

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

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: 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>05-123-12299</u>	County: <u>Weld</u>		
Facility Name: <u>Johnson Oly 1</u>	Facility Number: <u>322945</u>		
Well Name: <u>Johnson Oly 1</u>	Well Number: <u>Johnson Oly 1</u>		
Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>NWNE S32 T6N R65W</u>		Latitude: <u>40.451074</u>	Longitude: <u>-104.686782</u>

TECHNICAL CONDITIONS

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

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Kim loam, 1 to 3 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): A building is located approximately 180' south of the tank battery location.

The nearest surface water is 1,965' east and the nearest water well is 1,116' east. Depth to groundwater is unknown.

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, drilling and soil sampling</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface water	_____	_____

REMEDIATION WORKPLAN

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

On February 13, 2014, a historic dump line release was discovered during routine maintenance activities at the Johnson Oly 1 tank battery. The facility was immediately shut in and excavation of impacted soil below the dump lines commenced on June 16, 2014. A Form 19 was submitted on July 3, 2014 and the COGCC assigned spill tracking number 400639067 to this location. A topographic map of the site is included on Figure 1.

Describe how source is to be removed:

The source area was previously excavated and impacted material was transported and disposed of as described in the Form 19. The 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.:

Between June 16 - June 19, 2014, excavation activities were conducted following the discovery of a historic dump line release at the Johnson Oly 1 tank battery. Soil analytical results indicated residual petroleum hydrocarbon impacts were present at 18 feet below ground surface (bgs) and adjacent to the buried DCP gas line at 8 feet and 14 feet bgs. Prior to backfilling, two horizontal remediation pipes were installed at the base of the excavation at approximately 18 feet bgs, as illustrated on Figure 2. On August 19, 2014 and September 5, 2014, PDC advanced four soil borings (BH01, BH01D, BH02 and BH03) using direct push drilling techniques to delineate the lateral and vertical extent of residual petroleum hydrocarbon impacts in soil. Soil samples were collected from each borehole at varying depths between 18 feet and 38 feet bgs. Soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260B, and TPH - diesel range organics (DRO) by USEPA Method 8015. Analytical results indicate that benzene and TPH concentrations in exceedance of COGCC Table 910-1 soil standards are present on site between 18 - 38 feet bgs. However, the vertical extent of residual hydrocarbon impacts was not delineated due to geologic refusal. Groundwater was not encountered during drilling activities. Temporary wells were installed in the four boring locations and will be used for subsequent remedial activities. Soil analytical results are summarized in Table 1 and temporary well locations are illustrated on Figure 3. The analytical reports are included as Attachment A. PDC will conduct an additional sub-surface investigation to delineate the vertical extent of petroleum hydrocarbon impacts below 38 feet bgs. PDC will install a mobile soil vapor extraction (SVE) and air sparge (AS) system to address residual hydrocarbon concentrations in soil. Additional remedial strategies will be evaluated once final sub-surface characterization activities are complete. Following remediation activities, drilling and soil sampling will be completed to confirm residual soil impacts were successfully mitigated.



REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

Tracking Number: 400639067
Name of Operator: PDC Energy, Inc.
OGCC Operator No: 69175
Received Date:
Well Name & No: Johnson Oly 1
Facility Name & No.: Johnson Oly 1

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater was not encountered during excavation or drilling activities. Should site investigation activities indicate the presence of groundwater, temporary monitoring wells will be installed and sampled on a quarterly basis for BTEX constituents.

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 and the ground surface was contoured to match pre-existing conditions. The tank battery has since been rebuilt and the production lines have been replaced.

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:
Additional sub-surface characterization and drilling will be completed at the site to determine the vertical extent of soil impacts. The excavation extent and soil sample locations are illustrated on Figure 2. Soil boring locations are illustrated on Figure 3. Soil analytical results are summarized in Table 1 and the laboratory 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 material was disposed of at the Waste Management Landfill in Ault, Colorado under PDC 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 6/16/2014, NA, 11/20/14, 8/19/2014, 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: 11/20/14

OGCC Approved: _____ Title: _____ Date: _____