

4 Resource Management

Federal, state, county and local governmental units and their agencies have exclusive, or share, responsibility for the management and protection of water, land and other natural resources. Local entities are obligated to comply with federal and state environmental statutes, county level ordinances and local ordinances. In the case of surface water protection, the federal and state laws generally provide a nation or statewide strategy for water quality protection. Because of their broad-scale nature there are often gaps in protection efforts. This presents opportunities for county and local governmental units to enact ordinances or standards that will support a more comprehensive water quality protection strategy.

For more information on opportunities for local government to protect water and other natural resources consult the "Filling the Gaps" documents at www.swmpc.org/gaps.asp.

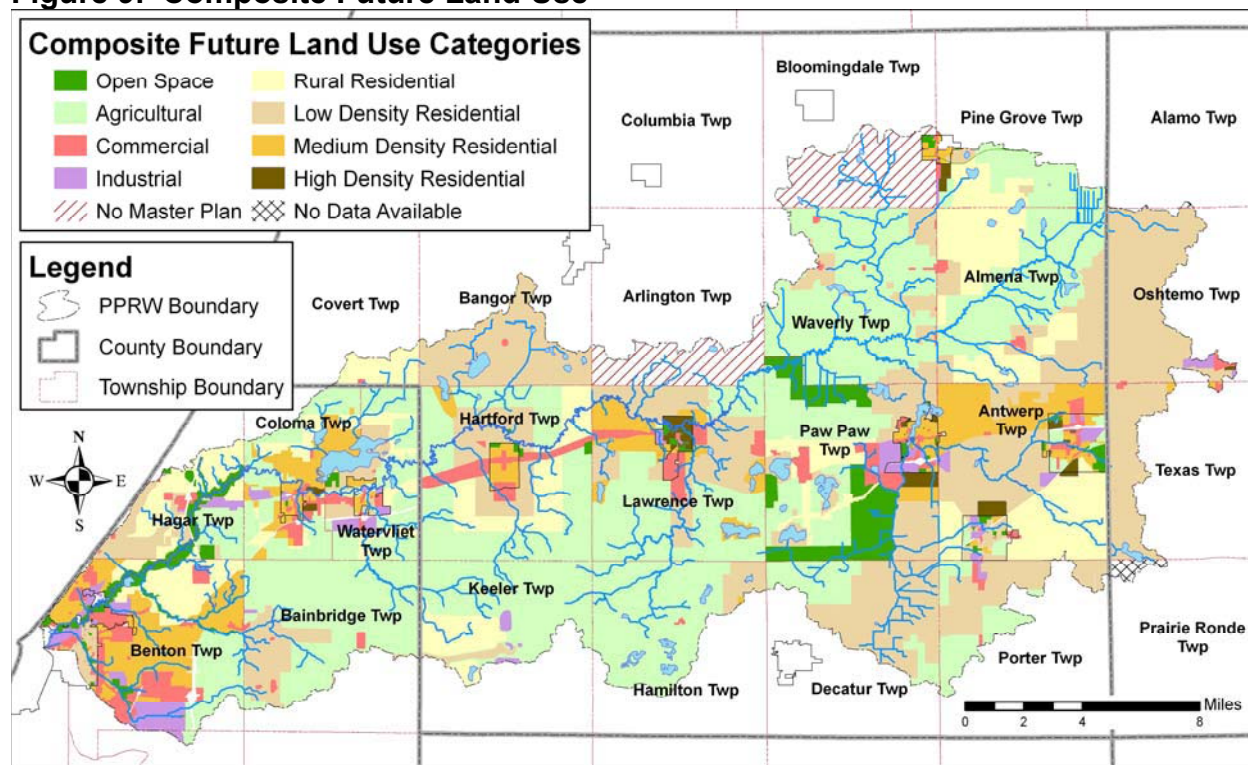
4.1 Land Use and Water Quality

The way land is managed, patterns of land use in relation to natural resources, and especially the way water is managed on a site to support the land use, has a large impact on the quality of water and the ecology of lakes, rivers, streams and shorelands. The authority to regulate land use rests primarily with local governments, largely through master plans and zoning ordinances. In addition, counties have the authority to enact ordinances that could affect the management of land. For example, several counties in Michigan have adopted phosphorus bans for fertilizer use. As a result, city, village, township and tribal governments have a significant role to play in protecting water resources. This role presents itself where federal and state statutes and county ordinances leave off.

