

State of Colorado  
Oil and Gas Conservation Commission

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Report taken by:  
ROB YOUNG

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: FOUNDATION ENERGY MANAGEMENT LLC	Operator No: 10112	<b>Phone Numbers</b>
Address: 5057 KELLER SPRINGS RD STE 650		Phone: (303) 244-8114
City: ADDISON State: TX Zip: 75001		Mobile: (720) 257-2302
Contact Person: Alyssa Beard	Email: abeard@foundationenergy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 14234 Initial Form 27 Document #: 402183100

PURPOSE INFORMATION

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

SITE INFORMATION

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

Facility Type: PIT	Facility ID: 112069	API #: _____	County Name: WELD
Facility Name: SOONER UNIT (24 WELLS)	Latitude: 40.651460	Longitude: -103.869821	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: _____	Sec: 21	Twp: 8N	Range: 58W Meridian: _____ Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Private land and Riverine Habitat  
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

Wild Horse Creek located approximatley 950 north of the Site which is classified as a Riverine Habitat (R4SBC) in the National Wetlands Inventory and is an intermittent streambed that contains flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.

# 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 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	Approximately 80' x 40' x 15' deep	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.

On June 18, 2015, COGCC issued Inspection 667400704 for the site indicating that remediation of the pit was required. On September 8, 2015, Foundation Energy performed impacted soil excavation activities and removed approximately 23 tons (18cy) of soil from the site for disposal. Soil samples were collected from the extents of the excavation at the locations illustrated on Figure 2 and submitted for laboratory analysis of BTEX, TPH-GRO/DRO, pH, EC, SAR, Organics, and Geochemical analysis. The laboratory results are summarized on Table 1 and the laboratory analytical report is attached. Based on the laboratory analytical results, Foundation energy performed additional soil removal activities and on February 1, 2016, a supplemental soil sampling event was conducted at the locations illustrated on Figure 2. The soil sample analytical data are summarized on Table 1 and the laboratory analytical report is attached. In accordance with the August 30, 2019 COGCC Inspection Document #688000335, Foundation Energy requested closure of Remediation #9288 and continued Site remediation under the new Remediation #14234 for closure of the tinhorn (culvert) and the partially buried oil skim tank. On November 22 and 25, 2019, approximately 501 tons of soil was removed from the excavation area illustrated on Figure 2, to the north of the previous excavation. Soil samples were collected from the extents illustrated on Figure 2 and submitted for laboratory analysis of BTEX, TPH-GRO/DRO, ph, SAR, and EC. However, because the soil samples were collected deeper than the root zone located between the surface and 3 feet bgs, Foundation is requesting relief from ph, SAR, and EC standards based on COGCC FAQ 32. Based on the soil sample analytical results, petroleum hydrocarbon impacts to soil have been remediated and a no further action request and site closure is warranted.

## 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 the August 30, 2019 COGCC Inspection Document #688000335 and subsequent to removal of the tinhorn and oil skim tank and excavation/removal of impacted soil, samples were collected from the extents of the excavations as illustrated on Figure 2. Based on the excavation extents and soil sample analytical results as summarized on Table 1 and provided in the attached laboratory analytical data, petroleum hydrocarbon impacts to soil associated with the tinhorn culvert and partially buried oil skim tank have been remediated.

### 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 21

Number of soil samples exceeding 910-1 6

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

Approximate areal extent (square feet) 2500

### NA / ND

--            Highest concentration of TPH (mg/kg) 8280

--            Highest concentration of SAR 18.8

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 16

### Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet)           

Number of groundwater monitoring wells installed           

Number of groundwater samples exceeding 910-1           

           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

           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) 501

Volume of liquid waste (barrels) 0

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 tinhorn (culvert) and the oil skim tank were removed and impacted soils were excavated for off-site disposal at a disposal facility.

## **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.

The tinhorn (culvert) and the oil skim tank were removed 9/19/19. Impacted soils were excavated for subsequent disposal. Soil samples were collected from the extents of the excavations performed in 2015, 2016, and 2019 and submitted for laboratory analysis of BTEX and TPH-GRO using USEPA Method 8260B, TPH-DRO using USEPA Method 8015. Based on the laboratory analytical results, petroleum hydrocarbon impacts have been remediated.

## **Soil Remediation Summary**

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 501

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ 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

Frequency:  Quarterly  Semi-Annually  Annually  Other Form 27 Remediation Progress Report and NFA Request

Report Type:  Groundwater Monitoring  Land Treatment Progress Report  O&M Report  
 Other Form 27 Remediation Progress Report and NFA Request

### 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:

Disposal at an approved off-site disposal facility.

Volume of E&P Waste (solid) in cubic yards 501

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

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Pawnee Waste, Grover CO

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

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? No

Do all soils meet Table 910-1 standards? No

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? Yes

Does Groundwater meet Table 910-1 standards? Yes

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.

The former pit area will be reclaimed as part of the larger reclamation effort of the entire Sooner Unit. The entire former tank battery (including the former pit area) will be recontoured and reseeded in Spring 2020 as soon as conditions allow.

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? Yes

## 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). 09/08/2015

Date of commencement of Site Investigation. 09/08/2015

Date of completion of Site Investigation. 11/04/2019

### **REMEDIAL ACTION DATES**

Date of commencement of Remediation. 09/08/2015

Date of completion of Remediation. 11/25/2019

### **SITE RECLAMATION DATES**

Date of commencement of Reclamation. 04/01/2020

Date of completion of Reclamation. 04/15/2020

**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: Alyssa Beard \_\_\_\_\_

Title: EHS Manager \_\_\_\_\_

Submit Date: 12/17/2019 \_\_\_\_\_

Email: abeard@foundationenergy.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: ROB YOUNG \_\_\_\_\_

Date: 12/19/2019 \_\_\_\_\_

Remediation Project Number: 14234 \_\_\_\_\_

**COA Type****Description**

	Submit a supplemental eForm 27 for Rem #14234 requesting project closure following backfilling of the excavation. Include photos of the backfilled pit.
	Submit a supplemental eForm 27 for Rem #9288 referencing Rem #14234.
	Based on the information presented, COGCC agrees backfilling the excavation is appropriate at this time.

**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**

402260492	FORM 27-SUPPLEMENTAL-SUBMITTED
402260912	SITE MAP
402260913	SOIL SAMPLE LOCATION MAP
402260914	ANALYTICAL RESULTS
402260916	ANALYTICAL RESULTS
402260917	ANALYTICAL RESULTS
402260918	ANALYTICAL RESULTS
402260919	ANALYTICAL RESULTS
402265238	DISPOSAL MANIFESTS
402265240	DISPOSAL MANIFESTS
402265242	DISPOSAL MANIFESTS

Total Attach: 11 Files

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

Environmental	Unchecked "is this a final closure request" pending pit backfilling.	12/19/2019
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Total: 1 comment(s)