

State of Colorado
Oil and Gas Conservation Commission

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Document Number:
402461565
Receive Date:
09/09/2020

Report taken by:
Steven Arauza

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 INFORMATION

Name of Operator: GRIZZLY OPERATING LLC	Operator No: 10531	Phone Numbers
Address: 5847 SAN FELIPE #3000		Phone: (970) 876-1959
City: HOUSTON State: TX Zip: 77057		Mobile: ()
Contact Person: Scott Ghan	Email: sghan@grizzlyenergyllc.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 14050 Initial Form 27 Document #: 402149004

PURPOSE INFORMATION

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

SITE INFORMATION

N Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: SPILL OR RELEASE	Facility ID: 466240	API #: _____	County Name: GARFIELD
Facility Name: Gibson Gulch Unit-66S91W/29SWSW 323972		Latitude: 39.492469	Longitude: -107.585501
QtrQtr: SWSW Sec: 29 Twp: 6S		Range: 91W	Meridian: 6 Sensitive Area? Yes
** correct Lat/Long if needed: Latitude: _____ Longitude: _____			

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Rangeland
Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

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 type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" 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	30x30x26	soil sampling

INITIAL ACTION SUMMARY

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

See COGCC Document Numbers 402149004 and 402191075 for work conducted prior to 11/14/19.

On 11/14/19, two soil borings were advanced to 26 feet bgs using hollow stem auger. As each soil boring was advanced a geologist inspected the soil for the presence of hydrocarbon impacts and field screened soil samples using a photoionization detector (PID). No hydrocarbon impacts were observed in either soil boring. During the advancement of soil borings, auger refusal was encountered within each soil boring at 26 feet bgs. Soil samples collected from soil boring SB-07 where field screening and observations indicated the highest potential for hydrocarbon impacts. No water was observed in soil boring SB-07. As approved in COGCC Document Number 402149004, soil samples were submitted for laboratory analysis of TPH GRO/DRO and BTEX. No soil samples were collected from MW-01 as it was installed in the same area of the previous soil boring SB-05. During assessment activities, water was only observed in soil boring MW-01, which was converted to a groundwater monitoring well. Soil boring locations are depicted on the attached Figure 2.

On 11/15/19, MW-01 was developed and sampled for laboratory analysis of constituents identified in COGCC Table 910-1. On February 19, May 29, and August 13, 2020, MW-01 was sampled in the first three quarters for the laboratory analysis of constituents identified in COGCC Table 910-1. Laboratory analytical results of the past three quarters have been either below the laboratory detection limit or within the COGCC Table 910-1 Concentration Levels for BTEX. Laboratory analytical reports are attached and summarized in Tables 1 and 2.

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):

Grizzly will conduct excavation activities in the exact location of S. Wall W. Side @ 18' to confirm remediation. Approximately 18 feet of documented clean overburden will be removed in order to reach this previous sample's depth. At this point, the soil will be field screened for hydrocarbons. If the results of the field screening indicate compliance with COGCC Table 910-1, one sample (S. Wall W. Side @ 18') will be collected at this location and submitted for laboratory analysis of TPH-GRO, TPH-DRO, and BTEX. If field screening does not indicate compliance with COGCC Table 910-1 at 18' bgs, the pothole excavation will be advanced to a depth where screening indicates the potentially impacted soil has been removed and a confirmation soil sample can be collected. When laboratory analytical results of the confirmation soil sample indicate Table 910-1 compliance for TPH and BTEX, Grizzly and the COGCC will consider this area remediated and no further action is necessary.

Proposed Groundwater Sampling

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

One groundwater sample will be collected quarterly from MW-01 and analyzed for BTEX, chloride, sulfate and TDS until compliance with COGCC Table 910-1 can be demonstrated for four straight quarters. Groundwater data collected to date is attached.

