# RURAL WATER QUALITY PROTECTION

## a planning & zoning guidebook for local officials

December 2012

MICHIGAN STATE UNIVERSITY | Land Policy Institute

Great Lakes RESTORATION

# Acknowledgments

This report was prepared by the Planning & Zoning Center (PZC) of the Land Policy Institute (LPI) at Michigan State University (MSU). This guidebook is one of the products of the U.S. Department of Environmental Protection grant to MSU, funded under the Great Lakes Restoration Initiative (GLRI). The GLRI is the largest investment in the Great Lakes in two decades and its activities are helping to restore and protect the Great Lakes ecosystem. The focus of this project was to prevent future contamination of rural watersheds by use of local planning and zoning tools. The authors would like to thank the following persons who were very helpful at one or more points in the development of this guidebook. They would also like to thank the 26 pilot communities in the Saginaw Basin that remained fully engaged throughout the duration of this project.

## Project Advisory Committee

- Sue Fortune, Executive Director, East Michigan Council of Governments.
- Anamika Laad, Program Manager, East Michigan Council of Governments.
- Zachary Branigan, Executive Director, Saginaw Basin Land Conservancy.
- Greg Eagle, Landowner Assistance Specialist, Saginaw Basin Land Conservancy.
- Michelle Selzer, Environmental Quality Analyst, Michigan Department of Environmental Quality (MDEQ).
- Charles Bauer, Environmental Quality Analyst, MDEQ.

## Planning Commissions and Staff of the Pilot Communities that Fully Engaged in this Project

- Arenac Township;
- Bridgeport Township;
- Caseville Township;
- City of Caseville;
- Clayton Township;
- Colfax Township;
- Edwards Township;
- Elkland Township;
- Evergreen Township;
- Flynn Township;
- City of Frankenmuth;
- Frankenmuth Township;
- Fremont Township;
- Greenleaf Township;
- Huron County;
- Indianfields Township;
- Koylton Township;
- Lake Township;
- City of Marlette;
- Marlette Township;
- Village of Mayville;
- Moffatt Township;
- Novesta Township;
- Ogemaw County;
- City of West Branch; and
- West Branch Township.

## Others that Provided Assistance at Key Junctures

- James Schardt, Program Officer, Great Lakes National Program, U.S. Environmental Protection Agency (EPA).
- Larry Merrill, Executive Director, Michigan Townships Association.
- Wayne Beyea, Specialist – Outreach, School of Planning, Design and Construction and MSU Extension, MSU.
- Glenn Pape, Extension Educator, MSU Extension.
- James Ribbron, County Extension Director, MSU Extension.
- Sara McDonnell, Project Coordinator, University of Michigan – Flint.
- Russ Beaubien, Project Manager, Spicer Group, Inc.
- Craig Stow, Aquatic Ecosystem Modeling Researcher, U.S. National Oceanic and Atmospheric Administration.
- Jon Bartholic, Director, Institute of Water Research, MSU.
- Erin Dreelin, Associate Director, Center for Water Sciences, MSU.
- Abigail Ertel, Project Manager, Huron Pines.
- Bob Zeilinger, President, Cass River Greenway.
- Cameron Davis, Senior Advisor to the Administrator, EPA.
- Senator Debbie Stabenow, U.S. Senator for Michigan.

# RURAL WATER QUALITY PROTECTION:

# A Planning & Zoning Guidebook for Local Officials

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December 2012

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*Design by MSU Land Policy Institute*

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# Chapter One: Introduction

Photo 1–1: Michigan and surrounding Great Lakes from space.

This guidebook seeks to provide local units of government in rural areas with information about how land development and other activities on the land affect water quality; to provide an overview of the many entities engaged in water quality protection (e.g., local, state, and federal government, individual property owners, and nonprofit organizations); to provide educational materials on best management practices that lower the impact of land use activities on our waterbodies; and to provide sample language for community Master Plans and Zoning Ordinances that helps ensure that future development and other land use activities occur with the lowest possible impact on the quality of the water we need for our communities. The guidebook also provides references to other useful resources on water quality protection.

