

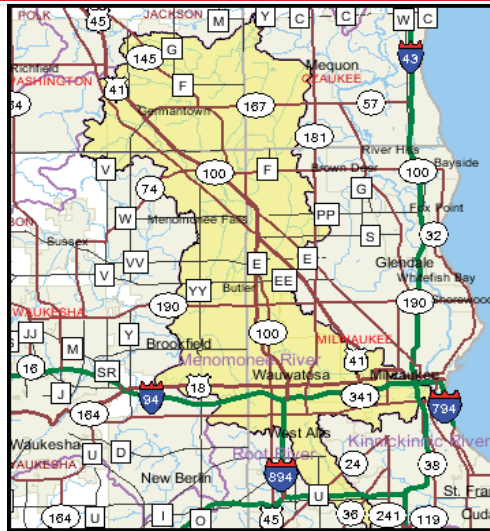
## 2010 Water Quality Management Plan Update

Milwaukee River Basin, Wisconsin

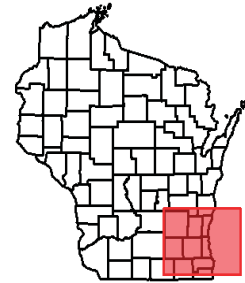
August, 2010

The Menomonee River Watershed covers 136 square miles in portions of Washington, Ozaukee, Waukesha and Milwaukee counties.

The river originates in the Village of Germantown and the City of Mequon and flows in a southeasterly direction for about 32 miles before it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor Estuary. The watershed contains 96 total stream miles and 4,537 wetland acres.



Map 1: Menomonee Watershed



### Contents

<b>Watershed Details</b> . . . . .	<b>1</b>
Population and Land Use . . . . .	1
Hydrology . . . . .	2
Ecological Landscapes. . . . .	3
Historical Note . . . . .	3
<b>Water Condition</b> . . . . .	<b>4</b>
Point & Nonpoint Pollution Issues . . . . .	4
River and Stream Quality . . . . .	4
Wetlands . . . . .	5
Lakes . . . . .	6
Aquatic Invasive Species. . . . .	.6
Impaired Waters. . . . .	.6
Recent Planning Efforts . . . . .	.8
Monitoring Studies . . . . .	.9
<b>Water Actions.</b> . . . . .	<b>4</b>
Watershed Program Grants . . . . .	.9
Stream Specific Recommendations. . . . .	.9
Watershed Recommendations . . . . .	.9
<b>Appendices.</b> . . . . .	<b>11</b>
Watershed Map . . . . .	11
ORW/ERW, Impaired Waters . . . . .	12
Dams and Outfalls . . . . .	13
Land Cover . . . . .	14
Potentially Restorable Wetlands . . . . .	15

### Watershed Details

#### Population and Land Use

The Menomonee River watershed is very densely populated (2367 persons per square mile) when compared to the State of Wisconsin as a whole (99 persons per square mile). Between 1990 and 2000, the population in the watershed has remained around 322,000 individuals, but the number of household units has increased by 3.5% to 129,736 dwellings (SEWRPC 2007a). So, even though the number of residents in the basin was stable, urban growth was increasing. The watershed spans four counties, nine cities, six villages and four towns. Table 1 summarizes the civil divisions in the watershed. Civil divisions are an important factor in the basin planning process since local units of government form the basic foundation of the public decision making framework within which environmental issues are addressed. (SEWRPC 2007b)

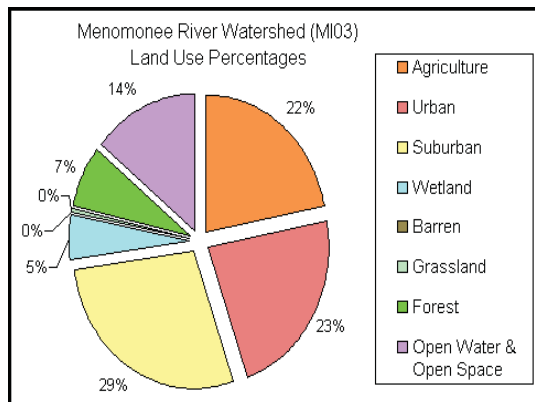


Figure 1: Land Use Menomonee Watershed

Land use refers to the primary ways people develop and manage the landscape. Today, the watershed contains a mix of land use types (Figure 1 & Appendix B), but just 170

