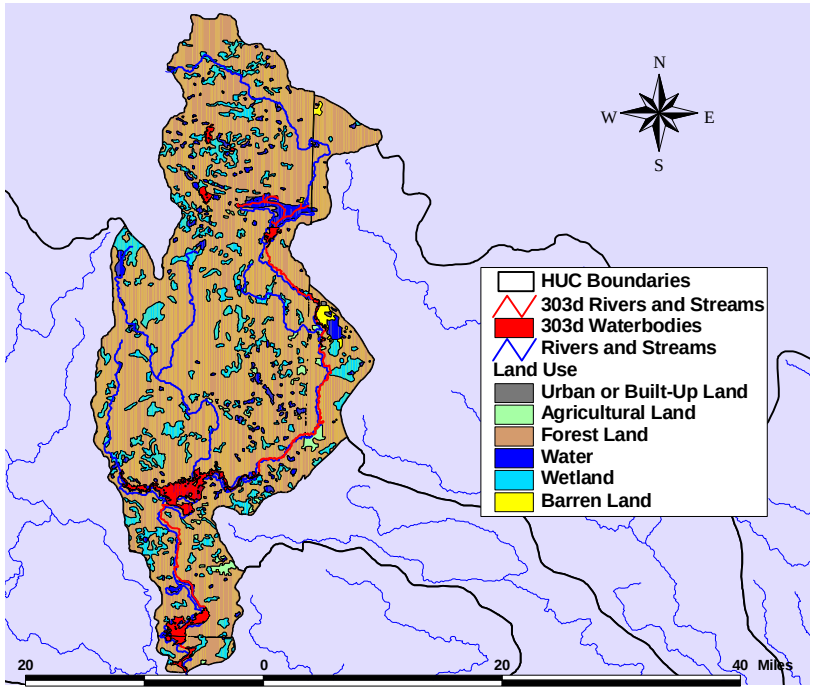
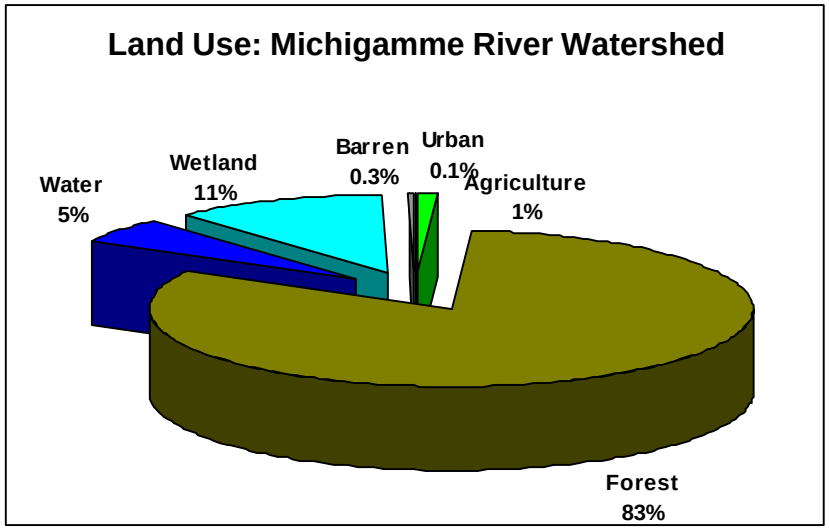

# Michigamme River Watershed

Hydrologic Unit Code: 04030107




## Watershed Overview / Ecology / Biodiversity

- The Michigamme River watershed covers approximately 727 square miles.
- There are 465 miles of rivers and streams in the watershed.
- The Michigamme River system flows into the Menominee River watershed.
- Approximately 82 percent of the watershed is forested.
- There are five listed impaired waters.

## Impaired (303d) Waters

| Waterbody Name | Impairment | Anticipated TMDL Submittal |
|---|---|---|
| Beaufort Lake | Mercury | 2011 |
| Craig Lake | Mercury | 2011 |
| Michigamme River And Impoundments | Mercury Fish Consumption Advisory | 2011 |
| Runkle Lake | Mercury | 2011 |
| Unnamed Lake | Mercury Fish Consumption Advisory | 2011 |

For more information, see the USEPA “Surf Your Watershed” website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030107

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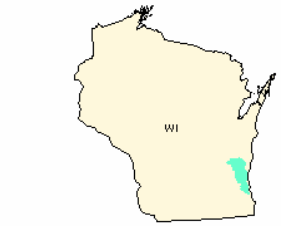
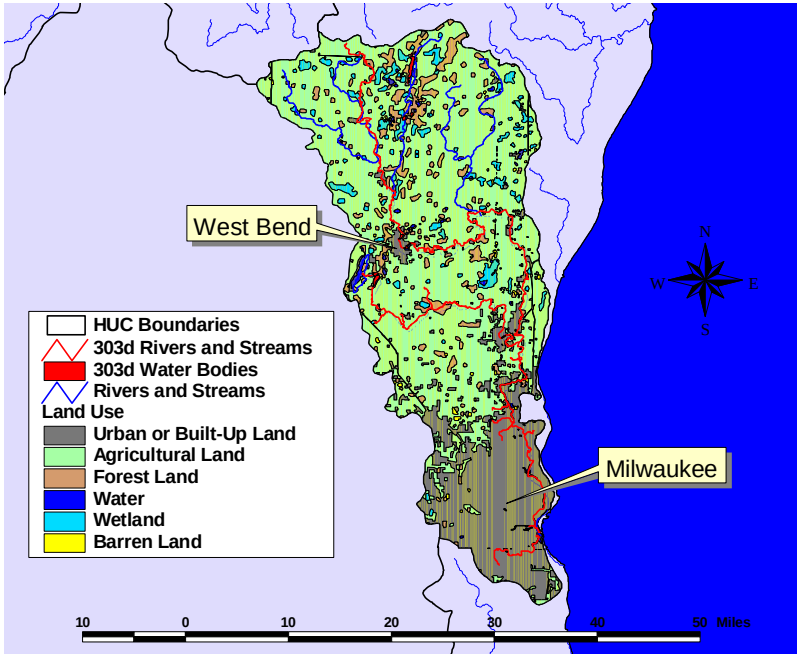
# Milwaukee River Watershed

Hydrologic Unit Code: 04040003



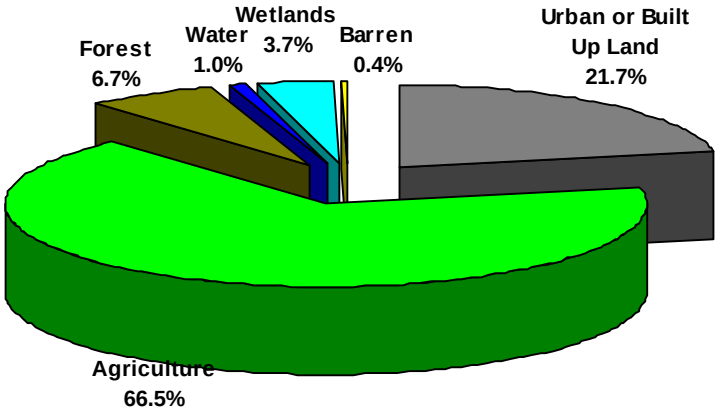

## Watershed Overview / Ecology / Biodiversity

- The Milwaukee River Basin encompasses approximately 900 square miles of land in portions of Dodge, Fond du Lac, Milwaukee, Ozaukee, Sheboygan, Washington, and Waukesha counties.
- The Milwaukee River Estuary is an Area of Concern.
- The southern quarter of the basin is the most densely populated area in the state, holding 90% of the basin's population, which is approximately 1.3 million people.
- The Basin includes 6 watersheds, 3 of the watersheds (Milwaukee River North, Milwaukee River East- West, Milwaukee River South) contain the Milwaukee River from start to finish. The other three watersheds (Cedar Creek, Menomonee River and Kinnickinnic River) are named after the major rivers they contain.
- Collectively the six watersheds contain about 500 miles of perennial streams, over 400 miles of intermittent streams, 35 miles of Lake Michigan shoreline, 57 named lakes and many small lakes and ponds.
- Wetlands encompass over 68,000 acres or 12% of the basin land area.
- The predominant land uses in the Basin are generally grasslands, which account for 56% of the Basin land cover. As urban development proceeds further into the countryside, farmland decreases.
- The Natural Heritage Inventory has documented 16 endangered, 26 threatened and 65 special concern plant and animal species, and 30 rare aquatic and terrestrial communities within the Basin.
- Runoff from specific and diffuse sources, contaminated sediment, habitat modifications (such as channelization and dams) have degraded water quality throughout the Basin.
- Recreational highlights include wildlife watching, hiking, fishing, hunting, bicycling, horseback riding, snowmobiling, skiing, camping, picnicking, and water sports.
- The Basin includes the Southeast Glacial Plains, Southeast Lake Michigan Coastal and Northern Lake Michigan Ecological Landscapes.
- Some streams have the ability to support some trout populations. Others have spring and fall runs of stocked trout and salmon. Fishing opportunities also exist in the rivers and harbors for northern pike, small mouth bass, and walleye.
- Lake Michigan supplies drinking water to about 70 percent of the basin residents, as a function of population size. The remainder of the population receives their drinking water from groundwater sources.
- Wildlife include white- tailed deer, ring- necked pheasant, waterfowl, geese, gray and flying squirrels, raccoons, woodchucks, great horned owls, a variety of hawks, songbirds, and shorebirds.
- Grasslands are promoted through prescribed burns & mowing.
- Maple- basswood is the most common forest type and the tree species with the greatest volume in the Basin is ash followed by hard maple, basswood, soft maple and red oak.

