Sand

Potential receptors (water wells within 1/4 mi, surface waters, etc.): The nearest surface water is located approximately 330' west of the site.  
There are no water wells located within 1/4 mile of the release area.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>16' (N-S) x 7' (E-W) x 4' bgs</u>	<u>Excavation, soil sampling, and laboratory analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>See attached data</u>	<u>Groundwater sampling and laboratory analysis</u>
<input type="checkbox"/> Surface water	_____	_____

**REMEDIATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

On February 18, 2014, historical hydrocarbon impacts were discovered beneath the separator during tank battery reconstruction activities at the Ft. St. Vrain 63N67W9SESE production facility. The volume of released material is unknown. The well was shut in, associated underground infrastructure removed, and excavation activities commenced. Groundwater was encountered in the excavation at approximately 4 feet below ground surface (bgs). A Form 19 was submitted to the COGCC on February 28, 2014. The COGCC has issued Spill Tracking Number 445076 for this release.

Describe how source is to be removed:

On February 18, 2014, excavation activities commenced and approximately 20 cubic yards of impacted material were excavated and transported to the Front Range Regional Landfill in Erie, Colorado for disposal. Excavation activities were guided in the field using a photoionization detector (PID) to measure volatile organic compound (VOC) concentrations in soil. Soil samples were collected from the sidewalls of the final extent of the excavation area at approximately 2 feet bgs. Soil samples were submitted to eAnalytics Laboratory in Loveland, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260, TPH - diesel range organics and oil range organics (DRO and ORO) by USEPA Method 8015. Laboratory results indicated that constituent concentrations in the soil samples collected from the final lateral extent of the excavation area were below the applicable COGCC Table 910-1 standards. Soils were excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Groundwater was encountered in the excavation at approximately 4 feet bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on February 19, 2014, indicated that the benzene concentration in sample GW01 was above the applicable COGCC Table 910-1 groundwater standard. Approximately 100 barrels of impacted groundwater were removed via vacuum truck and transported to a licensed injection facility for disposal. A second groundwater sample (GW02) was subsequently collected from the excavation area and submitted for laboratory analysis of BTEX. Analytical results received on February 19, 2014, indicated that the benzene concentration in sample GW02 remained above the applicable COGCC Table 910-1 groundwater standard. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in Table 2. Soil and excavation groundwater sample locations are illustrated on Figure 1 and laboratory analytical reports are included as Attachment A.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Impacted soil was excavated and transported to the Front Range Regional Landfill in Erie, Colorado. Impacted groundwater was removed via a vacuum truck and transported to a licensed injection facility for disposal. Prior to backfilling the excavation, 100 pounds of Chemically Oxygenated Granular Activated Carbon (COGAC) were added to the groundwater table to mitigate remaining hydrocarbon impacts. Additional groundwater monitoring measures are described on the following page.

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Tracking Number: Name of Operator: OGCC Operator No: Received Date: Well Name & No: Facility Name & No.:

REMEDIATION WORKPLAN (CONT.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.): On March 31, 2014, four temporary groundwater monitoring/remediation wells (BH01-BH04) were installed at the site to further assess the extent of groundwater impacts.

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. Use additional sheet for description if required. The excavation has been backfilled with clean soil and graded to match the adjacent topography.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing. Is further site investigation required? [ ] Y [X] N If yes, describe: Data indicate that impacted soil has been delineated and removed from the site.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.): Impacted soil was transported to the Front Range Regional Landfill in Erie, Colorado for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 2/18/2014 Date Site Investigation Completed: 3/31/2014 Remediation Plan Submitted: 3-15-16 Remediation Start Date: 2/18/2014 Anticipated Completion Date: Actual Completion Date: 1/16/2015

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Phillip Hamlin

Signed: [Signature] Title: Senior HSE Representative Date: 3-15-16

OGCC Approved: Title: Date:

Based on review of information presented it appears that no further action is necessary at this time. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if ground water is found to be significantly impacted, further investigation and/or remediation activities may be required at the site.