years ago the Menomonee River Basin was essentially undeveloped. Indigenous peoples -- the Fox, Mascouten, Potawatomi and Menominee--lived in a landscape covered with upland forests of maple, beech and basswood, and lowland areas dominated by tamarack, cedar and ash (DNR 2001). These conditions started changing in the second half of the 19th century when the population in the City of Milwaukee grew rapidly from 11,000 people in 1850, to more than 200,000 by 1890 (Milwaukee County Historical Society). Although early immigrants probably never thought much about land use classifications, they certainly used the land, ultimately altering the landscape. Woodlands were probably the first dominant land use in the Menomonee River watershed. Forests provided firewood and building materials for the early settlers. Gradually, as the trees were cleared to grow crops, agriculture became the next significant land use. Table 2 shows how farmland still covers a significant portion of the basin but has declined significantly over the last 60 years due to increases in residential and commercial land development. . From 1970 to 2000, agriculture and related land uses declined by 43%. Most remaining rural land is located in the upper reaches of the watershed in Ozaukee and Washington Counties (SEWRPC 2007b).

Urban land uses in the watershed increased from about 70 square miles in 1990, to about 87 square miles in 2000. This type of land use is spread throughout the watershed but concentrated in and around the Villages of Menomonee Falls, Elm Grove, Greendale, Germantown, and West Milwaukee; and in the Cities of Brookfield, Greenfield, Wauwatosa, West Allis, and Milwaukee. Residential property is the largest type of urban land use in the watershed. Since 1990, most, though not all, residential growth has occurred in the northwestern portion of the watershed in the Villages of Germantown and Menomonee Falls (SEWRPC 2007b).

## Hydrology

The watershed is characterized by small to medium sized warm water streams that exhibit flashy flow patterns. This means they often run too high and fast when it rains, and too low and slow when the weather is dry. These problems are rooted in historic channel modifications and growing urban land use. The waterways in the Menomonee River watershed were some of the earliest in Wisconsin to be dammed and ditched in order to facilitate drainage and supply water for irrigation and power, given their close proximity to growing settlements around the Port of Milwaukee. These stream modifications destroyed and degraded riparian wetlands and set the stage for decades of floodplain development. As the watershed urbanized, the percentage of the landscape covered by impervious surfaces (roads, rooftops, parking lots) increased as did the accompanying underground network of storm sewers designed to rapidly deliver stormwater into the river. Flooding became a growing problem, leading to stream channel lining, deepening, straightening and relocating to move stormwater downstream more swiftly. These activities, especially channel lining, have destroyed miles of habitat for animals and plants that live in or along rivers and streams. Consequently, the more impervious surfaces in the watershed the less rainfall and snow melt infiltrates the soil, less groundwater is now available to replenish and cool local streams, resulting in low flows and warm waters.

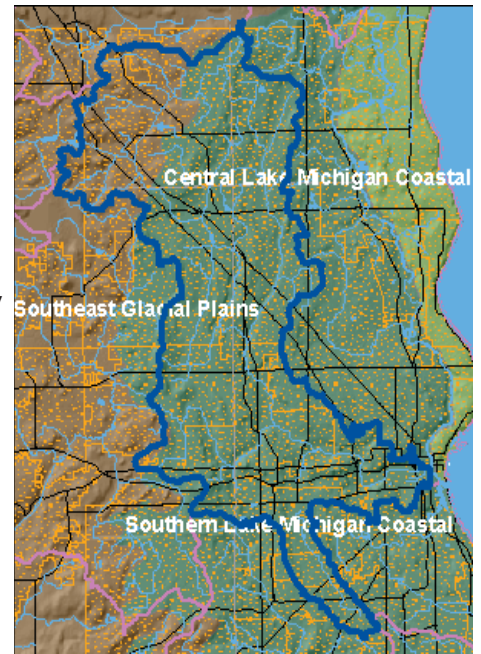
**Table 1. Civil Division-Menomonee River Watershed**