## Watershed Activities / Concerns / Priorities

- The Milwaukee River basin is part of the Wisconsin DNR's Milwaukee River basin management area.
- Water quality problems are from in- place pollutants, runoff in urban areas, floodplain development, and agricultural practices. As people move to the more rural areas of the basin, groundwater quantity and quality issues will become very important.
- Preservation of biodiversity and protection of endangered and threatened species, this is done by preserving their habitat.
- A comprehensive approach to the protection and restoration of wetlands is needed.
- Educate people to help prevent the spread of exotic nuisance species, which can wreak havoc on ecosystem balance.
- Monitoring of wildlife populations, water quality, and ecosystem function are needed to understand the status and trends of resources.

## Land Use - Milwaukee Watershed




## Priority Actions

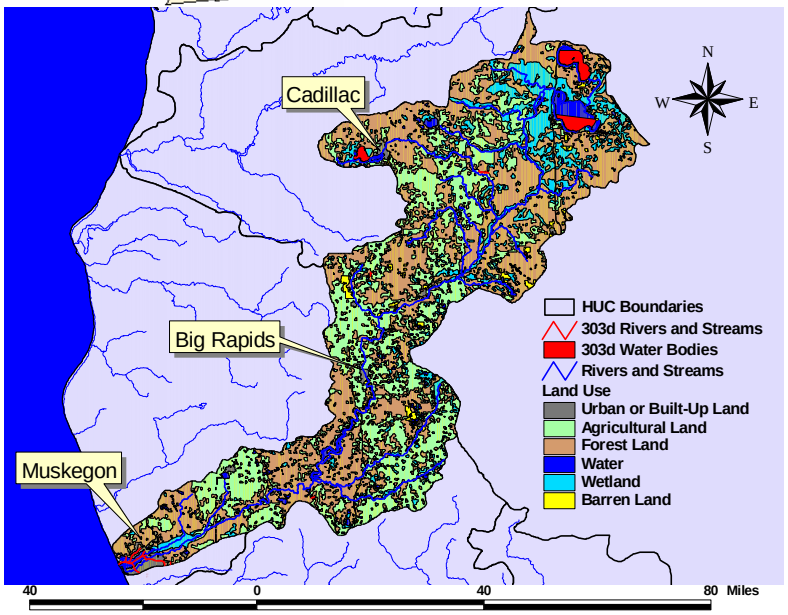
- Ten percent of the streams in the basin are listed as impaired, not meeting their potential. We need to fully understand the factors affecting water quality in the basin in order to make sound management decisions.
- Effectively managing the workload involved with the 1000 discharge permits to surface waters in the basin covering a wide range of activities from animal waste handling to construction sites to treating effluent.
- Protection of high quality and rare habitat and preventing further destruction, in addition to the restoration of degraded aquatic and terrestrial habitat.
- Work with local communities in developing “smart growth” plans & promoting wise land use and zoning.
- Work to better manage the excessive nutrients from known and unknown sources in the Basin.
- Improve the understanding of bacterial contamination of surface waters to make informed decisions for preventing future problems.
- Continuing efforts to work on the contaminated sediment concern.
- Continuing efforts currently being implemented (working with landowners, protection through acquisition, implementation of strategies found in Reversing the Loss: A Strategy for Protecting & Restoring Wetlands in Wisconsin).
- Keeping Lake Michigan safe and plentiful for drinking water needs.

For more information, see the Wisconsin Department of Natural Resources’ “Wisconsin's Basins” website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA “Surf Your Watershed” website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04040003

| Waterbody Name | Impairment | TMDL Submittal |
|---|---|---|
| Beaver Creek | Aquatic Toxicity | NA |
| Cedar Creek | Fish Consumption Advisories | NA |
| | PCBs | |
| Evergreen Creek(T11n R19e Sec 36 Sw Se) | Nutrients | NA |
| | Bacteria | |
| | Channel Modifications | |
| | Hindrance To Fish Migration | |
| | Wetland Loss | |
| Forest Lake | Mercury Fish Consumption Advisory | NA |
| Indian Creek | Metals | NA |
| | Bacteria | |
| | Flow Alteration(S) | |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | Sediment | |
| | Wetland Loss | |
| Jackson Park Pond | PCB Fish Consumption Advisory | NA |
| Lehner Creek | Nutrients | NA |
| | Bacteria | |
| | Sediment | |
| | Temperature | |
| | Wetland Loss | |
| Lincoln Creek | Metals | NA |
| | Aquatic Toxicity | |
| | Bacteria | |
| | Hindrance To Fish Migration | |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | PCBs | |
| | Sediment | |
| | Toxics | |
| | Wetland Loss | |
| Little Menomonee R. | Toxics | NA |
| Long Lake | Mercury Fish Consumption Advisory | NA |
| Mauthe Lake | Mercury Fish Consumption Advisory | NA |
| Milwaukee River | Fish Consumption Advisory | NA |
| | PCBs | |
| Natural Channel Reaches | Metals | NA |
| | Bacteria | |
| | Flow Alteration(S) | |
| | Wetland Loss | |
| Trib to Cedar Cr. | Bacteria | NA |
| | Channel Modifications | |
| | Sediment | |
| | Wetland Loss | |

# Muskegon River Watershed

Hydrologic Unit Code: 04060102




## Approved Watershed Plans

- Higgins Lake - Huron Pines RC&D Council
- Muskegon River - Grand Valley State University Annis Water Resources Institute
- Upper Clam River - City of Cadillac

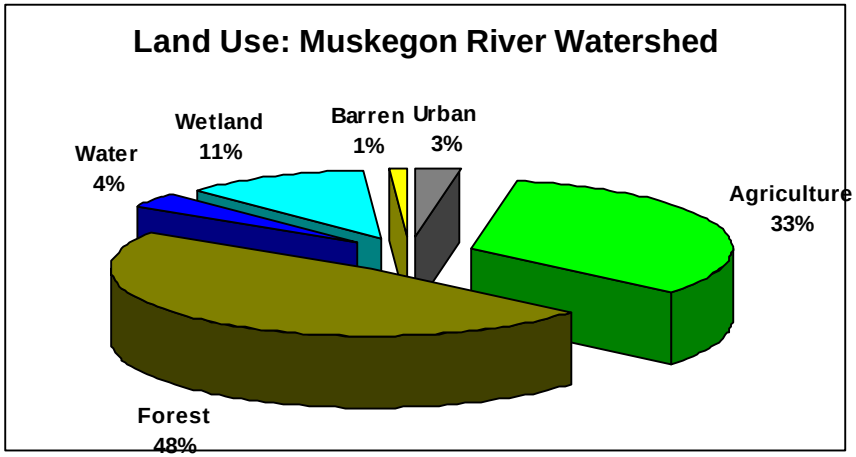
## Watershed Organizations

- Muskegon River Watershed Association - www.mrwa.org
- Huron Pines RC&D Council, http://www.huronpines.org/homepage/main.htm
- Grand Valley State University Annis Water Resources Institute http://www.gvsu.edu/wri/isc/muskegon/
- City of Cadillac http://www.cadillac-mi.net/

## Watershed Overview / Ecology / Biodiversity

- The Muskegon River Watershed drains approximately 2,723 square miles of land and is located in north-central Michigan.
- The River is approximately 219 miles long from its start at Houghton and Higgins Lakes down to its mouth at Muskegon Lake and, eventually, Lake Michigan.
- The Muskegon River Watershed is one of the of the largest watersheds in the State of Michigan and spans across the better part of nine counties: Wexford, Missaukee, Roscommon, Osceola, Clare, Mecosta, Montcalm, Newaygo, and Muskegon.
- Cities and towns located within the boundaries of the Muskegon River Watershed include; Cadillac, Lake City, McBain, Marion, Evart, Reed City, Big Rapids, Mecosta, Morley, Lakeview, Howard City, Newaygo, Fremont, and Muskegon.
- The Muskegon River and many of its streams and creeks are considered cool water fisheries. They can support both cold-water fish, such as trout and salmon, and warm water fish, such as northern pike and smallmouth bass.
- The sportfishery is worth an estimated $5 million per year.
- Impairments are excessive nutrient loading, sedimentation, hydrologic flow, invasive species and toxic substances.
- The river faces significant thermal pollution, which raises water temperature, from dams hydroelectric facilities, stormwater runoff, and a lack of streamside canopy. When temperature rises, available oxygen decreases, making it difficult for aquatic life to survive.

