

State of Colorado
Oil and Gas Conservation Commission

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Report taken by:
CHRIS CANFIELD

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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: <u>EXTRACTION OIL & GAS INC</u>	Operator No: <u>10459</u>	Phone Numbers
Address: <u>370 17TH STREET SUITE 5200</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Nathan Bennett</u>	Email: <u>nbennett@extractionog.com</u>	
		Phone: <u>(720) 354-4616</u>
		Mobile: <u>(570) 932-0776</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20670 Initial Form 27 Document #: 402833339

PURPOSE INFORMATION

- Rule 913.c.(1): Pit or Cuttings Trench closure.
- Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- Rule 913.g: Changes of Operator.
- Rule 915.b: Request to leave elevated inorganics in situ.
- Other: Wellhead, flowlines and tank battery decommissioning. NFA request.

SITE INFORMATION

Yes Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>001-08881</u>	County Name: <u>ADAMS</u>
Facility Name: <u>BYDALEK 2-11</u>	Latitude: <u>39.974100</u>	Longitude: <u>-104.973190</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SESW</u>	Sec: <u>11</u>	Twp: <u>1S</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>No</u>
Facility Type: <u>LOCATION</u>	Facility ID: <u>320291</u>	API #: _____	County Name: <u>ADAMS</u>
Facility Name: <u>BYDALEK-61S68W 11SESW</u>	Latitude: <u>39.974100</u>	Longitude: <u>-104.973190</u>	
** correct Lat/Long if needed: Latitude: <u>39.974336</u>		Longitude: <u>-104.973815</u>	
QtrQtr: <u>SESW</u>	Sec: <u>11</u>	Twp: <u>1S</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>No</u>

Facility Type: OFF-LOCATION FLOWLINE Facility ID: 466860 API #: _____ County Name: ADAMS
Facility Name: Wellhead Line 11SESW Latitude: 39.974277 Longitude: -104.973466
** correct Lat/Long if needed: Latitude: _____ Longitude: _____
QtrQtr: SESW Sec: 11 Twp: 1S Range: 68W Meridian: 6 Sensitive Area? No

Facility Type: SPILL OR RELEASE Facility ID: 481168 API #: _____ County Name: ADAMS
Facility Name: Bydalek #2-11 Latitude: 39.974271 Longitude: -104.973489
** correct Lat/Long if needed: Latitude: _____ Longitude: _____
QtrQtr: SESW Sec: 11 Twp: 1S Range: 68W Meridian: 6 Sensitive Area? No

SITE CONDITIONS

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

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

Middle Big Dry Creek and wetlands are located approximately 400 feet southwest.

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 checked="" 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	42' x 32' x 13' bgs	Laboratory analysis.

INITIAL ACTION SUMMARY

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

This form has been prepared to support removal of the production equipment associated with this location. In accordance with COGCC Rule 911 and Rule 915, initial representative soil samples will be collected beneath the following equipment, if present onsite: wellheads, separators, above ground surface tanks, flowlines and produced water vessels. Initial laboratory soil analysis will include only BTEX, 1,2,4 and 1,3,5 Trimethylbenzene, naphthalene, TPH, pH, EC, SAR and boron. Other equipment such as the ECDs, meter sheds, or other qualifying equipment will be field screened, and a lab analysis submitted if impacts are identified. Groundwater, if present, will also be collected and analyzed. Identified impacts will be reported as required for each discovery, and a Form 19 will be submitted, and remedial investigation will be conducted with excavation equipment.

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):

In accordance with COGCC Rule 911 and Rule 915 soil samples will be collected during closure of each qualifying equipment type and/or field screened as described in the Initial Action Summary. Initial laboratory analysis will include only BTEX, 1,2,4 and 1,3,5 Trimethylbenzene, naphthalene, TPH, pH, EC, SAR and boron. If impacts are confirmed, the full Table 915-1 list of analysis will be tested for and additional excavation effort may be conducted to delineate horizontal and vertical extents. Overburden stockpiles, if present, will be sampled prior to use as backfill with a frequency of 1 composite sample per 500 cubic yards of material and submitted for analysis of VOCs.

Proposed Groundwater Sampling

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

If groundwater is encountered during excavation activities, one sample will be collected and analyzed for Table 915-1 groundwater constituents BTEX, 1,2,4 and 1,3,5 Trimethylbenzene, and naphthalene.

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	NA / ND
Number of soil samples collected <u>24</u>	-- Highest concentration of TPH (mg/kg) <u>4015</u>

Number of soil samples exceeding 915-1 6 -- Highest concentration of SAR 13.2

Was the areal and vertical extent of soil contamination delineated? Yes BTEX > 915-1 Yes

Approximate areal extent (square feet) 1344 Vertical Extent > 915-1 (in feet) 13

Groundwater

Number of groundwater samples collected 0 Highest concentration of Benzene (µg/l) _____

Was extent of groundwater contaminated delineated? Yes Highest concentration of Toluene (µg/l) _____

Depth to groundwater (below ground surface, in feet) _____ Highest concentration of Ethylbenzene (µg/l) _____

Number of groundwater monitoring wells installed _____ Highest concentration of Xylene (µg/l) _____

Number of groundwater samples exceeding 915-1 _____ Highest concentration of Methane (mg/l) _____

Surface Water

0 Number of surface water samples collected

_____ Number of surface water samples exceeding 915-1

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?

