



02452576

**State of Colorado**  
**Oil and Gas Conservation Commission**



1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): \_\_\_\_\_

OGCC Operator Number: 10598

Name of Operator: SandRidge Exploration & Production, LLC.

Address: 123 Robert S. Kerr Avenue

City: Oklahoma City State: OK Zip: 73102

Contact Name and Telephone:

Ken Raymond

No: 405-429-6630

Fax: \_\_\_\_\_

API Number: 05-057-06508

County: Jackson

Facility Name: Coalmont

Facility Number: 421255

Well Name: Coalmont

Well Number: 3-13H

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSW, 13, 7N, 81W, 6 Latitude: 40.571358 Longitude: -106.441981

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Crude Oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Dry Land - Open, No Use

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Coalmont-Fluetsch complex

Potential receptors (water wells within 1/4 mi, surface waters, etc.): 1 DWR Registered Groundwater Well

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

Unknown

How Determined:

Soil Analysis

**REMEDIALATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

Please see attached Site Investigation Work Plan for additional information.

Describe how source is to be removed:

To be determined based on additional site investigation. Please see attached Site Investigation Work Plan for additional information.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

To be determined based on additional site investigation. Please see attached Site Investigation Work Plan for additional information.

**RECEIVED**  
FOR OGCC USE ONLY  
SEP 07 2016  
**COGCC**  
OGCC Employee  
☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV  
Tracking No: \_\_\_\_\_



Tracking Number:	
Name of Operator:	
OGCC Operator No:	
Received Date:	
Well Name & No:	Coalmont 3-13H
Facility Name & No:	Coalmont 421255

Page 2  
**REMEDIAL WORKPLAN (Cont.)**

Page 2

**If groundwater has been impacted, describe proposed monitoring plan** (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater was not encountered during the initial site investigation. Please see attached Site Investigation Work Plan for additional information.

**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. Use additional sheet for description if required.

The facility is presently in use. Reclamation activities are not warranted at this time.

**Attach samples and analytical results taken to verify remediation of impacts.** Show locations of samples on an onsite schematic or drawing.

**Is further site investigation required?** ☒ Y ☐ N If yes, describe:

Please see attached Site Investigation Work Plan for additional information.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

To be determined based on additional site investigation. Please see attached Site Investigation Work Plan for additional information.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: <u>May 2016</u>	Date Site Investigation Completed: <u>September 2016</u>	Date Remediation Plan Submitted: <u>TBD</u>
Remediation Start Date: <u>TBD</u>	Anticipated Completion Date: <u>TBD</u>	Actual Completion Date: <u>TBD</u>

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

Print Name: Ken Raymond Signed: Ken Raymond

Title: Senior Environmental Health and Safety Specialist Date: September 1, 2016

OGCC Approved: [Signature] Title: EPS Date: 9/6/2016

See Attached for Conditions of Approval

Coalmount 3-13H

Form 27, sundry doc number 401103092.

Conditions of Approval

In the event that Monitoring wells are installed, the screened interval should be such that it intersects the surface of ground water.

COGCC should be notified immediately, in the event that groundwater is encountered in investigation.

The vertical and horizontal extent of impact should be determined through the soil investigation. Soil samples should be taken as depths containing native material and suspected to be non-impacted.

The location of proposed samples are adequate, in the event that the "step out" samples indicate the extent of impacted material has not been reached, soil boring should be advanced until no impact is proven (vertically and laterally).

Final Reclamation should comply with 1000 series rules

Work plan is approved; however additional information and remediation may be required during the course of investigation and remediation.

Request for Closure will NOT be approved without Operator providing notice to Environmental staff, Kris Neidel (kris.neidel@state.co.us) or 970-871-1963 72hrs prior to mobilization at begin of work.



September 1, 2016

Mr. Alex Fisher  
West Environmental Supervisor  
Colorado Oil and Gas Conservation Commission  
796 Megan Avenue, Suite 201  
Rifle, Colorado 81650

**Via Email**

**RE: Site Investigation Work Plan  
Coalmont 3-13H (API# 05-057-06508)  
Jackson County, Colorado**

Dear Mr. Fisher:

LT Environmental, Inc. (LTE) has developed this Site Investigation Work Plan (Plan) on behalf of SandRidge Exploration and Production, LLC (SandRidge) to investigate potential subsurface environmental impacts at the Coalmont 3-13H (API# 05-057-06508) (Site). The legal location of the Site is the southwest quarter of the southwest quarter of Section 13, Township 7 North, Range 81 West, 6<sup>th</sup> Principle Meridian. The Site Location Map is included as Figure 1. This Plan provides Site history and Site investigation task summary.