## BACKGROUND

Looking at our planet from space, one might wonder why it is not called "Water." There is so much water, but people can only live in large numbers on the land part, which is a good reason for calling it "Earth." Coming closer, one can see how water and the land are really intertwined, with rivers, lakes and wetlands nearly everywhere on the different continents and major islands.

In the Great Lakes region, there are many of each of those kinds of waterbodies, and we have become accustomed to living well on the land, because of our ready access to large amounts of water and technologies that allow us to transport some of it into homes, shops, schools, and institutions; drain some of it off the land so we can plant crops; and dump in some of it to dilute our waste. Unfortunately, these daily activities are having a substantial negative impact on the water in our Great Lakes region. We allow large amounts of soil containing fertilizers, pesticides, and herbicides along with vehicular lubricants to run off the land into drains, streams, and rivers that flow into the Great lakes. We don't make much effort to conserve our precious groundwater resources, and we often dilute our waste with pure water.

We are learning how to have a lower impact in the ways we use the land and water. Only a few generations ago, scientists started discovering that the ways we used water were not going to be sustainable for long, even though there is so much of it. Both groundwater, and lakes and streams, were being contaminated by chemicals and bacteria to the point of lasting danger to human health. New technology and new approaches to managing water use were developed that could reduce or eliminate continued damage to our waterbodies. However, those technologies and management approaches are not currently used everywhere, and as a result, we find the water we rely on to build families, businesses, and communities continues to receive a variety of contaminates.

In many areas, technology is not up to the task of dealing with the amount of pollution our waterbodies receive. In some places, water is too degraded to fully support economic

Photo 1–2: Many beaches have been found to be unsafe for human contact with the water.

and community health, and the clean-up is a significant drain on government resources. Making the choice to reduce or prevent future pollution protects our economy and our health from the burden of having to clean up, or abandon large areas of land and water in the future. It is largely the things we do on the land that degrades the water. And when we degrade land and/or water, there is less of both that has the capacity to support our communities and the planet's population.

## RURAL FOCUS OF THE GUIDEBOOK

It has become apparent that we must find a way to reduce our impact on our water resources. We can do better! The solutions are numerous, but every group should work on those solutions within their range of control and partner with others to achieve common goals. There are numerous informational resources available for protecting water quality in urban settings; however, much of Michigan is rural, and rural communities and small towns require a different approach that takes into consideration the limited administrative capacity of rural communities to protect their water resources. This guidebook targets actions small rural communities can take to prevent water pollution. We use the Saginaw Bay Watershed as the area to pilot measures local governments can take to better protect water quality. This is a 23-county area in mid-Michigan, which drains 8,632.14 square miles into the Saginaw Bay.

## PURPOSE OF THIS GUIDEBOOK

This guidebook seeks to provide local units of government in rural areas with information about how land development and other activities on the land affect water quality; to provide an overview of the many entities engaged in water quality protection (e.g., local, state, and federal government, individual property owners, and nonprofit organizations); to provide educational materials on best management practices that lower the impact of land use activities on our waterbodies; and to provide sample language for community Master Plans and Zoning Ordinances that helps ensure that future development and other land use activities occur with the lowest possible impact on the quality of the water we need for our communities. The guidebook also provides references to other useful resources on water quality protection.

## PROTECTING WATER QUALITY IS EVERY COMMUNITY'S OBLIGATION

Nearly all of the activities that take place on the land (building, farming, mining and cutting trees, etc.) take place on private lands. When people build homes and stores, plow and fertilize fields, drill for oil and gas, or cut trees; unless done so carefully, sediment, nutrients, chemicals, and oil can be carried off in stormwater from nonpoint source pollution (which is different than the waste that is discharged as industrial or municipal waste through pipes, called point source pollution),

Photo 1–3: Children deserve healthy water for swimming.

adversely affecting the public health and values of nearby properties. Stormwater runoff and its eventual infiltration into the soil can bring those materials into our streams, lakes and groundwater, affecting whether we can swim in it, eat fish caught from it, establish viable tourism businesses, or even use it in our homes without expensive purification treatment. Governments at the federal, state and local levels have a shared responsibility to regulate many of those activities to protect our health and property.

