

REGIONAL PLANNING NEWS



A publication of the **Southeastern Wisconsin Regional Planning Commission**

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Reports and Resources

SEWRPC Floodland and Stormwater Management

A Comprehensive Plan for the Menomonee River Watershed

FEMA Risk MAP Program

Milwaukee Metropolitan Sewerage District Flood Management

Southeastern Wisconsin Floodplain Mapping and Flood Mitigation Planning

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) has a legacy of preparing comprehensive watershed studies and planning efforts that include floodplain management. **Floodplain modeling, mapping, and flood mitigation planning have formed the basis for the Commission's floodplain management and associated watershed management recommendations for 50 years.** Specifically, the Commission has performed analyses to identify and map areas prone to flooding, developed alternative plans to mitigate flooding, worked with its watershed plan advisory committees to formulate recommended flood mitigation plans, and assisted in the implementation of those plans.

The Commission's floodplain management program was initiated in the 1960s through the preparation of comprehensive watershed plans long before local floodplain zoning and Federal flood insurance were widely adopted. From 1966 through 2003, SEWRPC prepared comprehensive plans for the following watersheds: Root River, Fox River, Milwaukee River, Menomonee River, Kinnickinnic River, Pike River, Oak Creek, and Des Plaines River. In addition to addressing issues related to land use, parks and open space, and water quality, the plans included the development of detailed flood profiles and floodplain maps along numerous rivers and streams. The information continues to be updated and is the basis for local floodplain zoning and Federal flood insurance mapping throughout much of Southeastern Wisconsin.

Hydrologic and hydraulic computer simulation models were developed by the Commission for each watershed study and have been used to compute flood flows and stages along waterways and to map associated floodplain boundaries. The floodplain maps and models have been incorporated in Federal Emergency Management Agency (FEMA) flood

Flood Mitigation Planning

Mapping of flood-prone areas enables quantification of the flood hazard and leads to identification of flood mitigation needs.

SEWRPC comprehensive watershed plans have traditionally included a flood mitigation component with the development of alternative plans to address flooding.

County and municipal hazard mitigation plans also incorporate flood mitigation.

Recently, the Federal Emergency Management Agency (FEMA) has initiated the Risk Mapping, Assessment and Planning (RiskMAP) program, adding a planning component to FEMA flood hazard maps.



Overflow from the Fox River in downtown Waukesha on a stormy day in June 2008. Source: SEWRPC

insurance studies from their inception in the 1970s through the FEMA Floodplain Map Modernization program and the current FEMA Risk Mapping, Assessment and Planning (RiskMAP) program. In addition, Commission studies and models have been, and continue to be: 1) used as the basis for the development of floodplain management plans by SEWRPC and the Milwaukee Metropolitan Sewerage District (MMSD); 2) provided to consultants throughout the Region for use in water resources projects; and 3) used by SEWRPC, municipalities, and the Wisconsin Department of Transportation for the hydraulic designs of bridges and culverts associated with street and highway projects.

Floodplain maps developed from Regional Planning Commission studies are used by local zoning officials to regulate land use and development in and near floodplains and for Federal flood insurance purposes. They are also used for emergency action planning; the design of land developments; the identification of flooded buildings, highways, and roads for flood mitigation planning; and to reflect the effects of flood mitigation projects as they are completed. SEWRPC has included flood mitigation planning in several hazard mitigation plans, with plans developed at the request of Kenosha, Racine, and Washington Counties, and the City of Milwaukee. Commission studies have addressed flood mitigation along the Milwaukee River, the role of the Milwaukee County Grounds regional floodwater storage basin as a component of the MMSD Menomonee River flood mitigation project, and flood mitigation for four subwatersheds in Milwaukee County and Waukesha County in the Menomonee River Watershed.

