

State of Colorado Oil and Gas Conservation Commission

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401207719

Receive Date:

05/18/2017

Report taken by:

KRIS NEIDEL

Site Investigation and Remediation Workplan (Initial 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: QEP FIELD SERVICES LLC	Operator No: 10551	Phone Numbers Phone: (253) 896-8731 Mobile: (907) 529-0297
Address: 1801 CALIFORNIA ST #1200		
City: DENVER	State: CO Zip: 80202	
Contact Person: Kyle Waldron	Email: Kyle.A.Waldron@tsocorp.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 10389

Initial Form 27 Document #: 401207719

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 checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input 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 Facilities (in accordance with Rule 909.c.)

Facility Type: PIT	Facility ID: 449140	API #: _____	County Name: MOFFAT
Facility Name: Powder North CS South Pit		Latitude: 40.963472	Longitude: -108.310401
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NENE	Sec: 32	Twp: 12n	Range: 97w Meridian: 6 Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications ML

Most Sensitive Adjacent Land Use Rangeland

Is domestic water well within 1/4 mile? No

Is surface water within 1/4 mile? No

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 checked="" 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	60' by 60' by 27' bgs (estimated)	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.

On November 5 and 6, 2015, LTE personnel advanced six soil borings to depths ranging from 16.5 feet to 32 feet below ground surface (bgs) in the location of the south pit at the site using a truck-mounted drill rig. Each soil boring was advanced until field measurements indicated clearance or auger refusal was encountered. Soil from each borehole was characterized by visually inspecting soil samples and field screened using a photoionization detector (PID) to monitor soil headspace for the presence of volatile organic vapors. Each sample location was logged using a global positioning system (GPS). Following sample collection, each soil boring was backfilled with sand, bentonite and soil to match the surrounding grade. Boring Logs are included as Attachment 1. Soil boring and sample locations are detailed in the attached Figure 2.

Laboratory analytical results of soil confirmation samples collected north, east, and west of the Powder Wash North Compressor Station south pit area indicated compliance with COGCC Table 910-1 allowable concentrations. Laboratory analytical results and field observations to south of the pit and within the pit area indicated petroleum hydrocarbon impacted soil to a depth of approximately 27 feet bgs. A conservative estimate of petroleum hydrocarbon impacted soil volume for the north pit is 60 feet long by 60 feet wide and 27 feet bgs (3,600 cubic yards).

Figure 2 illustrates the TPH and benzene concentrations detected within each soil boring in the east pit. Laboratory analytical results are summarized in Table 1 and the laboratory analytical reports are included as Attachment 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):

Soil samples were collected during the initial action described above. Following remedial activities additional soil borings will be advanced using a drill rig equipped with hollow stem auger. The soil from each borehole will be characterized by visually inspecting soil samples and screened using a photo-ionization detector (PID) to monitor the soil headspace for the presence of volatile organic vapors. If the PID is not deemed to be an adequate tool for field screening, a PetroFlag analysis field kit will also be available to test the soil for the presence of longer chained hydrocarbons, as necessary. Grab soil samples will be collected from each soil boring and submitted for laboratory analysis of constituents identified in COGCC Table 910-1.

Proposed Groundwater Sampling

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

Groundwater was not encountered during initial assessment activities associated with this pit.

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 7

Number of soil samples exceeding 910-1 4

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 3600

NA / ND

-- Highest concentration of TPH (mg/kg) 3270

-- Highest concentration of SAR 5.7

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 31

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

NA Highest concentration of Benzene (µg/l) 0

NA Highest concentration of Toluene (µg/l) 0

NA Highest concentration of Ethylbenzene (µg/l) 0

NA Highest concentration of Xylene (µg/l) 0

NA Highest concentration of Methane (mg/l) 0

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?

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

Volume of solid waste (cubic yards) 0

Volume of liquid waste (barrels) 0

☐ Is further site investigation required?

REMEDIAL ACTION PLAN

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Impacted material will be remediated in-situ and remediation success will be demonstrated through sample collection and laboratory analysis.

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 petroleum hydrocarbon impacts associated with the pit will be remediated in-situ using a solar powered soil vapor extraction (SVE) system. Four SVE wells were installed on April 25, 2016, for pilot testing activities. SVE pilot testing was conducted on May 23, 2016, to evaluate the flow rate and applied vacuum required to influence the subsurface and to determine specific site design radius of influence (ROI). Two SVE screen depths were tested (10 feet to 15 feet bgs and 20 feet to 30 feet bgs) to encourage uniform flow throughout the impacted interval (1 foot to 30 feet bgs). The screens were 0.010" slot screen. Drilling logs and a well completion table are included as attachments. The pilot test results were favorable (30 foot ROI) and it was determined two additional SVE wells (total of 6) are needed for site remediation due to soil heterogeneity. The additional two wells will be installed during system installation activities. Pilot test methodology and results are included as an attachment. The well layout is included as a site figure.

LTE plans to use a 4.9 horsepower VariSun solar SVE system to actively remove soil vapors from the subsurface utilizing the 6 SVE wells. LTE plans to conduct SVE well installation and SVE system installation activities during summer 2017. Field operation and maintenance (O&M) activities will include effluent air monitoring, maintaining equipment, and adjustments to the system to optimize efficiency. For the purposes of this workplan, LTE is estimating that the SVE system will be in operation for approximately 1 year under enhanced SVE operations.

Soil Remediation Summary

☒ In Situ

☐ No Bioremediation (or enhanced bioremediation)

☐ No Chemical oxidation

☐ Yes Air sparge / Soil vapor extraction

☐ No Natural Attenuation

☐ No 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)

☐ 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.

Groundwater was not encountered during initial assessment activities associated with this pit.

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? No

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: _____

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.

Any disturbances associated with this project will be reclaimed to match preexisting grade. Site reclamation will be carried out when appropriate, based on productivity and plans for future development.

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). 11/05/2015

Date of commencement of Site Investigation. 11/05/2015

Date of completion of Site Investigation. 11/06/2015

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/10/2017

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

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

Signed: ` Kyle Waldron _____

Title: Remediation PM _____

Submit Date: ` 05/18/2017 _____

Email: Kyle.A.Waldron@tsocorp.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: KRIS NEIDEL _____

Date: 08/17/2017 _____

Remediation Project Number: 10389 _____

COA Type**Description**

	Operator should provide notice to Environmental staff Kris Neidel (kris.neidel@state.co.us) or 970-871-1963 72hrs prior to mobilization at begin of work and any sampling activity.
	Confirmation Soil samples should include PAH's due to existence of Benzo(A)pyrene.
	It appears that the layer mentioned in the boring logs as a "red layer" is a confining layer, final compliance demonstration should include samples of the "grey" material mentioned in boring logs.
	An eform27 should be submitted prior to collecting confirmation soil samples. The form should outline; proposed sample locations and target depths.
	Semiannual project updates should be submitted on eForm 27.
	Semiannual project updates should be submitted on eForm 27.

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**

401207719	FORM 27-INITIAL-SUBMITTED
401207732	SITE MAP
401207733	SOIL SAMPLE LOCATION MAP
401207734	LOGS
401207735	ANALYTICAL RESULTS
401207737	ANALYTICAL RESULTS
401278651	SITE MAP
401278778	OTHER
401278802	OTHER

Total Attach: 9 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)