**SITE HISTORY**

In May 2016, Fremont Environmental, Inc. (Fremont), on behalf of the Colorado Oil and Gas Conservation Commission (COGCC), conducted a limited site investigation (LSI) at the Site. Fremont advanced a total of six soil borings (A through F) at the Coalmont 3-13H as part of the initial LSI. Soil samples were collected from two of the soil borings (C and D). The laboratory analytical results indicated that TPH concentrations exceeded the COGCC Table 910-1 applicable standard in the soil sample collected from sample point C at a concentration of 6,378 mg/kg. Additionally, EC in the soil sample collected from soil boring C exceeded the COGCC Table 910-1 applicable standard at 4.30 millimhos per centimeter (mmhos/cm). Finally, arsenic concentrations exceeded the COGCC Table 910-1 applicable standard in both of the soil samples, ranging from 0.972 mg/kg (C) to 3.75 mg/kg (D).

Environmental impacts were observed in two of the six soil borings including C and D. These impacts included elevated concentrations of COGCC regulated constituents observed in the laboratory analytical results and in elevated volatile organic compound (VOC) concentrations collected in the field using a photoionization detection unit (PID). Fremont terminated the soil borings before the vertical limits of the environmental impacts were properly delineated. Additionally, Fremont did not advance soil borings in cardinal directions from those sample locations demonstrating evidence of environmental impact to properly delineate the lateral extent of impact.



## **SITE INVESTIGATION WORKPLAN**

Based on the LSI data, LTE proposes that a total of 10 soil borings be advanced at this facility in order to adequately delineate the vertical and lateral extent of impact. These soil borings will included:

- 1 Re-drill Soil Boring: The purpose of this soil boring is to delineate the vertical extent of impact discovered during the initial LSI. This re-drill soil boring will be conducted at sample point C of the initial LSI.
- 4 Step-out Soil Borings: The purpose of these soil borings is to delineate the lateral extent of impact discovered at sample point C during the initial LSI. These step-out soil borings will be conducted approximately 30 to 50 feet in cardinal directions of the sample point that had evidence of environmental impacts.
- 1 Exploration Soil Boring: The purpose of this soil boring is to determine if there is evidence of environmental impacts within the former skim pit area not delineated during the initial LSI.
- 4 Background Soil Borings: The purpose of these soil borings is to collect background arsenic concentrations in order to compare them with the concentrations observed in the soil samples collected during the initial LSI. These soil borings will be collected approximately 10 to 15 feet off of the disturbed well pad.

The sample point locations, PID readings, and analytical data collected during the initial LSI as well as the proposed supplemental LSI borehole locations at the Coalmont 3-13H are provided in Figure 4 (with the exception of the background soil sample locations).

### **Sampling and Analysis Plan – Soil**

The soil borings will be advanced with a truck mounted Geoprobe® using direct push drilling technology. Elite Drilling Services, LLC. (Elite) of Denver, Colorado will conduct the drilling activities. LTE will provide a staff level geologist or equivalent, to oversee drilling activities, record general lithology, observe evidence of environmental impacts including soil staining and odor, screen soil samples for VOC concentrations using a PID, and collect soil samples for laboratory analysis.

The soil borings will be advanced to a minimum of 5 feet below any evidence of environmental impacts including soil staining, odor, and elevated field screened VOC concentrations (>1.0 parts per million (ppm)). LTE will collect one soil sample from the soil profile with the highest VOC concentration or greatest evidence of hydrocarbon impacts. The soil samples will be collected in a laboratory provided sample container, properly labeled, placed on ice, and transported to Summit Scientific (Summit) of Golden, Colorado for laboratory for analysis under chain-of-custody protocol.

Background soil samples will be collected a minimum of 15 feet off disturbed areas for arsenic and electric conductivity (EC) analysis. LTE will advance the soil auger to a total depth of 3 feet bgs and collect a composite sample comprised of soil gathered in 6-inch intervals. The soil samples will be collected in a laboratory provided sample container, properly labeled, placed on ice, and transported to Summit for analysis. The laboratory analysis and analytical methods will include:



#### Re-Drill, Step-Out, and Exploration Soil Samples

- BTEX and TPH – GRO: EPA Method 8260
- TPH – DRO – EPA Method 8015

#### Background Soil Samples

- Arsenic – EPA Method 6020
- EC – Method SM2510B

LTE, on behalf of SandRidge, will provide the COGCC with a report summarizing the LSI field activities and provide proposed remediation strategies. This summary report will include:

- Field activity summary;
- Borehole Completion Logs;
- Figures:
  - Site Location Map,
  - Site Map
  - Borehole and Monitoring Well Locations,
  - Groundwater Level and Potentiometric Surface,
  - Laboratory BTEX, DRO-TPH, GRO-TPH, EC, and arsenic results, and
  - Impact Delineation.;
- Laboratory Analytical Results Summary Table; and
- Proposed Remediation Strategies.