For the purposes of this guidebook, local regulation is the most important level of regulation. It addresses site specific issues in ways that are appropriate to the problem and the

property. Generally, local government has the authority to regulate residential, commercial and industrial development. Farming in Michigan is generally exempt from that authority, provided it operates within the parameters of Generally Accepted Agricultural and Management Practices (GAAMPs), a minimum set of standards required by farmers to receive nuisance suit protection (SEMCOG, 2000). The MSU Extension, as well as the Michigan Farm Bureau and other organizations provide educational programs that help farmers comply with state and federal environmental regulations.

The treatment of waste at private residences is regulated by Health Departments, usually at the county level, under authority granted by the state. Typically, County Drain Commissioners (and to a lesser extent County Road Commissions) have the enormous responsibility of regulating activities that have the potential to produce sediment in streams from soil erosion.

Many voluntary and regulatory approaches have been developed to help protect land and water. To effectively use these approaches, it is important for citizens and officials to understand how the water cycle functions, above and below the surface of Earth, and how human activities on the land play a role in whether pollutants enter into that cycle. It is also important to learn about the structure and function of the land and water flow system, called a watershed, which is where people's actions determine the eventual quality of our water resource. These issues are addressed in Chapter 2.

We all share the same water. Every community is at some location within a watershed. Water flows downhill and almost everything that enters the water upstream ends out downstream. Thus, whether your community is in the headwaters or at the discharge point, its residents and businesses are either generating or receiving nonpoint source pollutants.

Rain in headwaters areas without stormwater management measures in place causes unsecured sediment, nutrients (fertilizer and animal waste), chemicals (like pesticides, fungicides, herbicides, etc.), and bacteria from human and animal waste to enter a stream or river. Unless consumed by plants or animals, or filtered out by various sediment traps, these pollutants are carried to the river's end; contaminating our waterways, creating human health problems, and leading to potential loss of recreational opportunities (fishing, boating, swimming, etc.). Over the last century, we have learned the hard way that healthy watersheds are vital for a healthy environment and economy. Healthy watersheds require each individual and each community to play a role in helping to protect water quality and prevent pollution. This guidebook focuses on the role that local governments can play in this process.

Federal and state governments have spent decades of attention on pollution reduction entering our waterways, and on the enactment of scores of regulations affecting agricultural and industrial operations. As a result, one would assume that there is no effective role for local planning and regulation of land to better protect water quality. However, that assumption is false. There are still some substantial gaps that can only be filled by local planning and local regulations. These were first documented in the Michigan Department of Environmental Quality publication entitled **"Filling the Gaps,"** now in its second edition (and available from the Michigan Association of Planning – **www.planningmi.org**).

These gaps are visible when various federal and state regulations are overlain and carefully examined. Sometimes the gaps are filled by county regulations, but most often, there remain issues that can only be addressed by local planning and regulation. This guidebook focuses on gaps associated with surface water and groundwater protection issues in general and stormwater management issues in particular. It uses a low impact development (LID), best management practices approach where LID is defined as follows:

> *Low Impact Development: An approach to land development that uses various land planning and design practices and technologies to simultaneously conserve*

*and protect natural resource systems, water quality and reduce infrastructure costs. Consult* ***Low Impact Development Manual for Michigan: A Design Guide for Implementers and Reviewers***:

**http://www.mi.gov/deq/0,1607,7-135--207334--,00.html**, or

**http://www.semcog.org/lowimpactdevelopment.aspx**.

The federal government identified major Areas of Concern (AOC) throughout the Great Lakes in the 1980's. A wide variety of impairments to beneficial uses were identified. Remedial Action Plans (RAP) were prepared to address problems in each of these AOC's. The Saginaw Bay Watershed is one of the designated AOCs for which a RAP has been prepared. Figure 1–1 shows the location of AOCs in Michigan, and the massive extent of sediment plumes into the Saginaw Bay following significant rain events in May 2011. *[see "Saginaw Bay Watershed and Area of Concern," August 2012,* ***http://www.epa.gov/glnpo/aoc/saginaw-river/index.html*** *for more background on this process and the wide variety of groups involved.]*

While Remedial Action Plans for Areas of Concern provide a broad framework for action, issues need to be identified and confronted at a smaller sub-area basis. Therefore, many sub-watersheds have local watershed protection plans that document the nature and type of pollutants that are of greatest local concern. These plans identify various goals, objectives and strategies for undertaking the highest priority issues in the watershed.

