

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**

<b>OGCC Operator Number:</b> 69175 <b>Name of Operator:</b> Petroleum Development Corporation <b>Address:</b> 1775 Sherman Street, Suite 3000 <b>City:</b> Denver <b>State:</b> CO <b>Zip:</b> 80203		<b>Contact Name and Telephone</b> <b>Name:</b> Randall Ferguson <b>No:</b> (303) 860-5800 <b>Fax:</b> (303) 860-5838	
<b>API/Facility No:</b> 05-123-21748 <b>Facility Name:</b> B. Johnson <b>Well Name:</b> B. Johnson		<b>County:</b> Weld <b>Facility Number:</b> 11 & 12-11 <b>Well Number:</b> 11-11	
<b>Location (QtrQtr, Sec, Twp, Rng, Meridian):</b> NWNW Sec 11 T6N R65W 6th PM <b>Latitude:</b> <b>Longitude:</b>			

**TECHNICAL CONDITIONS**

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

**Site Conditions:** Is location within a sensitive area (according to Rule 901e) ☒ Y ☐ N If yes, attach evaluation. Groundwater < 20 feet bgs.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Cultivated, irrigated farm land

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): An irrigation pond is located 60 feet southwest of the site; a building is located 123 feet west of the site; a water well is located 522 feet northwest of the site; and depth to groundwater is 9 ft below ground surface (bgs)

**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	33' N-S x 23' E-W x 9' bgs	Soil samples for field screening and laboratory analysis
<input type="checkbox"/> Vegetation		
<input checked="" type="checkbox"/> Groundwater	See attached data	Groundwater samples for laboratory analysis
<input type="checkbox"/> Surface water		

**REMEDIALATION WORKPLAN**

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

Form 19 provided on 9/14/2009 (Spill # 1630126).

Describe how source is to be removed:

During a routine tank battery upgrade, a leak in the dump line piping from the separator to the produced water tank was observed to have released an unknown volume of produced water and condensate into the subsurface. Once the dump line piping from the separator to the produced water tank was removed, impacted soil above the COGCC standards was excavated. Soil samples were collected from the sidewalls of the excavation and submitted for analysis of BTEX by EPA Method 8260B and TPH by EPA Modified Method 8015. Laboratory results indicated BTEX and TPH (C6-C28) concentrations were in compliance with COGCC Table 910-1 Concentration Levels. Due to the proximity of an irrigation pond to the release area, two surface water samples were collected and analyzed for BTEX. Laboratory results indicated the BTEX concentrations were in compliance with the CDPHE Water Quality Control Commission Regulation 41 (Reg.41) standards. Groundwater entering the excavation was sampled and analyzed for BTEX. Laboratory results indicated the benzene concentration exceeded Reg. 41. Before backfilling the excavation, activated carbon was applied to the groundwater and exposed smear zone soils. A topographic map and a site map are provided as Figures 1 and 2. Soil, groundwater, and surface water analytical results are provided in Tables 1, 2, and 3, respectively.

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.:

Approximately 253 cubic yards of impacted soil above the COGCC standards was transported to the Waste Management landfill in Ault, CO for disposal.

Submit Page 2 with Page 1.

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## REMEDIATION WORKPLAN (CONT.)

OGCC Employees: \_\_\_\_\_

Tracking Number: \_\_\_\_\_  
Name of Operator: Petroleum Development Corporation  
OGCC Operator No: 69175  
Received Date: \_\_\_\_\_  
Well Name & No: B. Johnson 11-11  
Facility Name & No.: B. Johnson 11 & 12-11

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

Three monitoring wells (MW01 through MW03) were installed at the site on November 30, 2009. Each of the wells were developed and purged following installation. Groundwater samples were collected and submitted for laboratory analysis of BTEX. Analytical results indicated non-detectable BTEX concentrations in groundwater samples collected from all three monitoring wells.

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 site was restored to its pre-release grade. PDC's production facility remains at the site.

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 ☐ N If yes, describe:

Groundwater monitoring wells will continue to be sampled until four consecutive quarters of analytical results are in compliance with Reg. 41.

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

Approximately 253 cubic yards of impacted soil above the COGCC standards was transported to the Waste Management Landfill in Ault, CO for disposal.

## IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	<u>9/3/09</u>	Date Site Investigation Completed:	<u>Active</u>	Remediation Plan Submitted:	<u>3/24/10</u>
Remediation Start Date:	<u>9/3/09</u>	Anticipated Completion Date:	<u>9/3/10</u>	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: Randall FergusonSigned:  Title: Environmental Supervisor Date: 4/2/10

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_