#### **Sampling and Analysis Plan – Groundwater Monitoring**

LTE has researched the Colorado Department of Natural Resources – Division of Water Resources (DWR) registered groundwater wells within the vicinity of the facilities in order to determine the depth to phreatic surface of the upper unconfined aquifer within this region. Based on our observations, the depth to groundwater in this region, ranges from 20 to 80 feet bgs and it is unlikely that historical impacts have intercepted the groundwater below these facilities.

In the event that groundwater is encountered, LTE will complete the soil borings as groundwater monitoring wells. The groundwater monitoring wells will be comprised of 1-inch diameter, schedule 40, polyvinyl chloride (PVC), flush threaded well materials with 0.010-inch factory milled screen. The groundwater monitoring wells will be screened across the phreatic surface with a minimum of 5 feet of screen placed below the groundwater table. The annulus of the boreholes will be backfilled with 10/20 filter sand from the bottom of the soil boring to approximately 2 feet above the top of the screened interval. Medium sized bentonite chips will be placed on top of the sand to surface. The groundwater monitoring wells will be completed at surface with a 2 to 3 foot stickup and no protective casing. In the event that the groundwater monitoring wells are completed in a high traffic area, they will be completed as flush mount with a 6-inch diameter protective casing, set in a 2 foot by 2 foot cement pad.





Elite will complete the groundwater monitoring well installation and LTE will provide a staff level geologist or equivalent, to oversee the installation. LTE will direct the groundwater monitoring well construction based on observed hydrogeological conditions, and record the construction details.

Upon completion of the groundwater monitoring well installation, LTE will return to the facilities to conduct groundwater monitoring activities. LTE will survey the top of casing and collect depth to groundwater in order to determine relative groundwater elevation and flow direction. LTE will develop the groundwater monitoring wells within 48 hours of completion. Prior to well development, LTE will measure the depth to groundwater and total well depth in order to calculate the well volume. Well development will be conducted using either a dedicated 3/4-inch diameter bailer or a peristaltic pump to remove 10-times the calculated well volume. LTE will collect groundwater samples no sooner than 24 hours after well development. Prior to sampling, LTE will measure the depth to groundwater and total well depth in order to calculate total well volume. LTE will purge 3-times the well volume prior to collecting a groundwater sample. The groundwater samples will be collected in laboratory provided sample containers, properly labeled, placed on ice, and transported, under waste-manifest-protocol, to Summit for laboratory analysis. The laboratory analysis and analytical methods will include BTEX by EPA Method 8260.

In the event that groundwater monitoring is required as part of this investigation, LTE will include a summary of the groundwater monitoring as part of the Summary Reports defined above. These summaries will include a the work tasks completed, findings, and recommendations for remediation. The analytical data will be summarized in the text, tabulated, and presented on figures.

## CLOSING

LTE appreciates the opportunity to provide the COGCC with this Site Investigation Work Plan on behalf of SandRidge. If you have questions or comments regarding the content of this proposal, please contact the undersigned at 303-433-9788. We look forward to assisting SandRidge with addressing potential environmental impacts associated with this Site.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in blue ink that reads 'Jess Alexander'.

Jess Alexander  
Project Manager

A handwritten signature in blue ink that reads 'Steve Kahn'.