The authority to regulate land use rests primarily with local governments. This gives cities, villages and townships a significant role in protecting water resources.

It is essential to plan for land uses with respect to existing natural features, soils and drainage patterns to lessen the impacts to water quality. Certain uses and activities should be located in areas where their impacts to water will be minimized. From a watershed perspective, land use will not only affect the immediate area, but also downstream areas and water bodies. Figure 9 is a composite map of future land use in the watershed. The future land use map was created from each governmental unit's master plan. The future land use map is a vision that is supposed to guide future development. Most of the land in the PPRW is planned for agriculture and rural or low - density residential use.

Figure 9. Composite Future Land Use



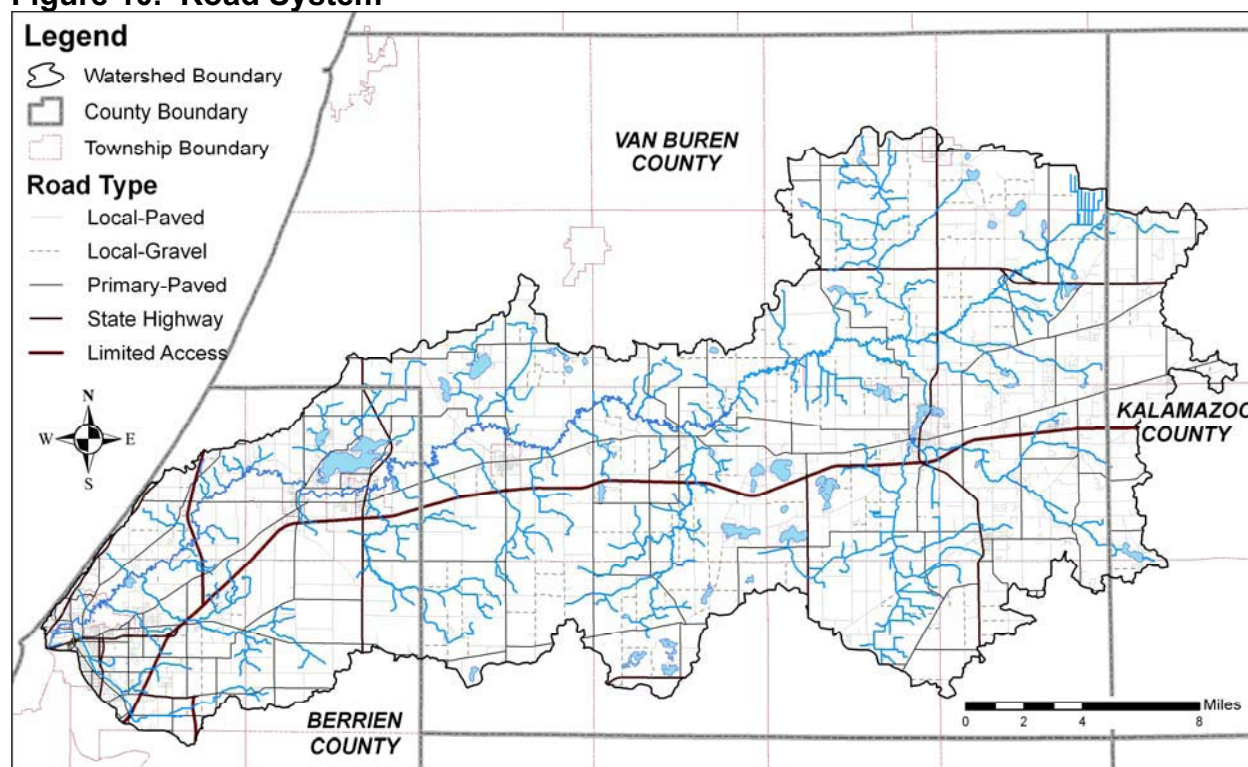
Once the placement of different future land uses (high density residential, low density residential, commercial, industrial, etc) are located with respect to soils, natural features, water bodies and drainage patterns, there should be great attention to how the land is developed. Land development can have a significant impact on water quality. The impacts to water quality that commonly result directly from development activity and increased drainage to support land development can be minimized through the use of smart growth and low impact development techniques. For more information on low impact development techniques visit www.swmpc.org/lid.asp.