Civil Division	Basin Area (square miles)
<b>Ozaukee County</b>	
City of Mequon	11.69
<b>Milwaukee County</b>	
City of Greenfield	2.9
City of Milwaukee	31.6
City of Wauwatosa	13.23
City of West Allis	6.77
Village of Greendale	0.12
Village of West Milwaukee	0.64
<b>Washington County</b>	
City of Milwaukee	0.02
Town of Germantown	0.76
Town of Richfield	1.55
Village of Germantown	29.37
<b>Waukesha County</b>	
City of Brookfield	13.54
City of New Berlin	0.67
City of Milwaukee	0.08
Town of Brookfield	0.21
Town of Lisbon	0.29
Village of Butler	0.79
Village of Elm Grove	3.29
Village of Menomonee Falls	18.54
<b>Total</b>	<b>136.06</b>
Source: SEWRPC 2007a	

## Ecological Landscapes

This watershed spans two of Wisconsin's 16 major Ecological Landscapes. The lower three quarters are located in the Southern Lake Michigan Coastal landscape, characterized by silt-loam soils overlying loamy and clayey tills. Historically, the upland vegetation was dominated by sugar maple-basswood-beech forests with some oak species. Only about 8% of this Ecological Landscape is forested. Maple-beech forests are about half of the remaining forest types, the remainder split equally between oak-hickory and lowland hardwood forests. There are some areas of wet-mesic and wet prairie but only small preserves remain since the landscape is heavily disturbed and fragmented. Due to this isolation, fragmentation, and high level of disturbance, non-native plants are abundant.

Roughly a quarter of the watershed's northern region lies in the Southeast Glacial Plain Ecological Landscape which is characterized by lime-rich soils frequently overlain by silt-loam loess. Historic vegetation consisted of a mix of prairie, oak forests and savanna, and maple-basswood forests. Wet-mesic prairies, southern sedge meadows, emergent marshes, and calcareous fens were found in lower portions of the Landscape. End moraines and drumlins supported savannas and forests. Agricultural and urban land use practices have drastically altered the land cover of the Southeast Glacial Plains since Euro-American settlement. The current vegetation is primarily agricultural cropland. Remaining forests occupy only about 10% of the land area and consist of maple-basswood, lowland hardwoods, and oak.



Map 2. Ecological Landscapes

## Historical Note

The City of Wauwatosa developed along the banks of the Menomonee River in Milwaukee County. The river provided a route from the north of the state to the City of Milwaukee and out to Lake Michigan. From the west came the Watertown-Milwaukee Plank Road, which intersected with the Menomonee River in Wauwatosa at what is now known as the Harwood Avenue bridge.

Plank roads had been used in European countries, and state governments saw them as means to move agricultural products to markets since farmers could use their own vehicles; such roads were cheaper to construct than railroads. Between 1846 and 1871, 135 turnpike and plank road companies were organized and chartered by the Wisconsin legislature.

Plank roads were typically constructed of wood planks two inches thick and eight feet long, which were nailed to four-inch-square stringers at a 90-degree angle. Tolls were charged for traveling on the roads, usually one-cent per mile for single animal vehicles and an additional half-cent per animal hauling a vehicle. A typical drive from Milwaukee to Green Bay with a team would cost \$3.78.

Between 1852 and 1871, there was a gradual decrease in charters granted, and plank roads eventually fell out of favor, in part, because they did not prove to be as profitable as had been expected. Rather than make necessary costly repairs, many owners abandoned the roads. The abandonment by private owners and lack of public interest in maintaining the roads, prompted the legislature to authorize and direct town supervisors to declare such roads a public highway, if the owners had neglected to make repairs or collect tolls for a period of 60 days or more. The towns then assumed responsibility for repair.



Wagons travel on plank road. Credit: World Press.Com

Although several of Wisconsin's plank roads continued to carry large volumes of traffic until the early 1900s, the majority were abandoned in the wake of railroad development during the 1860s and 1870s. Although the plank roads themselves have disappeared from the landscape, some of the routes exist as parts of Wisconsin's road system. For example, the Watertown Plank Road travels from Milwaukee to Watertown on much of the original route and retains the historic name in some urban areas.

### Point and Nonpoint Pollution Issues

Urban nonpoint pollution is a concern throughout the watershed. Sediment from construction sites and organic pollutants (leaves & grass clippings) from residential areas are two examples of urban runoff pollutants that wash into storm sewers where they contribute phosphorus to local waterways causing low oxygen conditions. All the communities in the watershed hold DNR Municipal Stormwater permits designed to reduce the nonpoint pollution that enters local waterways through their storm sewer system. Since 17 percent of the landscape remains agricultural, polluted runoff due to farming activities remains a concern in this watershed. (Table 2).

