Sensitive Area Determination Checklist

WPX Energy Rocky Mountain, LLC (WPX)			
Person(s) Conducting Field Inspection		Alexander Nees	07-24-2013
		Environmental Scientist	
Site Information			
Location:	Clough 2A Injection Well		Time: 10:00 AM
Type of Facility:	Proposed well pad expansion		
Environmental Conditions	Overcast, calm, dry soil		
Temperature (°F)	80		

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: One (1) unnamed USGS identified intermittent drainage and one (1) unnamed man-made diversion ditch.

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 migrate off the southern side of the facility, would tend to flow to the south towards the man-made diversion ditch.

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

WPXENERGY

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 $\leq 1.0x10^{-7}$ 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 there is one USGS identified intermittent drainage located 1,112 feet to the west and just inside the ¼ mile radius and one man-made diversion ditch which is located south of the interim reclamation area. The facility, as it is proposed to be expanded, would allow flow to occur off the southern side and portions of the eastern and western sides. Flow off the facility would tend to migrate to the south following the natural contours of the area. During facility expansion, it is recommended that Best Management Practices (BMPs) be installed in the form of an earthen perimeter berm along the graded edge of the southern and portions of the eastern and western fill slope sides (if any) due to the flat lying terrain. Any 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 no records were revealed which would provide any additional information in regards to the depth to groundwater. The vegetative cover and topographic setting of the facility does not suggest the presence of shallow groundwater. In addition past drilling activities just outside the ¼ mile radius (buffer zone) have shown groundwater to be in excess of fifty (50) feet bgs.

Based on the information collected during the site visit and desktop review, the greatest potential for impacts would be to the man-made diversion ditch located just to the south of the facility. It was noted in the site visit that the diversion ditch flows under the northern frontage road, interstate 70, and Highway 6 to the south of I-70. When it exits on the south side of Highway 6 it flows out into a flat lying interim reclamation area just to the east of the RMV 54-28 pad. Therefore, the man-made diversion feature has no hydraulic connectivity to the Colorado River further to the south. It is not anticipated the USGS identified drainage to the west of the facility would be impacted by a potential release. The flat lying terrain, topographic contours of the area, the distance to the drainage, and the moderate to high infiltration rates of the underlying soil would prevent a potential release form impacting this drainage. Although the potential for impacts to the man-made diversion ditch would be deemed as high, it has no hydraulic connection to any flowing surface water which would be the Colorado River. It has also been determined the larger drainage feature to the west would not be impacted by a potential release due to the observations noted above. With the potential for impacts to both surface water and groundwater being deemed as low the facility can be designated as being in a non-sensitive area.

Inspector Signature(s): _____ Date: 8/29/2013

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

_____ Date: 7/26/2013

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