Roads and Water Quality

Roads are a land use that can have substantial impacts on water quality. Controlling roadway-related pollution during project planning, construction and ongoing maintenance is important. For example, the salting and sanding of roads during the winter can be a major pollution concern. Figure 10 shows the extent of the road system in the PPRW. MDOT and County Road Commissions are responsible for the construction and maintenance of most roads in the PPRW. However, the management of local roads is often shared with townships, cities and villages. In addition, many cities and villages have their own road systems, which they maintain. The Southeast Michigan Council of Governments (SEMCOG) published a guidance document designed to promote good planning practices and endorse consideration and integration of environmental issues into transportation projects. This guidance document is available on-line at www.swmpc.org/downloads/enviro_transpo_guidance.pdf.

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Figure 10. Road System



4.2 Regulatory Authority and Water Resources

Water Bodies (rivers, drains, streams, lakes)

At the federal level, the Army Corps of Engineers exercises jurisdiction for navigation on the Paw Paw River from the mouth up to Paw Paw Avenue in Benton Harbor (about 2 miles). The Michigan Department of Environmental Quality (MDEQ) regulates water bodies in the watershed based on the Natural Resources and Environmental Protection Act, PA 451, part 301 Inland Lakes and Streams. This statute regulates the dredging, filling, construction and any structural interference with the natural flow of a lake or stream. This act also regulates marina operations. Permits are needed for activities such as construction of docks or placing fill or structures in lakes and streams. The Michigan Department of Natural Resources (MDNR) has the authority to regulate the number of boats and size of engines at MDNR access sites if human health or protected species are being impacted. Cities, villages and townships should enact ordinances that further protect the water quality of lakes and streams. Model ordinances to protect water quality can be found at www.swmpc.org/ordinances.asp.

MDEQ also regulates any discharges to lakes or streams such as those from industrial operations or municipal wastewater treatment plants through the National Pollutant Discharge Elimination System (NPDES) program. For a listing of NPDES permits in the watershed see Appendix 2. Further the MDEQ administers the Phase II stormwater program, which requires owners or operators of municipal separate storm sewer systems (MS4s) in urbanized areas to implement programs and practices to control polluted stormwater runoff. Benton Harbor City, Benton Charter Township, St. Joseph City, Berrien County Road Commission and Berrien County Drain Commissioner and

Administration participate in the Phase II stormwater program. More information on this program is available at www.swmpc.org/lshr.asp.

The County Drain Commissioner is responsible for the administration of the Drain Code of 1956, as amended. The duties of the Drain Commissioner include the construction and maintenance of drains, determining drainage districts, apportioning costs of drains among property owners, and receiving bids and awarding contracts for drain construction. The Drain Commissioner also approves drainage in new developments and subdivisions and maintains lake levels. The soil erosion and sedimentation program is housed in the Drain Commissioner's office. The County Enforcement Agent for the soil erosion program has the responsibility of ensuring earth change activities that are one or more acres in area and/or within 500 feet of a watercourse or lake do not contribute soil to water bodies.