Table 2. Land Use in the Menomonee River Watershed.

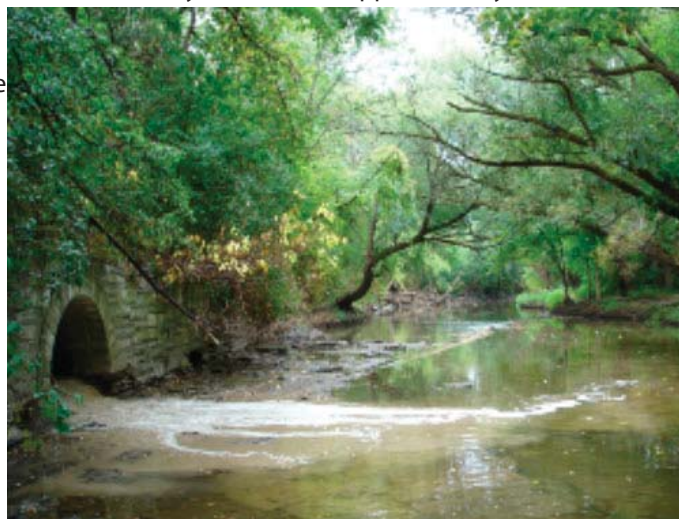
Category	1970		1990		2000	
	Square Miles	Percent of total	Square Miles	Percent of total	Square Miles	Percent of total
Urban						
Residential	33.4	24.6	38.6	28.4	40.5	29.8
Commercial	2.5	2.1	4.5	3.3	5.5	4
Industrial and Extractive	4.4	3.2	6	4.4	6.9	5.1
Transportation, Communication, and Utilities	18.8	13.9	19.8	14.7	22.7	16.8
Government and Institutional	5.3	3.9	5.8	4.3	5.7	4.2
Recreational	4.3	3.2	5	3.7	5.3	3.9
Subtotal	69	50.9	79.7	58.7	86.7	63.8
Rural						
Agricultural and Related	40.6	29.9	30	22.1	23.4	17.2
Water	0.5	0.4	0.8	0.6	0.8	0.5
Wetlands	9.7	7.1	10.3	7.6	10.6	7.8
Woodlands	3.8	2.8	3.4	2.5	3.3	2.4
Unused and other Open Lands	12.1	8.9	11.5	8.5	11	8.1
Subtotal	66.7	49.1	56	41.3	49.1	35.2
Total	135.7	100	135.7	100	135.8	100
Source: SEWRPC 2007a						

## Water Condition

### River and Stream Quality

Perhaps the most visible indications that the Menomonee River and its tributaries have been highly modified can be seen in sections of waterways where both the stream bed and banks are lined with concrete. About 8 percent of the streams in the watershed are concrete-lined or enclosed. (SEWRPC 2010) Honey Creek is an example of a tributary that has lost most of its in-stream and riparian habitat. The stream begins in the city of Greenfield as wetland and overland drainage before entering a 3.2 mile long concrete channel that meanders into the City of West Allis. At the north end of McCarty Park (Milwaukee County Park System), the stream becomes totally enclosed for approximately 2.1 miles until it emerges just north of Interstate 94 near the City of Wauwatosa. It then flows through additional lined sections for approximately 2 miles before joining the Menomonee River in Hart Park. Lined streams provide almost no habitat and also degrade conditions in unlined downstream stream sections by creating highly erosive flow velocities during wet weather conditions and excessively warm water during low flow conditions. In 2009, the MMSD began removing a section of concrete channel lining Underwood Creek as part of a multi-phase flood control project.

Channel obstructions further degrade instream habitat and restrict fish passage. The watershed contains 36 dams and concrete drop structures and 269 culverts and bridges (SEWRPC 2010). Removal of the Falk dam in the Menomonee River Valley was completed in February 2001. Although this low head dam was easily over-



Menomonee River, Photo Credit: Milwaukee River Keepers

topped during high-flow events, it was a significant barrier during low flow periods for many fish species. The N. 45th Street drop structure, which was also a significant migratory fish barrier, was removed and about 1,000 feet of concrete channel was replaced with a rock channel in the early 2000s.

