

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: Petroleum Development Corporation		Name: Randall Ferguson	
Address: 1775 Sherman Street, Suite 3000		No: (303) 860-5800	
City: Denver State: CO Zip: 80203		Fax: (303) 860-5838	
API/Facility No: 05-123-20196		County: Weld	
Facility Name: Erlich 32-7		Facility Number:	
Well Name: Erlich		Well Number: 32-7	
Location (QtrQtr, Sec, Twp, Rng, Meridian): SWNE Sec 7 T6N R64W 6 PM		Latitude: Longitude:	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate	
Site Conditions: Is location within a sensitive area (according to Rule 901e)? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation. Groundwater < 20 feet bgs.	
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Irrigated cropland	
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Aquolls and Aquepts, flooded	
Potential receptors (water wells within 1/4 mi, surface waters, etc.): An intermittent ditch is located 150 ft east of the site; a water well is located 1,620 ft west of the site; a building is located 1,780 ft southeast of the site; depth to groundwater is between 4 ft and 6 ft below ground surface (bgs)	
Impacted Media (check):	Extent of Impact:
<input checked="" type="checkbox"/> Soils	30' E-W x 90' N-S x 4' bgs
<input type="checkbox"/> Vegetation	
<input checked="" type="checkbox"/> Groundwater	See attached data
<input type="checkbox"/> Surface water	
How Determined:	
Soil samples for field screening and laboratory analysis	
Groundwater samples for laboratory analysis	

REMEDIALATION WORKPLAN

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

Form 19 submitted on 1/4/09 (Spill# 1942519). An initial Form 27 submitted on April 14, 2009 (Remediation# 4589).

Describe how source is to be removed:

During routine tank battery upgrade activities, PDC discovered a leak in the dump lines from the production tank to the separator. Once the dump lines were removed, impacted soil above the COGCC sensitive area standard was excavated in December 2008. Soil samples were collected from the sidewalls of the excavation and submitted for analysis of TPH by EPA Modified Method 8015. Laboratory results indicate TPH concentrations (C6-C36) along the excavation perimeter were in compliance with the COGCC sensitive area standard of 1,000 mg/kg (Table 910-1 prior to 4/1/09). A groundwater sample was collected from the open excavation and was submitted for analysis of BTEX by EPA Method 8260B. Laboratory results indicate benzene, toluene and total xylenes concentrations exceeded the CDPHE Water Quality Control Commission Regulation 41 (Reg.41) standards. Before backfilling the excavation, activated carbon was applied to the groundwater and exposed smear zone soils. A topographic site location map and site map are provided as Figures 1 and 2. Soil and groundwater analytical results are summarized in Tables 1 and 2, 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.:

A total of 540 cubic yards of impacted soil above the COGCC sensitive area standard (Table 910-1 prior to 4/1/09) was transported to the Waste Management landfill in Ault, CO for disposal.

Submit Page 2 with Page 1.



REMEDIAL WORKPLAN (CONT.)

OGCC Employee:

Tracking Number: _____
Name of Operator: Petroleum Development Corporation
OGCC Operator No: 69175
Received Date: _____
Well Name & No: Erlich 32-7
Facility Name & No.: Erlich 32-7

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

Five monitoring wells (MW01 through MW05) were installed at the site on 3/3/09. Groundwater samples were collected from each of the wells and submitted for laboratory analysis of BTEX on 3/10/09. Analytical results indicated BTEX concentrations in the groundwater samples collected from monitoring wells MW02, MW03, MW04, and MW05 were in compliance with Reg. 41 standards. The benzene concentration in the groundwater sample collected from well MW01 exceeded the Reg. 41 standard. An additional monitoring well (MW06) was installed downgradient of monitoring well MW01 in order to establish a downgradient point of compliance (POC) on 4/22/09. A groundwater sample was collected from MW06 on 4/24/09 and analytical results indicated BTEX concentrations were in compliance with Reg. 41 standards. Groundwater samples were collected from each of the wells on 6/19/09, 9/23/09, 12/9/09, and 3/18/10. Analytical results indicated non-detectable BTEX concentrations 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 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:

Analytical results indicate BTEX concentrations in the groundwater samples collected from each of the wells have remained in compliance with Reg. 41 standards for four consecutive quarters. Analytical results indicate the former groundwater impacts have been remediated. Based on the laboratory results, PDC is requesting a No Further Action status for the site.

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

A total of 540 cubic yards of impacted soil above the COGCC sensitive area standard (Table 910-1 prior to 4/1/09) was transported to the Waste Management Landfill in Ault, CO for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	<u>12/24/08</u>	Date Site Investigation Completed:	<u>3/10/10</u>	Remediation Plan Submitted:	<u>3/30/09</u>
Remediation Start Date:	<u>12/24/08</u>	Anticipated Completion Date:	<u>4/10/10</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 Ferguson

Signed:  Title: Environmental Supervisor Date: 4/1/09

OGCC Approved: _____ Title: _____ Date: _____