

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

**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): Pit Closure

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 96850

Name of Operator: Williams Production RMT Company

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: 05-045-10050

County: Garfield

Facility Name: Chevron TR 42-26-597

Facility Number: 274715

Well Name: Chevron TR 42-26-597

Well Number: N/A

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENE, Sec 26, T5S, R97W Latitude: 39.586346 Longitude: -108.238641

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced 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 Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Parachute Irigul-Complex, 5-30% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Bear Run Creek lies approximately 875 feet to the east, as well as the head of Crystal Creek located approximately 2,884 feet to the southeast.

**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 surrounding environment.

How Determined:

Visual observations, field screening, and analytical analysis

**REMEDIALATION WORKPLAN**

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

See attached and refer to COGCC Document #01175818 for details.

**Describe how source is to be removed:**

See attached and refer to COGCC Document #01175818 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 and refer to COGCC Document #01175818 for details.



**REMEDIAL WORKPLAN (Cont.)**

Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: PIT TR 42-26-597  
Facility Name & No: Facility ID# 274715 (PIT)

OGCC Employee: \_\_\_\_\_

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

See attached and refer to COGCC Document #01175818 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 and refer to COGCC Document #01175818 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 and refer to COGCC Document #01175818 for details.

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

See attached and refer to COGCC Document #01175818 for details.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: <u>July 2011</u>	Date Site Investigation Completed: <u>July 2011</u>	Date Remediation Plan Submitted: <u>Summer 2011</u>
Remediation Start Date: <u>Summer 2011</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: Karolina Blaney

Signed: Karolina Blaney

Title: Environmental Specialist

Date: 6/13/2011

OGCC Approved: \_\_\_\_\_

Chris Canfield

Title: FOR Chris Canfield  
EPS NW Region

Date: 06/17/2011

## Sensitive Area Determination Checklist

<b>Williams Production RMT Company</b>		
<b>Person(s) Conducting Field Inspection</b>	Jennifer Belcastro	6/9/11
<b>Site Information</b>		
Location:	TR 42-26-597	Time: 1620
Type of Facility:	Existing Well Pad	
<b>Environmental Conditions</b>	Sunny; windy; soil conditions are dry.	
Temperature (°F)	62°	

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

☒ Yes      ☐ No

### **SURFACE WATER**

- 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: : Bear Run a spring fed intermittent/perennial stream tributary to the West Fork of Parachute Creek, one unnamed intermittent/perennial drainage tributary to Bear Run.

If yes, describe location relative to facility: The intermittent section of Bear Run is located approximately 1,000 feet to the north, and the unnamed intermittent/perennial drainage which is tributary to Bear Run is located approximately 611 feet southeast of the existing facility.

- 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. If a large release were to migrate off the southeastern edge of the facility, flow would be to the southeast towards the unnamed intermittent/perennial drainage.

3. Is the potential to impact surface water from a facility release high or low?
- ☐ High ☒ Low

## GROUNDWATER

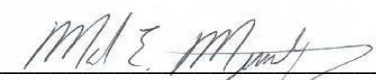
1. Will the proposed/new or existing facility have any pits which will contain hydrocarbons and chlorides or other E&P wastes?  
☒ Yes      ☐ No  
If yes, List the pit type(s): Production pit.
2. Is the site of the proposed facility underlain by an unconfined aquifer or recharge zone?  
☒ Yes      ☐ 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:**

As stated in the surface water section of this sensitive area determination, Bear Run is a spring fed intermittent/perennial stream located 1,000 feet to the north of the facility. Bear Run in the immediate vicinity of the facility is identified as intermittent and does not appear to flow a majority of the time. The unnamed intermittent/perennial drainage to the southeast of the facility has no defined channel until it intersects the spring fed perennial portion of the drainage approximately 700 feet to the southeast. The facility as it is currently constructed, limits the flow directions of a potential release to the northwestern and southeastern edges of the facility. If a release were to migrate off the facility it would run down the hillsides towards the above mentioned drainages. However the potential for fluids to reach either of the drainages would be low due to the thick vegetative cover consisting of service berry, oak brush, sage brush, grasses, and the moderate to high infiltration rates of the underlying soils. There are currently minimal Best Management Practices (BMPs) installed along the perimeter of the facility. These BMPs include a perimeter berm along the northwestern, northeastern and southeastern edges of the facility. A small diversion ditch is also constructed along the edges of disturbance on the same sides to further ensure site containment in the event of a 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 vegetative cover in the immediate vicinity of the facility, service berry, oak brush, and, sage brush does not suggest the presence of shallow groundwater. However, there are two springs identified on the USGS topographic map, and confirmed during the site visit, southeast of the existing facility approximately 700 feet. This spring forms the perennial section of the unnamed intermittent/perennial drainage which is tributary to Bear Run and Bear Run itself. The second spring is located approximately 1,525 feet to the northeast of the facility (NWNW Sec 25). This spring provides additional water to the perennial portion of Bear Run. The facility resides in the Uintah formation, which like the Green River Formation, tends to be fractured both vertically and horizontally allowing fluids to migrate in the subsurface over large distances. Based on the topographical setting of the facility, it is not anticipated that an overland release would impact groundwater and thus potentially the springs to the northwest and southeast due to the short duration time involved and the fact it would spread out over a large area. The greatest potential for impact to groundwater would be from a release that occurred over a longer period of time such as a leaking pit, the close proximity of the subject pit to the spring southeast of the facility, and the likelihood of fractured bedrock.

Based on the information collected during the site investigation and desktop review, the potential to impact surface water has been deemed low. The greatest potential for impacts from the facility would be to groundwater due to the geologic conditions in the area and the relatively close proximity of the both springs noted above. With this potential to impact groundwater, the facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 6/11/2011

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

 Date: 6/10/2011

Jennifer Belcastro, *Environmental Scientist*  
HRL Compliance Solutions, Inc.

## **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 of Annex A; and Williams Highlands Pit Closure Plan, COGCC document #01175818).
- 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.
- For additional information and detail of the proposed initial actions to be taken refer to the Williams Highlands Pit Closure Plan (COGCC document #01175818).

### **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 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 an approved facility.
- The potential source - production pit - will be closed and reclaimed in accordance with the COGCC 900 and 1000 series rules, respectively.
- The 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). Williams personnel have no reason to suspect nor have they been informed of signs or conditions that would indicate past or present failure of the liner/containment system.
- For additional information and detail of how the potential sources is to be removed refer to the Williams Highlands Pit Closure Plan (COGCC document #01175818).

**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, Wray Gulch Landfill) 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.
- For additional information and detail regarding the proposed approach to accomplish remediation of any impacts, if identified, refer to the Williams Highlands Pit Closure Plan (COGCC document #01175818).

**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 approval.
  - The monitoring and remediation plan will be developed to include, but is not 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 Trail Ridge field which includes this location.
- As a preventative measure, Williams 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 Williams 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. 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.

**Final disposition of E&P waste:**

- If the stockpiled volume is small enough to manage on-site, 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 do 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:
  - the West Garfield County Landfill (045-LFL-005; Parachute, CO);
  - or the Wray Gulch Landfill (103-LFL-020; Meeker, CO).
- Any soils requiring treatment that, once treated, fall below the allowable concentrations and levels provided in Table 910-1 may be recycled and reused at Williams facilities as fill material.

## 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		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	28 days
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

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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.*

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 OGCC # \_\_\_\_\_