Most of these plans call for action by various stakeholder groups. However, until recently, the implementation process has been challenging due to the lack of financial resources and technical assistance to stakeholder groups and communities. This problem has been aggressively addressed since 2010, with funds from the federal U.S. Environmental Protection Agency (EPA) Great Lakes Restoration Initiative (GLRI). Competitive grants have funded measures to restore various types of contaminated sites, as well as to put in place new plans and regulations at the local level to prevent future pollution. This is critical to protecting the investment being made in restoration activities.

Figure 1–2 illustrates this flow of planning to action. Chapter 3 describes the wide range of roles that key organizations (including local governments) play in making it happen.

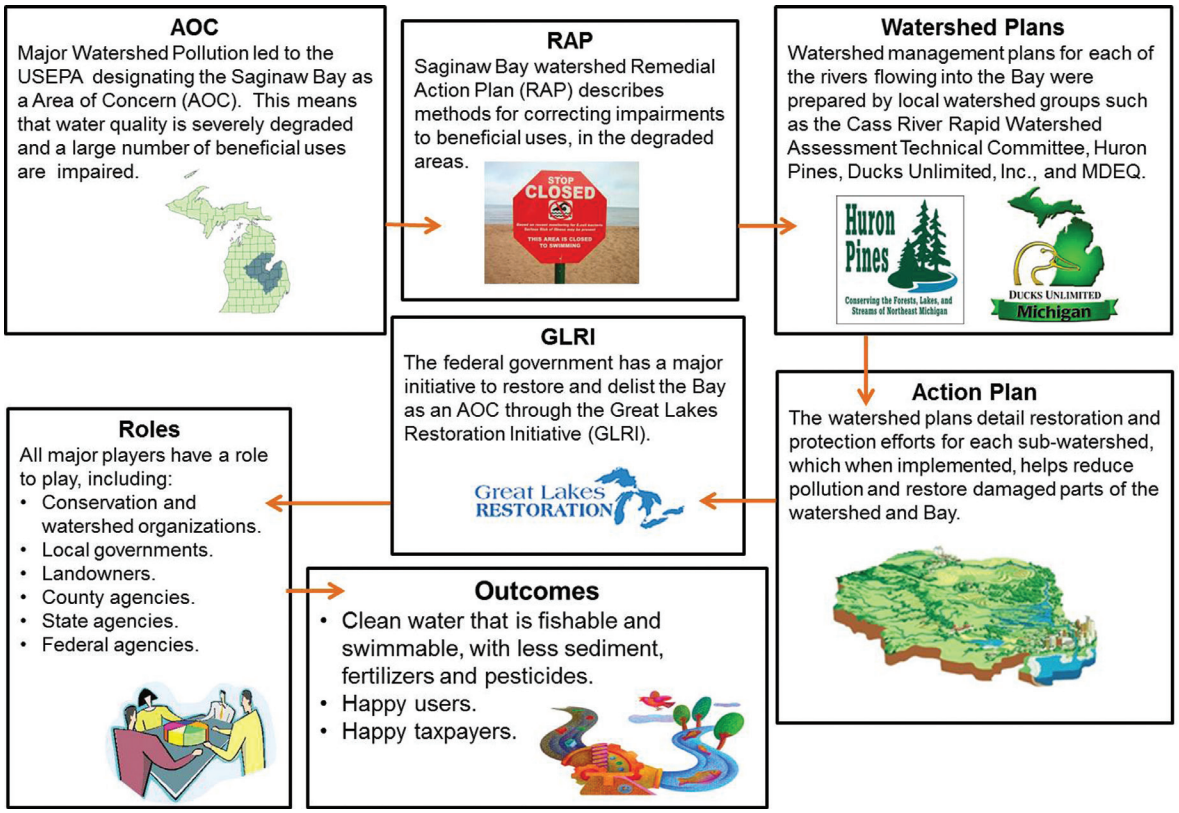
## PURPOSE AND TARGET AUDIENCE

This guidebook presents simple, straightforward approaches for protecting water quality through local Master Plans and Zoning Ordinances *in very rural places*. It is targeted at Planning Commissioners, Zoning Administrators, and local elected officials in rural Michigan, and is applicable throughout the Midwest Great Lakes states. It is written from a practical

### Figure 1–1: The Saginaw River/Bay Area of Concern


Source: U.S. Environmental Protection Agency.

## Figure 1–2: Making the Connection




Source: Planning & Zoning Center, Land Policy Institute, Michigan State University.

perspective, and is unlikely to satisfy purists. It takes a pragmatic approach, because every community and landowner has an obligation to help protect water quality, but few rural communities have the staff capacity to do much. In these economic times full-time planners and Zoning Administrators are a rarity in rural areas, and most staff are wearing multiple hats (e.g., Zoning Administrator, Building Inspector, Code Enforcement Officer, Soil Erosion and Sedimentation Control Officer, etc.).

Other guidebooks present more comprehensive, and more complex approaches (see sidebar on page 1–12), that if properly implemented will likely do more to protect water quality. But there is one characteristic of the approaches in this guidebook that make them better suited to small rural communities in the Midwest—they do not require much in the way of staff to implement. Instead, they rely on the common sense of landowners that one person's actions can have a negative impact on others, and that if this is pointed out, more often than not, people will choose the less impactful action. This value of friendliness and respect of neighbors is one that the rural Midwest is built upon. As a result, the water quality protection regulations in this guidebook provide information, choices, and guidance to landowners, not merely restrictions. These are not common characteristics of guidebooks on local land use regulations.