Wetlands

Michigan is one of two states that has the authority to administer section 404 of the Clean Water Act dealing with wetland protection. The Michigan Department of Environmental Quality regulates wetlands and shares this responsibility with the Army Corps of Engineers for the wetlands connecting to the Paw Paw River from the mouth to Paw Paw Avenue in Benton Harbor. However, MDEQ does not regulate all wetlands. Wetlands are regulated by MDEQ if they meet any of the following criteria:

- Connected to one of the Great Lakes.
- Located within 1,000 feet of one of the Great Lakes.
- Connected to an inland lake, pond, river, or stream.
- Located within 500 feet of an inland lake, pond, river or stream.
- Not connected to one of the Great Lakes or an inland lake, pond, stream, or river, but are more than 5 acres in size.
- Not connected to one of the Great Lakes, or an inland lake, pond, stream, or river, and less than 5 acres in size, but the DEQ has determined that these wetlands are essential to the preservation of the state's natural resources and has notified the property owner.

Since there are gaps in state protection of wetlands, a local unit of government (city, township, village, county) has the authority to create wetland regulations. A local wetland ordinance must be at least as restrictive as state regulations and the MDEQ must be notified if there is a local wetland ordinance in effect. Approximately 50 communities in Michigan have adopted local wetland ordinances. Although, none of these are in the PPRW, some jurisdictions within the watershed require building setbacks and a no-disturb zone around wetlands, which can be just as effective as a wetland ordinance.

Local governmental units can enact building setbacks and a no disturb zone around wetlands to help protect water quality.

Floodplains

The Michigan Department of Environmental Quality requires that a permit be obtained prior to any alteration or occupation of the 100-year floodplain of a river, stream or drain to ensure that development is reasonably safe from flooding and does not increase flood damage potential. Local ordinances restricting development in floodplains can be more restrictive than MDEQ regulations.

Some communities in the PPRW participate in FEMA's National Flood Insurance Program (NFIP) (see Table 7). The NFIP is a Federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. The program is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. The overall intent of NFIP is to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

Groundwater

Locally, the health department plays a role in groundwater protection with the regulation of the installation and design of septic systems. Local units of government have the authority to require the maintenance of septic systems through a septic system maintenance district ordinance. Another local groundwater protection option is a point of sale inspection ordinance for septic systems. With this ordinance, when property is sold there is a requirement to inspect the septic system. In Van Buren County, Columbia Township has recently adopted a point of sale septic inspection ordinance.

At the state level, the Department of Environmental Quality and the Department of Agriculture monitor groundwater use. All large quantity withdrawals, defined as having the capacity to withdraw more than 100,000 gallons of water per day average over any 30-day period, equivalent to 70 gallons per minute pumping, must be registered and water use must be reported annually. The Comprehensive State Groundwater Protection Program is a statewide program that looks at groundwater uses, including drinking water, and its role in sustaining the health of surface water bodies (rivers, streams, wetlands, marshes). The Wellhead Protection Program is intended to protect the drinking water supply. The program minimizes the potential for contamination by identifying and protecting the area that contributes water to municipal water supply wells and avoids costly groundwater clean-ups. The following cities and villages in the PPRW participate in a local Wellhead Protection Program:

Gobles Hartford Lawrence Lawton Mattawan Watervliet

4.3 Local Water Quality Protection Policies

Local governments regulate land use mostly through master plans and zoning ordinances. Table 7 presents a list of governmental units in the PPRW that possess master plans and zoning ordinances as well as participation in the Federal Emergency Management Agency (FEMA) National Floodplain Insurance Program (NFIP). Community participation in the NFIP is voluntary and based on an agreement between local governmental units and the Federal Government that states if a governmental unit will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

As part of the PRRW Planning Project, several communities agreed to have their master plans and zoning ordinances reviewed by the Southwest Michigan Planning Commission (SWMPC). The goal of these evaluations was to assist with the identification of strengths and limitations in the master plan and zoning ordinances that support the protection of water quality and natural resources. The communities volunteering to have their plans and ordinances reviewed by SWMPC included:

