FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: Stan Spencer

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
Address: 5057 KELLER SPRINGS RD STE 650
City: ADDISON State: TX Zip: 75001
Contact Person: Alyssa Beard

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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 8238 Initial Form 27 Document #: 2147811

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [x] 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 Facilites (in accordance with Rule 909.c.)

Facility Type: WELL Facility ID: API #: 103-10249 County Name: RIO BLANCO
Facility Name: BANTA RIDGE FED 12-18-1-103 Latitude: 39.964710 Longitude: -109.004260
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWNW Sec: 18 Twp: 1S Range: 103W Meridian: 6 Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications: GM
Most Sensitive Adjacent Land Use: NON CROP LAND
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

NO WATER WELLS OR SURFACE WATERS IDENTIFIED WITHIN A MILE (VERIFIED THORUGH COGCC GIS TOOL).

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [x] Produced Water
  - [ ] Oil
  - [ ] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	GROUNDWATER	NO GRNDWTR ENCOUNTERED AT 10' DEEP	None entered excavation
Yes	SOILS	40' x 65'; depths of 14' & 8'	SATURATED SOIL WITHIN TANK BER
No	SURFACE WATER	NA	NO SURFACE WATER WITHIN 1 MILE
	VEGETATION	NA	RELEASE ON WELL PAD

INITIAL ACTION SUMMARY

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

UPON SEEING SOIL-SATURATED SOIL WITHIN THE BERM, THE PUMPER IMMEDIATELY SHUT-IN THE WELL AND PRESSURE TESTED THE FLOWLINE TO VERIFY THAT WAS THE SOURCE OF THE LEAK. COGCC WAS NOTIFIED VERBALLY ON 1/28/14 AND A FORM 19 WAS SUBMITTED TO THE COGCC ON 2/14/14.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

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

Soil samples were collected on May 9, 2018 to confirm that all impacted material had been removed in July, 2015. All soil samples were below the Table 910 standard. A map of the soil sample locations and a table showing analytical results is attached.

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: 9

Number of soil samples exceeeding 910-1: 0

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

Approximate areal extent (square feet): 0

NA / ND

NA — Highest concentration of TPH (mg/kg):

NA — Highest concentration of SAR:

BTEX > 910-1: No

Vertical Extent > 910-1 (in feet): 0

Groundwater

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet): `

Number of groundwater monitoring wells installed:

Number of groundwater samples exceeding 910-1:

NA — Highest concentration of Benzene (µg/l):

NA — Highest concentration of Toluene (µg/l):

NA — Highest concentration of Ethylbenzene (µg/l):

NA — 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?

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

Volume of solid waste (cubic yards): 875

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.

WE HAVE REMOVED 3.5 LOADS OF CONTAMINATED DIRT, WHILE DOING SCREENINGS IN THE FIELD WITH A PID METER. THESE LOADS HAVE BEEN TAKEN TO AN APPROVED LANDFILL AND MANIFEST TICKETS WILL BE SUBMITTED WITH FINAL FORM 27A UPON COMPLETION.
**Updated 6/21/18 - A total of 52 loads of soil were removed from the excavated area and transported to RN Industries, which equaled a volume of 1033 yards of material.

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.

Since soil samples have not been collected yet, Foundation will require additional data in order to develop the remediation plan,. However, should soil samples in the pit base and sidewalls exceed the Table 910-1 standard, soil will be removed from the pit and landfarmed at an approved location until the extenet of impacts have been determined and removed.

** Updated 6/21/18 - Impacted material (1033 yards) was removed from the location in July 2015 and transported to an off-site disposal facility. The excavation activites were overseen by Tasman Geosciences. The excavation remained open and closure was not sought due to staffing changes at Foundation Energy. Recent confirmation soil samples were collected with a hand auger from the excavation, taking care to collect the samples from native material, rather than the weathered surface. The samples were analyzed for BTEX and TPH. All samples were non-detect. In addition, one of the shallower samples, North2@4', was analyzed for inorganic constituents. pH, SAR, and EC were below the Table 910 standard.

Soil Remediation Summary

☐ **In Situ**

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

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 1033
  - Name of Licensed Disposal Facility or COGCC Facility ID # ____
- No Excavate and onsite remediation
  - Yes 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.

NO GROUNDWATER HAS BEEN IMPACTED IN THE EXCAVATION SO FAR. IF GROUNDWATER IS ENCOUNTERED DURING THIS REMEDIATION, WE WILL SEEK THE GUIDANCE OF COGCC AND DEAL WITH SAMPLING AND REMEDIATION PER THEIR STANDARDS AND REGULATIONS.
**Updated 6/21/18 - Groundwater was not encountered in the excavation, which reached to 14' below ground surface.

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? No

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.

THE CONTAMINATED AREA THAT IS BEING ADDRESSED IN THIS REMEDIATION WAS THE FLAT AREA WITHIN THE TANK BERMS. ONCE WE REMOVE/DISPOSE OF ALL CONTAMINATED SOIL AND TEST TO VERIFY THE REMAINING DIRT IS WITHIN THE COGCC'S TABLE 910-1, WE WILL BACKFILL WITH CLEAN DIRT AND LEVEL THE AREA AGAIN TO REPLACE THE TANKS BACK IN THEIR ORIGINAL LOCATION. SEEDING WILL NOT OCCUR UNTIL FINAL RECLAMATION OF THE FACILITY (WHICH IS NOT PLANNED FOR THIS FACILITY). A DIAGRAM WILL BE SUBMITTED ONCE DELINEATION HAS OCCURRED AND SAMPLE HAVE BEEN TAKEN WITH OUR OUTLINED SCOP AND PROCEDURE TO COMPLETE THE REMEDIATION.
** Updated 6/21/18 - The excavated area will be backfilled with clean fill once approval to close has been granted from COGCC. The tanks have been relocated to the northern end of the facility location and will not be replaced to the original spot. Area that was disturbed outside the well pad will be reclaimed with a seed mix approved by the BLM for this area. Clean fill will be brought in as needed to bring the excavated area back to its natural topography. Some clean fill is stockpiled on location.
One of the shallower samples, North2 @4', was run for inorganic constituents. pH, SAR, and EC were all below the Table 910 standard.

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? Yes

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). _____

Date of commencement of Site Investigation. 01/28/2014

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 01/30/2014

Date of completion of Remediation. 03/15/2014

SITE RECLAMATION DATES

Date of commencement of Reclamation. 07/16/2018

Date of completion of Reclamation. 07/27/2018

OPERATOR COMMENT

This spill was reported in 2014, and excavation and disposal occurred in late July 2015. Staffing changes at Foundation led to a disconnect in requesting closure after the removal of 1033 yards of impacted material in 2015. Excavation was overseen by a 3rd-party consulting company. Confirmation soil samples were collected in May 2018 to confirm the extents were reached in 2015. The 9 samples collected were below the Table 910 standard. Foundation would like to request closure on this remediation number.

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:` 06/21/2018 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: Stan Spencer Date: 06/21/2018

Remediation Project Number: 8238

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
401678134	FORM 27-SUPPLEMENTAL-SUBMITTED
401679985	ANALYTICAL RESULTS
401679992	ANALYTICAL RESULTS
401681460	DISPOSAL MANIFESTS
401681551	SOIL SAMPLE LOCATION MAP

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
Environmental	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 ground water is found to be impacted, then further investigation and/or remediation activities may be required. The non-working surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules plus all BLM requirements for Federal surface lands.	06/21/2018

Total: 1 comment(s)