FORM 27 Rev 6/99

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#8407

State of Colorado
Oil and Gas Conservation Commission

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

FOR OGCC USE ONLY

March 13, 2014

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

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): Form 15 Pit Closure

OGCC Operator Number: 10447
Name of Operator: Ursa Operating Company, LLC
Address: 792 Buckhorn Dr.
City: Rifle State: CO Zip: 81650

Contact Name and Telephone:
Robert Bleil
No: 970-625-9922
Fax: 970-625-9929

API Number: N/A
County: Garfield
Facility Name: Lundgren Frac/Flowback Pit
Facility Number: E&P Facility ID # - 149019 Pit Facility ID# - ~~28224~~ 282224
Well Name: N/A
Well Number: N/A
Location: (QtrQtr, Sec, Twp, Rng, Meridian): NWSE, Sec 32, T5S, R92W Latitude: 39.569749 Longitude: -107.739864

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Frac/Flowback Water

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.): Non-Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Ildefonso-Lazear Complex, 6 to 65 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Ground water monioring well located approximately 120 feet to southwest. Agriculture irrigation ditch lies approximately 1,229 ft to the east.

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

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	Unknown until liner system is removed	Visual/Field Instruments
☐ Vegetation		
☐ Groundwater		
☐ Surface Water		

REMEDIATION WORKPLAN

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

See attached facility closure plan for details.

Describe how source is to be removed:

See attached facility closure plan for details.

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.:

See attached facility closure plan for details.

Submit Page 2 with Page 1

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Page 2

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Tracking Number: _____
Name of Operator: URSA
OGCC Operator No: 10447
Received Date: 3/14/14
Well Name & No: E.P Loc. 149019 Pit Loc. 285224
Facility Name & No: _____

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

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

See attached facility closure plan for details.

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.

See attached facility closure plan for details.

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:

See attached facility closure plan for details.

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

See attached facility closure plan for details.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: Est. May 2014	Date Site Investigation Completed: Est. May 2014	Date Remediation Plan Submitted: 3/7/2014
Remediation Start Date: TBD	Anticipated Completion Date: TBD	Actual Completion Date: TBD

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

Print Name: Kris Rowe Signed: _____

Title: Environmental Consultant for Ursa Operating Company Date: 3/10/2014

OGCC Approved: _____ Title: Env. Supv. Date: 5/13/14

See Attached Conditions of Approval

Document Number: 2017128 Form 27 **Facility ID: 149019 and Pit Facility ID 282224**

Ursa Operating Company LLC, Lundgren Frac/Flowback Centralized Exploration and Waste Management Facility, NWSE Section 32, T5S, R92W, 6th PM, Garfield County, Colorado, Form 27 Conditions of Approval (COAs)

Conditions of Approval:

Conditionally approved, however, additional information or activities may be required during the course of remediation.

PIT

Residual solids from the pit shall be sampled and analyzed for the constituents listed in table 910-1 and shall be disposed at an approved facility.

Discrete soil samples shall be collected from beneath the pit liner and along sidewalls to adequately characterize whether an impact has occurred. Composite samples will NOT be accepted. Samples shall be analyzed for the constituents listed in table 910-1.

Ursa indicates that they may consider landfarming, in-situ remediation or disposal of impacted material. If on-site treatment of any impacted material is being considered, a detailed addendum describing the conditions for the remediation shall be submitted. The site is in a sensitive area, with apparently shallow water table, permeable soil and within approximately 590 feet from a 317B External Buffer Zone. Ursa should describe what precautions will be taken to protect groundwater from impact.

LOCATION 324342

The following was noted in an Inspection completed on December 18, 2012 (Document Number 668500248):

- An approximate 40' by 200 foot landfarm area composed of drill cuttings, liners, wood fiber, and dirt exists.
- Debris piles of frac sand, drill cuttings, and earthen material exists.
- Open topped metal tanks containing vegetative rubbish, rainwater, dirt and possible E & P waste exists.

Discrete samples from the material(s) listed above shall be collected and analyzed for the constituents listed in table 910-1. These materials shall be properly disposed of at an approved facility.

Waste manifests and load receipts shall be retained for materials disposed including fluids that are proposed to be disposed of at the Wasatch Bench Water Management Facility (Facility ID: 149020).