The Commission also provides floodplain analysis, hydraulic surveys, engineering and zoning, and/or floodplain model information to municipalities, counties, and private consultants for specific projects upon request. For example, from 2012 to 2014, Commission technical staff prepared hydraulic analyses to assist Milwaukee County in the preparation of an environmental assessment of the Estabrook Dam on the Milwaukee River. This effort included analyses to determine the effect of various dam configurations, including removal of the dam, on water surface profiles of the Milwaukee River under both normal and flood flow conditions.

Objectives of a Comprehensive Watershed Plan

While each individual watershed management plan is developed as the result of extensive evaluation of the particular watershed, the plans have common elements. **The most noteworthy objectives of comprehensive watershed plans** are that they:

- Address existing and potential future stormwater and floodplain management problems;

- Address surface water quality problems created by point and nonpoint pollution sources;
- Address public park, open space, and natural area preservation; and
- Refine the land use element of an areawide or regional plan in a manner consistent with the recommendations regarding stormwater, floodplains, open space, and water quality management.

The 1976 SEWRPC Comprehensive Plan for the Menomonee River Watershed serves as a useful example for an overview of watershed planning. The plan covers a drainage area encompassing 135 square miles and 16 cities, villages, and towns in four counties. Over time, the area has become increasingly urbanized, with 65 percent characterized as urban in 2010, compared with 54 percent in 1970. The Menomonee River plan was one of the earliest examples of comprehensive watershed planning that addressed the multiple objectives of land use, water quality, floodplain management, open space and recreational space, and environmental corridor identification and preservation.

Over a 30-year span, the Menomonee River watershed has been the subject of 10 significant, integrated planning and project implementation efforts that have built on the 1976 SEWRPC plan and have included stormwater management and flood mitigation within the Milwaukee Metropolitan Sewerage District (MMSD) service area, evaluation of flooding in the City of Wauwatosa, regional land use and water quality planning, and local stormwater and watercourse plans.

As part of the Menomonee River watershed planning efforts, **SEWRPC delineated and mapped the boundaries of the one-percent-annual-probability (100-year recurrence interval) floodplains and floodways**, which provided the framework for the development by MMSD of a flood damage mitigation plan and the basis for local zoning decisions. The flood mitigation projects implemented by MMSD include the construction of the Milwaukee County Grounds floodwater storage basin; floodplain overbank lowering; acquisition and removal of structures in areas prone to flooding; and installation of a structural flood protection system that includes earthen levees, concrete floodwalls, and raised road grades in the vicinity of Hart Park in the City of Wauwatosa.

MMSD Hart Park Flood Mitigation Project



The Commission also recently prepared the analyses and documentation needed for a FEMA conditional letter of map revision reflecting in a single model numerous Menomonee River flood mitigation projects implemented over the past decade by MMSD and/or the Cities of Milwaukee and Wauwatosa, along with projects to be implemented in the near future. The incorporation of those projects — representing over a decade of progress in flood mitigation — in a single model is a major achievement that will greatly assist the cities in administering floodplain zoning and MMSD in completing additional flood mitigation projects.



