

Sensitive Area Determination Checklist

Williams Production RMT Company		
Person(s) Conducting Field Inspection	Ashlee Lane	07/14/10
	<i>Biologist</i>	
Site Information		
Location:	AP 21-20-695	Time: 1330
Type of Facility:	Existing Well Pad	
Environmental Conditions	Clear and calm	
Temperature (°F)	90°s	

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: Three (3) unnamed USGS identified intermittent drainages, all of which are tributary to Cottonwood Gulch.

If yes, describe location relative to facility: One unnamed intermittent drainage is located 72 feet north of the facility; the second unnamed intermittent drainage is located 375 feet east of the facility; the third unnamed intermittent drainage is located 689 feet south of the existing facility.

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. If a potential release was to migrate off the northeastern corner or eastern edge of the facility.

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

☒ High During intermittent flow (spring runoff or after precipitation events).
☒ Moderate If intermittent flows are not occurring (dry season).

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): Drilling 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.

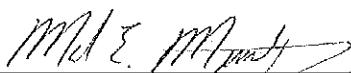
7. Is the potential to impact ground water from the facility in the event of a release high or low?
☒ Moderate ☐ Low

Additional Comments:

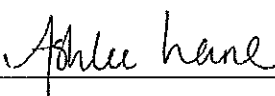
As stated in the surface water section of this sensitive area determination, there are three (3) unnamed USGS identified tributaries within a quarter mile of the facility. The first drainage is located 72 feet north of the facility, the second 375 feet east of the facility, and the third 689 feet south of the facility. All three (3) drainages exhibit signs of intermittent flow; most likely during the spring runoff and after significant precipitation events. All three (3) drainages are tributary to Cottonwood Gulch, a perennial stream. The facility as it is currently constructed would limit the flow directions of a potential release to the northeastern corner and eastern side of the facility. A release off the northeastern corner would flow directly into the unnamed intermittent drainage north of the facility. A release off the eastern side of the facility would be towards the unnamed intermittent drainage east of the facility. The potential to impact this drainage is lower due to the fact the area between the facility is heavily vegetated and the underlying soil has a moderate to high infiltration rate. It is not anticipated that a potential release would impact the intermittent drainage south of the facility due to the topography of the area which would direct flow from a potential release parallel to this drainage. By COGCC decision (500 foot rule) the facility would be classified as being in a sensitive area due to their close proximity to the existing facility. Best management practices (BMPs) are currently installed in the form of a perimeter berm and temporary straw bale barrier on the east side of the facility. It is highly recommended that the perimeter berm be enlarged and extended further on the north and south sides of the facility. It is also recommended that, if possible, a diversion ditch be installed along the northern and eastern sides of the fill slopes. These BMP's should be monitored and maintained to 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, mountain mahogany, oak brush, and various forbs) does not suggest the presence of shallow groundwater. However, hardwood tress are present in the unnamed intermittent drainage approximately 1,500 feet to the southeast of the facility along the banks of the unnamed intermittent drainage suggesting that groundwater may be seeping out of the hillside. The facility is located within the lower Green River Formation which is known to be fractured both vertically and horizontally which allows for potential fluid migration over large distances. Based on the topographical setting of the facility, it is not anticipated that an overland release would impact groundwater due to the short duration time involved and the fact it would spread out over a larger 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, due to the close proximity of the subject pit to the hardwood trees and drainages east of the facility and the likelihood of fractured bedrock. Therefore it would be highly recommended that the pit be lined in accordance to COGCC criteria and tested prior to placement of any materials into it.

Based on the information collected during the site investigation and desktop review, the potential to impact surface water has been deemed moderate to high depending on the time of year. 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 drainages and hardwood trees noted above. With this potential to impact both surface water and groundwater, the facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 04/05/2011

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

 Date: 04/04/2011

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

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Because this location is in a Sensitive Area (See attached SAD), Williams will employ the following BMPs to support protection of surface and ground water:

- Williams will ensure 110 percent secondary containment for any volume of fluids contained at well site during drilling and completion operations.
- Williams will implement best management practices to contain any unintentional release of fluids.
- Either a lined drilling pit or closed loop system will be implemented.