In rural areas, many key regulations are implemented at the county level, and this is often the most cost-effective and customer-consistent place for such regulations to be implemented. Generally, there are more resources at the county level; providing greater capacity for well-trained staff and the opportunity to fairly and uniformly apply land use regulations over a larger area. However, counties do not always have the statutory authority to adopt water quality regulations outside of zoning and, in Michigan, of 83 counties, only 22 have zoning (and most are in northern Michigan). Additionally, in states like Michigan, townships, cities, and villages all have the power to plan and zone, and if they do, local regulations supersede county zoning. Therefore, if water quality is to be protected in large rural areas that are locally zoned, provisions need to be inserted into local Zoning Ordinances.

Michigan has over 1,850 local units of government (cities, villages, townships, and counties). Approximately 350 have a population of over 5,000 persons. The overwhelming bulk of local governments in Michigan have 1,000 or less persons and levy a mil or less in taxes. The result is inadequate resources for full-time zoning and building administration; but at the same time, in most cases there is not sufficient demand for those services to warrant full-time staffing. *As a result, in order to induce local governments in rural areas to take measures to better protect water quality there must be simple, common sense, choice-based, property owner–implemented measures without a lot of administrative complexity.* We have attempted to provide these kinds of provisions in this guidebook.

Basic information about the purpose, value and benefit of each regulation, as well as the targeted application of various approaches to those circumstances where they are likely to have the greatest impact is also essential. This guidebook is structured to provide this information.

## CHAPTER ORGANIZATION

This guidebook is divided into the following chapters:

1. Introduction.
2. Understanding Watersheds.
3. The Umbrella of Protection for the Watershed.
4. Best Management Practices in Rural Areas.

Appendices:

1. Master Plan and Zoning Ordinance Sample Language.
2. Local Planning and Zoning Assessment Tool.

Chapter 4 and Appendix A comprise the bulk of this guidebook. They are organized as follows:

- Description of major low impact development category.
  - Description of the category.
  - List of best management practices addressed within the category.
  - "Good," "Better," "Best" Table for that category.

