

CHAPTER 1: INTRODUCTION



Huron River at the Kent Lake Dam photo: HRWC

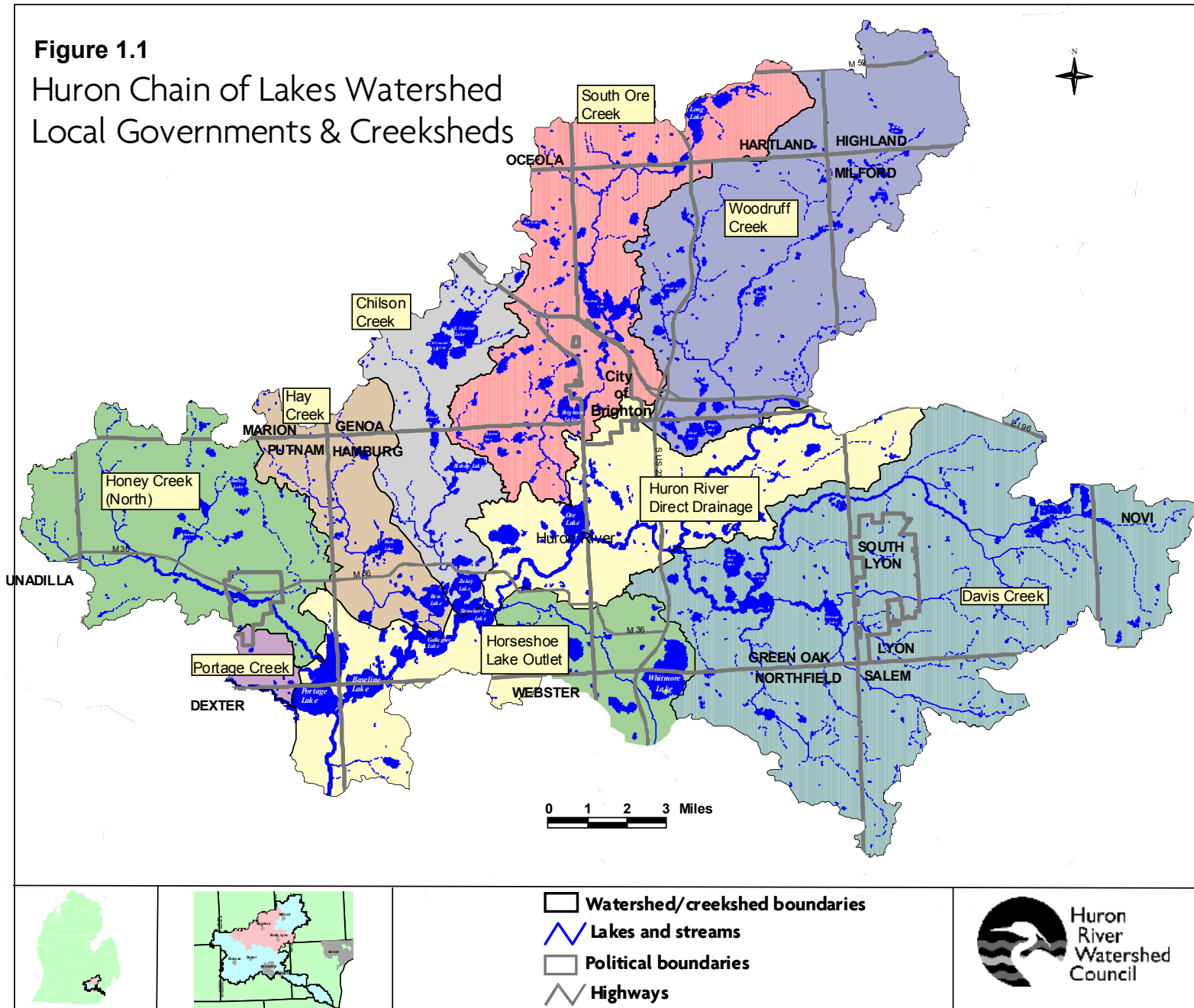
1.1 THE HURON CHAIN OF LAKES WATERSHED

The Huron Chain of Lakes Watershed is part of the Huron River Watershed (see Figure 1.1), one of Michigan's natural treasures. The Huron River supplies drinking water to approximately 150,000 people, supports one of Michigan's finest smallmouth bass fisheries, and is the State's only designated Scenic River in southeast Michigan. The Huron River Watershed is a unique and valuable resource in southeast Michigan that contains ten Metroparks, two-thirds of all southeast Michigan's public recreational lands, and abundant county and city parks. In recognition of its value, the State has officially designated 27 miles of the Huron River and three of its tributaries as Michigan Department of Natural Resources Country Scenic River under the State's Natural Rivers Act (Act 231, PA 1970). The Huron is home to one-half million people, numerous threatened and endangered species and habitats, abundant bogs, wet meadows, and remnant prairies of statewide significance.

The Huron River basin is located in southeastern Michigan and encompasses approximately 900 square miles (576,000 acres) of Ingham, Jackson, Livingston, Monroe, Oakland, Washtenaw, and Wayne counties (Figure 1.1). The main stem of the Huron River is approximately 136 miles long, with its origin located at Big Lake and the Huron Swamp in Springfield Township, Oakland County. The main stem of the river meanders from the headwaters through a complex series of wetlands and lakes in a southwesterly direction to the area of Portage Lake. Here, the river begins to flow south until reaching the Village of Dexter in Washtenaw County, where it turns southeasterly and proceeds to its final destination of Lake Erie. The Huron is not a free-flowing river. At least 98 dams segment the river system, of which 17 are located on the main stem.

The immediate drainage area to the Huron Chain of Lakes Watershed is 253 square miles (161,919 acres), representing approximately 28% of the Huron River Watershed. The majority of the watershed lies within Livingston County, with eastern portions in southwest Oakland County and southernmost areas in Washtenaw County. All or portions of 20 local communities are situated in the Huron Chain of Lakes Watershed, of which the largest portions are within the townships of Brighton, Genoa, Lyon, Green Oak, Hamburg, and Putnam, as well as the Village of Pinckney, the City of Brighton, and the City of South Lyon. Other communities with smaller areas in the watershed include the townships of Highland, Hartland, Oceola, Milford, Marion, Unadilla, Salem, Northfield, Webster, and Dexter, as well as the City of Novi.

Figure 1.1
 Huron Chain of Lakes Watershed
 Local Governments & Creeksheds



The segment of the Huron River in the Huron Chain of Lakes Watershed begins at the outfall of the Kent Lake Dam on the Oakland County/Livingston County border and ends approximately two miles downstream of Portage Lake, where it straddles the border between Livingston and Washtenaw Counties. From the Kent Lake outlet, the river flows southwest through a series of wetland complexes and several large glacial kettle lakes in Livingston County before reaching Portage Lake. Eight major tributaries, corresponding to eight distinct sub-basins, or “creeksheds”, drain into this direct drainage area of the Huron River. The mainstem of the Huron River in the Watershed is approximately 27 miles long with additional 593 miles of contributing streams. Over 22,000 acres (34 sq. miles) of wetlands remain in the Watershed as of 2000, comprising over 13% of the total watershed area. The Huron Chain of Lakes area contains nearly 1000 lakes and impoundments, of which 172 are greater than five acres and 84 of which are greater than twenty acres.

The watershed contains a number of protected natural areas including Island Lake State Recreation Area, Huron Meadows Metropark, Gregory State Game Area, Brighton State Recreation Area, portions of Pinckney State Recreation Area and Hudson Mills Metropark, as well as numerous public and private local parks. Low-density residential areas, grasslands/old agricultural fields, forested lands, and wetlands are found throughout the watershed while medium- and high-density residential and commercial and industrial areas are concentrated in the more urbanized areas.

In recent decades, the Huron River Watershed, particularly in the Huron Chain of Lakes, has experienced amplified development pressures from a growing economy and urban sprawl. According to the U.S. Census data and the Southeast Michigan Council of Governments (SEMCOG)¹, the total population of the nine communities that comprise nearly ¾ of the Chain of Lakes Watershed* increased 52% from 1990 to 2005. The forecast to 2030 show a 74% increase in population from 2005 levels. The number of households in these nine communities increased 61% from 1990 to 2005. The forecast to 2030 show a 91% increase in total households from 2005 levels.

Livingston County has been the fastest growing county in the state for the past decade, reflecting a trend in growth out from Detroit to the more outlying areas spurred by highway improvements, infrastructure, and a desire for open space. According to SEMCOG, Livingston County’s population increased by over 13% from 2000 to July 2004, compared with 1.6% in Oakland County and 6.5% in Washtenaw County. SEMCOG predicts that most of Livingston County’s growth in the next 30 years will take place in Genoa, Brighton, Hamburg, and Green Oak Townships, the heart of the watershed. Putnam Township and Lyon Township are also experiencing tremendous growth, with populations increasing more than 10 % and 14% respectively since the 2000 Census.²

If current development practices are employed to accommodate the projected increase in population and associated infrastructure, then SEMCOG estimates 40% of the remaining open spaces will be developed within the Huron River Watershed by 2020. Much of this projected conversion of undeveloped land will occur in the Huron Chain of Lakes area where it will hasten degradation of the hydrology and water quality of surface

* Includes Brighton Township, City of Brighton, Genoa Township, Green Oak Township, Hamburg Township, Lyon Township, Village of Pinckney, Putnam Township, and City of South Lyon.

waters. Common practices that impact hydrology and water quality include draining of wetlands, straightening and dredging of streams (“drains”), removal of riparian vegetation, installation of impervious surfaces and storm sewers, inadequate soil erosion controls, poorly designed stream crossings, and elevated nutrients. Such practices result in altered hydrology (“flashy” flows and flooding), soil erosion and sedimentation, nuisance algal blooms, dangerous levels of pathogens, and degraded fisheries.

1.2 PURPOSE OF THE HURON CHAIN OF LAKES WATERSHED MANAGEMENT PLAN

The Huron Chain of Lakes Watershed Management Plan (WMP) is part of an effort led by communities in the Huron Chain of Lakes Watershed seeking compliance with the federal National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program. In Michigan, the U.S. Environmental Protection Agency (U. S. EPA) has authorized the Michigan Department of Environmental Quality (MDEQ) to administer the Phase II permitting process. The Huron Chain of Lakes WMP is being developed to meet one of the requirements of Michigan’s watershed-based stormwater permit (MIG619000), one of two permit options available to communities in Michigan.

As that permit states “the permittee shall participate in the development and implementation of a Watershed Management Plan. The purpose of the WMP is to identify and execute the actions needed to resolve water quality and water quantity concerns by fostering cooperation among the various public and private entities in the watershed.... The emphasis of the WMP shall be to mitigate the undesirable impacts caused by wet weather discharges from separate storm water drainage systems.” Furthermore, the General Watershed-Based Permit requires that “Those concerns related to Total Maximum Daily Loads (TMDLs) established within the watershed should be included and details for those actions specific to storm water controls shall be listed in the WMP.”

This Plan was developed with the intention of fulfilling the watershed management planning criteria for the NPDES Phase II Program, as mentioned above, as well as for the U.S. EPA’s Clean Water Act §319 Program and MDEQ’s Clean Michigan Initiative Program.

The communities involved in the development of this plan are committed to protecting the sensitive natural areas of the Huron Chain of Lakes Watershed, mitigating impacts of existing and future stormwater discharges and nonpoint source pollution, and restoring degraded areas.

1.3 HURON CHAIN OF LAKES STEERING COMMITTEE

Efforts to comply with Phase II stormwater regulations in Livingston County are being coordinated under leadership of the Livingston County Drain Commissioner (LCDC). In order to facilitate a coordinated effort throughout the County to meet the watershed-based permit requirements, LCDC has held monthly joint meetings for permittees in the Huron Chain of Lakes and South Branch Shiawassee watersheds since December 2002. This countywide group works together to address administrative and procedural Phase II issues that are common to permittees in both watersheds.

The Huron Chain of Lakes Steering Committee (the Steering Committee) was formed in February 2004 to coordinate the study, development, and timely filing with MDEQ of a Huron Chain of Lakes Watershed Management Plan as required under the Phase II stormwater requirements. The Steering Committee met monthly following the county-wide regular meetings. Through an intergovernmental agreement administered by the County, representatives from the following Huron Chain of Lakes communities in Livingston County formed the core of the Steering Committee, which commissioned the services of the Huron River Watershed Council (HRWC) to facilitate the development of, and write, the Huron Chain of Lakes Watershed Management Plan:

City of Brighton
Brighton Township
Genoa Township
Green Oak Township

Livingston County Drain Commissioner
Livingston County Road Commission
Village of Pinckney
Putnam Township

All Steering Committee representatives are voting members and are considered “primary entities,” meaning that they are covered under the watershed-based Phase II permit as part of the Huron Chain of Lakes planning efforts. Details on the machinations of the Steering Committee are found in the Huron Chain of Lakes Watershed intergovernmental agreement (Appendix K).

“Secondary entities” are located within the Huron Chain of Lakes Watershed and are either primarily associated with another watershed group, covered by a jurisdictional permit, or are not regulated under Phase II. However, they were encouraged to participate in the planning process, and some of these entities participated in the monthly meetings of the Steering Committee and contributed to the development of this Plan. These Secondary entities are:

Dexter Township
Hamburg Township
Hartland Township
Highland Township
Lyon Township
Marion Township
Milford Township
Northfield Township

City of Novi
Oakland County
Oceola Township
Salem Township
City of South Lyon
Unadilla Township
Webster Township
Washtenaw County Drain Commissioner

Additionally, representatives from other stakeholder groups contributed to the development of the Huron Chain of Lakes Watershed Management Plan. These groups are:

Livingston County MSU Extension Service
Southeast Michigan Council of Governments
Michigan Department of Environmental Quality

1.4 COORDINATION WITH FEDERAL WATER QUALITY PROGRAMS AND EXISTING WATERSHED MANAGEMENT PLAN EFFORTS

1.4.1 National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Permit

As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes. According to the U.S. Environmental Protection Agency (U.S. EPA), individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit. However, industrial, municipal, and other facilities must obtain permits if their stormwater discharges go directly to surface waters. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events that often contain pollutants in quantities that could adversely affect water quality. Most stormwater discharges are considered point sources and require coverage by an NPDES permit.

A 1987 amendment to the Federal Clean Water Act required the U.S. EPA to develop regulations setting NPDES permit application requirements for stormwater discharges from communities with municipal separate storm sewer systems (MS4s). An MS4 is a drainage system that discharges to waters of the State and is owned or operated by a federal, state, county, city, village, township, district, or other public body of government. Such drainage systems may include roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels.

Phase I of the NPDES regulations, which went into effect in 1990, regulated stormwater discharges from communities with MS4s and populations greater than 100,000. The regulations for Phase II of the NPDES regulations, which capture the next tier of communities, were issued in 1999. Communities with MS4s that are located within the U.S. Census Bureau's urbanized areas, based on the 2000 census, are required to obtain stormwater discharge permits under Phase II of the NPDES regulations. A majority of communities in the Huron River Watershed, including all communities in the Huron Chain of Lakes Watershed except Unadilla Township, must comply with these regulations as of March 2003.

As mentioned above in section 1.2, the Huron Chain of Lakes WMP is being developed to meet a requirement of Michigan's watershed-based stormwater permit (MIG 619000). The watershed-based permit is unique to Michigan and has been "strongly endorsed" by the U.S. EPA. This permit requires the formation of watershed working groups composed of communities and other political and public agencies responsible for the management of stormwater discharges to work cooperatively to develop and implement plans to address stormwater pollution. The watershed-based permit requires communities to complete five different components:

1. *Watershed Management Plan (WMP)* to identify and address water quality and quantity issues within the Huron Chain of Lakes/South Branch Shiawassee Watershed. This WMP will be developed in cooperation with other communities and stakeholders within the Huron Chain of Lakes Watershed;

2. *Public Education Plan (PEP)* to promote, publicize, and facilitate watershed education to encourage the public to reduce the discharge of pollutants in storm water;
3. *Public Participation Plan (PPP)* to solicit input and encourage participation from all watershed stakeholders in developing the Huron Chain of Lakes WMP;
4. *Storm Water Pollution Prevention Initiative (SWPPI)* to detail the actions that a community will take to meet the goals of the WMP and to reduce discharge of pollutants to the maximum extent practicable;
5. *Illicit Discharge Elimination Program (IDEP)* to find, eliminate, and prohibit illicit discharges to a community's storm water drainage system.