Little Menomonee River restoration. Source: SEWRPC

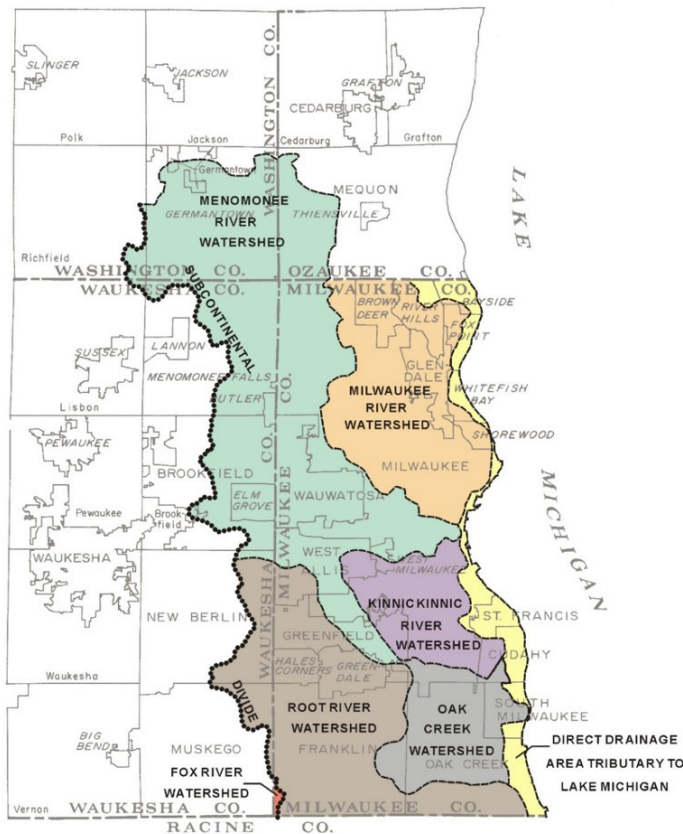
Fox River Flood Mitigation

Another example of the implementation of recommendations developed through watershed planning is a 22-year Kenosha County program to mitigate flooding through the acquisition and removal of flood-prone structures along the Fox River. The SEWRPC staff assists Kenosha County with administration of the program, which provides the option for homeowners to voluntarily sell their homes in an identified flood-prone area as part of a program funded by the State of Wisconsin and FEMA. One hundred and three houses have been physically removed from the floodplain under this program.

Floodplain Mapping for the Milwaukee County Automated Mapping and Land Information System Steering Committee and MMSD

The SEWRPC staff is currently updating floodplain boundaries throughout Milwaukee County and along streams tributary to Milwaukee County under a project conducted for the Milwaukee County Automated Mapping and Land Information System (MCAMLIS) Steering Committee and MMSD. Recent work on this project has involved developing or updating hydrologic and hydraulic models for the Root River watershed and sections of the Menomonee River watershed as well as mapping 32 streams — or 80 miles of waterways — in the Root and Menomonee River watersheds. The work extends into Ozaukee, Washington, and Waukesha Counties.

Watersheds Comprising the MCAMLIS/MMSD Study Area



(The portion of this study being done for the MCAMLIS Steering Committee is limited to Milwaukee County.)

MMSD 2050 Facilities Plan

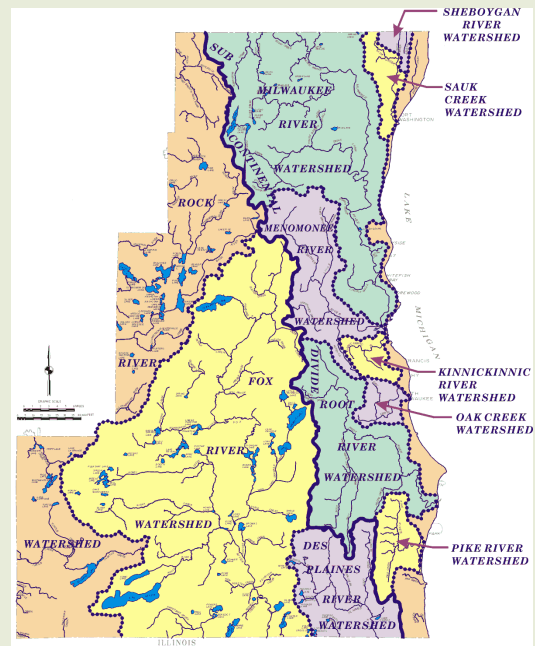
The Commission staff is also assisting MMSD in the preparation of its 2050 Facilities Plan, which is expected to be completed in 2017. This work involves floodplain analysis and mapping of flood hazard areas under planned land use conditions, an evaluation of how the application of updated rainfall frequency information issued by the National Oceanic and Atmospheric Administration in 2014 would affect the sizes of stormwater management facilities required for new development in municipalities served by MMSD, and the compilation of demographic and land use planning data to help predict wastewater flows and capacity needs for the future.

