

Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)		
Person(s) Conducting Field Inspection	Alexander Nees	03/28/14
	<i>Environmental Scientist</i>	
Site Information		
Location:	GM 313-12	Time: 0920
Type of Facility:	Proposed frac pad	
Environmental Conditions	Clear, calm, sunny	
Precipitation at site w/n previous 24 hours; soil moist at surface		
Temperature (°F)	50°	

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: Two (2) unnamed USGS identified intermittent drainages, one (1) unnamed non-USGS identified ephemeral drainage, and one stormwater catchment basin.

If yes, describe location relative to facility: One (1) unnamed USGS identified intermittent drainage is located 756' to the south-southwest; one (1) unnamed USGS identified intermittent drainage is located 1,258' to the south; the one (1) unnamed non-USGS identified ephemeral drainage is located 226' to the north-northeast; the stormwater catchment basin is located approximately 230 feet to the east 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. A potential release, if it were to migrate off the facility, would flow to the east directly into the stormwater catchment basin.

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

☒ High to surface water features ☒ High to actual flowing surface water

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):

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

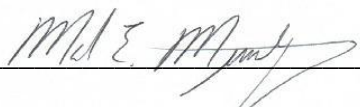
Additional Comments:

As stated in the surface water portion of this sensitive area determination, there are two (2) unnamed USGS identified intermittent drainages, one (1) unnamed non-USGS identified ephemeral drainage, identified during the site visit, and one stormwater catchment basin located within a ¼ mile of the existing facility. None of these drainage features could be impacted by a release at the facility due to the fact that all three (3) drainages are separated from the facility by elevated topography and artificial diversion structures (berms, bar ditches). The facility, as it is currently constructed and proposed to be expanded, is cut into an east facing slope, and is surrounded by elevated topography on the north, west, and south sides. This construction limits the direction of a potential release to the eastern side. If a potential release were to migrate off the facility, flow would be to the east where it would cross the access road and travel downslope via sheet flow until entering a large artificial stormwater basin approximately 530 feet to the east.

During facility expansion, Best Management Practices (BMPs) should be installed in the form of an earthen perimeter berm along the eastern edge of the facility. An elevated water bar should be constructed across the facility entrance as well. If feasible, a diversion ditch should be constructed along the toe of all the eastern fill slope as well. These BMPs could potentially contain a release on the facility surface. In addition, they will greatly aid in slowing/mitigating the migration of any potential release, if it were to migrate off the facility, from reaching the stormwater catchment basin. All installed BMPs 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 revealed no water wells are located within a ¼ mile of the proposed facility. Two well permits (permit number 193647 and 193648) have been issued for locations within a ¼ mile of the proposed facility but have not yet been drilled. The nearest water well (permit number 47732) is located 2,957' north of the facility. The depth to groundwater is noted to be 20'. The well is located adjacent to Parachute Creek, approximately 55' lower in elevation than that of the existing facility. Therefore it could be assumed that the depth to groundwater would be at least 75', if not greater, in the immediate vicinity of the proposed facility expansion. The topography of the general area slopes generally to the east, although there is significant topographical variation on a local scale. The vegetation is dominated by xeric species typical of the elevation and location, including sagebrush, greasewood, four-wing saltbush, juniper, cheatgrass, and herbaceous species typical of reclamation seed mixes such as western wheatgrass. There are isolated instances of rabbitbrush in the diversion ditches, and scattered occurrences of kochia in locations where water pools ephemerally. There are no occurrences of hydrophytic vegetation that would suggest the presence of shallow groundwater or anything other than occasional ephemeral surface flow. The channel of all drainages displayed similar vegetation to the upland areas, which indicates that the drainages only carries surface water originating from elevated topography to the west, and does not have any connection to more permanent sources of groundwater.

Based on the information collected during the site visit and desktop review, the potential to impact groundwater has been deemed as being low as noted above. The greatest potential for impacts is to the stormwater catchment basin located to the east of the proposed facility expansion. If a potential release were to migrate off the facility and not be contained by any installed BMP's, flow would be directly towards and into the above noted stormwater catchment basin. In most instances this would contain any release from the facility and easily pumped out. However, there is a drain in the bottom of the catchment basin, identified during the site visit, which is tied directly into the Town of Parachute's storm sewer system. If a potential release were to reach the stormwater catchment basin, it would quickly migrate through the stormwater sewer system and enter the Colorado River. As noted above, if adequate (BMPs) are installed and maintained during expansion construction and operation the potential for impacts to the Colorado River could be greatly reduced. However, with the significant risk of impacts to the Colorado River, the facility should be designated as being in a sensitive area.

Inspector Signature(s):  Date: 3/29/2014

Mark E. Mumby, *Project Manager/RPG*
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 Date: 3/28/2014

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