Almena Township	Antwerp Township
Decatur Village	Decatur Township
Hamilton Township	Hartford Township
Hartford City	Paw Paw Village
Waverly Township	

In addition to the municipalities listed above, the Pokagon Band of Potawatomi Indians provided a copy of their draft master land use plan to SWMPC for evaluation of its content. The plan does an excellent job of addressing natural resources and utilizes the information to influence growth and development decisions. Subsequent to the finalization of the Land Use Plan, a Tribal Land Use and Conservation Code will be developed to support the land use plan vision and may include any other form of land use requirement, restriction, or management practice considered necessary for the protection, sound use and development of the property and resources of the Band.

The full reviews of the plans and zoning ordinances are available on the SWMPC website at www.swmpc.org/pprw_pz_review.asp. In summary, the master plans generally did not relate water quality and natural resource protection to the safety and welfare of the residents and community. Most of the master plans did not address the connection between land use and water quality. Further, the plans generally did not discuss the negative impacts of increased impervious surfaces and the need for stormwater management and low impact development techniques to protect water quality. Lastly, most plans did not include much language on natural resources (lakes, wetlands, streams, riparian buffers, woodlands, open space etc.) and their value to the community and their role in protecting water quality. The following provisions were generally missing from most zoning ordinances reviewed:

1. Waterbody Protection

- require adequate building setbacks along rivers/drains and wetlands
- require naturally vegetated buffers along streams, rivers, lakes and wetlands
- floodplain protection regulations

2. Site Plan Review Process

- show the location of natural features, such as lakes, ponds, streams, floodplains, floodways, wetlands, woodlands, steep slopes, and natural drainage patterns on site plans
- show and label all stormwater best management practices on the site plan (rain gardens, swales, etc)
- site plan review criteria - require the preservation of natural features, such as lakes, ponds, streams, floodplains, floodways, wetlands, woodlands, steep slopes, and natural drainage patterns to the fullest extent possible and minimize site disturbance as much as possible

- require drain commissioner review of stormwater management during the site plan review process
- require the use of native plants in all landscaping plans and vegetative stormwater bmps (to help reduce storm water velocities, filter runoff and provide additional opportunities for wildlife habitat)
- require the use of Low Impact Development techniques whenever feasible (see Low Impact Development for Michigan: A Design Guide for Implementers and Reviewers at www.swmpc.org/downloads/lidmanual.pdf)

3. Open Space and Agricultural Land Preservation

- use bonus densities or other incentives to encourage open space developments
- require all Planned Unit Developments to provide 25-50% open space
- require open space areas to be contiguous and restrict uses of open space area to low impact uses
- in agricultural zoning districts, utilize methods, such as sliding-scale, to limit fragmentation of farmland and to lessen conflicts between farming and residential uses
- require buffers between agricultural operations and residential uses
- allow for clustering/open space developments in agricultural districts to protect natural features

4. Parking Lots and Roads – Reducing Impervious Surfaces

- allow for more flexibility in parking standards and encourage shared parking
- require a portion of large paved parking lots to be planted with trees/vegetation
- require treatment of stormwater parking lot runoff in landscaped areas
- require 30% of the parking area to have compact car spaces (9 x18 ft or less)
- allow driveways and overflow parking to be pervious or porous pavement
- use maximum spaces instead of minimums for parking space numbers
- require landscaped areas in cul-de-sacs and allow hammerheads
- allow swales instead of curb and gutter (if curbs are used require perforated or invisible curbs, which allow for water to flow into swales)

5. Stormwater BMPs (refer to Low Impact Development for Michigan: A Design Guide for Implementers and Reviewers at www.swmpc.org/downloads/lidmanual.pdf or see model stormwater ordinance at www.swmpc.org/ordinances.asp)

