

## 7 Water Quality Summary

### 7.1 Designated Uses

According to the Michigan Department of Environmental Quality (MDEQ), the primary criterion for water quality is whether the water body meets designated uses. Designated uses are recognized uses of water established by state and federal water quality programs. All surface waters of the state of Michigan are designated for and shall be protected for the uses listed in Table 12. (Citation: R323.1100 of Part 4, Part 31 of PA 451, 1994, revised 4/2/99). A watershed management plan provides direction for protecting and restoring designated uses.

**Table 12. Definitions of Designated Uses**

Designated Use	General Definition
Agriculture	Water supply for cropland irrigation and livestock watering
Industrial Water Supply	Water utilized in industrial processes
Public Water Supply	Public drinking water source
Navigation	Waters capable of being used for shipping, travel, or other transport by private, military, or commercial vessels
Warmwater Fishery	Supports reproduction of warmwater fish
Coldwater Fishery	Supports reproduction of coldwater fish
Other Indigenous Aquatic Life and Wildlife	Supports reproduction of indigenous animals, plants, and insects
Partial Body Contact	Water quality standards are maintained for water skiing, canoeing, and wading
Total Body Contact	Water quality standards are maintained for swimming

Designated uses of many water bodies in the PPRW are threatened or impaired due to habitat loss or fragmentation, rather than any specific pollutant. For the designated use assessment, only pollutant based impairments and threats are considered. For detailed information on the most common pollutants (sediment, nutrients, temperature, flow, bacteria and chemicals) their sources and Michigan's water quality standards see Appendix 9.

### 7.2 General Water Quality Statement

Overall, the following designated uses are threatened in the PPRW: Partial and Total Body Contact, Coldwater and Warmwater Fishery and Other Indigenous Aquatic Life and Wildlife. The Coldwater Fishery designated use only applies to MDNR designated coldwater streams. The following water bodies in the PPRW are designated as coldwater fisheries: Sand Creek, Blue Creek, Mill Creek, Brush Creek, North Branch and its tributaries above M-40, West Branch, East Branch above M-40 and Pine Creek.

The designated uses of Agriculture, Industrial Water Supply and Navigation are being met throughout the watershed. The Public Water Supply use is not applicable in the PPRW because no communities withdraw water directly from the Paw Paw River. Benton Harbor is the only community in the PPRW relying on surface water for its municipal water supply and their water intake is located offshore in Lake Michigan.

The State of Michigan also considers Fish Consumption a designated use for all water bodies. For all streams within the PPRW and Maple Lake, the Fish Consumption designated use is considered non-attaining due to elevated levels of PCB's found in several locations. There is a generic, statewide, mercury-based fish consumption advisory that applies to all of Michigan's inland lakes. In the PPRW, Van Auken and Rush were the only lakes sampled for mercury in fish tissue. In both lakes, elevated levels of mercury were found in fish tissue, as a result the Fish Consumption designated use is considered non-attaining in those lakes.

### **7.3 Individual Water Body Assessment**

Within a watershed, water quality can vary greatly from one water body to the next. An assessment of individual water bodies was completed for the PPRW and can be found in Appendix 4. Table 13 provides a summary of the assessment. Not all water bodies within the watershed were evaluated. Only water bodies with enough information to make a water quality statement were included. The assessment includes: 1) which designated uses are threatened or impaired, 2) the reasons why the designated uses are being threatened or impaired, 3) the pollutants causing the threat or impairment, and 4) the sources of the pollutants and the causes related to those sources. Several sources of information were used in this assessment, such as the MDEQ 2006 and 2008 Integrated Reports; MDNR Fisheries Division staff input; MDNR Fisheries Reports; Spicer Study on Paw Paw Lake; TNC Agricultural Impact Study; TNC Floodplain Forest Study; Van Buren County Drain Commissioner input; MDEQ Biosurvey Reports; PPRW Volunteer Inventory; MDEQ Road Stream Crossing Inventory, MDEQ Wetland Functional Analysis and MDEQ Flashiness Report.

The Clean Water Act (CWA) requires Michigan to prepare a biennial Integrated Report on the quality of its water resources as the principal means of conveying water quality protection/monitoring information to the United States Environmental Protection Agency (USEPA) and the United States Congress. For each water body, the report classifies each designated use as: 1) fully supported, 2) not supported or 3) not assessed. Designated uses other than fish consumption, which were considered not supported by the MDEQ in 2008, are identified in Table 13. Designated uses not supported because of a specific pollutant often require the development of a Total Maximum Daily Load (TMDL). Table 14 lists the water bodies in the PPRW that require a TMDL and the year the TMDL is scheduled to be developed.

