

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
6/10/2014

#8504

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: 400606233

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: 69175		Contact Name and Telephone	
Name of Operator: <u>PDC Energy, Inc.</u>		Name: <u>Brandon Bruns</u>	
Address: <u>1775 Sherman Street, Suite 3000</u>		No: <u>(303) 831-3971</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80203</u>		Fax: <u>(303) 860-5838</u>	
API/Facility No: <u>05-123-12582</u>	County: <u>Weld</u>		
Facility Name: <u>Virginia 1-22</u>	Facility Number: _____		
Well Name: <u>Virginia 1-22</u>	Well Number: <u>Virginia 1-22</u>		
Location (Qtr, Sec, Twp, Rng, Meridian): <u>SESW S22 T5N R65W</u>		Latitude: <u>40.380033</u>	Longitude: <u>-104.653832</u>

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.): Residential, agriculture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Aquolls and Aquent, gravelly substratum

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Residential buildings are located 150' to the south of the former tank location.

The closest water well is located 315' south of the location. The nearest surface water is located 25' to the northeast, and depth to groundwater is 3 ft.

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>Refer to Figures 2 and 3 and Table 1</u>	<u>Excavation and soil sampling</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>Refer to the attached Figure 3 and Table 2</u>	<u>Drilling and groundwater sampling</u>
<input type="checkbox"/> Surface water	_____	_____

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
On December 27, 2013, soil and groundwater impacts were discovered at the Virginia 1-22 facility (API #05-123-12582) during the removal of a buried produced water vessel. A Form 19 was submitted to the COGCC on May 12, 2014 and a spill tracking number of 400606233 was issued by the COGCC. A topographic map of the site is included on Figure 1.

Describe how source is to be removed:
The source area was excavated and impacted material was transported to the Waste Management facility located in Ault, Colorado for disposal as described in the Form 19. The final excavation extent and soil sample locations are illustrated on Figure 2.

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.:
On April 7, 2014, PDC installed six temporary monitoring wells (BH01 through BH06), were installed using direct push drilling techniques. Groundwater was encountered at approximately three feet below ground surface (bgs). Monitoring well locations are illustrated on Figure 3. Groundwater monitoring was initiated on April 29, 2014 at the six temporary groundwater monitoring locations. Groundwater samples were submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) using USEPA Method 8260B. Groundwater samples exhibited BTEX concentrations below the applicable COGCC Table 910-1 groundwater standards at the six monitoring locations. Analytical results from April 29th indicate petroleum hydrocarbons are below laboratory detection limits. Groundwater analytical results are summarized in Table 2 and illustrated on Figure 3. Laboratory analytical reports are included as Attachment A. PDC will conduct monitored natural attenuation (MNA) until four consecutive quarters of BTEX concentrations below the applicable COGCC Table 910-1 have been received.

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REMEDIATION WORKPLAN (CONT.)

OGCC Employee: R. Allison

Tracking Number: 400606233
Name of Operator: PDC Energy, Inc.
OGCC Operator No: 69175
Received Date: 6/10/2014
Well Name & No: Virginia 1-22
Facility Name & No.: Virginia 1-22

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater was encountered during excavation and drilling activities at approximately 3 feet bgs. PDC will continue quarterly groundwater sampling at the six monitoring wells to assess the dissolved phase petroleum hydrocarbon impacts in groundwater using USEPA Method 8260. Groundwater monitoring will continue on a quarterly basis for analysis of BTEX by EPA Method 8260B until four quarterly consecutive quarters of groundwater concentrations are in compliance with the applicable COGCC Table 910-1 standards.

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 area where the excavation is located has been backfilled and compacted with clean material and the ground surface was contoured to match pre-existing conditions. PDC's tank battery has been rebuilt. Following four consecutive groundwater analytical data in compliance with the COGCC Table 910-1 groundwater standards, the temporary monitoring wells will be properly plugged and abandoned.

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:
PDC feels that no further Site investigation is required at this time. The excavation extent and soil sample locations are illustrated on Figure 2. Temporary monitoring locations are illustrated on Figure 3. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in Table 2. The analytical reports are included as Attachment A.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
Impacted soils were hauled for disposal at the Waste Management Facility in Ault, Colorado under PDC waste manifests.

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 12/27/2013, 4/7/2014, 6/10/14, 4/29/2014, NA, TBD.

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

Print Name: Brandon Bruns

Signed: [Signature] Title: EHS Supervisor Date: 6/10/14

OGCC Approved: _____ Title: Northeast EPS Date: 6/27/2014