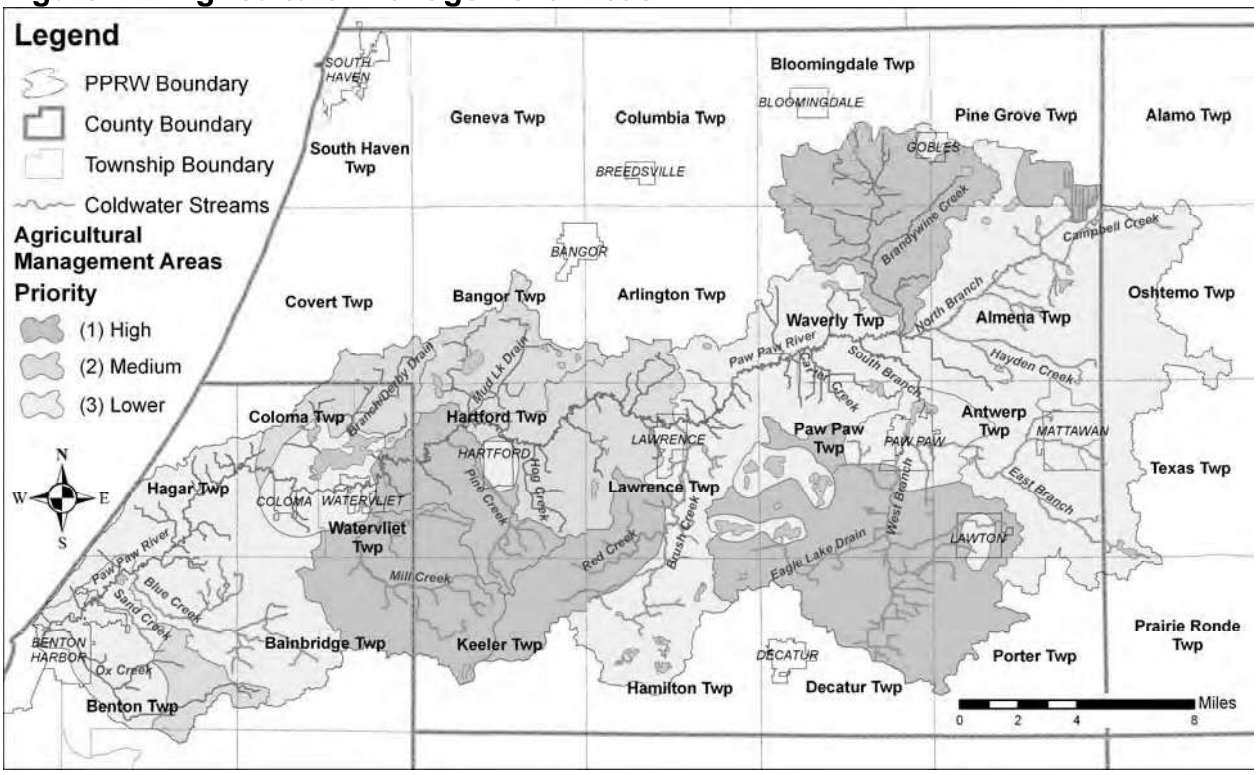
8.2 Agricultural Management Areas

The prioritization of agricultural management areas is based on significant water body impairments, estimated pollutant loadings (SWAT model), amount of agriculture land cover and problems identified by MDEQ staff, MDNR Fisheries staff, Van Buren County Drain Commissioner or through the volunteer inventory process. The PPRW is prioritized into three categories for agricultural management as shown in Figure 24. The high priority agricultural management areas are the Mill Creek, Pine Creek, Red Creek, Brandywine Creek and West Branch subwatersheds and the Mentha Flats area in the southeast corner of Pine Grove Township. The medium priority agricultural management areas generally cover the Branch & Derby Drain, Mud Lake Drain and Hog Creek subwatersheds as well as the upstream portions of Ox and Sand Creek. The high and medium priority areas are suspected to contain a majority of the agricultural related pollutant sources impairing or threatening water quality in the PPRW. The remainder of the watershed is in a lower priority level for agricultural management efforts. However, since this analysis is at a landscape scale, there may be agricultural sites in the lower priority area that need attention to improve water quality in the watershed.

Figure 24. Agricultural Management Areas



Agricultural Management Area Pollutants and Sources

In the agricultural management areas the prioritization of pollutants and sources is based on their suspected significance to impaired water quality in these areas.

In the agricultural management areas, the pollutants are prioritized as follows:

1. **Sediment** is a known pollutant throughout the watershed, especially in the agricultural areas. Sediment from agricultural runoff also carries nutrients like phosphorus and nitrogen. Biosurveys found sediment impairment occurring in all of the impaired streams in agricultural management areas.
2. **Bacteria and pathogens** are a known pollutant in two of the highest priority agricultural management area waterbodies, Mill and Pine Creeks. TMDLs are scheduled for development in these watersheds due to extremely high Escherichia coli (E. coli) levels. Unrestricted livestock access sites have also been found in agricultural management areas.
3. **Nutrients** are a suspected pollutant in all of the agricultural management areas. In the West Branch, one of the highest priority agricultural management areas, a TMDL is scheduled for development due to low dissolved oxygen levels. Nutrients from agricultural runoff are suspected to be causing the impairment.
4. **Pesticides** are suspected to be a problem in agricultural areas; however, no data was found to document their significance in the PPRW.
5. **Temperature** is a concern in agricultural management areas because the removal of tree cover along coldwater streams and drains can lead to increased water temperature. Temperature is also impacted by altered hydrology from increased drainage efficiency and soil compaction, because groundwater recharge is reduced.
6. **Oil, grease and metals** are a concern in agricultural areas because of the use and maintenance of farm equipment (tractors, irrigation pumps, etc.).

In the agricultural management areas, the pollutant sources are prioritized as follows:

1. **Streambanks –** Streambank erosion is a significant source of the highest priority pollutant (sediment). Streambank erosion was identified in biosurveys throughout the agricultural areas. In addition, recent fieldwork identified several streambank erosion sites on agricultural drains in the Paw Paw Lake (Berrien County) watershed.
2. **Livestock —** Two water bodies with scheduled TMDLs in agricultural management areas (Mill and Pine Creek) are being impacted by the application of livestock waste.
3. **Stormwater runoff –** Unmanaged runoff from agricultural lands can carry sediment, nutrients, bacteria and pathogens directly to surface water.
4. **Septage waste –** Failing septic systems and improper application or disposal of septage waste by septic haulers is a suspected source of nutrients, bacteria and pathogens in agricultural management areas.