- allow the location of bioretention areas (rain gardens, filter strips, swales) in required setback areas and common areas
- encourage the use of best management practices (BMPs) that improve a site's infiltration and have BMPs labeled and shown on site plans
- require use of native plants for landscaping plans and for runoff/stormwater controls (prohibit invasive and exotics species)
- require use of BMPs and encourage use of above ground BMPs instead of below ground stormwater conveyance systems
- prohibit direct discharge of stormwater into wetlands, streams, or other surface waters without pre-treatment
- require periodic monitoring of BMPs to ensure they are working properly and require that all stormwater BMPs be maintained

Table 7. Zoning, Master Plans and NFIP Participation by Governmental Unit

Governmental Unit	County	Zoning?	Master Plan Date*	FEMA NFIP Participation
Alamo Twp.	Kalamazoo	Yes	Unknown	No
Almena Twp.	Van Buren	Yes	2006	Yes
Antwerp Twp.	Van Buren	Yes	2002	No
Arlington Twp.	Van Buren	Yes	Draft in progress	Yes
Bainbridge Twp.	Berrien	Yes	2003	Yes
Bangor Twp.	Van Buren	No	2001	No
Benton Harbor, City of	Berrien	Yes	1998	Yes
Benton Twp.	Berrien	Yes	2002	Yes
Bloomington Twp.	Van Buren	No	None	No
Coloma, City of	Berrien	Yes	1991	Suspended
Coloma Twp.	Berrien	Yes	2001	Yes
Covert Twp.	Van Buren	Yes	2004	Yes
Decatur Twp.	Van Buren	Yes	2001	No
Gobles, City of	Van Buren	Yes	2006	No
Hagar Twp.	Berrien	Yes	2001	Yes
Hamilton Twp.	Van Buren	Yes	2001	No
Hartford, City of	Van Buren	Yes	1999	No
Hartford Twp.	Van Buren	Yes	1999	No
Keeler Twp.	Van Buren	Yes	2002	No
Lawrence Twp.	Van Buren	Yes	2002	No
Lawrence, Village of	Van Buren	Yes	2002 – Draft	No
Lawton, Village of	Van Buren	Yes	2004	No
Mattawan, Village of	Van Buren	Yes	1998	No
Oshtemo Twp.	Kalamazoo	Yes	1993	Yes
Paw Paw Twp.	Van Buren	Yes	2003	No
Paw Paw, Village of	Van Buren	Yes	1999	Yes
Pine Grove Twp.	Van Buren	Yes	2006	No
Pokagon Band of Potawatomi	Van Buren	In Progress	2008 - Draft	No
Porter Twp.	Van Buren	Yes	2005 – Draft	No
Prairie Ronde Twp.	Kalamazoo	Yes	Unknown	No
Sodus Twp.	Berrien	Yes	2004	Yes
St. Joseph, City of	Berrien	Yes	2008	Yes
Texas Twp.	Kalamazoo	Yes	1999	No
Watervliet, City of	Berrien	Yes	Unknown	Yes
Watervliet Twp.	Berrien	Yes	1998	Yes
Waverly Twp.	Van Buren	Yes	2006 -Draft	Yes