For more information see the USEPA “Surf Your Watershed” website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04060102




## Watershed Activities / Concerns / Priorities

- The Annis Water Resources Institute (AWRI) from Grand Valley State University received a Section 319 grant to support the development of the since approved watershed management plan. The project currently has funds to do several structural practices in the watershed along with public education.
- The Great Lakes Fishery Trust (GLFT) selected the Muskegon River watershed as the focus of their "River Initiative," involving multi-million dollar, annual funding support for the next three to five years.
- The Community Foundation for Muskegon County received a $100,000 environmental grant from the Charles Stewart Mott Foundation to support a comprehensive, two-year assessment of the Mona Lake Watershed. The objectives of the Mona Lake Watershed Project are to conduct a preliminary assessment of the aquatic and terrestrial habitats and contamination sites present in the watershed and to identify areas of significant change and degradation.
- Hersey River Restoration Project is working to cleanup contaminated sediments and development of an agreeable plan between the village of Hersey and the MDNR for the removal of dilapidated dam structures on the Hersey River.
- The Marion Millpond/Middle Branch River project will remove the Marion Dam, retain the millpond by constructing a bermed dike between it and the River, and construct a covered bridge at the site of the .
- The Village of Marion, in Osceola County, together with the MDNR Fisheries Division have agreed on a plan to restore both the Middle Branch River and the Marion Millpond including the removal of the Marion Dam.
- The Muskegon Lake & Estuary Emergent Vegetation Restoration Demonstration Project will work to re-establish of native wild rice stands, soft stem bulrush and other aquatic vegetation for fish and wildlife habitat in the Muskegon Lake Area of Concern (AOC) and the lower river (estuary) located at the river mouth and within the Muskegon State Game Area.

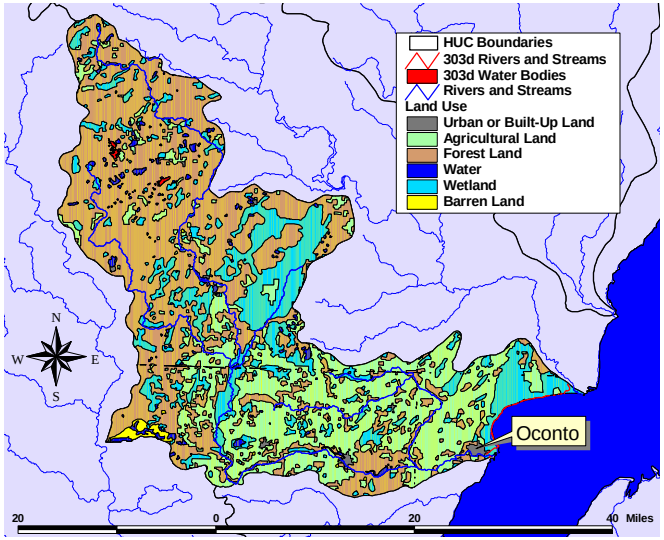
## Impaired (303d) Waters

| Waterbody Name | Impairment | TMDL Submittal |
|---|---|---|
| Bear Lake | Nutrients | 2009 |
| | ALGAE | 2009 |
| | PCBS Fish Consumption Advi- | 2009 |
| Bills Lake | Mercury | 2011 |
| Clam River | Nutrients | 2003 |
| | Fish Community Rated Poor | 2003 |
| | Nuisance Plant Growths | 2003 |
| Higgins Lake | PCBs Fish Consumption Advi- | 2010 |
| Houghton Lake | PCBs Fish Consumption Advi- | 2010 |
| Lake Mitchell | Mercury | 2011 |
| Lily Lake | Mercury | 2011 |
| Muskegon Lake And Muske- | Mercury | 2010 |
| | PCBS | 2008 |
| Ruddiman Creek | Fish Community Rated Poor | 2008 |
| | Macroinvertebrate Commu- | 2008 |
| Ryerson Creek | Fish Community Rated Poor | 2008 |
| | Macroinvertebrate Commu- | 2008 |
| Todd Lake | Mercury | 2011 |


# Oconto River Watershed

Hydrologic Unit Code: 04030104

For more information, see the Wisconsin Department of Natural Resources' "Wisconsin's Basins" website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA "Surf Your Watershed website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030104



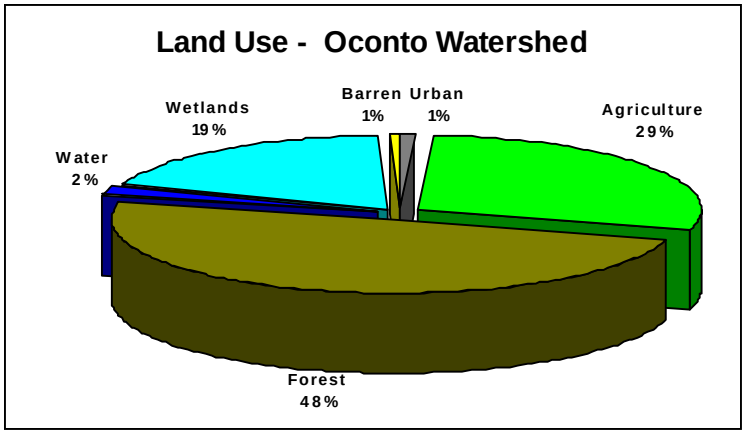

## Watershed Overview / Ecology / Biodiversity

- The Oconto watershed covers over 1035 square miles and has over 560 miles of streams.
- The major waterways include the Oconto River, the Lower Oconto River, the Little River, the Lower North Branch Oconto River, and the South Branch of the Oconto River.
- Most of the watershed is part of the Upper Green Bay basin management area as identified by Wisconsin DNR.
- Wildlife include black bear, white- tailed deer, turkey, ring- necked pheasant, ruffed grouse, waterfowl, geese, beaver, mink, otter, timber wolves, elk, colonial waterbirds, trumpeter swans, eagle, osprey, northern goshawk, shorebirds.
- Maple- basswood is the most common forest type and the tree species with the greatest volume in the basin is hard maple followed by aspen, white and red pine, soft maple and balsam fir.
- Coastal wetlands are an important feature of the watershed.
- Groundwater is plentiful and clean and is used for drinking water
- Oconto is the primary urbanized area in the watershed.

## Watershed Activities / Concerns / Priorities

The following are objectives for the Upper Green Bay management Basin, which includes the Oconto River watershed:

- Target the West Shore of Green Bay as a high priority for habitat protection
- Implement the DNR's 50 year Land Legacy Study, an acquisition plan for the state
- Protect shoreland habitat and water quality through water regulation and zoning
- Work with local communities in developing "smart growth" plans & promoting wise land use and zoning
- Complete a comprehensive fisheries plan for the basin, focusing on the Oconto, Menominee, and Peshtigo Rivers and Lake Michigan, including addressing invasive exotic species
- Encourage sound forestry practices on public and private land and identify and manage terrestrial invasive exotic species
- Enhance educational activities for forestry, water quality, wildlife management, healthy ecosystem




## Impaired (303d) Waters

| Waterbody Name | Impairment | TMDL Submittal |
|---|---|---|
| Green Bay – S. of Marinette & Tribs to the first dam | PCB Fish Consumption Advisory | NA |
| Maiden Lake | Mercury Fish Consumption Advisory | NA |
| Reservoir Pond | Mercury Fish Consumption Advisory | NA |

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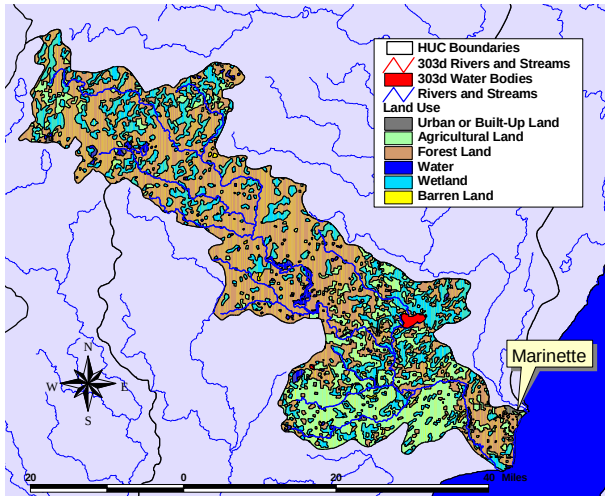
# Peshtigo River Watershed

Hydrologic Unit Code: 04030105

For more information, see the Wisconsin Department of Natural Resources' "Wisconsin's Basins" website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA "Surf Your Watershed" website at: http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030105




## Watershed Overview / Ecology / Biodiversity

- The watershed covers 1165 square miles with approximately 12 miles of Lake Michigan shoreline.
- The watershed flows into Green Bay in Wisconsin.
- The major waterways in the watershed include the Lower Peshtigo River, the Little Peshtigo River, The Middle Peshtigo and Thunder River, and the Upper Peshtigo River.
- The watershed has three listed impaired waters
- Marinette is the only urbanized area in the watershed.
- The watershed land uses are primarily forest (54%), wetland (22%), and agriculture (21%).
- Wildlife include black bear, white- tailed deer, turkey, ring- necked pheasant, ruffed grouse, waterfowl, geese, beaver, mink, otter, timber wolves, elk, trumpeter swans, eagle, osprey, northern goshawk, shorebirds.
- Maple-basswood is the most common forest type and the tree species with the greatest volume in the basin is hard maple followed by aspen, white and red pine, soft maple and balsam fir.

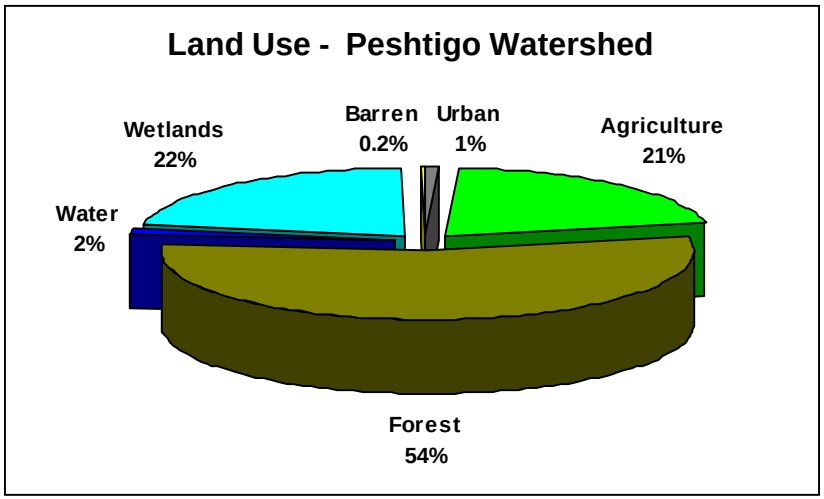
## Watershed Activities / Concerns / Priorities

The following are objectives for the Upper Green Bay management Basin, which includes the Peshtigo River watershed:

- Target the West Shore of Green Bay as a high priority for habitat protection
- Protect shoreland habitat and water quality through water regulation & zoning
- Work with local communities in developing "smart growth" plans & promoting wise land use and zoning
- Complete a comprehensive fisheries plan for the basin, focusing on the Oconto, Menominee, and Peshtigo Rivers and Lake Michigan, including addressing invasive exotic species
- Encourage sound forestry practices on public and private land and identify and manage terrestrial invasive exotic species
- Enhance educational activities for forestry, water quality, wildlife management, healthy ecosystem

## Impaired (303d) Waters

| Waterbody Name | Impairment | TMDL Submittal |
|---|---|---|
| Bass Lake | Organic Enrichment/Low Dissolved Oxygen | NA |
| | Winter Kills | |
| Gilas Lake | Mercury Fish Consumption Advisory | NA |
| Noquebay Lake | Mercury Fish Consumption Advisory | NA |



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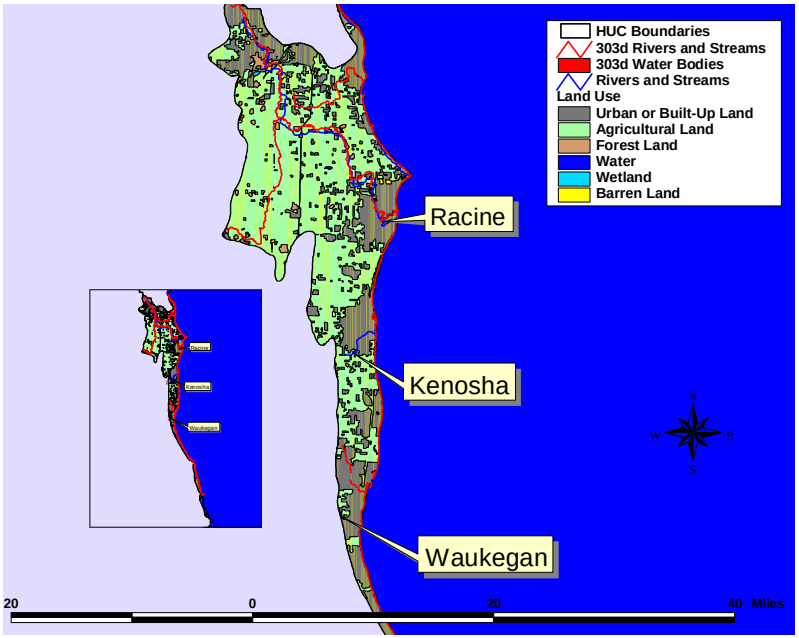
# Pike-Root (Waukegan) Watershed

Hydrologic Unit Code: 04040002



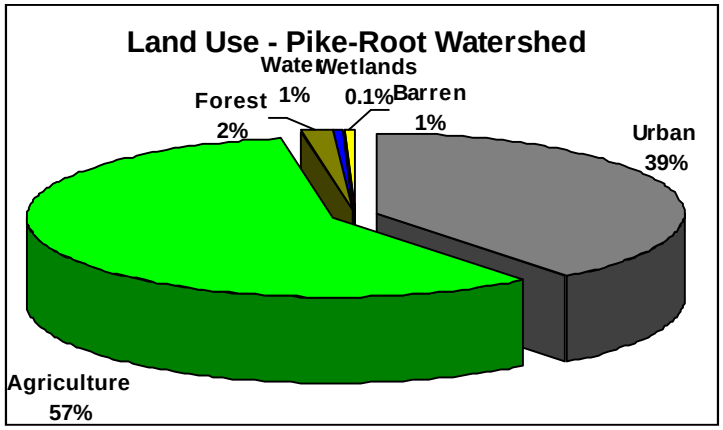

## Watershed Organizations

- Pike-Root Watershed Initiative Network - www.rootpikewin.org/
- 1000 Friends of Wisconsin - www.1kfriends.org/
- Citizens for a Better Environment –www.cbemw.org/
- Friends of Root River/Sustainable Racine - www.sustainable-racine.com/
- Mike Luba, Root-Pike River Basin Water Leader: - Michael.Luba@dnr.state.wi.us
- The Waukegan Citizens' Advisory Committee - http://wkkhome.northstarnet.org/iepa/page2.html
- The Waukegan Environmental Justice Committee

## Watershed Overview / Ecology / Biodiversity

- The Pike-Root watershed covers over 410 square miles and includes major subwatersheds as the Pike River, the Root River, Oak Creek, Racine Harbor, the Waukegan River, and Waxdale Creek..
- The watershed has over 113 miles of shoreline on the west side of Lake Michigan.
- The watershed stretches from south of Milwaukee to north of Chicago.
- The watershed includes the cities of Racine and Kenosha, Wisconsin, and Waukegan, Illinois.
- The Waukegan Harbor is an Area of Concern.
- While over 50 percent of the watershed is used for agricultural purposes, almost 40 percent is urbanized.
- Groundwater below the surface basin has seen significant overpumping. There are several cones of depression. In southeastern Wisconsin, groundwater that once flowed into Lake Michigan has dropped in level so that the lake now flows into the aquifer.
- The Waukegan River, which is part of the basin, is the only river in Illinois that flows into Lake Michigan.
- The National Heritage Inventory has documented 16 endangered, 20 threatened, and 52 special concern plant and animal species and 17 rare aquatic and terrestrial species in the watershed.
- The combined effects of the draining of the majority of wetlands and stream modifications like channel manipulation have led to degraded water and habitat quality throughout the Pike- Root Basin.

For more information, see the Wisconsin Department of Natural Resources' "Wisconsin's Basins" website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA "Surf Your Watershed" website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04040002




## Watershed Activities / Concerns / Priorities

- The Root-Pike Watershed Initiative Network has awarded $21,886 to seven area watershed projects to improve rivers and lakefronts within the Root River and Pike River watersheds in the Racine area.
- Common recommendations for improving the Pike and Root River watersheds include:
  - Encourage implementation of urban nonpoint source best management practices.
  - Encourage implementation of agricultural nonpoint source best management practices, including buffer strip development.
  - Conduct baseline surveys on streams within the watershed.
  - Assess sediment delivery, sediment transport, and streambank erosion within the watershed.
  - Conduct aquatic habitat and sediment assessments above and below dams on the Pike and Root Rivers.
  - Evaluate and implement aquatic habitat restoration and water quality improvement practices where practicable.
  - Evaluate and implement wetland restoration projects where practicable.
  - Evaluate dams for removal
- Approximately 1 million pounds of PCBs have been dredged from Waukegan River

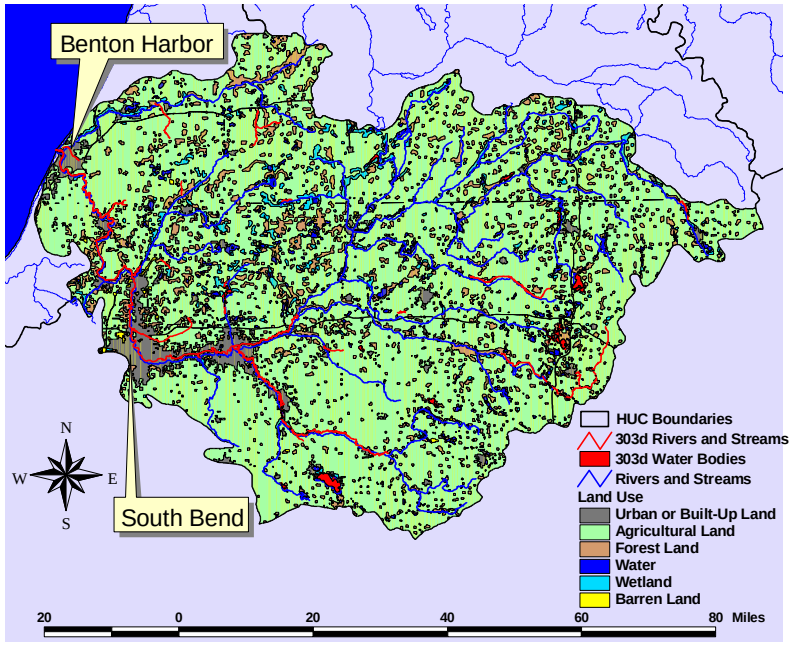
## Impaired (303d) Waters

| Waterbody Name | Impairment | Anticipated TMDL Submittal |
|---|---|---|
| Oak Creek, WI | Aquatic Toxicity | NA |
| Racine Harbor, WI | Aquatic Toxicity | NA |
| | Fish Consumption Advisories | |
| Root River, WI | Organic Enrichment/Low Dissolved Oxygen | NA |
| Root River Canal, WI | Organic Enrichment/Low Dissolved Oxygen | NA |
| Root River Canal W. Branch, WI | Organic Enrichment/Low Dissolved Oxygen | NA |
| Root River From Its Mouth Upstream To The Horlick Dam In The City Of Racine, WI | PCB Fish Consumption Advisory | NA |
| Waxdale Creek, WI | Fish Kills | NA |
| | Toxics | |
| Lincoln Pk North Pnd, IL | Metals | NA |
| | PCBs Fish Consumption Advisory | |
| | Nutrients | |
| | Suspended Solids | |
| | Noxious Aquatic Plants | |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | Siltation | |
| Waukegan R, IL | Priority Organics | NA |
| | Metals | |
| | Other Habitat Alteration(s) | |
| | PCBs Fish Consumption Advisory | |
| Waukegan R, IL | Priority Organics | NA |
| | Metals | |
| | Other Habitat Alteration(s) | |
| | PCBs Fish Consumption Advisory | |
| Waukegan R S Br, IL | Priority Organics | NA |
| | Metals | |
| | Other Habitat Alteration(s) | |
| | PCBs Fish Consumption Advisory | |


# St. Joseph River Watershed

Hydrologic Unit Code: 04050001

For more information, see the USEPA "Surf Your Watershed" website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04050001




## Approved Watershed Management Plans

- Dowagiac River - Cass Conservation District, http://users.beanstalk.net/casscons
- Nottawa Creek - Calhoun Conservation District http://www.calhouncd.org/
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## Watershed Groups

- Friends of the St. Joseph River http://www.fotsjr.org/
- St. Joseph River Basin Commission http://www.sjrbc.com/
- Cass Conservation District
- Calhoun Conservation District

## Watershed Overview / Ecology / Biodiversity

- The St. Joseph River Watershed is located in the southwest portion of the Lower Peninsula of Michigan and northwestern portion of Indiana. It spans the Michigan-Indiana border and empties into Lake Michigan at St. Joseph, Michigan.
- The watershed drains 4,685 square miles from 15 counties (Berrien, Branch, Calhoun, Cass, Hillsdale, Kalamazoo, St. Joseph and Van Buren in Michigan and De Kalb, Elkhart, Kosciusko, Lagrange, Noble, St. Joseph and Steuben in Indiana).
- The watershed includes 3,742 river miles and flows through and near the Kalamazoo-Portage, the Elkhart-Goshen, the South Bend and the St. Joseph/Benton Harbor metropolitan areas.

## Watershed Activities / Concerns / Priorities

- A Watershed Management Plan for the St. Joseph River basin, led by the Friends of the St. Joseph River, will be prepared through funding by the Michigan Department of Environmental Quality and include the Indiana portion of the basin.
- The St. Joseph watershed project has generated maps of subwatersheds, cities, USGS water resources stations, digital elevations, wetlands, river valley segments, land use, average annual precipitation, 1950-1999, designated trout streams, geological features, and soils.
- Under the Dowagiac River watershed management plan, nine municipalities in the Dowagiac River watershed have or will receive technical and/or financial assistance to work on master plans and zoning ordinances to protect farmland, open space, rural character, wetlands, floodplains and water quality.
- Pokagon Band of Potawatomi tribe is involved in Dowagiac River watershed,

## Basin Prioritization of Concerns

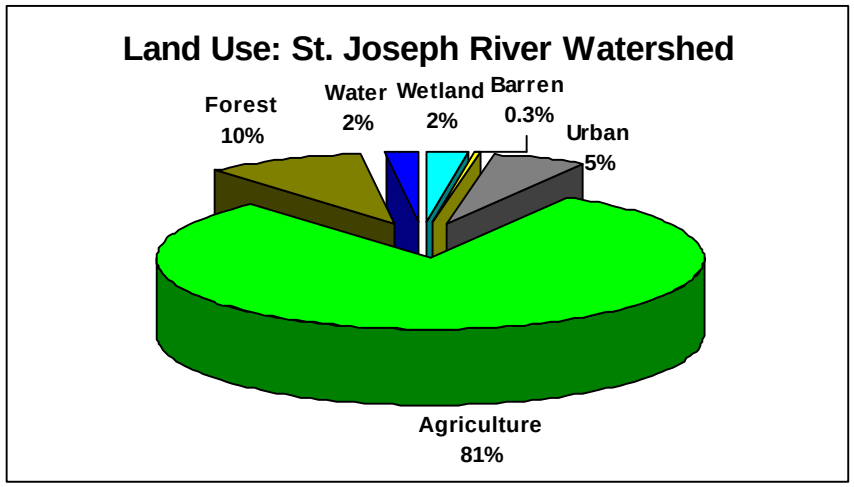
- The Watershed Concerns have been prioritized by the Steering Committee, according to the importance of each concern and the ease of implementing BMP's to correct those concerns, in the following manner:
  1. Sediments (tie)
  1. Nutrients (tie)
  3. Habitat Loss
  4. Wetlands (tie)
  4. Animal Waste (tie)
  6. Pesticides (tie)
  6. Urbanization & Land Use (tie)
  8. Biota
  9. CSO's
  10. Pathogens (tie)
  10. Hydrologic Modification (tie)
  10. Litter (tie)

## Surface Water Designated Use Targets

- Warm water fishery
- Other indigenous aquatic life/wildlife
- Partial body contact, recreation
- Full body contact, recreation (May - October)
- Navigation
- Public Water Supply: Surface Intake Point
- Industrial Water Supply
- Agriculture
- Certain water bodies are also protected as a coldwater fishery

## Additional Basin Designated Use Targets

- Groundwater
- Habitat preservation
- Increased public access (to the river/streams)
- Archeological preservation
- Preserve agricultural uses and access
- Preserve open space
- Greenways
- Public water trails
- Watershed linkages
- Manage invasive species.




## Impaired (303d) Waters

| | Impairment | Anticipated |
|---|---|---|
| Barton Lake, MI | Mercury | 2011 |
| Christiana Creek, MI | Macroinvertebrate Com- | 2008 |
| Coldwater Lake, MI | Mercury | 2011 |
| Dowagiac River, MI | PCBs Fish Consumption | 2010 |
| Eau Claire Extension | Macroinvertebrate Com- | 2003 |
| Farmers Creek, MI | Pathogens | 2008 |
| | Nuisance Plant Growth | 2008 |
| Fawn River, MI | PCBs Fish Consumption | 2010 |
| Mckinzie Creek, MI | Fish Community Rated | 2003 |
| Ox Creek, MI | Macroinvertebrate Com- | 2008 |
| Paw Paw River, S. Br. And | Macroinvertebrate Com- | 2008 |
| Pine Creek, MI | Fish Community Rated | 2008 |
| | Macroinvertebrate Com- | 2008 |
| Prairie River, MI | Fish Community Rated | 2007 |
| | Macroinvertebrate Com- | 2007 |

# St. Joseph River Watershed
# Impaired (303d) Waters (cont.)

| Waterbody Name | Impairment | TMDL Submittal |
|---|---|---|
| Jimmerson Lake, | Mercury Fish Consumption Advisory | 2012 |
| Juday Creek, IN | PCBs Fish Consumption Advisory | 2012 |
| Lake James, IN | Mercury Fish Consumption Advisory | 2012 |
| Lake Shipshe- | PCBs Fish Consumption Advisory | 2012 |
| Lake Wabee, IN | Mercury Fish Consumption Advisory | 2012 |
| Lake Wawasee, IN | Mercury Fish Consumption Advisory | 2012 |
| | PCBs Fish Consumption Advisory | 2012 |
| Long Lake, IN | Mercury Fish Consumption Advisory | 2012 |
| Marsh Lake, IN | Mercury Fish Consumption Advisory | 2012 |
| Mather's Ditch, IN | Dissolved Oxygen | 2004 |
| | Endrin | 2004 |
| Mud Creek, IN | Ammonia | 2004 |
| | Dissolved Oxygen | 2004 |
| Olin Lake, IN | Mercury Fish Consumption Advisory | 2012 |
| Oliver Lake, IN | Mercury Fish Consumption Advisory | 2012 |
| Orland Tributary, | Dissolved Oxygen | 2004 |
| Pigeon Creek, IN | Mercury Fish Consumption Advisory | 2012 |
| | PCBs Fish Consumption Advisory | 2012 |
| Snow Lake, IN | Mercury Fish Consumption Advisory | 2012 |
| | PCBs Fish Consumption Advisory | 2012 |
| St. Joseph River, IN | E. Coli | 2004 |
| | Mercury Fish Consumption Advisory | 2012 |
| | PCBs Fish Consumption Advisory | 2012 |
| Tippecanoe Lake, | Mercury Fish Consumption Advisory | 2010 |
| Randall Lake , MI | Mercury | 2011 |
| | PCBs Fish Consumption Advisory | 2010 |
| Rocky River, MI | Fish Community Rated Poor | 2007 |
| | Macroinvertebrate Community | 2007 |
| Silver Creek, MI | Macroinvertebrate Community | 2008 |
| St. Joseph River, | Macroinvertebrate Community | 2007 |
| St. Joseph River#, MI | Pathogens | 2003 |
| St. Joseph, River#, MI | PCBs Fish Consumption Advisory | 2009 |
| | Pcbs | 2009 |
| St. Joseph River#, MI | Mercury | 2010 |
| Union Lake, MI | PCBs Fish Consumption Advisory | 2005 |
| Crawford Ditch, IN | Copper | 2004 |
| | Oil And Grease | 2004 |
| Elkhart, River, IN | E. Coli | 2004 |
| | Mercury Fish Consumption Advi- | 2012 |
| | PCBs Fish Consumption Advisory | 2012 |

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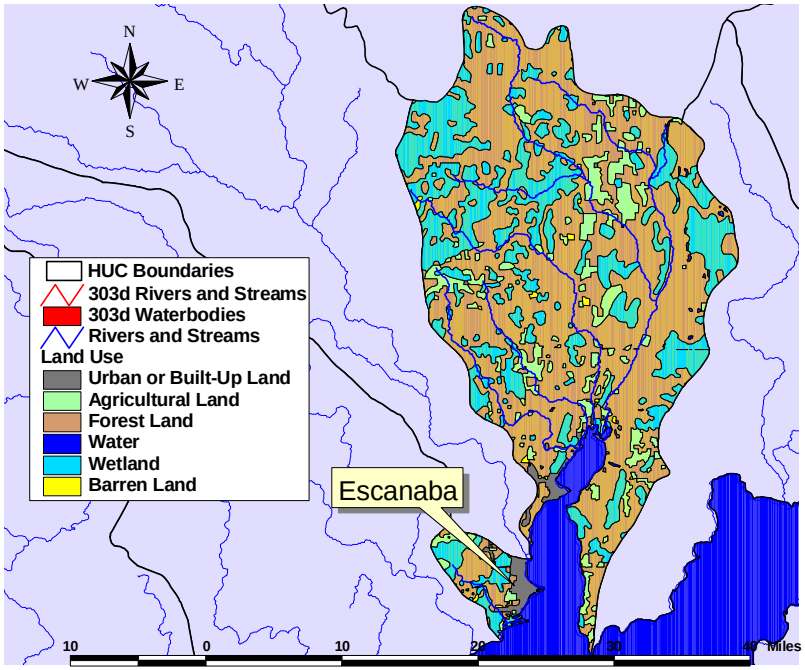
# Tacoosh-Whitefish Watershed

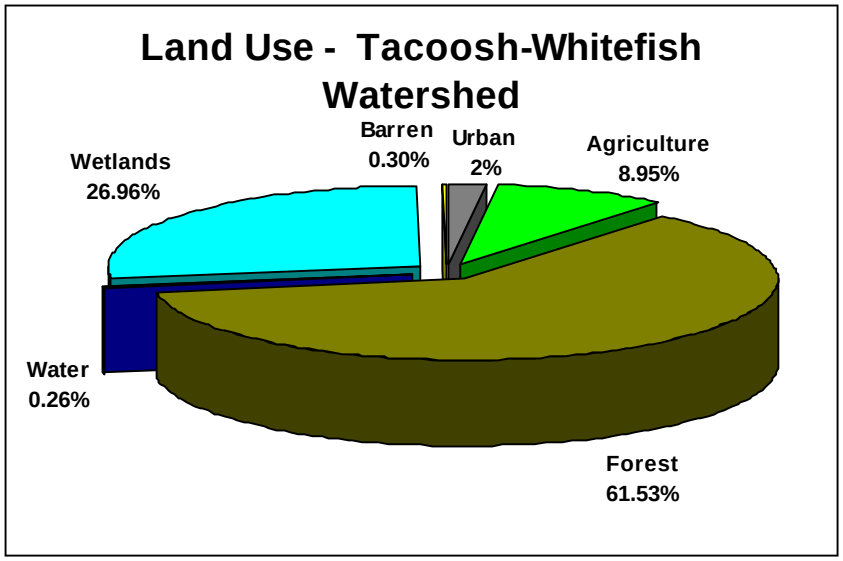
Hydrologic Unit Code: 04030111

For more information, see the USEPA "Surf Your Watershed" website at: http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030111




## Watershed Overview / Ecology / Biodiversity

- The Tacoosh-Whitefish watershed is located in the upper peninsula of Michigan and covers approximately 633 square miles.
- The watershed has almost 53 miles of Lake Michigan shoreline.
- Escanaba, Michigan is the lone urbanized area in the watershed.
- The Tacoosh-Whitefish watershed has no listed impaired waters.
- The watershed is mostly forest and wetland.



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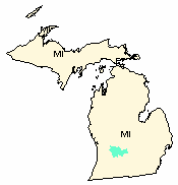
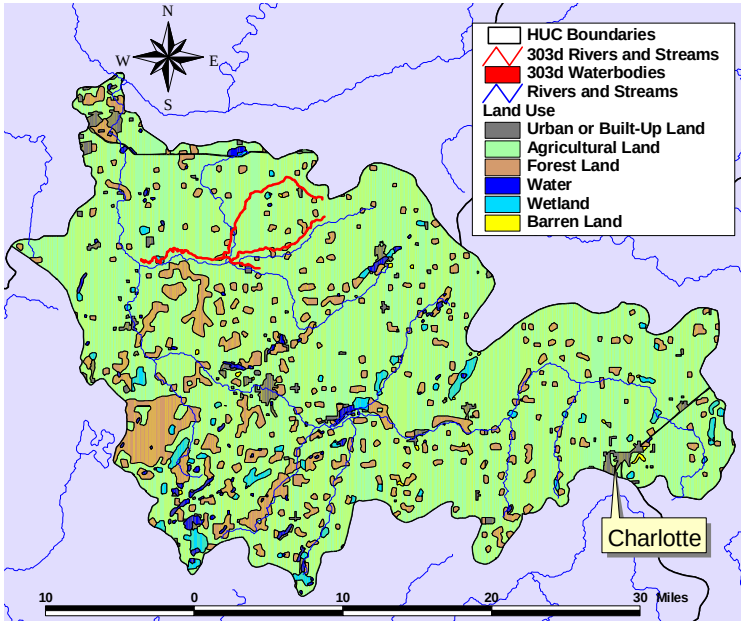
# Thornapple River Watershed



Hydrologic Unit Code: 04050007

For more information, see the USEPA website at: http://cfpub.epa.gov/surf/huc.cfm?huc_code=04050007




## Approved Watershed Management Plans

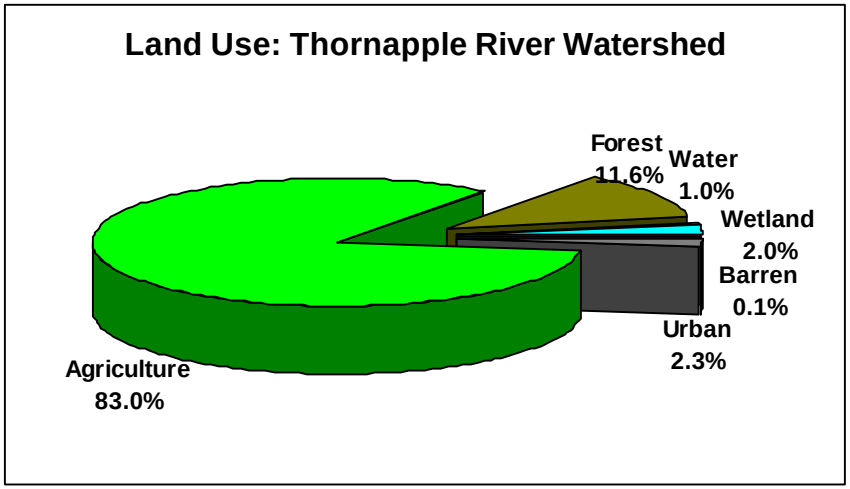
- Coldwater River - Coldwater River Watershed Council

## Watershed Organizations

- Coldwater River Watershed Council
- Thornapple River Watershed Council
- Grand Valley State University Annis Water Resources Institute

## Watershed Overview / Ecology / Biodiversity

- The Thornapple River watershed flows into the Lower Grand River watershed.
- The watershed covers over 855 square miles.
- Over 83 percent of the watershed is in agricultural use.
- Charlotte, Michigan is the lone urban area in the watershed.
- 324 miles of the watershed's streams and rivers flow year-round.




## Impaired (303d) Waters

| Waterbody Name | Impairment | Anticipated TMDL Submittal |
|---|---|---|
| Coldwater River | Pathogens | 2006 |
| Duck Creek | Macroinvertebrate Community Rated Poor | 2010 |
| Tyler Creek (Bear Creek) | Pathogens | 2006 |
| | Fish Community Rated Poor | 2006 |
| | Macroinvertebrate Community Rated Poor | 2006 |

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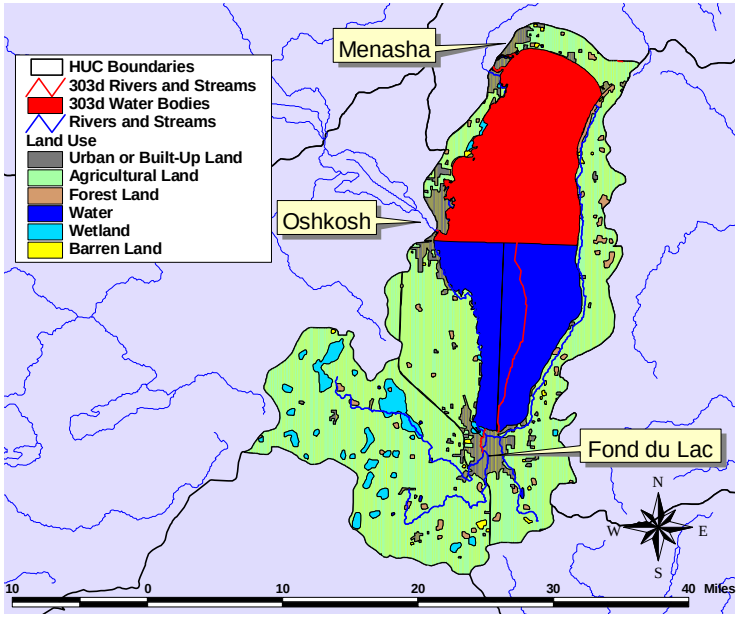
# Lake Winnebago Watershed

Hydrologic Unit Code: 04030203




## Watershed Overview / Ecology / Biodiversity

- The Lake Winnebago watershed covers over 581 square miles.
- Over 200 square miles of the watershed are lakes, the largest being Lake Winnebago.
- The watershed is located between the Upper and Lower Fox Rivers in Wisconsin.
- The watershed is primarily glacial plain.
- The watershed is above a sandstone aquifer.
- The Niagra Escarpment, a bedrock ridge, forms the eastern boundary of the Lake Winnebago watershed.
- Menasha, Oshkosh, and Fond du Lac, Wisconsin are the primary urbanized areas located in the watershed.
- High Cliff State Park is a 1,145 acre state park located in Calumet County.
- A Glacial Habitat Restoration Area (GHRA) is located in the watershed in Winnebago and Fond du Lac counties. The GHRA is an area where the state is restoring a patchwork of grasslands and wetlands over a large rural landscape so that wildlife can thrive side-by-side with agriculture.
- The basin hosts resident and migratory neo-tropical songbirds in its open grassland/ agricultural habitat.

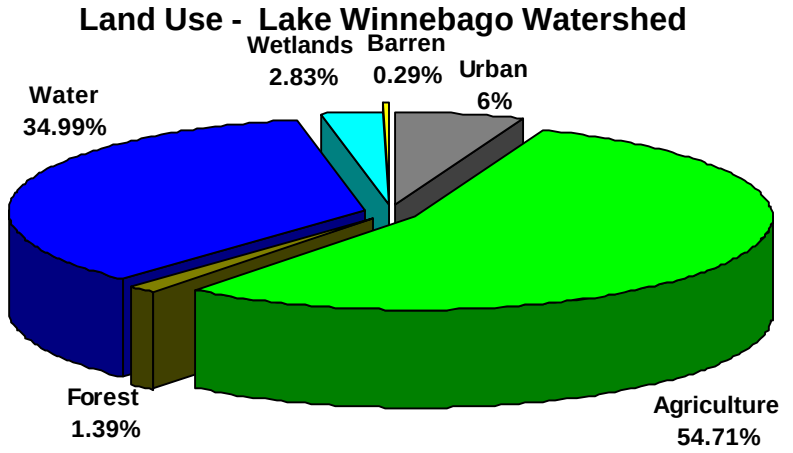
## Watershed Contacts

- The University of Wisconsin-Extension – http://clean-water.uwex.edu/foxwolf/
- Fox Wolf Watershed Alliance http://www.fwb2k.org/
- Lake Michigan Forum - http://www.lkmichiganforum.org/
- Rob McLennan, the Upper Fox River Water Basin Team Leader - Robin.McLennan@dnr.state.wi.us

For more information, see the Wisconsin Department of Natural Resources' "Wisconsin's Basins" website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA "Surf Your Watershed" website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030203

## Watershed Activities / Concerns / Priorities

- The Wisconsin DNR manages the Lake Winnebago watershed as part of the Upper Fox River basin management area.
- Numerous urban stormwater outfalls discharge to Lake Winnebago from portions of the Cities of Oshkosh, Neenah, and Menasha. Storm event runoff from commercial, industrial, and residential construction sites and from plat developments in rapidly developing sections of Oshkosh, Neenah, and Menasha are also nonpoint source pollution problems.
- Water quality modeling done by Northeast Wisconsin Waters of Tomorrow (NEWWT) have indicated this watershed to be a major contributor of phosphorus and suspended solids to Lake Winnebago.
- Critical animal waste and soil erosion problems are intensified by the steep slopes along the Niagara escarpment.
- Average soil loss in all of Calumet County is estimated to be 2.7 tons per acre. These factors accelerate nutrient and sediment delivery to Lake Winnebago. Both the Winnebago Comprehensive Management Plan and the Lower Green Bay Remedial Action Plan identified this watershed as a high priority for the control of nonpoint sources of pollution.
- The eastern portion of the watershed was selected as a nonpoint source priority watershed project in 1989. The primary goals of this watershed project are to reduce Phosphorus and sediment loading to Lake Winnebago and decrease the loading of heavy metals from urban nonpoint sources.
- Lake Winnebago specific fisheries priorities include:
  - Continue the Lake Winnebago Fisheries Community Assessment through trawling, seining, shocking, and netting to characterize the Lake Winnebago fish community and assess year-class strength.
  - Continue lake sturgeon management in the Winnebago-Fox-Wolf System. Conduct population and harvest assessments; continue public involvement and education; work closely with the Winnebago Citizens Sturgeon Advisory Committee; pursue Upper Fox River long term sturgeon spawning stock rehabilitation, spawning, and nursery habitat protection and enhancement; cooperate with other regional, statewide, national, and international sturgeon management and research programs; and prepare the annual Winnebago System Sturgeon Management report, direct sturgeon registration, and determine harvest cap for the annual sturgeon spearing season.

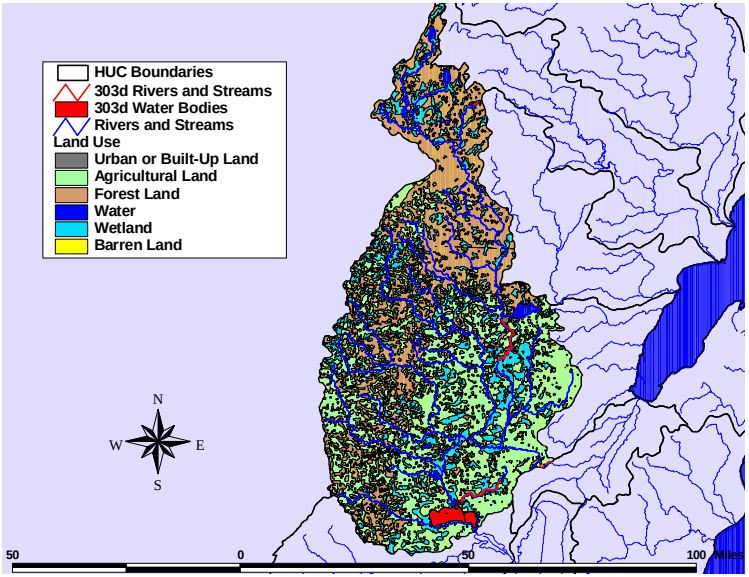



## Impaired (303d) Waters

| Waterbody Name | Impairment | Anticipated TMDL Submittal |
|---|---|---|
| Fond Du Lac River | Metals | NA |
| | Fish Consumption Advisories (Mercury) | |
| | Fish Consumption Advisories (PCBs) | |
| | Toc | |
| Winnebago Lake | Nutrients | NA |
| | Fish Consumption Advisories (Mercury) | |
| | Fish Consumption Advisories (PCBs) | |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | Sediment | |


# Wolf River Watershed

Hydrologic Unit Code: 04030202



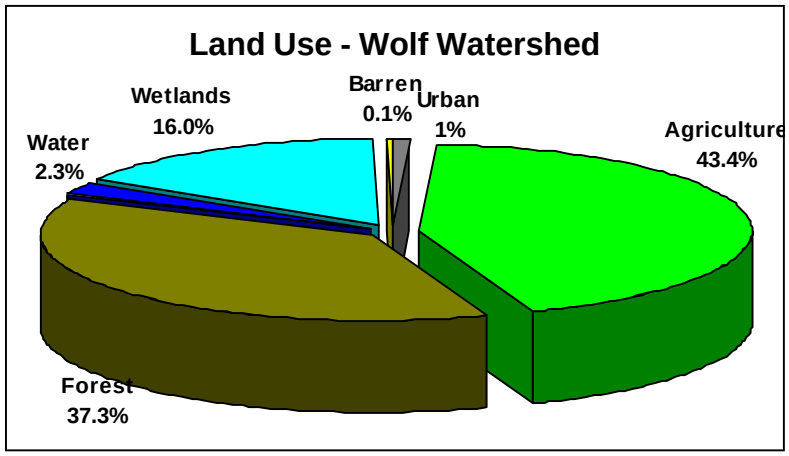

## Watershed Contacts

- The University of Wisconsin-Extension – http://clean-water.uwex.edu/foxwolf/
- Fox Wolf Watershed Alliance http://www.fwb2k.org/
- Lake Michigan Forum - http://www.lkmichiganforum.org/
- Dan Helf, Wolf River Basin Water Team Leader:
  - Daniel.Helf@dnr.state.wi.us

For more information, see the Wisconsin Department of Natural Resources' "Wisconsin's Basins" website at http://dnr.wi.gov/org/gmu/gmu.html and the USEPA "Surf Your Watershed website at http://cfpub.epa.gov/surf/huc.cfm?huc_code=04030202

## Watershed Overview / Ecology / Biodiversity

- The Wolf River Basin covers an area of 3730 square miles.
- The Wolf Basin's general topography can be characterized by rolling hills, plain meadows, lush and forested wetlands, numerous lakes and small tributaries. Vegetation consists primarily of hardwood forests mixed with large amounts of hemlock, northern white-cedar swamp, and hardwood-conifer swamp.
- The Wolf River originates with a discharge from Pine Lake located in Forest County. The river flows south for about 203 miles until it reaches Lake Poygan. At that point it becomes part of the Winnebago Lake system. Waters from the Winnebago system then flow into the Lower Fox River where they eventually reach the Bay of Green Bay.
- Development within the basin is predominately along the Wolf River or its major tributaries. Communities like Shawano, Clintonville, New London, Waupaca, Weyauwega and more were developed primarily because of being located on waterways that were used by the logging industry
- The Basin includes the Northern Hills and Northeast Plains Ecological Landscapes with small portions in the Central Sand Hills, Southeast Glacial Plains and North Central Forest.
- Surface waters are a mix of cold and warm water streams with smallmouth bass, walleye, northern pike, panfish, trout and salmon.
- Groundwater is generally abundant, clean and used for drinking water in many of the basin's communities.
- Over 143 rare animal species live in the Wolf River Basin, including northern goshawk, red- headed woodpecker, great gray owl, barn owl, red- shouldered hawk, bad eagle, osprey and various butterflies, beetles, dragonflies, fish, grasshoppers, mayflies, mussels, mammals, snails, snakes and turtles.
- The basin supports 57 rare plant (known accounts), including 8 state endangered, 11 state threatened, 38 special concern and two federally listed plants species. The majority of these plants are associated with wetlands.
- Menominee, Stockbridege-Munsee Band of Mohicans, Forest County Potawatomi Community, Sokaogon Chippewa, and Mole Lake--participate in the Wisconsin NRCS Tribal Conservation Advisory Council




## Watershed Activities / Concerns / Priorities

**Environmental Concerns**

- Loss of aquatic habitat and open land to development; pollution threats to surface and groundwater. Simplification of diverse habitat and loss of special places that support rare species.
- Water quality problems from in- place pollutants, dams, urban and agricultural runoff.
- Preservation of biodiversity and protect endangered and threatened species.
- Protection of large contiguous blocks of forests, grassland and wetland that serve as habitat for mammals, birds, and amphibians and provide a large self-sustaining ecosystem for all to enjoy.
- Invasive exotic nuisance species: purple loosestrife, gypsy moths, zebra mussels, Eurasian water milfoil, garlic mustard (uplands), and others.
- Monitoring of wildlife populations, water quality, and ecosystem function are needed to the status and trends of resources in the basin.

**Basin Priorities**

Wolf Basin Partners identified the following areas as highest basin priorities:

- Water Pollution
- Loss of Shoreline Habitat
- Hunting/ Fishing/ Trapping and Recreational Uses
- Inventory of Resources

Wisconsin DNR's Wolf Team has also identified priorities to guide work:

- Preservation and protection of wetlands
- The presence and spread of exotic species
- Pressures on Natural Resources from development
- Promoting sound land use and "smart growth" or comprehensive planning

## Impaired (303d) Waters

| Waterbody Name | Impairment | Anticipated TMDL Submittal |
|---|---|---|
| Arbutus Lake | Mercury Fish Consumption Advisory | NA |
| Big Hills Lake | Mercury Fish Consumption Advisory | NA |
| Columbia Lake | Mercury Fish Consumption Advisory | NA |
| Deep Hole Lake | Mercury Fish Consumption Advisory | NA |
| Kusel Lake | Mercury Fish Consumption Advisory | NA |
| Little Sand Lake | Mercury Fish Consumption Advisory | NA |
| Mayflower Lake | Mercury Fish Consumption Advisory | NA |
| Pine Lake | Mercury Fish Consumption Advisory | NA |
| Poygen Lake | Mercury Fish Consumption Advisory | NA |
| | PCBs Fish Consumption Advisory | |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | Sediment | |
| Rat River * | Organic Enrichment/Low Dissolved Oxygen | NA |
| | Flow Alteration(S) | |
| Rat River * | Organic Enrichment/Low Dissolved Oxygen | NA |
| | Flow Alteration(S) | |
| Roberts Lake | Mercury Fish Consumption Advisory | NA |
| Shawano Lake | Mercury Fish Consumption Advisory | NA |
| Winneconne Lake | Mercury Fish Consumption Advisory | NA |
| Winneconne Lake | Mercury Fish Consumption Advisory | NA |
| | Organic Enrichment/Low Dissolved Oxygen | |
| | Nutrients | |
| | Turbidity | |
| | PCBs Fish Consumption Advisory | |
| | Sediment | |
| Wolf River Below Shawano Dam Down To State Hwy 156 | Mercury Fish Consumption Advisory | NA |