

State of Colorado
Oil and Gas Conservation Commission

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Report taken by:
CARLOS LUJAN

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27.

This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATON

Name of Operator: <u>BLACK HILLS PLATEAU PRODUCTION LLC</u>	Operator No: <u>10150</u>	Phone Numbers Phone: <u>(970) 210-9370</u> Mobile: <u>()</u>
Address: <u>1515 WYNKOOP ST STE 500</u>		
City: <u>DENVER</u>	State: <u>CO</u> Zip: <u>80202</u>	
Contact Person: <u>Chanse Brackett</u>	Email: <u>chanse.brackett@blackhillscorp.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 9636 Initial Form 27 Document #: 2526153

PURPOSE INFORMATION

<input type="checkbox"/> 901.e. Sensitive Area Determination	<input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
<input checked="" type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure	<input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
<input type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation	<input checked="" type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project
<input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste	<input type="checkbox"/> Rule 906.c.: Director request
<input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure	<input type="checkbox"/> Other _____

SITE INFORMATION N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: <u>PIT</u>	Facility ID: <u>116408</u>	API #: _____	County Name: <u>MESA</u>
Facility Name: <u>HORSESHOE CANYON 3</u>	Latitude: <u>39.239221</u>	Longitude: <u>-108.230368</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSW</u>	Sec: <u>28</u>	Twp: <u>9S</u>	Range: <u>97W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use RANGELAND

Is domestic water well within 1/4 mile? Yes Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

NONE

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	~295 SQUARE FEET x ~9 FEET DEEP	SOIL BORINGS

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Refer to the follow up field inspection/site visit report dated April 4, 2016. Document #671000322

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Monitoring samples were collected to determine if concentrations are being reduced by remediation efforts.

Proposed Groundwater Sampling

Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Proposed Surface Water Sampling

Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 3
Number of soil samples exceeding 910-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 295

NA / ND

-- Highest concentration of TPH (mg/kg) 9100
-- Highest concentration of SAR 16
BTEX > 910-1 No
Vertical Extent > 910-1 (in feet) 1

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 0'
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 910-1 0

Highest concentration of Benzene (µg/l) _____
Highest concentration of Toluene (µg/l) _____
Highest concentration of Ethylbenzene (µg/l) _____
Highest concentration of Xylene (µg/l) _____
Highest concentration of Methane (mg/l) _____

Surface Water

0 Number of surface water samples collected
0 Number of surface water samples exceeding 910-1
If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Were background samples collected as part of this site investigation?

Three (3) independent background grab samples were collected and analyzed for arsenic, SAR, pH, and EC. Background samples will be used to request an allowance for arsenic.

Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) _____ Volume of liquid waste (barrels) _____

Is further site investigation required?

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The dump line which introduced produced water to the pit was taken out of service quite some time ago. The production equipment was re-plumbed to dump produced water into a steel production water tank. Excavation of pit and associated impacted soils consisted of delineating the extents of the impacts through exploratory borehole drilling. Once extents of contamination were determined, excavation equipment was utilized to remove the impacted soils. A Photoinization Detector (PID) meter was also utilized to guide excavation efforts. Confirmation samples were collected from each side wall and bottom of the excavation and can be seen as an attachment to this report. As part of the approved Form 27 (Rem #9636), the hydrocarbon impacted soil were transported to the Homer Deep Unit 9-41 location and placed into a Land Treatment Unit for ex-situ bio-remediation treatment.

REMIEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

Impacted soils from the pit closure excavation activities were transported to the Homer Deep 9-41 location for ex-situ treatment utilizing enhanced bio-remediation techniques. The degradation of hydrocarbons utilizing microbes is a natural process that is enhanced and accelerated by techniques developed by HRL Compliance Solutions, Inc. Maintaining proper soil conditions and nutrient levels is essential to microbial growth and productivity. Bio-remediation products and nutrients were applied to the LTU to promote microbial growth and proliferation. Water was applied on a regular basis to maintain a moisture content essential to microbial mobility. The LTU was also aeriated on a regular basis to provide oxygen and ensure even treatment distribution and a consistent media for treatment. Once soils were thoroughly mixed, additional monitoring soil samples were collected until analytical data confirmed COGCC Table 910-1 standards were met. Initial sample results collected during the site characterization indicated that only DRO and GRO exceeded COGCC Table 910-1 parameters. Based on these results, only DRO and GRO were analyzed for confirmation sampling. Black Hills is requesting an allowance based on arsenic concentrations in the remediated soils and background samples. Background samples indicate arsenic concentrations that exceed COGCC standards as well as arsenic values within the LTU. Background samples indicated an arsenic concentration of 6.5 mg/kg and the initial sample collected on 4/13/16 indicated an arsenic concentration of 1.5 mg/kg. Three (3) feet of native soil cover will be placed over the remediated soils during reclamation activities. Black Hills is requesting an allowance for arsenic, EC, SAR and pH based on background concentrations if native soils, as described above.

