

State of Colorado  
**Oil and Gas Conservation Commission**



1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)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): \_\_\_\_\_

OGCC Operator Number: <u>10200</u>	Contact Name and Telephone: <u>PAUL MANISCALCO</u>
Name of Operator: <u>PETROHUNTER OPERATING COMPANY</u>	No: <u>303 572 8900</u>
Address: <u>1600 STOUT STREET SUITE 2000</u>	Fax: _____
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>	

API Number: <u>05 103 10972 00</u>	County: <u>RIO BLANCO</u>
Facility Name: _____	Facility Number: <u>288675</u>
Well Name: <u>LAKE</u>	Well Number: <u>6-22</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SENW 22 1N 95W 6PM</u>	Latitude: <u>40.04367</u> Longitude: <u>-108.04137</u>

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): DRILL CUTTINGS - INTERIM CLOSURE

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.): OPEN RANGE

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: RIO BLANCO 34 FORELLE LOAM

Potential receptors (water wells within 1/4 mi, surface waters, etc.): POWELL PARK DITCH

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input type="checkbox"/> Soils	<u>SEE ATTACHED</u>	_____
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

**REMEDATION WORKPLAN**

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

Describe how source is to be removed:  
SEE ATTACHED

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.:  
SEE ATTACHED

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:(303)894-2109



Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

Page 2  
**REMEDIATION WORKPLAN (Cont.)**

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

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

SEE ATTACHED

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.

SEE ATTACHED

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:

SEE ATTACHED

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

SEE ATTACHED

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: \_\_\_\_\_ Date Site Investigation Completed: \_\_\_\_\_ Date Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: \_\_\_\_\_ Anticipated Completion Date: \_\_\_\_\_ 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: \_\_\_\_\_ Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

OGCC Approved: *Chris Canfield* Title: FOR Chris Canfield Date: Feb 25, 2011  
EPS NW Region

February 8, 2011

Colorado Oil and Gas Conservation Commission (COGCC)  
Attn.: Mr. Chris Canfield, Northwest Region Environmental Protection Specialist  
707 Wapiti Court, Suite 204  
Rifle, Colorado 81650

Subject: Proposed Work Plan for the Interim Closure of a Drill-Cutting Pit  
Well Name: Lake 6-22  
API No.: 05-103-10972-00  
Physical Location: SE NW Section 22, T1N, R95W, 6PM  
*Walter* Project No.: 242-05-001

Dear Chris,

**Walter Environmental Group, Inc. (*Walter*)** was contracted by PetroHunter Operating Company (PetroHunter) to prepare a Work Plan for the interim closure of the drill-cutting pit associated with the Lake 6-22 well, located in the SE1/4 of the NW1/4 of Section 22, Township 1 North, Range 95 West, of the 6<sup>th</sup> P.M. (Latitude/Longitude: 40.04367/-108.04137) (Figure 1). The purpose of this letter is to obtain COGCC approval to implement the proposed interim closure work plan. The following paragraphs summarize the regulatory history, site setting, and proposed work plan.

### **Regulatory History**

A routine site inspection was conducted by COGCC staff on May 24, 2010. Following the site inspection, a Notice of Alleged Violation was issued. According to the Notice of Alleged Violation, the following issues were documented:

- Hydrocarbons were observed on the surface of the drilling cutting pit;
- Trash was observed on the drill cutting pit (sacks of materials and pallets);
- Weeds were found to be emerging on the pad surface;
- No weed control measures were observed;
- Signs had incorrect contact information, inadequate information, and were not located at the wellhead; and
- Production pit did not have required netting in place per the permit.

Site housekeeping issues have been (or will be) addressed by PetroHunter, this work plan addresses the drill-cutting pit closure issue.

### **Site Setting**

The Lake 6-22 well is located approximately 7 miles west-northwest of the town of Meeker, north of Highway 64 (Figure 1). The surrounding site topography is variable with slopes ranging from 6 to 20 percent. Surface drainage from the site is to the west. Several unnamed dry washes transport surface run-

off toward Powell Park Ditch located approximately 2,500 feet south of the site.