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):

No additional excavation will be conducted to the south based on data collected from SB-07 demonstrating Table 910-1 compliance.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 0
Number of soil samples exceeding 910-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 100

NA / ND

NA Highest concentration of TPH (mg/kg) _____
NA Highest concentration of SAR _____
BTEX > 910-1 No
Vertical Extent > 910-1 (in feet) 27

Groundwater

Number of groundwater samples collected 1
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 24'
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 910-1 0

-- Highest concentration of Benzene (µg/l) 3.6
ND Highest concentration of Toluene (µg/l) _____
ND Highest concentration of Ethylbenzene (µg/l) _____
ND Highest concentration of Xylene (µg/l) _____
NA 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?

See COGCC Document Number 402149004 regarding background arsenic information.

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.

Excavation activities removed approximately 440 cubic yards of hydrocarbon impacted soil. The soil was transported to Greenleaf Environmental Services in De Beque, Colorado for offsite disposal. Data collected through additional confirmation soil sampling (SB-07) suggests residual hydrocarbon impacts identified by excavation sample S WALL W. SIDE @ 18' have been remediated through aeration during the open excavation and natural attenuation.

REMEDIATION 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.

The source material was removed through excavation as previously stated. Any potential remaining impacts identified by E. FLOOR @ 26' have been defined vertically by soil sample SB-05 25-27.5' and laterally through compliant samples collected at bedrock between 25 to 26 feet in soil borings SB-01 through SB-04, SB-06, and SB-07. Additionally, Grizzly mixed 400 pounds (lbs) of chemically oxidized granular activated carbon (GAC) into the excavation at the water level prior to backfilling to remediate residual dissolved phase hydrocarbons in the area of soil sample E. FLOOR @ 26'.

Soil Remediation Summary

In Situ

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

Ex Situ

- _____ Excavate and offsite disposal
- _____ If Yes: Estimated Volume (Cubic Yards) _____
- _____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
- _____ Excavate and onsite remediation
- _____ Land Treatment
- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Other _____

Groundwater Remediation Summary

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

One groundwater sample will be collected quarterly from MW-01 and analyzed for BTEX, chloride, sulfate and TDS until compliance with COGCC Table 910-1 can be demonstrated for four straight quarters. Groundwater data collected to date is attached.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other Requested Update _____

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? Yes _____

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

NA

Volume of E&P Waste (solid) in cubic yards _____ 440

E&P waste (solid) description hydrocarbon impacted soil _____

COGCC Disposal Facility ID #, if applicable: _____ 159998

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____ 0

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No _____

Do all soils meet Table 910-1 standards? _____

Does the previous reply indicate consideration of background concentrations? _____

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? _____

Is additional groundwater monitoring to be conducted? _____

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.

All disturbances will be returned to preexisting conditions.

Is the described reclamation complete? _____

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. 07/22/2019

Actual Spill or Release date, if known. 07/22/2019

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/24/2019

Date of commencement of Site Investigation. 08/29/2019

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. _____

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Grizzly Operating is respectfully requesting relief from the COA pertaining to sample location E. Floor @ 26' that was attached to COGCC approved Supplemental Form 27 Document Number 402260331. Please find a letter attached from LT Environmental, Inc. which supports the request for relief from the COA. LT Environmental has been assisting Grizzly with this remediation project since its inception. A well documented email chain of correspondence between Grizzly and COGCC environmental staff exists which provides extensive details pertaining to the COA and supports Grizzly's request for relief from this specific COA. This correspondence should be referenced for additional details due to limitations in this F27 submittal.

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

Signed: Scott Ghan

Title: Senior EHS Specialist

Submit Date: 09/09/2020

Email: sghan@grizzlyenergyllc.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: Steven Arauza

Date: 09/24/2020

Remediation Project Number: 14050

COA Type

Description

	<p>Relief from COA on COGCC Supplemental Form 27 Document Number 402260331 is not granted.</p> <p>This remediation project will not be eligible for closure with documented TPH impacts to soil at depth. Operator shall demonstrate compliance of TPH impacted areas (E. Floor @ 26' and S. Wall W. Side @ 18') via a Supplemental eForm 27.</p> <p>And as stated in Docs #1727845 and #1727846--dated 07/2/2020, "The sample collected from the E Floor at 26 feet had combined (DRO and GRO) TPH of 2230 mg/kg. The remediation cannot be closed until the operator demonstrates that the subsurface soils are compliant with Table 910-1 for TPH. The operator can advance soil borings north to northeast of where the E Floor at 26 feet sample was collected outside of the excavated area in the native material."</p>
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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.