*For each best management practice in that category.*

- Description of issue.
  - Problem being addressed.
  - Gap left for local regulation.
  - Explanation of key terms.
- Proposed approach in the Master Plan.
  - Description.
  - Explanation of key terms.
  - Key Master Plan language.
- Proposed approach in the Zoning Ordinance.
  - Description.
  - Explanation of key terms.
  - Key Zoning Ordinance language.

There are two appendices:

- Master Plan and Zoning Ordinance Sample Language; and
- Local Planning and Zoning Assessment Tool.

## GOOD, BETTER, BEST APPROACHES

In order to provide communities (and in some cases property owners) with choices that best suits their administrative capacity and view on the role of government relative to regulation of private property, each of the best management practices presented in Chapter 4 is presented with three options: "Good," "Better" and "Best." In many cases, the "Good" level is largely to provide educational information to land owners. In other cases, the "Good" level is intended to provide a modicum of guided practice, compared to doing nothing (the base condition in most local plans and Zoning Ordinances examined in the pilot project). At the "Better" and "Best" levels, the community is expected to become involved in Site Plan Review, and to set and administer progressively higher standards. The "Better" level requires some staff administrative capacity and usually more effort/cost on the part of landowners than the "Good" level. The "Best"

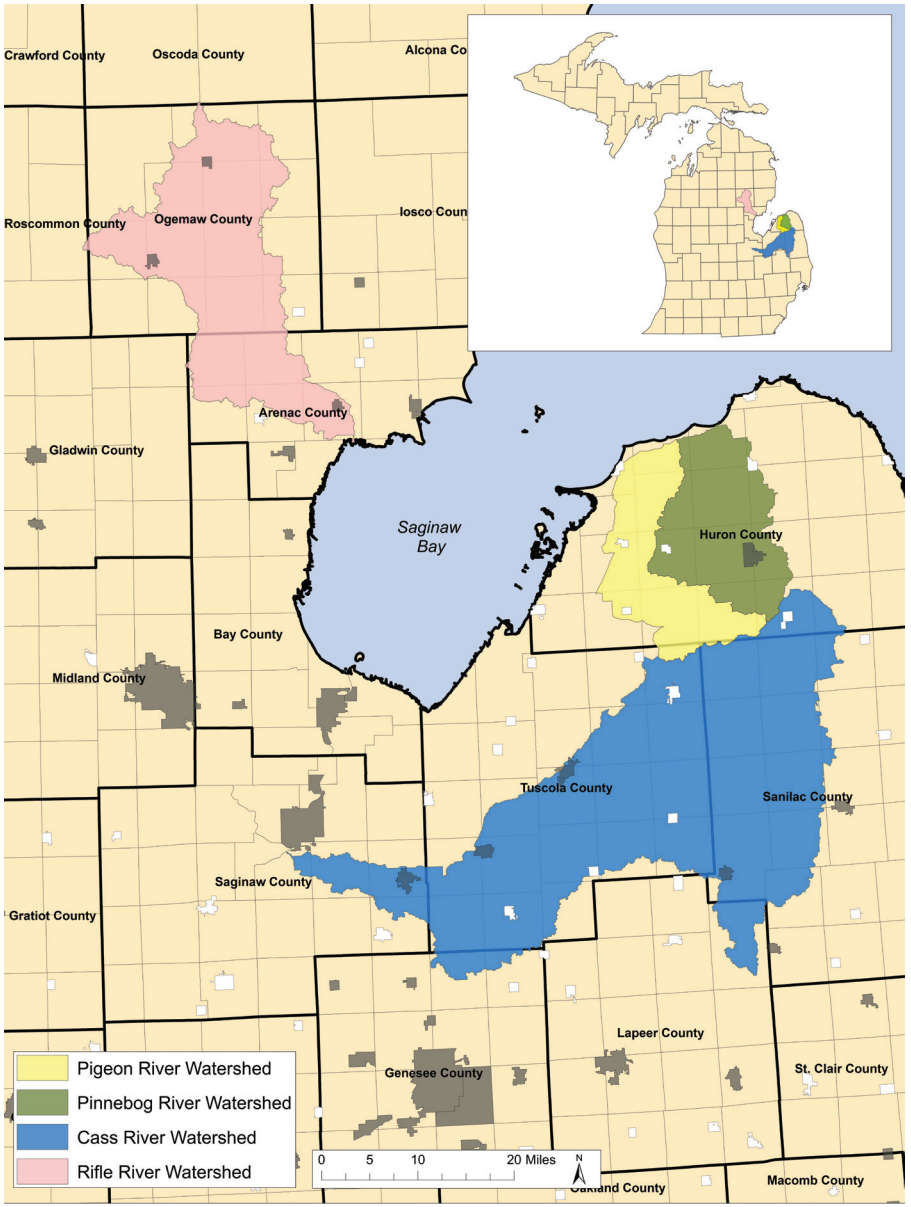
category is reserved for those rural communities that have full-time staff, and at least a Planning Commission that is supportive of the approach presented (and even better if it has the full support of the governing body).

