

Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
Person(s) Conducting Field Inspection	Alexander Nees	5/10/2013
Site Information		
Location:	KP 32-9	Time: 10:30am
Type of Facility:	Proposed well pad	
Environmental Conditions	Sunny, scattered clouds, wet soil conditions (precipitation event)	
Temperature (°F)	60	

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: Garfield Creek, a USGS identified perennial stream; two (2) USGS identified intermittent drainages; one seep identified during the site visit.

If yes, describe location relative to facility: Garfield Creek located 536 feet to the east, one intermittent drainage is located 829 feet to the south southeast, the second intermittent drainage is located approximately 1,202 feet to the southeast, and several small seeps is located adjacent to the northeast corner and along the eastern edge of the proposed 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 were migrate of the eastern or the northern side of the proposed facility.

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 Cuttings and fluids will be managed on the surface.

If yes, list the pit type(s):

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.*)

The pad is approximately 480 feet from the Garfield Creek floodplain, and elevated above the floodplain by approximately 160 feet.

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.
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, there are four (4) surface water features within ¼ mile of the proposed facility. Garfield Creek, a USGS identified perennial drainage is located 536 feet to the east and several seeps are located adjacent to the proposed edge of disturbance on the northwestern corner and eastern side of the proposed facility. The facility, as it is currently proposed, limits the direction of a potential release to a portion of the northern and the entire eastern sides. If a release were to migrate off the facility, flow would be to the east following the natural contours of the area. The slope of the hillside off the eastern side is fairly steep (~20 degrees) which would allow a release to migrate fairly unimpeded towards Garfield Creek with which is approximately 80 feet below the proposed facility surface. In addition, flow from a release could potentially interact with water flow from the seeps which were identified during the site visit. Surface water from the seeps, most notably the one located near the northwest corner, flow directly into Garfield Creek. It is not anticipated the other two intermittent drainages identified within the ¼ mile buffer zone would be impacted as flow would be parallel to the one located south of the facility and the fact the other flows to the east into Garfield Creek from the oppsite side of the valley. During facility construction, Best Management Practices (BMPs) should be installed in the form of an earthen perimimeter berm along the graded edge of the fill slope sides. If feasible, a diversion ditch should be constructed along the toe of the fill slope sides as well. All BMPs should be monitored and maintained to ensure sight containment if the event of a release.

The State Engineers Office and USGS records were reviewed and no records were revealed which would provide additional information pertaining to the depth to groundwater. The majority of the vegetative cover in the immediate vicinity of the proposed facility does not indicate the presence of shallow groundwater. Hydrophilic plant species in the immediate vicinity of Garfield Creek would indicate groundwater may be present approximately 80 feet below the surface of the proposed facility. However, the seeps present near the northwest corner and along the eastern sides suggest that perched groundwater may be present at a depth of approximately 25 feet based on their location relative to that of the proposed facility. The source of the perched groundwater is most likely from the irrigated fields to the west.

Based on the information collected during the site visit and desktop review, the greatest potential for impacts would be to surface water features (i.e. Garfield Creek). As stated above, the relative steepness of the hillside and the presence of several seeps to the east of the facility could allow a potential release to reach Garfield Creek fairly unimpeded. Therefore, the potential to impact surface water would be deemed to be high. The potential for impacts to groundwater would be deemed to be low including the perched zone supplying water to the seeps. This would be due to the fact there are no long term storage structures on the pad such as a pit which could potentially leak fluids over a longer period time. With the high potential for impacts to Garfield Creek, the proposed facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 7/3/2013

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

 Date: 5/10/2013

Alexander Nees, *Environmental Scientist*
HRL Compliance Solutions, Inc.