

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

Remediation # 4208

## 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): \_\_\_\_\_

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

## GENERAL INFORMATION

<b>OGCC Operator Number:</b> 69175		<b>Contact Name and Telephone</b>	
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: 05-123-07599		County: Weld	
Facility Name: Great Western Sugar		Facility Number: #1	
Well Name: Great Western Sugar		Well Number: #1	
Location (QtrQtr, Sec, Twp, Rng, Meridian): NENE 9-T4N-R67W 6th Principal Meridian Latitude: _____ Longitude: _____			

## TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.):		Condensate and/or produced water	
<b>Site Conditions:</b> 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:		Sandy clay	
Potential receptors (water wells within 1/4 mi, surface waters, etc.):		Water well located approximately 340' north of the site, surface water located approximately 310' south of the site and groundwater at 8-9' bgs.	
<b>Description of Impact</b> (if previously provided, refer to that form or document):			
Impacted Media (check):	Extent of Impact:	How Determined:	
<input type="checkbox"/> Soils	See attached table and lab report	Soil sample for field screening and laboratory analysis	
<input type="checkbox"/> Vegetation			
<input checked="" type="checkbox"/> Groundwater	See attached table and lab reports	Collected groundwater samples for laboratory analysis	
<input type="checkbox"/> Surface water			

## REMEDATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
Form 19 submitted on November 29, 2007 (Spill # 1982075). Form 27 submitted on April 18, 2008 (Remediation # 4208)
Describe how source is to be removed:
A limited site investigation was conducted in 2007 due to historic operation of a "tinhorn" adjacent to the produced water tank. The "tinhorn" and impacted soil were previously removed by a former operator. A soil boring was advanced in the former location of the "tinhorn" and a soil sample (SB01) was collected from 8 feet below ground surface (bgs). The soil sample was submitted to a laboratory for analysis of Total Petroleum Hydrocarbons (TPH) by EPA Modified Method 8015. Laboratory results indicated the TPH (C6-36) concentration was below the Colorado Oil and Gas Conservation Commission (COGCC) Sensitive Area allowable level of 1,000 mg/kg (Table 910-1 prior to 4/1/09). Groundwater was encountered in the boring during site investigation activities. Soil boring SB01 was completed as a monitoring well (MW01) and a groundwater sample was collected following development and purging. The groundwater sample was submitted to a laboratory for analysis of BTEX by EPA Method 8260B. Laboratory results indicated the benzene concentration exceeded the CDPHE, Water Quality Control Commission (WQCC) Regulation 41-The Basic Standard for Groundwater of 5 µg/L. A topographic map and site map are provided as Figures 1 and 2. Soil and groundwater analytical results are provided in Tables 1 and 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.:
Groundwater at the site was remediated by monitored natural attenuation.

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Name of Operator: Petroleum Development Corporation  
OGCC Operator No: 69175  
Received Date: \_\_\_\_\_  
Well Name & No: Great Western Sugar #1  
Facility Name & No.: Great Western Sugar #1

## REMEDIATION WORKPLAN (CONT.)

OGCC Employee: \_\_\_\_\_

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

Three additional monitoring wells (MW02-MW04) were installed at the site in January 2008. Following installation, monitoring wells MW02, MW03, and MW04 were developed and purged. Groundwater samples were collected from wells MW01, MW02, MW03, and MW04 on a quarterly basis from January 29, 2008 through October 21, 2009 and were submitted for laboratory analysis BTEX. Groundwater Analytical results indicate BTEX concentrations in groundwater samples collected from each of the monitoring wells have been below the Basic Standards for Groundwater the past 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.

PDC's production facility remains at the site. The attached figure depicts the configuration of the facility and the locations of the monitoring wells.

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 levels in the groundwater samples collected from each of the wells have remained below the Basic Standards for Groundwater for four consecutive quarters. The groundwater data indicates the former groundwater impacts have been remediated. Based on the laboratory results, PDC is requesting 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.):

Groundwater at the site was remediated by monitored natural attenuation.

## IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	<u>11/29/07</u>	Date Site Investigation Completed:	<u>10/21/09</u>	Remediation Plan Submitted:	<u>2/5/10</u>
Remediation Start Date:	<u>11/27/07</u>	Anticipated Completion Date:	<u>10/21/09</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: 2/5/10

OGCC Approved: \_\_\_\_\_ Title: EPS Date: 02/08/10