## THANKS TO PILOT COMMUNITIES

This guidebook was prepared as a result of working with approximately 100 rural jurisdictions in four sub-watersheds of the Saginaw Basin in Michigan (see Figure 1–3): The Pigeon and Pinnebog River watersheds are largely in Huron County; the Cass River watershed is largely in Sanilac, Tuscola, and Saginaw counties; and the Rifle River watershed is largely in Ogemaw and Arenac counties. The County Planning Commissions in Huron and Ogemaw county are not only responsible for preparation and maintenance of the county Master Plans, but also for county zoning. Both counties embraced the "Better" and "Best" approaches, because they have professional staff that are adequately trained to implement the more expansive approaches. There are 22 jurisdictions covered by these county ordinances (the rest of the townships in those counties have their own zoning).

In contrast, within the four pilot sub-watershed, there are 58 townships, nine cities, and eight villages without the benefit of county zoning. Few municipalities have trained staff capable of administering most zoning-based water quality provisions (and some already were doing so before this project came along).

### Figure 1–3: Pilot Communities Location




Source: Michigan Geographic Data Library, Michigan Department of Technology, Management & Budget.

As a result, only 26 communities engaged with staff of the Planning & Zoning Center (PZC) at Michigan State University (MSU) to incorporate water quality protection provisions in the Master Plan and Zoning Ordinance by December 2012. It is hoped that over time, more local governments in these sub-watersheds will include the "Good," "Better," or "Best" provisions advocated in this guidebook into the local Master Plan or Zoning Ordinance.

We are very grateful for the willingness of the rural communities that participated to pilot the provisions in this guidebook. We hope to learn from the challenges they face over the next couple of years. As a result, we will post updates to the guidebook on **www.pzcenter.msu.edu** website, if necessary.

## PROCESS FOLLOWED IN WORKING WITH THE PILOT COMMUNITIES

### Basic Training

Engagement with communities in the four pilot sub-watersheds began with educational sessions on the issues surrounding local protection of water quality and the value and benefit of local action. Many of the materials presented in those workshops are included in various parts of this guidebook.

These sessions also revealed a tremendous need for basic training on local planning and zoning. As a result, staff of the MSU Michigan Citizen Planner Program were secured to conduct two workshops in three locations in the four pilot sub-watersheds. It had been many years since these rural communities had received this type of training on the basic elements of local planning and zoning based on Michigan statutes. With the turnover on local Planning Commissions, it is important that such training be available on regular intervals of at least every two to three years. These sessions were well-appreciated by participants.

### Assessment Tool

For the purpose of evaluating the effectiveness of water quality protection strategies by local governments within the four pilot sub-watersheds, the project team developed the Local Planning and Zoning Assessment Tool (see Appendix B, on page A–17). The assessment tool addresses the following information:

A. **Introduction:** Purpose, Method, Organization and Content, How to Use Assessment, Defined Terms, and Notes;

B. **Community Assessment Tool:** Background, General Questions, Provisions, and Supplementary Information; Master Plan, and Zoning Ordinance; and

C. **Attachment (Sample Gridsheet):** Includes instructions for determining the number of acres in each land use and land cover category.