Steve Kahn, P.E.  
Vice President

Attachments:

Figure 1 – Site Location Map

Figure 2 – Site Map: Coalmont 3-13H

## ATTACHMENTS



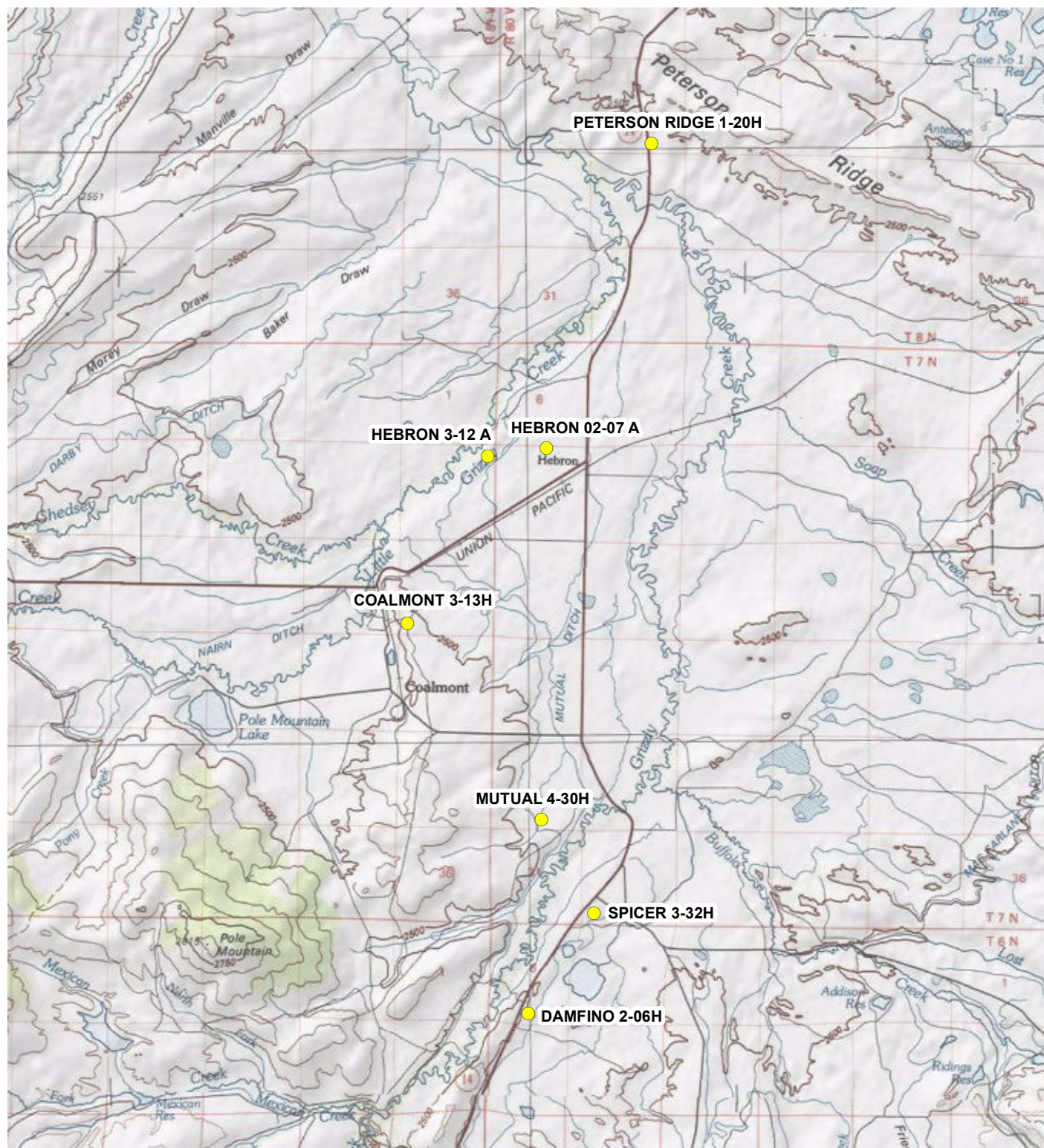
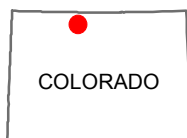


IMAGE COURTESY OF ESRI/USGS

## LEGEND

● SITE LOCATION



COLORADO

FIGURE 1  
SITE LOCATION MAP  
SANDRIDGE WELLSITES  
JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC





## LEGEND






-  SAMPLE LOCATION
-  PROPOSED RE-DRILL SOIL BORING
-  PROPOSED STEP-OUT SOIL BORING
-  DISTURBED AREA
-  FORMER PIT LOCATION

IMAGE COURTESY OF ESRI

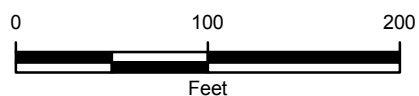


FIGURE 2  
COALMONT 3-13H  
SOIL ANALYTICAL RESULTS  
JACKSON COUNTY, COLORADO

**SANDRIDGE EXPLORATION AND PRODUCTION, LLC**