Shallow bedrock consists of the Wasatch Formation, which generally consists of mudstone with interbedded fine-grained sandstones. The Wasatch Formation is generally considered a confining layer. Shallow ground water is not expected beneath the site. However, shallow ground water may be present within alluvial deposits adjacent to nearby surface-drainage features.

**Walter** conducted a water-well search for registered wells located within a 1-mile radius of the site. No permitted water wells were identified.

### **Field Visit**

**Walter** field personnel conducted a site visit on November 12, 2010. **Walter** was accompanied by Mr. Bill White with White Construction and Excavation, LLC.

At the time of the site visit, the drill-cutting pit contained drill cuttings, and was measured to be approximately 90 feet long by 40 feet wide. Mr. White estimated the depth of the drilling pit to be approximately 8 to 10 feet below grade. The drill-cutting pit was unlined.

### **Proposed Work Plan**

Based on a previous conversation with Ms. Linda Spry O'Rourke, COGCC Environmental Protection Specialist, it was determined that due to increased regulatory scrutiny on pits and the recent alleged violations in connection with this site, an environmental assessment would be required for drill-cutting pit closure.

Based on this requirement, the following work plan has been developed to determine if: 1) the presence of drill cuttings and drilling fluid within the pit have negatively impacted the soil and/or ground water beneath the pit; and 2) the drill cuttings have been sufficiently mixed such that any backfill material is below the Table 910-1 Concentration Levels in soil.

In order to determine if the historical presence and use of the drill-cutting pit has negatively impacted the native soils and/or ground water beneath the site, **Walter** proposes the following scope of work:

- Collect and field screen three soil samples from a depth of one to two feet beneath the bottom of the drilling pit at the locations identified in Figure 3. Based on the reported total depth of the drilling pit, it is anticipated that the soil samples will be collected at approximately 10 to 12 feet below ground surface.
- Field screening will consist of measuring the organic vapor headspace and electrical conductivity of each soil sample. The organic vapor headspace will be measured using a photoionization detector (PID). Electrical conductivity will be measured by preparing a saturated paste (50:50 mixture of soil and distilled water). The electrical conductivity of the saturated paste will be measured using a hand-held electrical conductivity meter.
- Based on the field screening results, one soil sample will be selected for detailed laboratory analytical testing. The selected soil samples will be packaged and shipped to Accu-Test Laboratories of Houston, Texas (Accu-Test) under standard Chain-of-Custody (COC) protocol for analysis of benzene, toluene, ethyl-benzene, xylenes (collectively

referred to as BTEX), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), salinity, and metals.

It is not anticipated that ground water will be encountered during soil sampling activities.

In order to determine if the backfill material within the drill-cutting pit is below the Table 910-1 Concentration Levels in soil, **Walter** proposes the following scope of work:

- Collect six discrete soil samples from various locations within the drill pit. The soil samples will be combine to create one composite soil sample.
- The composite soil sample will be packaged and shipped to Accu-Test under standard COC protocol for analysis of BTEX,TPH, PAHs, salinity, and metals.

All soil sampling activities will be conducted using an excavator supplied by White Construction and Excavation, LLC. Soil samples will be collected from the bucket of the excavator. In most instances, the soil samples will be collected from the teeth of the excavator bucket to help ensure the soil samples represent the intended target depth and location.

For comparison purposes, background soil samples will be collected to determine the natural background concentrations of salinity parameters and metals in the site soils. The background soil samples will be collected at the same depth intervals as the soil samples collected within and beneath the drill cutting pit for direct comparison.

## Results

A notice of completion will be prepared and submitted to COGCC upon completion of the environmental soil sampling. However, if laboratory data indicates impacted soil above the Table 910-1 Concentration Levels, another Form 27 will be prepared with additional sampling proposed.

PetroHunter would like to move forward with the drilling pit closure sampling as soon as possible. With your approval and depending on winter weather conditions, it is our goal to complete this work in February 2011.

Please call me if you have any questions, comments, or concerns.