<u>Att Doc Num</u>	<u>Name</u>
402461565	FORM 27-SUPPLEMENTAL-SUBMITTED
402462073	SITE MAP
402476440	ANALYTICAL RESULTS

402476448	ANALYTICAL RESULTS
402480386	ANALYTICAL RESULTS
402482811	MAP
402484556	OTHER

Total Attach: 7 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	Page 4 of the attached report (Doc #402484556) states that "the GAC is effectively remediating any residual hydrocarbons within the saturated zone." As previously stated, confirmation sampling is required to demonstrate the effectiveness of the in-situ remediation.	09/23/2020
Environmental	<p>Per Rule 906.a operators shall investigate, clean up, and document impacts as soon as practicable, The Director may require additional activities...to the extent necessary to ensure compliance with concentration levels in Table 910-1.</p> <p>Per Rule 906.c, a Form 27 is required "when necessary to ensure compliance with the concentration levels in Table 910-1"</p> <p>Per Rule 909.b.(5), Soil that does not meet 910-1 shall be remediated.</p> <p>Per Rule 909.e.(1), Remediation shall be complete "upon compliance with the concentrations in Table 910-1, or upon compliance with an approved workplan."</p> <p>Per Rule 910.b.(1), sampling and analysis shall be conducted in accordance with approved workplan and Rule 910</p> <p>Per Rule 910.b.(2), sampling and analysis for site investigation or confirmation of successful remediation shall be conducted to confirm compliance with Table 910-1</p> <p>Per Rule 910.b.(3).A, If soil contamination is suspected or known to exist as a result of spills/releases, representative samples of soil shall be collected and analyzed per Rule 910</p> <p>Per Rule 910.b.(3).E, Soil impacted by hydrocarbons, samples shall be analyzed for TPH per Table 910-1.</p> <p>The 900-Series Rules do not make a distinction between vadose zone and saturated zone soils, therefore the request for relief from the subject COA is not supported by COGCC 900-Series Rules.</p>	09/17/2020
Environmental	<p>Responses to questions included in the attached letter (doc #402484556):</p> <ol style="list-style-type: none"> 1) The COGCC is requesting that the Operator demonstrate remediation effectiveness and compliance with Table 910-1 for TPH exceedances at 18' and 26' that have been previously documented by soil sampling and analysis. 2) Samples are being requested from outside of the excavated and backfilled area to demonstrate compliance of in situ material, not clean backfill material. 3) In-situ remediation is a viable technology and confirmation sampling is required to demonstrate effectiveness. 4) This project demonstrates impacts to both groundwater and soil at 26', compliance with Table 910-1 for both types of media must be verified to document the effectiveness of the remediation. 	09/17/2020

Environmental	<p>Page 3 of the attached report (doc #402484556) states that "As previously stated, the impacted zone represented by excavation sample E. Floor @ 26' was also later represented by soil collected at depth from SB-05 and groundwater collected from MW-01 following remedial application of GAC."</p> <p>Page 3 also states that "Through excavation, GAC application, and collection of laboratory data through subsequent soil and groundwater sampling activities, compliance with Table 910-1 has been demonstrated in this area."</p> <p>The COGCC does not concur with this assessment. Soil Sample ID E. Floor @ 26' documents TPH exceedances (2,230 mg/kg) at depth as of 7/25/2019, Sample ID SB-05 25'-27.5' was collected from a nearby area on 9/3/2019 after the excavation had been backfilled with clean material. Because the sample was collected after the area had been backfilled with clean material, it does not necessarily demonstrate compliance of undisturbed in situ soil with Table 910-1.</p>	09/17/2020
Environmental	Referenced correspondence has been uploaded to the project file under docs #1727845 and #1727846.	09/17/2020

Total: 5 comment(s)