

State of Colorado Oil and Gas Conservation Commission

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received 04/11/2016
Project 9608
Spill 444846
Document #: 2212329

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.

Spill Complaint
Inspection NOAV

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

Tracking No:

GENERAL INFORMATION

OGCC Operator Number: 47120
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP
Address: 1099 18th Street, Suite 1800
City: Denver State: CO Zip: 80202
Contact Name and Telephone: Name: Phillip Hamlin No: 970-336-3500 Fax: 970-336-3656

API/Facility No: 05-123-19963 444846
County: Weld
Facility Name:
Facility Number:
Well Name: HSR-Grant Brothers
Well Number: 10-31
Location (QtrQtr, Sec, Twp, Rng, Meridian): NESE S31 T2N R67W
Latitude: 40.091582 Longitude: -104.924528

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)? [X] 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: Sandy Clay to Clay
Potential receptors (water wells within 1/4 mi, surface waters, etc.): There is no surface water within 1/4 mile of the site. The nearest water well is approximately 725' northwest of the release area.

Description of Impact (if previously provided, refer to that form or document):
Impacted Media (check): [X] Soils [] Vegetation [X] Groundwater [] Surface water
Extent of Impact: 24' (E-W) x 26' (N-S) x 10' bgs
How Determined: Excavation, soil sampling, and laboratory analysis
Groundwater sampling and laboratory analysis

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
On February 12, 2016, historical hydrocarbon impacts were discovered along the produced water sump dumpline during construction activities at the HSR-Grant Brothers 10-31 production facility. The volume of released material is unknown. The facility was shut in, associated infrastructure repaired, and excavation activities commenced. Groundwater was encountered at approximately 10 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on February 15, 2016 (Document # 400988955) and a Supplemental Form 19 was submitted to the COGCC on February 22, 2016 (Document # 400993405). The COGCC has issued Spill Tracking #444846 for this release.

Describe how source is to be removed:
On February 12, 2016, excavation activities commenced and approximately 500 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 8 feet bgs. Soil samples were submitted to Origins Laboratory in Denver, 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, electrical conductivity (EC), and pH. Laboratory results indicated that constituent concentrations in the soil samples collected from the final lateral extent of the excavation area were below 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 10 feet bgs. Approximately 80 barrels of groundwater were removed from the excavation area via vacuum truck and transported to a licensed injection facility for disposal. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on February 18, 2016, indicated that the benzene concentration in sample GW01 was above the applicable COGCC Table 910-1 groundwater standard. Soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. 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 transported to a licensed injection facility for disposal. Prior to backfilling the excavation, approximately 110 pounds of activated carbon were introduced to the groundwater table to mitigate remaining aqueous phase hydrocarbon impacts. Additional groundwater monitoring measures are described on the following page.



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.):
Temporary groundwater monitoring wells will be installed at the site to further assess the extent of groundwater impacts. These wells will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain below COGCC groundwater standards for four consecutive quarters.

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. Kerr-McGee's tank battery remains at the site. Reclamation activities at the site will be compliant with COGCC regulations.

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 N If yes, describe:
Laboratory data indicate that impacted soils in the excavation have been remediated to below COGCC Table 910-1 standards. Temporary monitoring wells will be installed to further assess groundwater impacts. Groundwater samples will be collected from the temporary monitoring wells until BTEX concentrations remain below the applicable COGCC standards for four consecutive quarters. Soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. The analytical laboratory reports are included as Attachment A.

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. Impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	<u>2/12/2016</u>	Date Site Investigation Completed:	<u>TBD</u>	Remediation Plan Submitted:	_____
Remediation Start Date:	<u>2/12/2016</u>	Anticipated Completion Date:	<u>7/15/2017</u>	Actual Completion Date:	_____

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: Title: Senior HSE Representative Date: 4/8/2015

OGCC Approved: _____ Title: _____ Date: _____

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.