Soil Remediation Summary

In Situ

_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
_____ Air sparge / Soil vapor extraction
_____ Natural Attenuation
_____ Other _____

Ex Situ

No _____ Excavate and offsite disposal
If Yes: Estimated Volume (Cubic Yards) _____
Name of Licensed Disposal Facility or COGCC Facility ID # _____
Yes _____ Excavate and onsite remediation
Yes _____ Land Treatment
Yes _____ Bioremediation (or enhanced bioremediation)
No _____ Chemical oxidation
No _____ Other _____

Groundwater Remediation Summary

No _____ Bioremediation (or enhanced bioremediation)
No _____ Chemical oxidation
No _____ Air sparge / Soil vapor extraction
No _____ Natural Attenuation
No _____ Other _____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

Based on observations from the soil borings and geological conditions present at the location, groundwater has not been encountered or impacted.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other _____
Report Type: Groundwater Monitoring Land Treatment Progress Report O&M Report
 Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Volume of E&P Waste (solid) in cubic yards _____

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes _____

Do all soils meet Table 910-1 standards? Yes _____

Does the previous reply indicate consideration of background concentrations? Yes _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? _____

Does Groundwater meet Table 910-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? No _____

RECLAMATION PLAN

RECLAMATION PLANNING

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.

Black Hills intends to use the remediated soils on-site for future interim reclamation activities and will be covered with three (3) feet of native soil cover. Soils will be stored on location until reclamation.

Is the described reclamation complete? No _____

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim? Final?

Did the Surface Owner approve the seed mix? _____

If NO, does the seed mix comply with local soil conservation district recommendations? _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). _____

Date of commencement of Site Investigation. 04/04/2016

Date of completion of Site Investigation. 09/21/2017

REMEDIAL ACTION DATES

Date of commencement of Remediation. 06/10/2017

Date of completion of Remediation. 09/04/2017

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Please forward to Carlos Lujan for review.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Chanse Brackett

Title: Production Foreman

Submit Date: 12/06/2017

Email: chanse.brackett@blackhillscorp.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: CARLOS LUJAN

Date: 12/15/2017

Remediation Project Number: 9636

COA Type**Description**

COA Type	Description

Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num**Name**

401419169	FORM 27-SUPPLEMENTAL-SUBMITTED
401419547	ANALYTICAL RESULTS
401447578	ANALYTICAL RESULTS
401452442	ANALYTICAL RESULTS
401452449	ANALYTICAL RESULTS
401477820	SOIL SAMPLE LOCATION MAP
401477828	ANALYTICAL RESULTS
401478076	ANALYTICAL RESULTS

Total Attach: 8 Files

General Comments**User Group****Comment****Comment Date**

Agency	Documentation submitted with this supplemental e-form 27 includes: 1) Lab results from boreholes in the footprint of the backfilled pit (showing impact - TPH but no PAHs); 2) Lab results with confirmation samples from walls and bottom of the excavated pit (in compliance); 3) Lab results of the land treated soil indicating compliance with Table 910-1, after a year of land farming.	12/12/2017
Environmental	Based on review of information presented it appears that no further action is necessary at this time, and COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if ground water is found to be significantly impacted, then further investigation and/or remediation activities may be required at the site.	12/12/2017
Environmental	Blackhills has submitted documentation to support closure of the pit Facility ID #116408 (Horseshoe Canyon #3 pit) and REM #9636 submitted to close the pit. REM #9636 will be closed and Pit status will be changed to CLOSED.	12/12/2017

Total: 3 comment(s)