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

#7526

RECEIVED
1/28/2013

Complaint OGCC Employee:
NOAV
[x] Spill [ ]
[ ] Inspection [ ]
Tracking No: **2229761**

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):
[X]	[ ]	[ ]	[ ]	[ ]

GENERAL INFORMATION

OGCC Operator Number: 69175
Name of Operator: PDC Energy, Inc.
Address: 1775 Sherman Street, Suite 3000
City: Denver State: CO Zip: 80203

Contact Name and Telephone
Name: Brandon Bruns
No: (303) 831-3971
Fax: (303) 860-5838

API/Facility No: 327444
Facility Name: Benson 24-15
Well Name: Benson 24-15
County: Weld
Facility Number: 327444
Well Number: Benson 24-15
Location (QtrQtr, Sec, Twp, Rng, Meridian): SESW Qtr S15 T6N R65W 6th PM Latitude: 40.48042 Longitude: -104.65139

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 [ ] [X] N If yes, attach evaluation.
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Oil and gas production, livestock grazing, and cultivated
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Nunn clay loam, 0 to 1 percent slopes
Potential receptors (water wells within 1/4 mi, surface waters, etc.): Residential buildings are located approximately 205 feet west. Cattle livestock graze approximately 50 feet west. A water well is located approximately 1,150 feet southeast. Depth to shallowest groundwater is approximately 17 ft bgs.

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

Impacted Media (check):	Extent of Impact:	How Determined:
[X] Soils	Refer to attached Figure 2 and Table 1	Excavation, direct push drilling, and soil sampling
[ ] Vegetation		
[X] Groundwater	Refer to attached Figure 2 and Table 2	Groundwater sampling
[ ] Surface water		

REMEDIATION WORKPLAN

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

A Form 19 was submitted on July 25, 2012 (COGCC Spill #2229761). An aerial map of the site is included as Figure 1.

Describe how source is to be removed:

The source area was previously excavated and impacted material was transported and disposed of at the Waste Management Ault, CO facility as described in the Form 19 submitted on July 25, 2012.

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 September 4, 2012 PDC conducted direct push drilling activities with continuous core soil sampling at seven borehole locations to further characterize residual petroleum hydrocarbon impacts within the subsurface (Figure 2). Five of the boreholes (BH-02, BH-03, BH-05, BH-06, BH-07) were completed as dual purpose temporary monitoring/remediation wells. Soil samples collected from the boreholes were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and gasoline range total petroleum hydrocarbons (TPH) using USEPA Method 8260B and diesel range TPH using USEPA Method 8015. Soil sample analytical results from the direct push drilling investigation are summarized on Table 2. On September 13, 2012, PDC conducted groundwater sampling activities at three of the five monitoring well locations. BH-06 was not sampled due to the presence of 2.76 feet of light non-aqueous phase liquid (LNAPL) and BH-07 was dry. Groundwater samples were analyzed for BTEX using USEPA Method 8260.The soil and groundwater samples were submitted to Summit Scientific Laboratories, Inc. in Golden, CO for analysis. The groundwater analytical results are illustrated on Figure 3, summarized on Table 2, and the laboratory analytical report is included in Attachment A. On September 28, 2012, PDC initiated bi-monthly LNAPL recovery from BH-06 while performing enhanced fluid recovery (EFR) and air sparge (AS) events at the remaining monitoring wells. A total of approximately three barrels of impacted groundwater and approximately 0.64 gallons of LNAPL was removed from the subsurface and disposed of at an approved facility. PDC plans to continue LNAPL recovery at BH-06 twice per month. Additionally, PDC conducted a soil vapor extraction (SVE) pilot test on October 24, 2012 to determine the volatile organic compound (VOC) mass recovery potential from the Site monitoring wells. The SVE pilot test indicated that mass extraction in the vapor phase can be successfully achieved. Therefore, PDC is currently evaluating installation and operation of SVE equipment to address residual petroleum hydrocarbon impacts to soil. PDC will submit a Form 27 Notice of Change (NOC) and Sundry Notice should SVE remediation techniques be implemented and an SVE system installed at the site.

Submit Page 2 with Page 1.

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REMEDIATION WORKPLAN (CONT.)

OGCC Employee:

Tracking Number:
Name of Operator: PDC Energy, Inc.
OGCC Operator No: 69175
Received Date:
Well Name & No: Benson 24-15
Facility Name & No.: Benson 24-15

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

PDC will continue to sample the five monitoring wells on a quarterly basis to assess the dissolved phase petroleum hydrocarbon impacts in groundwater using USEPA Method 8260.Groundwater monitoring and sampling will be continued until four consecutive quarters of groundwater monitoring data indicate that VOC concentrations have met the COGCC Table 910-1 limits for groundwater.

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 is used as an equipment access area to the tank battery location and consists of road base. The excavation has been backfilled and compacted with clean material and the ground surface was contoured to match pre-existing conditions.

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 [x] N If yes, describe:

PDC feels that no further Site investigation is required at this time. The excavation extents, soil sample locations, bore holes, and monitoring well locations are illustrated on Figure 2. Soil analytical data is summarized in Table 1 while groundwater analytical data is summarized in Table 2 and illustrated on Figure 3. All analytical data are summarized in the laboratory reports provided as Attachment A.

* - COGCC requires 4 consecutive quarters of below GW standards for NFA.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Waste was disposed of at the Waste Management Facility in Ault, CO.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	7/3/2012	Date Site Investigation Completed:	9/13/2012	Remediation Plan Submitted:	
Remediation Start Date:	9/28/2012	Anticipated Completion Date:	NA	Actual Completion Date:	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: Brandon Bruns Title: EHS Professional Date: 1/25/13

OGCC Approved: Robert H. Chesson Title: EPS Date: 1/28/2013

Digitally signed by Robert H. Chesson
DN: cn=Robert H. Chesson, o=COGCC, ou, email=robert.chesson@state.co.us, c=US
Date: 2013.01.28 15:50:47 -07'00'