A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant a water body can receive and still meet applicable water quality standards.
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**Table 13. Water Bodies at a Glance**

<b>Water Body</b>	<b>Sub Watershed ID+</b>	<b>Impaired Uses</b>	<b>Threatened Uses</b>	<b>Pollutants (known (k) or suspected (s))</b>
Paw Paw Mainstem	9, 10, 14, 15, 16, 17		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)
<b>Coldwater Tributaries</b>				
Blue Creek	16	Partial & Total Body Contact*	Coldwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Temperature (s), Bacteria/Pathogens (k), Pesticides (s)
Brush Creek	8		Coldwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Temperature (s), Pesticides (s)
Campbell Creek	1		Coldwater Fishery Other Indigenous Wildlife	Sediment (s), Nutrients (s), Temperature (s), Pesticides (s)
Eagle Lake Drain	5	Coldwater Fishery Other Indigenous Wildlife*		Sediment (k), Nutrients (s), Temperature (s), Pesticides (s)
East Branch	6		Coldwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Temperature (s), Pesticides (s)
Hayden Creek	3		Coldwater Fishery Other Indigenous Wildlife	Sediment (s), Nutrients (s), Temperature (s), Pesticides (s)
Mill Creek	13	Partial & Total Body Contact*	Coldwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Temperature (s), Bacteria/Pathogens (k), Pesticides (s)
North Branch	1, 3		Coldwater Fishery Other Indigenous Wildlife Partial & Total Body Contact	Sediment (k), Nutrients (s), Temperature(s), Bacteria/Pathogens (s), Pesticides (s)
Pine Creek	14	Coldwater Fishery* Other Indigenous Wildlife* Partial & Total Body Contact*		Sediment (k), Nutrients (s), Temperature (s), Bacteria/Pathogens (k), Pesticides (s)
Red Creek	8	Coldwater Fishery Other Indigenous Wildlife		Sediment (k), Nutrients (s), Temperature (s), Pesticides (s)

<b>Water Body</b>	<b>Sub Watershed ID+</b>	<b>Impaired Uses</b>	<b>Threatened Uses</b>	<b>Pollutants (known (k) or suspected (s))</b>
Sand Creek	17	Coldwater Fishery Other Indigenous Wildlife		Sediment (k), Nutrients (s), Temperature (s), Oils/Grease/Metals (s), Pesticides (s)
West Branch**	4, 7	Coldwater Fishery* Other Indigenous Wildlife	Partial & Total Body Contact	Sediment (k), Bacteria/Pathogens (s), Nutrients (s), Temperature (s), Pesticides (s)
<b>Warmwater Tributaries</b>				
Brandywine Creek	2	Warmwater Fishery	Other Indigenous Wildlife Partial & Total Body Contact	Sediment (k), Nutrients (s), Bacteria/Pathogens (s), Pesticides (s)
Branch & Derby Drain	12		Warmwater Fishery Other Indigenous Wildlife Partial & Total Body Contact	Sediment (k), Nutrients (s), Bacteria/ Pathogens (s), Pesticides (s)
Carter Creek	9		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)
Hog Creek	10		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)
Mud Lake Drain	11	Warmwater Fishery	Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)
Ox Creek	17	Warmwater Fishery Other Indigenous Wildlife*		Sediment (k), Nutrients (s), Oils/Grease/Metals (k), (chromium, copper, lead PCBs, organic compounds; zinc, PAHs; BNAs), Pesticides (s)
South Branch	7		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s), Oils/Grease/Metals (s)
<b>Lakes</b>				
Paw Paw Lake	12	Warmwater Fishery	Other Indigenous Wildlife	Sediment (k), Nutrients (k), Oils/ Grease/ Metals (s), Pesticides (s)
Maple Lake	7	Warmwater Fishery	Other Indigenous Wildlife	Sediment (k), Nutrients (s), Oils/Grease/Metals (s), Pesticides (s)

+Refer to Figure 3 for subwatershed boundaries

\*This designated use was listed as not supported by the MDEQ in the 2008 Integrated Report.

\*\*Referred to in MDEQ Integrated Report as South Branch

**Table 14. TMDLs Scheduled for Paw Paw River Watershed**

<b>Water Body</b>	<b>Pollutant</b>	<b>TMDL* Schedule</b>
Ox Creek	Sedimentation/Siltation, Solids (Suspended/Bedload), Chromium (total), Copper, Lead, Oil and Grease	2009
Mill Creek	Escherichia coli (E. coli)	2009
Pine Creek	E. coli	2009
Blue Creek	E. coli	2017
West Branch**	Dissolved oxygen	2018
Rush Lake	Mercury in Fish Tissue	2011
Van Auken Lake	Mercury in Fish Tissue	2011
Maple Lake	PCB in Fish Tissue	2009
All PPRW Rivers/Streams	PCB in Fish Tissue and Water Column	2009/2010

\*A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant a water body can receive and still meet applicable water quality standards.

\*\*Referred to in MDEQ Integrated Report as South Branch