The fishery in the watershed has been and continues to be dominated by species that can tolerate low dissolved oxygen and other water quality impairments. The proportions of such tolerant fish species have all increased over the last 100 years as shown in Appendix F. Most notable is the exotic invasive common carp species, which has increased from 2 percent to nearly 40 percent of the catch from 1975 to present. Carp are likely having a negative effect on the overall fishery in this watershed by destroying habitat and competing with native fish species for food and spawning areas. The data also indicates an apparent, relatively recent, gain of six species in the watershed. Notable species were the brook trout, brown trout, smallmouth bass, black crappie, walleye, and greater redhorse. These species were all observed in the lower portions of the Menomonee River and seem to be associated with the removals of the Falk dam and the drop structure at N. 45th Street. Other species that have increased in abundance include small mouth bass, an intolerant fish species, and walleye, which is probably indicative of the WDNR's stocking conducted pursuant to walleye population restoration efforts in the Lower Milwaukee River and Harbor since 1995 (SEWRPC 2007a).

Despite this increase in the overall number of fish species, there has been a decrease in the percent of native fishes in the Menomonee River watershed. Most notable losses include several intolerant species including the blacknose shiner and spottail shiner, the least darter and redbreast dace, which are species of special concern in the State of Wisconsin, and the greater redhorse which is a threatened species in the State of Wisconsin. Additional species that have not been observed since 1975 include the southern redbelly dace, northern redbelly dace, and grass pickerel (SEWRPC 2007a).

Two toxic sites are currently being remediated in the watershed. Efforts to clean up the Little Menomonee River are nearly done while work on the Burnham Canal is just beginning. Over five miles of the Little Menomonee River, from its confluence with the Menomonee River north to Brown Deer Road, were designated as a Superfund Site in 1984. Creosote contaminated sediments discovered in 1971 caused extensive environmental damage. The project involved the removal of contaminated groundwater and sediment. A treatment system is still in place to address remaining contaminated groundwater. The final major clean up phase finished in 2009 but EPA will review the site at least every five years until 2026 at which time it may be eligible for removal from the Superfund list. (EPA 2009) The Burnham Canal used to be a federally authorized navigation channel but, as of 1987, is no longer being dredged. The site is located in the industrial Menomonee River Valley just upstream from the Milwaukee Harbor Estuary. Contaminants of concern include six heavy metals (cadmium, copper, lead, nickel, silver and zinc) and Polycyclic Aromatic Hydrocarbons (PAHs). In July of 2008, the responsible party signed an agreement with EPA to conduct a Remedial Investigation/Feasibility Study for the Site. The RI/FS is currently in progress. The expected completion date is December 2010. (EPA Website)

## Wetlands

Based on soils, it's estimated that the Menomonee River Watershed historically contained around 10,534 wetland acres prior to Euro-American settlement. Today, the watershed contains less than half this amount, approximately 4,537 wetland acres. Forested wetlands make up 72 percent of this total, and emergent, shrub type and open water wetlands round out the remaining 28 percent. Approximately 13 percent of existing wetlands are dominated by reed canary grass, an aggressive invasive plant species. Around 50 percent, or 3000 acres, of the watershed's lost wetlands are potentially restorable (Figure 3).

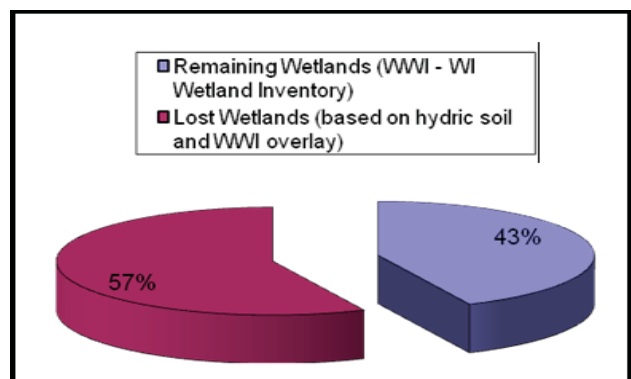


Figure 3. Historical Wetland Loss

Over half of the original wetlands in the watershed have been either filled or drained. Early records point to significant wetland losses in the lower Menomonee River, where it joins the outflows of the Milwaukee and Kinnickinnic Rivers in what is called the Milwaukee Harbor Estuary. (SEWRPC 2010) Wetland losses degraded water quality, wildlife and fisheries habitat. Greenseams is the name of an innovative land protection program funded by the MMSD and managed by the Conservation Fund. Through voluntary transactions the

program purchases undeveloped, privately owned open space along streams, shorelines and wetlands in areas expected to have major residential growth by 2020. Greenseams' properties should help reduce flooding, provide sites for future wetland restorations, increase wildlife habitat and create outdoor recreational opportunities.

