FORM 27 Rev 6/99

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 02/01/2016
Project 9482
Spill 443306
Document 2144959

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

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: 330941 443306
Facility Name: HSR-Ferme Farms
Well Name: HSR-Ferme Farms
Location (QtrQtr, Sec, Twp, Rng, Meridian): NENE S14 T3N R67W

County: Weld
Facility Number: 63N67W14NENE
Well Number: 1-14A
Latitude: 40.23110 Longitude: -104.85189

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate 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.): Crop land

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): The nearest surface water is located approximately 1320' west of the site. The nearest water well is located approximately 170' southwest of the release area.

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

Impacted Media (check):	Extent of Impact:	How Determined:
☒ Soils	30' (E-W) x 28' (N-S) x 6' bgs	Excavation, soil sampling, and laboratory analysis
☐ Vegetation		
☒ Groundwater	See attached data	Groundwater sampling and laboratory analysis
☐ Surface water		

REMEDIATION WORKPLAN

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

On September 23, 2015, historical impacts were discovered beneath the produced water sump during tank battery construction activities at the Ferme Farms 63N67W14NENE production facility. The facility was shut in, associated underground infrastructure removed, and excavation activities commenced. Groundwater was encountered in the excavation at approximately 6 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on September 24, 2015 (COGCC Document No. 400905110), and a Supplemental Form 19 was submitted on October 2, 2015 (COGCC Document No. 400908205). The COGCC has issued Spill Tracking number 443306 for this release.

Describe how source is to be removed:

On September 23, 2015, excavation activities commenced and approximately 210 cubic yards of impacted material were excavated; 20 cubic yards were transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal and 190 cubic yards were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. 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 5 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 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 6 feet bgs. Approximately 20 barrels of groundwater were removed via vacuum truck and transported to a licensed injection facility for disposal. A groundwater sample (GW01) was subsequently collected and submitted to Origins Laboratory for analysis of BTEX by USEPA Method 8260. Analytical results received on September 24, 2015, indicated that the benzene, toluene, and total xylenes concentrations in sample GW01 were above the applicable COGCC Table 910-1 groundwater standards. On September 28, 2015, approximately 240 additional barrels of groundwater were removed via vacuum truck and transported to a licensed injection facility for disposal. A second groundwater sample (GW02) was subsequently collected and submitted to Origins Laboratory for analysis of BTEX by USEPA Method 8260. Analytical results received on September 29, 2015, 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 Buffalo Ridge Landfill in Keenesburg, Colorado and the Kerr-McGee Land Treatment Facility in Weld County, Colorado. Prior to backfilling the excavation, 165 pounds of activated carbon were added to the groundwater table to mitigate remaining hydrocarbon impacts. Additional proposed groundwater remediation measures are described on the following page. The produced water sump was replaced during assessment and remediation activities.

Submit Page 2 with Page 1.

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Page 2

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

REMEDIATION WORKPLAN (CONT.)

OGCC Empbyeee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Temporary groundwater monitoring and/or remediation 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? [X] Y [ ] N If yes, describe:

Data indicate that impacted soil has been delineated and removed from the site. Temporary monitoring/remediation wells will be installed to further assess groundwater impacts. 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 Buffalo Ridge Landfill in Keenesburg, Colorado and the Kerr-McGee Land Treatment Facility in Weld County, Colorado for disposal. Impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	9/23/2015	Date Site Investigation Completed:		Remediation Plan Submitted:	
Remediation Start Date:	9/23/2015	Anticipated Completion Date:	1/23/2017	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: 1/29/2016

OGCC Approved: _____ Title: _____ Date: _____

Peter Gintautas

Digitally signed by Peter Gintautas
DN: cn=Peter Gintautas, o=COGCC, ou=Environmental Protection Specialist, email=peter.gintautas@state.co.us, c=US
Date: 2016.02.02 09:00:00 -07'00'