Floodplain Management Assistance

Counties and municipalities in the Region regularly request assistance from Commission staff for a variety of floodplain management analyses and data. Recent requests have included floodplain analyses for stream rehabilitation projects, floodplain and hydraulic scour analyses for bridge modification or replacement projects, and the provision of floodplain model information.

Additional assistance regularly provided to local governments upon request includes studies and consultation related to local zoning issues, floodplain mapping, and flood mitigation planning.

For more information, please contact SEWRPC Deputy Director Mike Hahn at mhahn@sewrpc.org.



SEWRPC Watershed Plans

The Southeastern Wisconsin Regional Planning Commission has prepared comprehensive watershed plans for the following watersheds in the Region:

Root River (Kenosha, Milwaukee, Racine, and Waukesha Counties: 1966)

Fox River (Kenosha, Milwaukee, Racine, Walworth, Washington, and Waukesha Counties: 1970)

Milwaukee River (Ozaukee, Milwaukee, and Washington Counties: 1971)

Menomonee River (Ozaukee, Milwaukee, Washington, and Waukesha Counties: 1976)

Kinnickinnic River (Milwaukee County: 1978)

Pike River (Kenosha and Racine Counties: 1983)

Oak Creek (Milwaukee County: 1986)

Des Plaines River (Kenosha and Racine Counties: 2003)

Watch for Updates



One Region, Focusing on Our Future

VISION 2050 is SEWRPC's land use and transportation planning effort for Southeastern Wisconsin.

Learn about VISION 2050 at www.vision2050sewis.org.

Follow us on Twitter at [@vision2050sewis](https://twitter.com/vision2050sewis).

The **Southeastern Wisconsin Regional Planning Commission** is the official advisory areawide planning agency for land use and infrastructure for the seven counties in the Region.

More information can be found at www.sewrpc.org.

Please contact us at sewrpcnews@sewrpc.org.

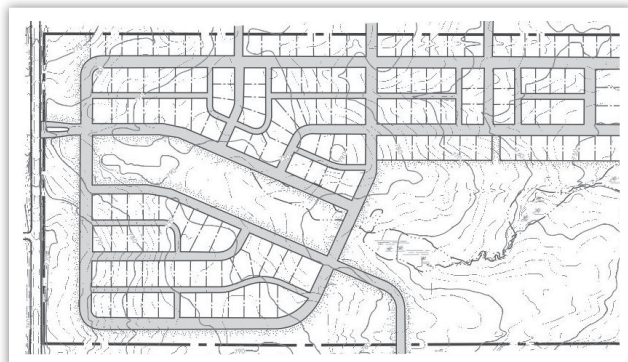
Model Land Division Ordinance Updated

The Commission recently completed an update to the SEWRPC model land division ordinance. The model land division ordinance was prepared in 2001 as part of the update to SEWRPC Planning Guide No. 1, *Land Division Control Guide*, July 2001 at www.sewrpc.org/landdivcontrol.

The updated model land division ordinance reflects changes to Chapter 236 of the Wisconsin Statutes enacted by the Legislature through July 7, 2015, including limits on the collection of fees for public park acquisition and improvements, transmittal of plats to objecting agencies, and timelines for review of proposed land divisions.

The new model land division ordinance also reflects other changes to State laws and regulations and updates terminology related to floodplains and private onsite wastewater treatment systems (POWTS). References to the use of specific land survey datums have also been deleted and replaced with language leaving the determination of the appropriate datum to each local government's engineer.

The new model ordinance is available on the SEWRPC website at www.sewrpc.org/landdivordinance. Please contact **Nancy Anderson** at (262) 547-6721 or nanderson@sewrpc.org if you would like a copy of the new model ordinance or the Land Division Control Guide, or have questions about them. A copy of the model ordinance that shows changes between the 2001 and 2016 versions is also available.



Source: SEWRPC

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