

State of Colorado
Oil and Gas Conservation Commission

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#8071

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11/5/2013

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 Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: _____

OGCC Operator Number: 96850

Name of Operator: WPX Energy Rocky Mountain LLC

Address: 1058 County Road 215

City: Parachute State: CO Zip: 81635

Contact Name and Telephone:

Karolina Blaney

No: 970-683-2295

Fax: 970-285-9573

API Number: _____ County: Garfield

Facility Name: SG Cement Return Pit

Facility Number: 434367 ✓

Well Name: _____ Well Number: _____

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENW Sec. 32, T7S, R96W 6th PM Latitude: 39.393733 Longitude: -108.134185

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): cement and fresh 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.): Rangeland, non-irrigated

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: 47. Nihill channery loam & 66. Torriorthents-Camborthids-Rock outcrop

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

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

Impacted Media (check):

☐ Soils☐ Vegetation☐ Groundwater☐ Surface Water

Extent of Impact:

The purpose of this Investigation Form 27

is to determine whether or not there are any

impacts to the environment.

How Determined:

REMEDIALATION WORKPLAN

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

See the Form 27 attachment for details

Describe how source is to be removed:

See the Form 27 attachment 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 the Form 27 attachment for details



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REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

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

See the Form 27 attachment 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.

The pit will be backfilled and the reclaimed area will be utilized for cuttings management only, as described in the SG cuttings trench Materials Management Plan

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 the Form 27 attachment for details

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

Any soils requiring treatment will be managed on-site to concentrations required by COGCC Table 910-1.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: _____ Date Site Investigation Completed: _____ Date Remediation Plan Submitted: 9/26/2013
Remediation Start Date: _____ Anticipated Completion Date: _____ Actual Completion Date: _____

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

Print Name: Karolina Blaney

Signed: _____

Title: Environmental Specialist

Date: 9/26/2013

OGCC Approved: _____

Title: _____

Date: 10/15/13

FORM 27 ATTACHMENT:

Describe initial Action taken:

- At the location(s) of the pit which are the furthest downgradient, lowest in elevation and/or have the potential for pooling of liquid, 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),
 - or similar, for detection of volatile hydrocarbons, in the immediate area of the pit footprint.
- Confirmation sample(s), Rule 905.b.(4), will be collected and submitted for lab analysis and verification 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, 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 Site Closure Plan.
- Grab sample(s) will be submitted for laboratory analysis to confirm field screening activities. Sub-liner sample analytes will include considerations identified by Rule 910 and all contaminants of concern for soils from Table 910-1 excluding boron (see attached analyte list in Table 1).
- 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 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 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 and laboratory confirmation samples collected to demonstrate compliance with Table 910-1 of the COGCC 900-series rule; and
 - placed within a lined and bermed containment cell pending remediation and disposal as 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 an approved facility.

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 bermed containment cell pending an on-site landfarming/bioremediation,

If groundwater has been impacted, describe proposed monitoring plan:

- 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 it be observed or determined that groundwater impacts exist an appropriate site specific monitoring and remediation plan will be developed and submitted for COGCC approval.
- As a correction to information submitted on the original Form 2A that was submitted for this facility, it should be noted that the anticipated depth to ground water is expected to be substantially deeper than the 39 feet that was reported on the Form 2A. Additionally, there are no shallow alluvial materials / systems near the SG cuttings trench, therefore, no impacts to ground water are anticipated. The cement returns within the trench are not anticipated to have any impact on ground water resources due to the extremely small volume of cement that was actually placed into the trench (< 10 cubic yards), and the fact that the cement returns are immobile, benign, and contain no TPH concentrations. The area will also be tested to insure that there are no impacts to soil pH conditions, but none are anticipated.

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 (i.e. Evergreen 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.

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
Organics	TVPH (GRO)	SW8015 mod	500 mg/kg
	TEPH (DRO)		
	Benzene	SW8021	0.17 mg/kg
	Toluene		85 mg/kg
	Ethylbenzene		100 mg/kg
	Xylenes (total)		175 mg/kg
	Acenaphthene	SW8270	1,000 mg/kg
	Anthracene		0.22 mg/kg
	Benzo (A) anthracene		
	Benzo (B) flouranthene		
	Benzo (K) fluoranthene		0.022 mg/kg
	Benzo (A) pyrene		
	Chrysene		22 mg/kg
	Dibenzo (A,H) anthracene		0.022 mg/kg
	Fluoranthene		1,000 mg/kg
	Fluorne		0.22 mg/kg
	Indeno (1,2,3,C,D) pyrene		
	Naphthalene		23 mg/kg
	Pyrene		1,000 mg/kg
Inorganics	Electrical Conductivity	USDA Hdbk	<4 mmhos/cm or 2x background
	Sodium Adsorption Rate	USDA Hdbk 60 Method 20B or 3A	<12
	pH	SW9045	6-9
Total Metals*	Arsenic	SW 6010, 6020, 7470	0.39 mg/kg
	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.

Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
Person(s) Conducting Field Inspection	Ashlee Lane	10/25/12
Site Information		
Location:	Smith Gulch Cuttings Trench/SG 22-32	Time: 1400
Type of Facility:	Existing Well Pad	
Environmental Conditions	Windy, partly cloudy; snow flurries.	
Temperature (°F)	40°	

Has the proposed, new or existing location been designated as a sensitive area?

☐ Yes ☒ No

SURFACE WATER

1. Are there any surface water features or SWSAs adjacent to or within ¼ mile of the proposed/new or existing facility?

☒ Yes ☐ No

If yes, list type of surface water feature(s), i.e. rivers, creeks, streams, seeps, springs, wetlands: Smith Gulch, a USGS identified intermittent drainage; one USGS identified unnamed intermittent drainage.

If yes, describe location relative to facility: Smith Gulch is located approximately 769 feet to the southeast and the USGS identified unnamed intermittent drainage is located 792 feet to the west.

2. Could a potential release from the facility reach surface water features?

☒ Yes ☐ No

If yes, describe the pathway a release from the facility would likely follow to determine if the potential to impact surface water is high or low. A potential release, if it were to migrate off the facility, would tend to follow the topographical relief of the area which slopes to the southwest from the SG 22-32 well pad.

3. Is the potential to impact surface water from a facility release high or low?

☐ High ☒ Low

GROUNDWATER

1. Will the proposed/new or existing facility have any pits which will contain hydrocarbons and chlorides or other E&P wastes?

☒ Yes ☐ No

If yes, List the pit type(s): Cuttings trench.

2. Is the site of the proposed facility underlain by an unconfined aquifer or recharge zone?

☐ Yes ☒ No

3. Is the hydraulic conductivity of the underlying soil or geologic material $\leq 1.0 \times 10^{-7}$ cm/sec?

☒ Yes ☐ No

4. Is the proposed facility located within 1/8 mile of a domestic water well or 1/4 mile of a public water supply well which would use the same aquifer?

☐ Yes ☒ No

5. Is the proposed facility located within a 100 year floodplain?

☐ Yes (*Sensitive Area*) ☒ No (*If no, proceed to question #6.*)

6. Is the depth to groundwater known?

☐ Yes (*If yes, follow instructions provided in 6(a) of this section.*)

☒ No (*If no, follow instructions provided in 6(b) of this section.*)

- (a) If yes, could a potential release from the proposed facility reach groundwater?

☐ Yes ☐ No

If yes, explain:

- (b) If no:

(i) Evaluate surrounding soils, topography, and vegetation which may suggest the presence of shallow groundwater.

(ii) Gather information from surrounding well data in order to determine a depth to groundwater, i.e. State Engineers Office.

7. Is the potential to impact ground water from the facility in the event of a release high or low?

☐ High ☒ Low

Additional Comments:


The proposed Smith Gulch cuttings trench (facility) is proposed to be constructed on the eastern side of the existing SG 22-32 well pad. As stated in the surface water section of this sensitive area determination, one unnamed USGS ephemeral drainage is located approximately 792 feet to the southwest of the proposed facility. The facility, as it is currently proposed, would limit the direction of a potential release to the western and southern sides of the existing SG 22-32 pad. If a potential release were to migrate off the SG 22-32 pad, flow would be to the southwest slightly parallel to the unnamed intermittent drainage. However, it is not anticipated any flow would reach the drainage due to the vegetative cover, the distance between the location and the drainage, and the fact the cuttings will be in a semi-solid state meaning no free liquids should be associated with the trench. In addition, the unnamed intermittent drainage exhibits ephemeral characteristics in the immediate vicinity of the facility indicating it doesn't flow a majority of the time. It is not anticipated Smith Gulch would be impacted by a potential release from the proposed facility. There is a ridgeline which separates the proposed facility from Smith Gulch. The soil stock pile for the facility will also be on the east side creating an additional barrier between the facility and Smith Gulch. It would still be recommended Best Management Practices (BMPs) be installed along any fill slope sides of the proposed facility expansion as well as the western and southern sides of the SG 22-32 well pad. The BMPs should be in the form of an earthen perimeter berm around the graded edge of the facility and a diversion ditch, if feasible, along the toe of the fill slope sides. These BMPs should be monitored and maintained to ensure site containment in the event of a potential release.

The State Engineer's Office and USGS records were reviewed and no records were revealed that would provide additional information pertaining to the depth to groundwater. The vegetation in the area consists of Greasewood and Sage Brush with no other indicators of shallow groundwater.

Based on the information collected during the site investigation and desktop review, the potential to impact actual surface water features, actual flowing surface water, and groundwater has been deemed low. Therefore, the facility can be designated as being in a non-sensitive area.

Inspector Signature(s):  Date: 10/26/2012

Mark E. Mumby, *Project Manager/RPG*
HRL Compliance Solutions, Inc.

 Date: 10/25/2012

Ashlee Lane, *Biologist*
HRL Compliance Solutions, Inc.