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

received 11/12/2015
Project 9355
Remediation 200437997
Spill 441917
Facility 443609 - tank battery
Document 2144687

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:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

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: 319015
Facility Name: Glen L. Hanson Gas Unit
Well Name: Glen L. Hanson Gas Unit
Location (QtrQtr, Sec, Twp, Rng, Meridian): SENW S16 T2N R66W

County: Weld
Facility Number: B-62N66W16SENW
Well Number: B #2
Latitude: 40.141060 Longitude: -104.786780

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): 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: Sandy Clay
Potential receptors (water wells within 1/4 mi, surface waters, etc.): The nearest surface water is located approximately 400' west of the site. The nearest water well is located approximately 761' east 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	16' (E-W) x 25' (N-S) x 3.5' 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 May 26, 2015, surficial staining was discovered inside the secondary containment during routine activities at the Glen L. Hanson Gas Unit B-62N66W16SENW production facility. The facility was shut in and impacted soil was excavated and transported off-site for disposal. Groundwater was encountered in the excavation at approximately 3.5 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on May 29, 2015, and a Supplemental Form 19 was submitted on June 5, 2015. The COGCC has issued Spill Tracking number 441917 for this release.

Describe how source is to be removed:

Excavation activities commenced on May 26, 2015, and approximately 60 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, 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. 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 3.5 feet bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on May 27, 2015, indicated that benzene, toluene, and total xylenes concentrations in GW01 were above the applicable COGCC Table 910-1 groundwater standards. Approximately one barrel of impacted groundwater was removed from the excavation via vacuum truck and transported to a licensed injection facility for disposal. A second groundwater sample (GW02) was subsequently collected from the excavation and submitted for laboratory analysis of BTEX. Analytical results received on May 29, 2015, indicated that benzene and toluene concentrations in GW02 were above the applicable COGCC Table 910-1 groundwater standards. Approximately two additional barrels of impacted groundwater were removed from the excavation via vacuum truck and transported to a licensed injection facility for disposal. A third groundwater sample (GW03) was subsequently collected from the excavation and submitted for laboratory analysis of BTEX. Analytical results received on June 8, 2015, indicated that benzene concentrations in GW03 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 Kerr-McGee Land Treatment Facility in Weld County, Colorado. Impacted groundwater was removed via a vacuum truck and transported to a licensed disposal facility for disposal. 132 pounds of activated carbon were added to the groundwater in the excavation prior to backfilling to mitigate remaining dissolved phase groundwater impacts. Additional groundwater remediation measures are described on the following page.

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 Emplyeee:

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

On August 7, 2015, three temporary groundwater monitoring/remediation wells were installed at the site to further assess the extent of groundwater impacts. Groundwater samples will be collected from the temporary monitoring wells on a quarterly basis; the most recent sampling event was conducted on August 14, 2015. Samples were submitted to Origins Laboratory in Denver, Colorado for analysis of BTEX by USEPA Method 8260. Temporary monitoring/remediation well locations and groundwater analytical results are illustrated on Figure 2, and a groundwater contour map is presented on Figure 3. Groundwater analytical results are summarized in Table 2 and the groundwater laboratory analytical reports and well completion diagrams are included as Attachments A and B, respectively. Quarterly groundwater monitoring at the temporary monitoring locations will be conducted until BTEX 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 have been 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 Kerr-McGee Land Treatment Facility in Weld County, Colorado for disposal. Impacted groundwater was removed via a vacuum truck and transported to a licensed disposal facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	5/26/2015	Date Site Investigation Completed:	TBD	Remediation Plan Submitted:	
Remediation Start Date:	5/26/2015	Anticipated Completion Date:	12/1/2016	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: 11/16/15

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: 2015.11.18 08:34:23 -07'00'