

State of Colorado Oil and Gas Conservation Commission

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 17342 Initial Form 27 Document #: 402565168

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: Quarterly Groundwater Monitoring Summary Report

SITE INFORMATION

No Multiple Facilities

Facility Type: LOCATION	Facility ID: 324639	API #:	County Name: JACKSON
Facility Name: ALLARD-610N79W 30SENE		Latitude: 40.812241	Longitude: -106.301789
		** correct Lat/Long if needed: Latitude:	Longitude:
QtrQtr: SENE	Sec: 30	Twp: 10N	Range: 79W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications GW

Most Sensitive Adjacent Land Use Non-Crop Land - Silver Spur Land and Cattle

Is domestic water well within 1/4 mile? Yes

Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

The Allard location was constructed in alluvial material associated with the Michigan River.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

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

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	Unknown	Laboratory analysis
Yes	SOILS	150 square feet	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.

Initial actions and completed remedial measures have previously been submitted to the COGCC in the Form 19I (Document #402528181), in the Form 19S (Doc #402545454), and in the Form 27I (Doc #402565168). A remediation work plan was submitted in a Form 27S (Doc #402669575). The COGCC assigned spill tracking facility ID #324639 and remediation number #17342 for the Site. The impacts were initially discovered in late September 2020 and believed to be from a historical spill of unknown origins. The Allard well was plugged and decommissioned in November 2020, and impacted material was discovered in two separate areas of the Site at the former well jack area (WJA) on the northern portion of the site and near the former battery and treater area (FBTA) on the southern portion of the site. Following the well plugging activities, initial delineation activities were completed on December 1, 2020, and included test pitting and sampling activities. Impacted material was hauled offsite, and clean backfill material was used to fill the test pits until further delineation and a remediation workplan could be prepared. Lab results confirmed groundwater was above COGCC standards for benzene, and that further investigation was required. During May 2021, additional soil impacts were removed by excavation and nine groundwater monitoring wells were installed. Results of that remediation and investigation were presented in a Form 27S (Document #402726781). Details of the fourth quarter 2021 (4Q21) groundwater monitoring event, as well as monthly water level gauging, are provided herein.

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):

Previous soil results were presented in the F27I (#402565168) and F27S (Document #402726781).

Proposed Groundwater Sampling

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

Nine monitoring wells were installed during May 2021, and eight monitoring wells, four in the WJA and four in the FBTA, were sampled during the 4Q21 monitoring event. Groundwater samples were submitted to Summit Scientific laboratory for Table 915-1 organic analysis. One monitoring well, MW04, was not sampled during the 4Q21 groundwater monitoring event because it was dry. Additionally, all nine monitoring wells are being gauged on a monthly basis to observe and evaluate groundwater conditions and the affect that the nearby surface water, if any, has on the localized groundwater table. Groundwater elevations and analytical data from the 4Q November 2021 monitoring event at each Site are presented in Tables 1 and 2 and illustrated on Figures 3 through 6. Laboratory reports have been provided as an attachment.

Proposed Surface Water Sampling

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

During the May 2021 investigation, one surface water sample was collected for Table 915 groundwater parameters from the drainage on the west side of the FBTA and presented in F27S (Document #402726781). Further surface water sampling is not anticipated at this Site.

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 0

Number of soil samples exceeding 915-1 0

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

Approximate areal extent (square feet) 250

NA / ND

NA Highest concentration of TPH (mg/kg)

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 8

Groundwater

Number of groundwater samples collected 8

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 7

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 0

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

ND Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

0 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?

☐ 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?

Based on the results of the May 2021 investigation (F27S- Document #402726781), further investigation may be required at both the WJA and FBTA. However, that document is pending approval by COGCC, and further action will be taken based on guidance from COGCC. Due to the large quantities of cobbles and shallow groundwater, excavation was difficult, however, with the site conditions, FEM attempted to remove as much source material as possible from the WJA and FBTA during this phase of the investigation, and it may be difficult to remove additional soils from these areas during certain times in the year. FEM proposes to leave the soil impacts in place and continue groundwater monitoring on a routine basis until no further action and Site closure is approved. The soil impacts that remain in place are highly degraded and do not appear to be mobilizing or impact the groundwater, vegetation, or the surrounding land use and receptors.