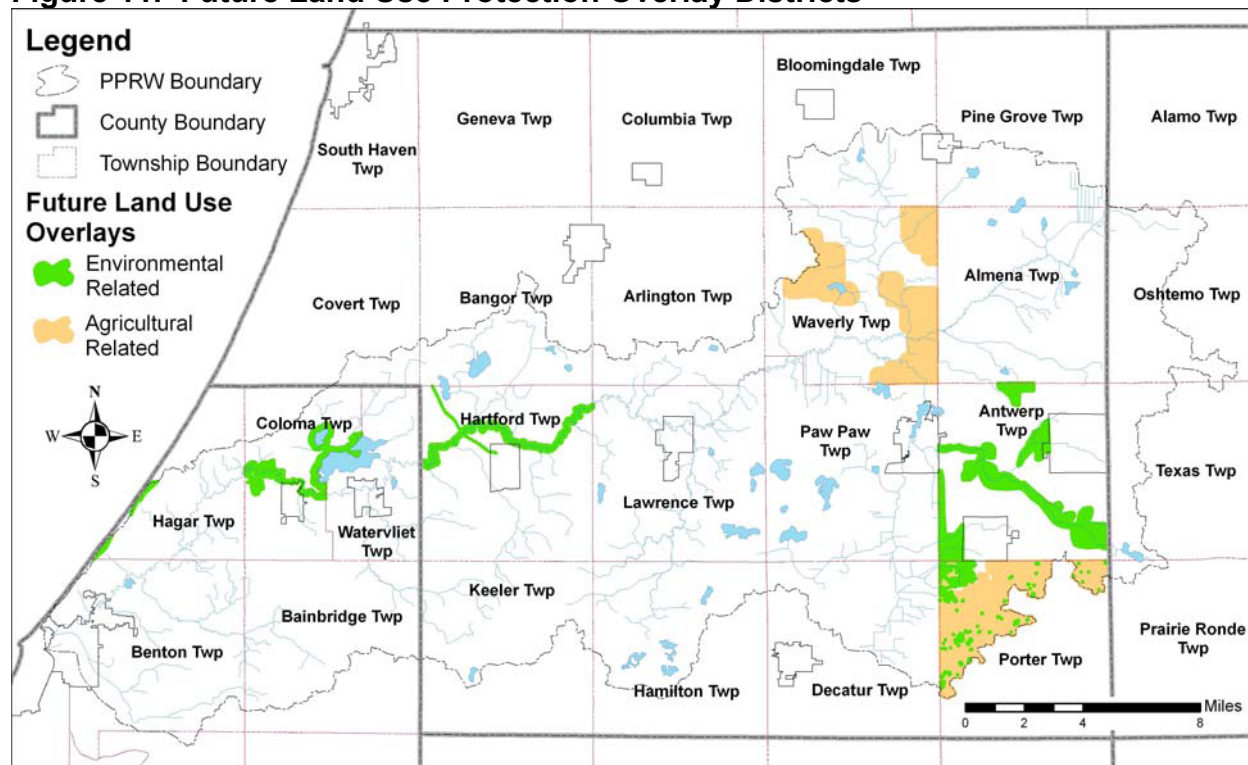
*on file at Southwest Michigan Planning Commission

A few municipalities have implemented specific protection regulations for the Paw Paw River and its tributaries. Figure 11 illustrates local protection initiatives for agricultural lands and natural and water resources through the use of overlay districts.

- Waverly and Porter Townships have agricultural related overlays to encourage farmland preservation.
- Hagar Township has an environmental overlay district along the Lake Michigan shoreline; much of this area is critical dune.
- Antwerp, Porter, Coloma and Hartford Townships have environmental overlay districts protecting water resources.
- Hartford Township has an overlay district along the Van Buren Trail.

It is evident from Figure 11 environmental overlay districts do not protect most of the Paw Paw River and its tributaries. However, several jurisdictions have ordinances that mandate building setbacks along water bodies and wetlands, which provide protection of water quality. These setbacks also provide room for a stream to meander and change its course over time. A building setback of at least 100-150 feet is ideal (this width may need to be increased if the floodplain is wider or if it is a coldwater stream).

Figure 11. Future Land Use Protection Overlay Districts



4.4 Private Land Management

Beyond, federal, state and local laws protecting water quality, the greatest opportunity to protect and preserve water quality and natural resources rests with the landowner in how they manage their lands. Most of the land in the watershed is in private ownership. Many organizations are willing to provide technical assistance to landowners on how to better manage their lands to protect natural resources and water quality. These

organizations include MSU County Extension Offices, Conservation Districts, Natural Resources Conservation Service, Southwest Michigan Land Conservancy, The Nature Conservancy, Sarett Nature Center, Department of Natural Resources and United States Fish and Wildlife Service (Partners for Wildlife Program). See Appendix 3 for more detailed information on protection and management options available for private lands.