## Lakes

There are no named lakes within this watershed; however there are park ponds that provide opportunities for urban fishing.

## Aquatic Invasive Species

The red swamp crayfish was discovered in a stormwater pond near the Menomonee River in Washington County in August 2009. The DNR implemented control actions to remove these animals and is currently monitoring the site.

## Impaired Waters

Currently, 11 miles of stream are included on WDNR's 303(d) list as impaired. The most common impairment is unsafe bacterial levels. The table on the following page shows the 2008 impaired waters in this watershed, as well as waters proposed for listing based on new information for the 2010 Clean Water Act reporting cycle. Below is an example of our online information for impaired waters in the state.

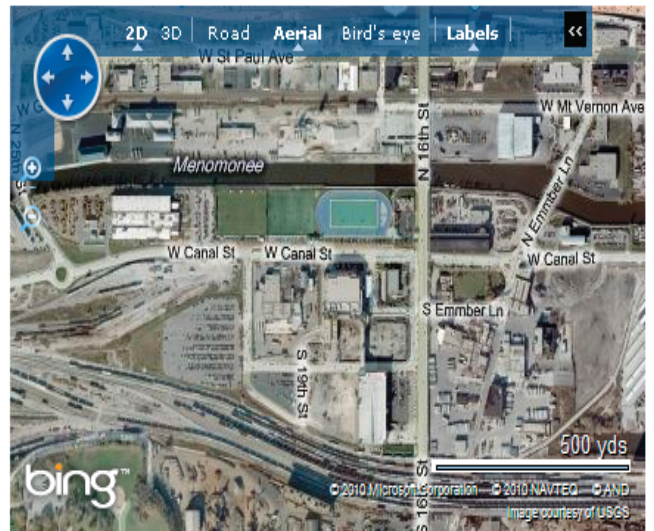
### Impaired Water: Menomonee River (Menomonee River)

**Location:** Milwaukee County, Wisconsin, MI03

**WBIC:** 16000, **Stream Miles:** 0-2.67

**Water Condition:** Water is impaired due to one or more pollutants and associated quality impacts.

**Notes:** NR104 list. List in 2010. Per NR 104.06(2)(a)7.: The Menomonee River in Milwaukee County below the confluence with Honey Creek "shall meet the standards for fish and aquatic life except that the dissolved oxygen may not be lowered to less than 2 mg/L at any time, nor may the membrane filter fecal coliform count exceed 1,000 per 100 mL as a monthly geometric mean based on not less than 5 samples per month nor exceed 2,000 per 100 ml in more than 10% of all samples during any month."



