

State of Colorado  
Oil and Gas Conservation Commission

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FOR OGCC USE ONLY

received 12/15/2015  
Project 9414  
Remediation 200438359  
Spill 443143  
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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	Contact Name and Telephone
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP	Name: Phillip Hamlin
Address: 1099 18th Street, Suite 1800	No: 970-336-3500
City: Denver State: CO Zip: 80202	Fax: 970-336-3656
API/Facility No: 05-123-10111 <b>443143</b>	County: Weld
Facility Name:	Facility Number:
Well Name: Saint Vrain Assoc.	Well Number: 1
Location (QtrQtr, Sec, Twp, Rng, Meridian): NWSW S3 T3N R67W	Latitude: 40.251580 Longitude: -104.881540

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: Sandy Clay

Potential receptors (water wells within 1/4 mi, surface waters, etc.): The nearest surface water is located approximately 250' southwest of the site.  
No water wells are 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	18' (E-W) x 28' (N-S) x 4' bgs	Excavation, soil sampling, and laboratory analysis
<input type="checkbox"/> Vegetation		
<input checked="" type="checkbox"/> Groundwater	See attached data	Groundwater sampling and laboratory analysis
<input type="checkbox"/> Surface water		

REMEDIATION WORKPLAN

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

On September 1, 2015, surficial staining was discovered around the Saint Vrain Association #1 wellhead during a routine inspection. The volume of released material is unknown. The wellhead was shut in and excavation activities commenced. Groundwater was encountered in the excavation at approximately 4 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on September 4, 2015 (COGCC Document No. 400895730), and a Supplemental Form 19 was submitted on September 11, 2015 (COGCC Document No. 400898383). The COGCC has issued Spill Tracking number 443143 for this release.

Describe how source is to be removed:

On September 1, 2015, excavation activities commenced and approximately 80 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 at approximately 3 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 4 feet bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on September 2, 2015, indicated that the benzene concentration in sample GW01 was 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. 110 pounds of activated carbon were added to the groundwater in the excavation prior to backfilling to mitigate remaining dissolved phase hydrocarbon impacts. Additional proposed groundwater remediation 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.): 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 wellhead 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 Kerr-McGee Land Treatment Facility in Weld County, Colorado for disposal.

IMPLEMENTATION SCHEDULE

Table with 4 columns: Date Site Investigation Began, Date Site Investigation Completed, Remediation Plan Submitted, Remediation Start Date, Anticipated Completion Date, Actual Completion Date. Values include 9/1/2015, TBD, 12/15/2016.

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: 12/11/15

OGCC Approved: Title: Date: