

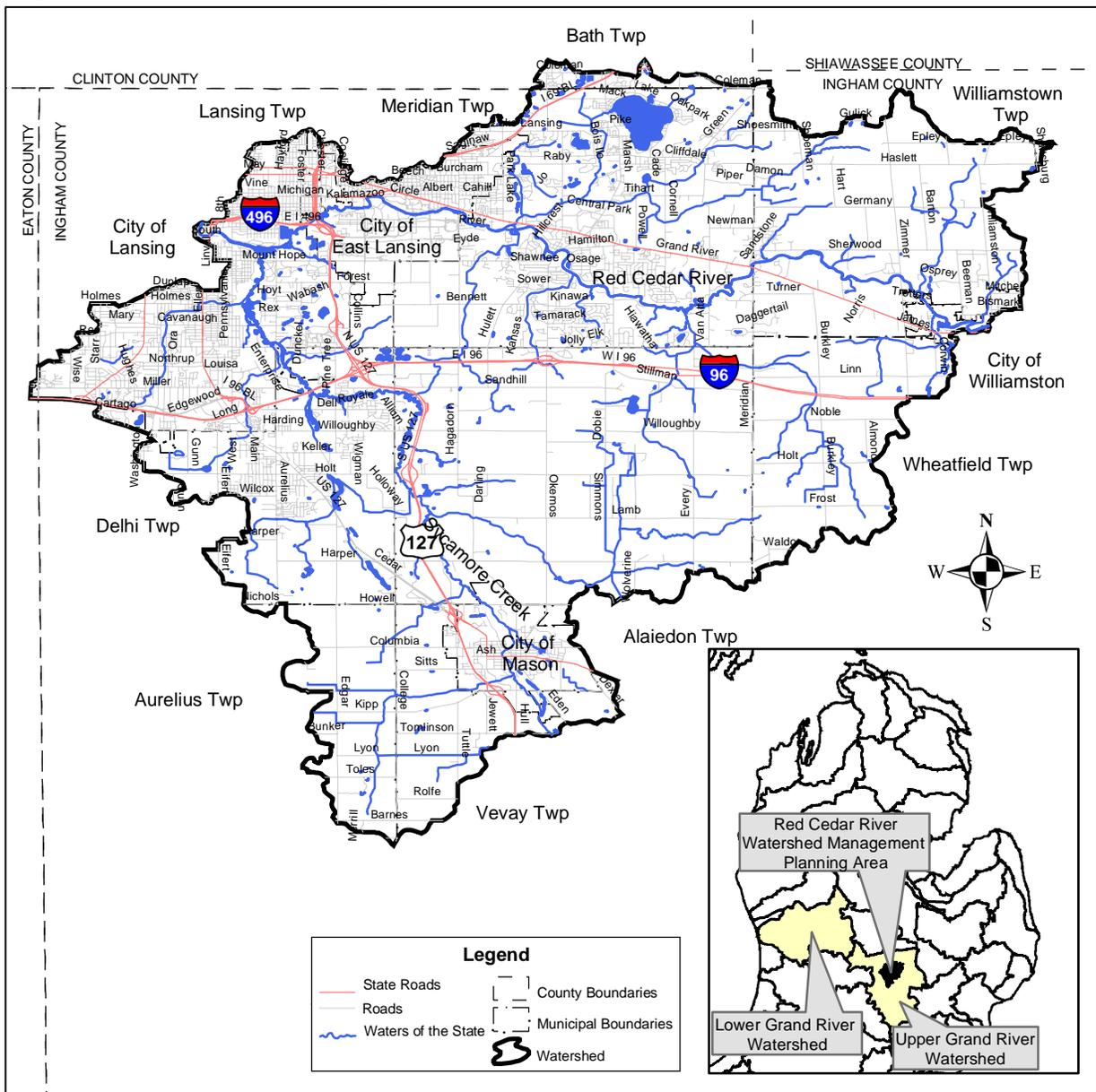
2. Introduction



Effective April 21, 2004, the State of Michigan, by Public Act 78 of 2004, officially designated the American lotus blossom (*Nelumbo lutea*) as the state symbol for clean water. The American lotus is a showy plant that proliferates in shallow wetland areas during the summer months. Micro and macro invertebrates inhabit submerged portions of the plant, which in turn are used as food for fish and other wildlife. The adoption of this symbol demonstrates Michigan's commitment to wetland protection and clean water. Michigan's commitment is further established by the National Pollutant Discharge Elimination System (NPDES) Phase II storm water permit requiring communities to conduct storm water or watershed planning. The Red Cedar Watershed Management Plan contained herein is one of many planning efforts in Michigan.

American lotus

Figure 2-1. Watershed location map.



Red Cedar Watershed

The Red Cedar River is a major tributary to the Grand River, located in Central, Lower Michigan (Figure 2-1). The Red Cedar River discharges into the Grand River in Lansing, Michigan, which continues on west and drains into Lake Michigan.

Approximately 106,000 acres of the acres comprising the Red Cedar River Watershed are included in this watershed management plan (WMP). Within the watershed there are about 225 miles of rivers and streams. The two largest are the Red Cedar River and Sycamore Creek. There are also approximately 985 acres of lakes within the watershed with approximately 46% of that area attributed to Lake Lansing.

Purpose of the Watershed Management Plan

On March 10, 2003 any municipality within the Lansing Urbanized Area (UA) was required to submit a NPDES Phase II storm water permit. In Michigan, permittees were given the choice of submitting a jurisdictional or a watershed based permit. Michigan is the only state to offer this permitting option. With over 300 communities in Michigan needing to apply for Phase II Permit coverage, over 250 have decided to use the watershed planning option, due to its many benefits over a traditional permitting program.

Some benefits of the watershed approach include: access to grant funding, including the State Bond Fund known as Clean Michigan Initiative (CMI), expanded schedules for watershed management planning, and choices on how and when implementation will occur. A watershed approach involves coordination with both public and private sectors focusing efforts to address the highest priority problems.

As a result of this watershed permit approach, the Greater Lansing Regional Committee on Phase II Nonpoint Source Pollution Prevention (GLRC) was created. The GLRC has developed this plan to address the requirements outlined in the Phase II permit and to improve and protect the ecological, hydrological, and cultural resources of the Red Cedar River Watershed.



What is a Watershed

A watershed is any area of land that drains to a common point. That common point may be a lake, the outlet of a river, or any point within a river system. Throughout this WMP, the terms basin, subbasin, watershed, subwatershed, and catchment are used to describe the drainages of the river (Figure 2-2).

Watershed Management Units

The largest watershed management unit is the basin. A **basin** drains to a major receiving water such as a large river, estuary or lake. Within each **basin** are a group of **subbasins**, that are a mosaic of many diverse land uses, including forest, agriculture, range and urban areas. **Subbasins** are composed of a group of **watersheds**, which, in turn, are composed of a group of **subwatersheds**. Within **subwatersheds** are **catchments**, which are the smallest units in a watershed, defined as the area that drains an individual development site to its first intersection with a stream.

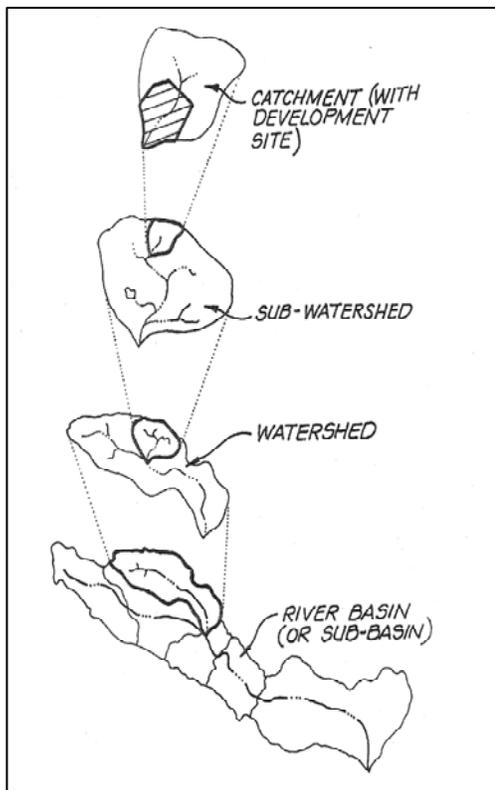
Source: CWP, 1998.

Table 2-1. Description of Watershed management units.

Watershed Management Unit	Typical Area (square miles)	Influence of Impervious Cover	Sample Management Measures
Catchment	0.05 - 0.50	Very Strong	BMP and site design
Subwatershed	1 - 10	Strong	Stream classification and management
Watershed	10 - 100	Moderate	Watershed-based zoning
Subbasin	100 - 1,000	Weak	Basin planning
Basin	1,000 - 10,000	Very Weak	Basin planning

Source: CWP, 1998.

Figure 2-2. Watershed management units.



Source: CWP, 1998.

Plan Requirements

According to the **MDEQ NPDES Wastewater Discharge General Permit for Storm Water Discharges from Municipal Separate Storm Sewer Systems Subject to Watershed Plan Requirements**, the WMP shall, at a minimum, contain the following:

- an assessment of the nature and status of the watershed ecosystem to the extent necessary to achieve the purpose of the WMP;
- short-term measurable objectives for the watershed;
- long-term goals for the watershed (which shall include both the protection of designated uses of the receiving waters as defined in Michigan's Water Quality Standards, and attaining compliance with any Total Maximum Daily Load (TMDL) established for a parameter within the watershed);
- determination of the actions needed to achieve the short-term measurable objectives for the watershed;
- determination of the actions needed to achieve the long-term goals for the watershed;
- assessment of both the benefits and costs of the actions identified above (a "cost/benefit analysis" is not required);
- commitments, identified by specific permittee or others as appropriate, to implement actions by specified dates necessary to achieve the short-term measurable objectives;
- commitments, identified by specific permittee or others as appropriate, to implement actions by specified dates necessary to

- initiate achievement of the long-term goals; and
- methods for evaluation of progress, which may include chemical or biological indicators, flow measurements, erosion indices, and public surveys.

Relevant Federal, State, and Regional Programs

Clean Water Act

Growing public awareness and concern for controlling water pollution led to enactment of the Clean Water Act (CWA) of 1972. The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs, such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The Act made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by nonpoint source pollution.



Subsequent enactments modified some of the earlier CWA provisions. Revisions in 1981 streamlined the municipal construction grants process, improving the capabilities of treatment plants built under the program. Changes in 1987 phased out the construction grants program, replacing it with the State Water Pollution Control Revolving Fund, more commonly known as the Clean Water State Revolving Fund (SRF). This new funding strategy addressed water quality needs by building on EPA State partnerships.



The State of Michigan administers the Total Maximum Daily Load (TMDL) program in Michigan. These rules define the water quality goals for a lake or stream. MDEQ defines water quality standards (WQS) as "state rules established to protect the Great Lakes, the connecting waters, and all other surface waters of the state". The goals are in three areas, including the uses of the lake or stream, such as swimming and fishing; safe levels to protect the uses, such as the minimum oxygen level needed for fish to live; and procedures to protect high quality waters." (MDEQ, 2005)

Public Act 451 of 1994 – Natural Resources and Environmental Protection Act

The Natural Resources and Environmental Protection Act is designed to protect the environment and natural resources of the state by:

- regulating pollutant discharges
- regulating land, water, and resource use
- prescribing penalties and remedies for violations.

Notable parts of the act relating to storm water include: Part 31 – Water Resources Protection; Part 41 – Sewerage Systems; Part 87 – Groundwater and Freshwater Protection; Part 91 – Soil Erosion & Sedimentation Control; Part 301 – Inland Lakes and Streams; Part 303 – Wetland Protection; and Part 305 – Natural Rivers Act.

Public Act 40 of 1956 – The Drain Code

The Drain Code sets forth procedures for the creation, maintenance and financing of county and inter-county drains in Michigan. It establishes the office and prescribes the duties and powers of the county drain commissioner. County drains are important to Phase II efforts because many of them are waters of the state, and most of them discharge directly or indirectly to waters of the state. (Pratt, 2005)

State Programs and Permits

State programs that directly enforce and assist in compliance with federal and state storm water regulations include the following MDEQ Water Division groups: Storm Water, Soil Erosion and Sedimentation Control, NPDES Permits, and Nonpoint Source Pollution. State-level funding programs that support storm water related projects include: the SRF, the Strategic Water Quality Initiative Fund, and the CMI.

Despite the NPDES permitting process that covers storm water-specific issues, other permits may apply for a specific case. Many state and federal permits are covered under the MDEQ/U.S. Army Corps of Engineers Joint Permit Application (JPA) package. The JPA covers activities relating to: wetlands, floodplains, marinas, dams, inland lakes and streams, great lakes bottomlands, critical dunes, and high-risk erosion areas. Other permits not included in the JPA include: the Sewerage System Construction Permit and the Groundwater Discharge Permit.

Additional Programs

Specific situations may invoke numerous other federal, state, and local programs that directly or indirectly relate to storm water issues. The following list presents some of these:

- The federal Safe Drinking Water Act establishes wellhead protection provisions that are implemented at the state (MDEQ Water Wellhead Protection program) or local level. Wellhead protection may involve managing and treating storm water to prevent aquifer pollution.
- Coastal and shoreline areas invoke numerous federal laws such as the Shoreline Erosion Protection Act and the Coastal Zone Act, state laws, and state programs such as Coastal Management, Sand Dune Protection, and Shoreland Management.

Commercial/industrial facilities (mines, landfills, agriculture facilities, etc.) have numerous laws and regulations controlling on-site materials use and site-related runoff control requirements that are designed to minimize environmental impacts. Example laws include: the Surface Mining Control & Reclamation Act, the Resource Conservation and Recovery Act, and the Federal Insecticide, Fungicide, and Rodenticide Act.

References

- Center for Watershed Protection. "Rapid Watershed Planning Handbook." 1998. Ellicott City, Maryland.
- Michigan Department of Environmental Quality. "TMDL Website." Via: www.michigan.gov. Last accessed: February 2nd, 2005.
- Pratt, Paul. "E-mail communication concerning Michigan's Drain Code". January 28th, 2005.

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