Name	Local Name /	Start Mile	End Mile	WBIC	County	Pollutant	Impairment	303 Status
<a href="#">Unnamed</a>	<a href="#">Butler Ditch</a>	0	2.9	18100	Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Goldendale Creek</a>	<a href="#">Goldenthal Creek</a>	0	3.5	18900	Washington	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Honey Creek</a>	<a href="#">Honey Creek</a>	0	0.9	16300	Milwaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Honey Creek</a>	<a href="#">Honey Creek</a>	0.9	7	16300	Milwaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Honey Creek</a>	<a href="#">Honey Creek</a>	7	10	16300	Milwaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Unnamed</a>	<a href="#">Lilly Creek</a>	0	4.7	18400	Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Little Menomonee River</a>	<a href="#">Little Menomonee</a>	0	9	17600	Milwaukee, Ozaukee	Creosote	Chronic Aquatic Toxicity	EAP Project
<a href="#">Little Menomonee River</a>	<a href="#">Little Menomonee</a>	0	9	17600	Milwaukee, Ozaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Addition
<a href="#">Little Menomonee Creek</a>	<a href="#">Little Menomonee River</a>	0	3.9	17900	Ozaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	0	2.67	16000	Milwaukee	E. coli	Recreational Restrictions - Pathogens	303d Listed
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	0	2.67	16000	Milwaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Addition
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	0	2.67	16000	Milwaukee	PCBs	Contaminated Fish Tissue	303d Listed
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	0	2.67	16000	Milwaukee	Total Phosphorus	Low DO	303d Listed
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	0	2.67	16000	Milwaukee	Unspecified Metals	Chronic Aquatic Toxicity	303d Listed
<a href="#">Menomonee River</a>	<a href="#">Menomonee River</a>	2.66	6.27	16000	Milwaukee	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Milwaukee River</a>	<a href="#">Milwaukee River</a>	0	2.9	15000	Milwaukee	E. coli	Recreational Restrictions - Pathogens	303d Listed
<a href="#">Milwaukee River</a>	<a href="#">Milwaukee River</a>	0	2.9	15000	Milwaukee	PCBs	Contaminated Fish Tissue, Contaminated Sediment	303d Listed
<a href="#">Milwaukee River</a>	<a href="#">Milwaukee River</a>	0	2.9	15000	Milwaukee	Total Phosphorus	Low DO	303d Listed
<a href="#">Milwaukee River</a>	<a href="#">Milwaukee River</a>	0	2.9	15000	Milwaukee	Unspecified Metals	Contaminated Sediment	303d Listed
<a href="#">Unnamed</a>	<a href="#">Nor-X-Way Channel</a>	0	4.9	18450	Ozaukee, Washington, Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Underwood Creek</a>	<a href="#">Underwood Creek</a>	0	5.5	16700	Milwaukee, Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Underwood Creek</a>	<a href="#">Underwood Creek</a>	5.5	8.54	16700	Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Unnamed</a>	<a href="#">West Br. Menomonee</a>	0	2.45	5033615	Washington	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List
<a href="#">Willow Creek</a>	<a href="#">Willow Creek</a>	0	2.8	18800	Washington, Waukesha	Fecal Coliform	Recreational Restrictions - Pathogens	Proposed for List

## Recent Planning Efforts

The Menomonee River Watershed (Appendix A) has been the focus of several recent water quality planning efforts. In 2007, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) published Technical Report 39: Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds and Planning Report Number 50: A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds to address water pollution abatement within a 1,127 square mile area called the Greater Milwaukee River Watershed Region. In conjunction with this effort, the Milwaukee Metropolitan Sewerage District (MMSD) completed their 2020 Facilities Plan, to guide sewage and floodwater management activities for the next decade within its service area. In 2010, a coalition of public and private watershed stakeholders called the Southeast Wisconsin Watershed Trust (SWWT) completed a Watershed Restoration Plan for the Menomonee River and the SEWRPC published Memorandum Report No. 194: Stream habitat Conditions and Biological Assessment of the Kinnickinnic and Menomonee River Watersheds: 2000-2009 to supplement the habitat related information contained in Planning Report 50. The Wisconsin Department of Natural Resources (WDNR) collaborated in the development of each of these planning efforts and participated in the review of each document.

### What is a Basin Plan?

Basin Plans are guides the WDNR uses to determine future natural resource management activities for a particular water resource.

- Identifies
  - Water conditions & land use
  - Based on monitoring and assessment methodology
  - Recommendations for action
    - Ensure permits, facilities and other regulated actions are in conformance with the water quality management plan for that area
  - Impaired waters
    - Waters not meeting water quality standards
- Includes Public Involvement/Comment Process
- Submitted to EPA
- Final Plans & Plan Amendments Represent a State wide Water Quality Management Plan and are integral to WDNR's Water Quality Management Planning Framework.

Unlike the plans mentioned above, the Menomonee River Basin Plan is not intended to provide a comprehensive overview of current land and water resource conditions in the basin. This plan presents what the WDNR considers to be priority issues degrading the surface water quality in the basin in addition to the Department's recommended actions for improving these conditions. The narrative and data to support the plan's findings and recommendations draw heavily from several of the planning efforts mentioned above. Readers who are interested in learning more background about the natural resource conditions and problems in the basin are encouraged to consult these documents.