1.4.2 Total Maximum Daily Load Program

A Total Maximum Daily Load (TMDL) is the maximum amount of a particular pollutant a waterbody can assimilate without violating state water quality standards. Water quality standards identify the applicable "designated uses" for each waterbody, such as swimming, agricultural or industrial use, public drinking water, fishing, and aquatic life. MDEQ establishes scientific criteria for protecting these uses in the form of a number or a description of conditions necessary to ensure that a waterbody is safe for all of its applicable designated uses.

The state also monitors water quality to determine the adequacy of pollution controls from point source discharges. If a waterbody cannot meet the state's water quality criteria with point-source controls alone, the Clean Water Act requires that a TMDL must be established. TMDLs provide a basis for determining the pollutant reductions necessary from both point *and non-point* sources to restore and maintain the water quality standards. In Michigan, the responsibility to establish TMDLs rests with the MDEQ. Once a TMDL has been established by the MDEQ, affected stakeholders must develop and implement a plan to meet the TMDL, which will bring the waterbody into compliance with state water quality standards.

To date, three TMDLs, all for phosphorus, have been established in the watershed for Brighton, Strawberry, and Ore Lakes. Six TMDLs for other pollutants are scheduled for future establishment in the watershed, as described in Table 1.1.

Table 1.1: Waterbodies requiring TMDLs in the Huron Chain of Lakes Watershed*(Source: MDEQ 2004 303(d) list of nonattaining waterbodies)*

Waterbody	Pollutant or Problem	TMDL Year	Location/Area
Brighton Lake	Nutrient enrichment (phosphorus)	Established in 2000	158 acre impoundment of South Ore Creek, downstream of City of Brighton
Ore Lake	Nutrient enrichment (phosphorus)	Established in 2000	192 acre impoundment of South Ore Creek, downstream of Brighton Lake near Huron River
Strawberry Lake	Nutrient enrichment (phosphorus)	Established in 2000	Hamburg Twp. 247 acre lake on Huron River just downstream of M-36.
Honey Creek	Poor macroinvertebrate community	Scheduled for 2007	Vicinity of Pinckney. 16 miles from headwaters to Mill Pond at Toma Rd.
Horseshoe Lake Drain	Poor macroinvertebrate community	Scheduled for 2009	Northfield Twp in Washtenaw County. 1.4 miles from Horseshoe Lake outlet, downstream to Barker Rd.
Bishop Lake	Fish Consumption Advisory for Mercury	Scheduled for 2010	119 acre lake in Brighton State Rec. Area, Hamburg Twp
Whitmore Lake	Fish Consumption Advisory for Polychlorinated Biphenyls (PCBs)	Scheduled for 2010	677-acre lake in vicinity of Whitmore Lake, MI.
Woodland Lake	Fish Consumption Advisory for Polychlorinated Biphenyls (PCBs)	Scheduled for 2010	309 acre lake on South Ore Creek, north of City of Brighton.
Yerkes Drain	Water Quality Standard Exceedance for Dissolved Oxygen	Scheduled for 2013	.7 miles from South Lyon WWPT downstream to Nichwagh Lake.

These individual TMDLs are discussed in greater detail in Chapter 2. As previously mentioned, concerns related to established TMDLs in the watershed, and stormwater-related actions to address those TMDLs, are included in this Plan. However, because the problems associated with Mercury and PCB TMDLs are not likely to be closely linked to stormwater, actions designed to address such TMDLs are not emphasized in this Plan.

1.4.3 The Brighton Lake Subwatershed Management Plan

In August 2002 a Watershed Management Plan for the Brighton Lake Subwatershed (a part of the Huron Chain of Lakes Watershed) was completed under the guidance of the Huron River Watershed Council and approved by the MDEQ. The primary purpose of the Brighton Lake Subwatershed Management Plan was to establish a state-approved methodology to diminish the adverse effects of nonpoint source phosphorus pollution

throughout the subwatershed and meet the established phosphorus loading Total Maximum Daily Load (TMDL) for Brighton Lake.

The recommendations of these two plans are inherently complementary because: the Brighton Lake Subwatershed is inclusive in the Huron Chain of Lakes Watershed; the Huron Chain of Lakes WMP must also address concerns related to the Brighton Lake TMDL; and the TMDL for Brighton Lake cannot be addressed without improving stormwater management practices. Therefore, implementation of either plan will necessarily advance implementation of the other plan.