One background soil sample was collected from an area within native soils undisturbed by oil and gas activities. The background soil sample was analyzed for soil suitability and 915-1 Metals and the results were used to generate baseline levels for native soil conditions. The background sample indicates that Arsenic, Barium, and Selenium were present in elevated concentrations.

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.

Once evidence of historical release was discovered during closure of the partially-buried produced water vessel (PWV) and flowline, additional excavations were conducted and impacted soil was removed and transported to a disposal facility. A total of approximately 655 cubic yards of soil (5 cubic yards from the flowline excavation, and 650 cubic yards from the PWV excavation) were disposed of at the Front Range Landfill in Erie, Colorado. Transport and disposal records will be kept on file under usual and customary practice and are available upon request. Soil samples were collected and analyzed for Table 915-1 constituents until the horizontal and vertical extents of the excavations were within COGCC Table 915-1 allowable limits. The background sample indicates that Arsenic, Barium, and Selenium are present in elevated concentrations.

REMEDICATION 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.

In accordance with COGCC Rule 911 and Rule 915, representative surface soil samples were collected beneath the separator, above-ground storage tank (AST), and excavation samples were collected from the PWV. Other equipment such as the dump line and flowline were field screened using a photoionization detector (PID). Hydrocarbon impacts at the flowline near the separator and the PWV were removed and confirmation samples were collected. The background, PWV, and separator samples exceeded Table 915-1 allowable limits for arsenic ranging from 1.49 to 4.36 mg/kg. Background concentrations of arsenic (BKG01@6") were 3.47 mg/kg. These concentrations are not irregular for arsenic concentrations in this land use type with no reason to believe that arsenic containing materials may have been used at this site (Colorado Department of Public Health and Environment Arsenic Concentrations in Soil, July 2014 -see attached). Therefore, arsenic has not been considered a contaminant of concern at this Site. The background sample also indicates that Barium and Selenium are present in elevated concentrations. Groundwater is estimated to be below 20ft bgs, therefore, those samples which exceed the protection of groundwater soil screening level concentrations risk based (R) or MCL based (M), are naturally occurring concentrations, and are not a threat to groundwater.

Soil Remediation Summary

In Situ

Ex Situ

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

- Yes _____ Excavate and offsite disposal
- _____ If Yes: Estimated Volume (Cubic Yards) _____ 655
- _____ 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.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

Quarterly Semi-Annually Annually Other

Request Alternative Reporting Schedule:

Semi-Annually Annually Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

Report Type: Groundwater Monitoring Land Treatment Progress Report O&M Report
 Other NFA Request

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 _____

If YES:

- Compliant with Rule 913.h.(1).
- Compliant with Rule 913.h.(2).
- Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? Yes _____

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

Does Groundwater meet Table 915-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

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.

Reclamation activities will be completed in accordance with 1000 Series Rules, in collaboration with the landowner, and reported in a Form 4 (Sundry Notice) with proper documentation to demonstrate compliance with requirements for final reclamation. After all road base or other material is removed for reclamation, Operator may submit samples for laboratory analysis for soil suitability in compliance with 915.b if impacts from inorganic constituents are indicated.

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 provide the seed mix? _____

If YES, does the seed mix comply with local soil conservation district recommendations? _____

Did the local soil conservation district provide the seed mix? _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. _____

Proposed date of completion of Reclamation. _____

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 09/20/2021

Actual Spill or Release date, or date of discovery. 11/16/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/06/2021

Proposed site investigation commencement. 10/29/2021

Proposed completion of site investigation. 12/01/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/29/2021

Proposed date of completion of Remediation. 12/01/2021

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

OPERATOR COMMENT

This form has been prepared to document successful removal of the production equipment associated with this location. Residential screening levels were utilized at this location based on nearby groundwater monitoring wells registering static water levels deeper than 20 feet below ground surface. Analytical data shows all analyzed samples are in exceedance of Table 915-1 residential screening levels for arsenic. However, a background sample collected from nearby, non-impacted native soils shows that elevated arsenic levels are naturally occurring in the native soils in the area. The background sample also indicates that Barium and Selenium are present in elevated concentrations. Please find the attached Topographic Map, Site Diagram, Lab Results Summary Tables, a copy of the laboratory results, Tank Battery, Wellhead, and Flowline Closure Checklists with associated photologs, and a reference related to arsenic concentrations in soil (Colorado Department of Public Health and Environment Arsenic Concentrations in Soil, July 2014).

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

Signed: Maggie Graham

Title: Senior Project Manager

Submit Date: 01/25/2022

Email: Maggie.Graham@apexcos.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: CHRIS CANFIELD

Date: 02/16/2022

Remediation Project Number: 20670

Condition of Approval**COA Type****Description**

	Based on the information presented, it appears that no further action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required.
	The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.
2 COAs	

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**

402935287	FORM 27-SUPPLEMENTAL-SUBMITTED
402936847	OTHER
402936982	OTHER

Total Attach: 3 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)