### Milwaukee Estuary Area of Concern (AOC)

In the 1980's the US and Canada signed an agreement to improve water quality in the Great Lakes. A major focus is to target "Areas of Concern", like the Milwaukee Estuary, which suffer from a long history of toxic contamination.

Recently the Milwaukee AOC was expanded to include the Menomonee River from the estuary 12.5 miles upriver to where the Little Menomonee River flows under Highway 100.

Federal, state, and local agencies have developed a plan to begin cleaning up and restoring the Milwaukee AOC. The plan lists 11 impairments for the Menomonee River and its tributaries.

Ultimately, each of these impairments must be addressed and "delisted", or removed from the list of impairments for the Milwaukee AOC. Project priorities include the removal of concrete river linings near the Miller Park Baseball Stadium and increasing instream habitat near the mouth of the river.

### Interested in Learning More?

Visit: <http://dnr.wi.gov/water/>

Southeastern Wisconsin Regional Planning Commission  
<http://www.sewrpc.org/SEWRPC.htm>

Milwaukee Metropolitan Sewerage District  
<http://v3.mmsd.com/>

EPA - Milwaukee Area of Concern  
<http://www.epa.gov/glnpo/aoc/milwaukee>

See also:  
Southeast Wisconsin Watershed Trust  
<http://www.swwtwater.org/home/>



### Monitoring Studies

- WDNR currently is monitoring the Burnham Canal for the statewide watershed rotation study through September 30, 2010.
- Volunteers participate with monitoring water quality at over 15 sites in the Menomonee River Watershed. Most of the sites have volunteers participating in Level 1 monitoring which includes dissolved oxygen (DO), temperature, turbidity, flow, and macroinvertebrates (and do periodic stream assessments). Level 2 (advanced) volunteers monitor water quality using DNR equipment and protocols, and monitor pH, dissolved oxygen (DO), turbidity, and temperature (using automated thermistors).
- Volunteers monitor on at least a monthly basis, and data is entered into either the DNR "SWIMS" or WAV databases.

### Watershed Program Grants

#### Recent Nonpoint Source Grants

##### *City of Wauwatosa City-wide Rain Gardens – Grant Awarded 2008*

To cost-share implementation of a City-sponsored program to encourage homeowners and businesses to install rain gardens on their respective properties in an effort to advance the goals of the City's Municipal Storm Water permit.

##### *Village of Elm Grove Stormwater Management Planning – Grant Awarded 2008*

To cost-share development of a storm water management plan covering the Village of Elm Grove, creation of pollution prevention ordinances, provision for public participation, and analysis of the feasibility for establishing an alternative funding capacity for storm water costs.

##### *City of Wauwatosa Stormwater Inlet Replacements- Grant Awarded 2008*

To cost-share installation of catch basins in conjunction with on-going street replacement projects throughout the City in furtherance of the pollution reduction goals established by the Municipal Storm Water permit.

### Stream Specific Recommendations:

- Evaluate phosphorus data available and collect data within Underwood Creek and South Branch Underwood Creek to fill in gaps for eventual listing as impaired for phosphorus for 2012 listing.
- Provide habitat for young and adult fish in the Menomonee River portion of the Milwaukee River Estuary Area of Concern (AOC) using habitat baskets and other structures. Implement Habitat Improvement Project in the Estuary Environment (HIPEE) project as funding becomes available.

### Watershed Recommendations

- Improve aquatic habitat throughout watershed. Evaluate structures and other impediments to fish migration. Work with MMSD and local units of government to eliminate obstructions from downstream to upstream as funding become available.
- Improve near stream (riparian) habitat to promote biodiversity. Work with local stakeholders and decision makers to establish a biodiversity vision and implement projects to achieve that vision as outlined in Appendix G.
- Work with local units of government and private property owners to implement a chloride reduction strategy.
- Develop a comprehensive strategy for delisting impaired beneficial uses within the Menomonee River portion of the Milwaukee Harbor Estuary of Concern. Initial focus will be on in-stream and riparian habitat improvement for fish and wildlife impairments.
- Work with the Southeastern Wisconsin Watersheds Trust for evaluating the potential for establishing a watershed permit for the Menomonee River Watershed.
- Monitor storm sewer outfalls to detect and eliminate illicit discharges to help control urban-sourced pathogens that are harmful to human health.

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DNR PUB WT- WT-950



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# Menomonee River Watershed