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.

Source removal activities were conducted in May 2021, and the details are presented in a previous F27S (Document #402726781).

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.

Following the excavation of impacted soil at the WJA, monitoring wells were installed to delineate the extent of groundwater contamination. Monitoring wells were also installed at the FBTA, even though excavation did not take place, and groundwater impacts were not observed at either of the two investigative areas. If required, a separate remediation workplan will be presented to COGCC for approval in a subsequent form 27 progress report. In response to a COGCC COA on the remediation work plan (Document #40266975), monthly gauging of the monitoring wells is being completed and will continue throughout 2022 events. Quarterly groundwater monitoring will be performed at the Site until a period of four consecutive monitoring events have demonstrated that groundwater impacts are below COGCC Table 915-1 standards. At that time, a no further action (NFA) determination for the Site will be requested from the COGCC.

Soil Remediation Summary

☐ In Situ

☐ Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ 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.

A total of 9 monitoring wells were installed at the Site in May 2021, five in the FBTA (MW01-MW05) and four in the WJA (MW06-MW09), and groundwater samples were collected from eight of the well locations during the 4Q21 monitoring event. MW04 was dry and could not be sampled during the 4Q21 monitoring event. Based on previous observations, seasonal fluctuations in the groundwater table will allow MW04 to be sampled during certain times of the year when the groundwater table is elevated. The monthly and 4Q21 water level and calculated groundwater elevations are presented in Table 1 and illustrated on Figures 3 and 4. During the 4Q21 groundwater gauging event, MW09 was observed to be damaged by livestock on Site. This well has not shown previous impacts, and with COGCC approval, FEM does not anticipate replacing this damaged well. Laboratory analysis was conducted by Summit Scientific for Table 915-1 organic constituents, and all eight samples were below the laboratory detection limits and COGCC standards. The laboratory results are presented in Table 2 and illustrated in Figures 5 and 6.

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 Fourth Quarter 2021 Groundwater Monitoring Summary Report

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? No

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?

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards?

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.

Both sites have been backfilled and will be reclaimed upon final remediation approval. Foundation proposes to reseed the locations with a seed mix approved by the landowner during the next favorable season after approval and weed spraying will be utilized for weed prevention until final reclamation has been achieved. Final reclamation will be performed in accordance with 1000 series rules.

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. _____

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/01/2020

Proposed site investigation commencement. 05/11/2021

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/11/2021

Proposed date of completion of Remediation. _____

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 supplemental Form 27 has been provided as a fourth quarter 2021 groundwater monitoring summary and status update report for the Allard North (WJA) and Allard South (FBTA) sites in Jackson County, Colorado. Eight of the nine monitoring wells at the site were sampled during the 4Q21 monitoring event with one seasonally dry well. Table 915-1 organic contaminant concentrations were not detected above the laboratory detection limits during the current quarter, and wells will continue to be monitored until a period of four consecutive quarters have demonstrated contaminant concentration levels below COGCC standards. At that time, a no further action (NFA) determination for the Site will be requested from the COGCC.

Based on conversations with COGCC, an investigation and remediation work plan for remaining soil impacts at the WJA and FBTA will be presented in the first quarter 2022 along with the quarterly groundwater summary.

Information within this Supplemental Form 27 is associated with REM# 17342 in conjunction with the Allard 30-8-5 wellhead (Facility ID 324639) historical release that was discovered during the initial well decommissioning activities.

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:

Email: regulatory@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:

Date:

Remediation Project Number: 17342

COA Type**Description**

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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.

Att Doc Num**Name**

402947910	ANALYTICAL RESULTS
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Total Attach: 1 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)