Sincerely,



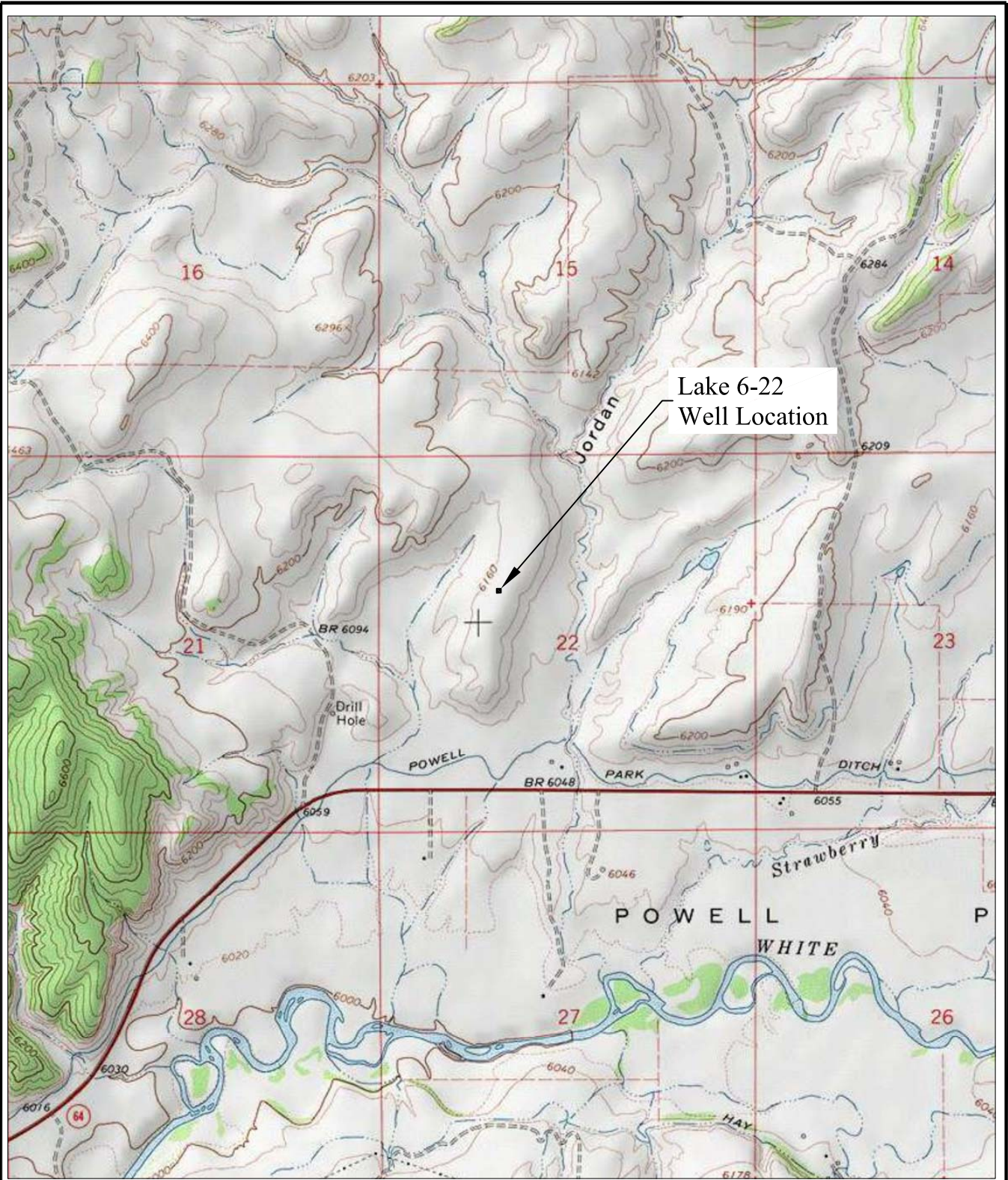
Scott Carmichael  
**Walter Environmental Group, Inc.**

## Attachments

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2/8/2011 10:20:01 AM



Source: USGS, Buckskin Point, Colorado Quadrangle; 1966, photorevised 1992.



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APPROXIMATE SCALE IN FEET

**WALTER ENVIRONMENTAL**  
Group Inc.

**Well Location Map**  
Lake 6-22 Well  
Section 22 T1N R95W  
Rio Blanco County, Colorado

01/12/2011  
Project No. 242-05-001

**Figure 1**