FORM 27 ATTACHMENT:

Describe initial Action taken:

- All fluids within the pit will be removed and disposed at the Wasatch Bench Facility and any residual fluids or solids will be allowed to dry.
- The pit liner(s) will be removed in sections and the underlying layers will be examined by a qualified and trained professional. Each layer will be evaluated for evidence of contamination to aid in identifying if the liner system leaked or was faulty.
- The bottom of the pit will be divided into four (4) equal quadrants, as well as each side segregated into two (2) quadrants, dividing them in half.
- Within each quadrant, field-screening will be performed and will utilize appropriate field equipment which may include, but is not limited to the following.
    - a PetroFlag unit,
    - a photoionization gas detector (PID),
- Confirmation sample(s), Rule 905.b.(4), will be collected and submitted for lab analysis and verification from each quadrant to confirm compliance with Rule 910 and Table 910-1 (reference to specific analytes is provided below) relative to the aforementioned field screen activity.
- Other areas of the pit walls and floor will be inspected for evidence of impact via field screening and visual observation. Grab samples will be collected from areas of concern, as appropriate, to demonstrate diligence and thoroughness of investigation activities performed as directed in Rule 905.b.(1). In addition, all field screening activities and results will be documented and compiled into a summary report, table and/or map to be provided with the Notice of Completion (NOC) report.
- A visual assessment will be performed throughout the entire investigation process and will be adequately documented (e.g. field notes, observations, photographs, etc.) by qualified personnel.

Describe how source is to be removed:

The presence of impacts has not been determined at this point. No impacts have been observed to date or any other indication that would suggest there has been an event that would result in impact to the surrounding environment. However, should contamination be encountered the following actions will be taken:

- Any spill or release will be reported via a Form 19 and in accordance with Rule 906 and remediation shall be performed in accordance with requirements specified in Rules 909 and 910.
- Notification and consultation with the affected surface owner(s) shall be made with good faith effort and in accordance with Rule 906.c.
- Should a release be identified and attributed to the contents of the pit, the impacted area will be:
    - Excavated in which field screen instruments will guide the excavation. Once field screening results indicate compliance with COGCC Table 910-1 standards,

laboratory confirmation samples will be collected to demonstrate compliance with COGCC 900-series rule; and
  - All excavated material will be placed within a lined and bermed containment cell pending remediation and disposal option described below.
- All pit contents will be evacuated and managed in accordance with all applicable local, state [i.e. Rule 905.b.(2)] and federal regulations. If disposal is required, the relevant media will be disposed of at a properly permitted and approved facility.
- The potential source - Production Pit and Centralized E&P Facility - will be closed and reclaimed in accordance with the COGCC 900 and 1000 series rules, respectively.
- The stockpiled synthetic liner will be removed either recycled/reused or disposed of at an approved facility as a solid waste and in accordance with Rule 905.b.(3).

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, in-situ bioremediation, burning of oily vegetation, etc.:

The presence of impact has not been determined at this point. No impacts have been observed to date or any other indication that would suggest there has been an event that would result in impact to the surrounding environment. However, should contamination be encountered the following actions will be taken:

- Any area(s) determined to be impacted/contaminated will be excavated and managed in accordance with all applicable rules and regulations regarding solid waste including applicable portion of COGCC Rule 907.
- Field screen equipment will be used to guide the excavation to ensure compliance with Table 910-1 of the COGCC 900 series rule.
- The excavated material will be placed within a lined and bermed containment cell pending the following options. Remediation and disposal options may include:
  - on-site landfarming/bioremediation,
  - in-situ remediation, and/or,
  - disposal at an approved waste, management facility; as consistent with Rule 907.
- Disposal of impacted media will occur at an approved waste facility (i.e. Garfield County Landfill, ECDC Environmental, Reams Construction) further defined in the “Final disposition of E&P waste” below.
- Final disposition will be dependent upon identified contaminants, contaminant concentration, land availability, landowner approval and waste volume.

If groundwater has been impacted, describe proposed monitoring plan:

- No impacts have been observed to date or any other indication that would suggest there has been an event that would result in impact to the surrounding environment.
- Samples were collected from a downgradient groundwater monitoring well on December 5, 2013. Analytical results indicated no impact

- However, should it be observed or determined that groundwater impacts exist an appropriate site specific monitoring and remediation plan will be developed and submitted for approval.
    - The monitoring and remediation plan will be developed to include, but may not be limited to,
        - number of sample wells and/or points;
        - proposed location of sample wells and/or points;
        - sampling schedule;
        - analytical methods including analyte list(s);
        - monitoring scheme including end point; and
        - potential mitigation or remediation approaches if necessary [Rule 910 (4) E].

Describe reclamation plan:

- The pit will be reclaimed to the present grade of the location or to the approximate original contour of the landscape and consistent with the 1000 series Rule.
- Seeding of the disturbed area will be performed in accordance with its' intended use. The seed mix will be prescribed by the landowner.
- There are no known noxious weeds in the immediate area of the disturbance. A noxious weed survey is performed annually of the North Gravel Trend field which includes this location.
- As a preventative measure, Ursa seeds all disturbed areas as soon as practicable with temporary or sterile annual seed mixes to:
    - provide soil stability, and
    - serve as a nurse or cover crop for desired species; derived from the natural seed bank and/or the applied seed mix.
- Bare ground treatment is a common practice by Ursa and any identified noxious weed species will be spot treated for immediate eradication and prevention of encroachment and dispersal.
- A plat of the location is attached for topographic and geographic reference.

Attach samples and analytical results taken to verify remediation of impacts. Show location of samples on an onsite schematic or drawing. Is further site investigation required?:

- The presence of impact has not been determined at this point; therefore, the need for further site investigation has not been determined at this time.
- A determination of whether further site investigation is required and is pending field assessments and screening, which are to be confirmed by analytical results from an accredited - NELAP - laboratory (e.g. ALS Group Analytical Laboratory).
- Final documentation of investigation and closure activities shall be submitted to the Division within thirty (30) days after conclusion of any and all remediation and reclamation activity and in accordance with all applicable sections and subsections of Rule 909.

Final disposition of E&P waste:

- If the stockpiled volume is small enough to manage on-site, and there is available area on location, concentrations are within a reasonable range to be remediated in a timely manner and the identified contaminants are conducive to bioremediation, landfarming or in-situ remediation may occur as approved and in accordance with Rule 907.
- Should the aforementioned attributes not exist or concentrations are not conducive to bioremediation, then off-site disposal will be the final disposition of all impacted materials.
- If the latter option is taken, disposal will occur at an approved treatment, storage or disposal facility (TSD) which may include, but is not limited to, the following facilities:
    - West Garfield County Landfill (045-LFL-005; Parachute, CO);
    - ECDC Environmental LC, (East Carbon, UT)
    - Reams Construction (Naturita, CO)

ANNEX A:

Confirmatory Analyte List for Potential Contaminants of Concern in Soil:

Table 1 – Sample collection, handling and analysis summary

Analyte Class	Analysis	Method	COGCC Table 910-1 Standard	Holding Time	Container
Organics	TVPH (GRO)	SW8015 mod	500 mg/kg	14 days	4 oz. wide mouth jar
	TEPH (DRO)				
	Benzene	SW8021	0.17 mg/kg	14 days	4 oz. wide mouth jar
	Toluene		85 mg/kg		
	Ethylbenzene		100 mg/kg		
	Xylenes (total)		175 mg/kg		
	Acenaphthene	SW8270	1,000 mg/kg	14 days	4 oz. wide mouth jar
	Anthracene				
	Benzo (A) anthracene		0.22 mg/kg		
	Benzo (B) flouranthene				
	Benzo (K) fluoranthene				
	Benzo (A) pyrene		0.022 mg/kg		
	Chrysene		22 mg/kg		
	Dibenzo (A,H) anthracene		0.022 mg/kg		
	Fluoranthene		1,000 mg/kg		
	Fluorne				
	Indeno (1,2,3,C,D) pyrene		0.22 mg/kg		
	Naphthalene		23 mg/kg		
	Pyrene		1,000 mg/kg		
Inorganics	Electrical Conductivity	USDA Hdbk	<4 mmhos/cm or 2x background	28 days	4 oz. wide mouth jar
	Sodium Adsorption Rate	USDA Hdbk 60 Method 20B or 3A	<12	180 days	1 gal. ziplock bag
	pH	SW9045	6-9	< 24 hrs.	2 oz. wide mouth jar

Rem # _____
OGCC # _____

Table 1 Cont'd - Sample collection, handling and analysis summary

Analyte Class	Analysis	Method	COGCC Table 910-1 Standard	Holding Time	Container
Total Metals*	Arsenic	SW 6010, 6020, 7470	0.39 mg/kg	28 days for Hg & 180 days for remaining	4 oz. wide mouth jar
	Barium		15,000 mg/kg		
	Cadmium		70 mg/kg		
	Chromium (III)		120,000 mg/kg		
	Chromium (IV)		23 mg/kg		
	Copper		3,100 mg/kg		
	Lead (inorganic)		400 mg/kg		
	Mercury		23 mg/kg		
	Nickel (soluble salts)		1,600 mg/kg		
	Selenium		390 mg/kg		
	Silver		390 mg/kg		
	Chloride		15,000 mg/kg		

General note: Preservation standards for organics and inorganics in soil are < 4°C as per EAL protocol. Of the above sample methods and procedures, none require a preservative to preserve sample integrity.
Note(**): Boron (hot water soluble) has been excluded from this analyte list as no crops (citrus or nuts) or other vegetation which may be sensitive to boron are known or are expected to be encountered. Should the Director or COGCC EPS decide to, at his discretion, require a Boron analysis the above analyte list will be modified to reflect that change and requirement, at that point in time.

Rem #_____
OGCC #_____