The project team completed a 17-page assessment for 66 jurisdictions and shared the results with them. The results revealed a large number of Master Plans and Zoning Ordinances that were old and not in compliance with basic statutory requirements. In addition, most of the plans and ordinances had few, if any, provisions related to water quality protection. Instead, they were largely land use focused with simple structures for regulating land into residential and agricultural districts, and in some cases commercial, industrial, or special districts. Table 1–1 presents a summary of the results of the assessments across all communities within the four pilot sub-watersheds (Cass River, Rifle River, and Pigeon/Pinnebog Rivers) that chose to submit Master Plans and Zoning Ordinances for review.

The assessments pointed out opportunities for strengthening language in the Master Plan and Zoning Ordinance to better protect water quality. These assessments were shared at sub-area meetings where communities could easily hear the relative status of their own plans and Zoning Ordinances compared to nearby communities. In some cases this motivated communities to act.

Each community was given a brief summary of "Good," "Better," "Best" management practices, and asked to identify which approach they wanted the project team to use when drafting specific language to amend the local Master Plan and Zoning Ordinance.

## Table 1–1: Assessment Results from the Four Pilot Sub-Watersheds of the Saginaw Basin

| | Municipalities | Counties |
|---|---|---|
| **Essential Elements** | | |
| Low impact development | 0 | 0 |
| Environmental inventory | 33 | 1 |
| Goals and objectives for water quality | 23 | 2 |
| Coordinated permitting | 19 | 2 |
| Coordinated Site Plan Review | 14 | 1 |
| Earth change activity as regulated under the Soil Erosion and Sedimentation Control Act | 24 | 1 |
| Accumulation and disposal of waste and other materials | 21 | 1 |
| **Best Management Practices** | | |
| Parcel splits for buildable area | 10 | 1 |
| Land division alternatives | 27 | 1 |
| Stormwater management (plan) | 8 | 1 |
| Stormwater management (ordinance) | 4 | 0 |
| Stormwater management: Buffer strips Site Plan Review standards | 8 | 2 |
| Stormwater management: Other Site Plan Reviews standards | 7 | 1 |
| Impervious surface reduction (plan) | 4 | 0 |
| Impervious surface reduction (ordinance) | 3 | 0 |
| Natural feature and drain setbacks | 4 | 0 |
| Groundwater protection | 3 | 0 |

Note: This table continues on the next page.

### Specific Local Recommendations

The project team prepared a set of specific recommendations for each community based on the response it received. One-on-one meetings were set up with local planning and zoning officials to review all the recommendations, and to give each community the opportunity to ask questions. These meetings were held in groups of nearby jurisdictions. In addition to the amendment language, information on Master Plan and Zoning Ordinance amendment procedures were also provided to each jurisdiction. The project team also responded to email and phone questions, and checked back with each jurisdiction after a few months, to ensure they were still on track to adopt the proposed amendments. Some communities acted faster than others and some decided to take an opportunistic approach, deciding to wait until an upcoming Master Plan or Zoning Ordinance amendment process was started.

## THANKS TO THE FUNDERS

The guidebook was prepared using funds from the EPA Great Lake Restoration Initiative. We are grateful for this support and the opportunity to demonstrate pragmatic approaches to protecting water quality in rural areas. A special thank you is extended to Senator Debbie Stabenow who pushed very hard in Congress for the passage of the Great Lakes Restoration Initiative and to ensure its continued funding. Without her efforts, this project, and hundreds more, would not have been possible. See http://www.stabenow.senate.gov/.

## Table 1–1: Assessment Results from the Four Pilot Sub-Watersheds of the Saginaw Basin (cont.)

| | Municipalities | Counties |
|---|---|---|
| **Resource Protection** | | |
| Resource Protection Overlay Districts (plan) | 2 | 1 |
| Resource Protection Overlay Districts (ordinance) | 6 | 1 |
| Floodplains | 7 | 0 |
| Woodland protection and reforestation (plan) | 8 | 0 |
| Woodland protection and reforestation (ordinance) | 9 | 1 |
| Wetland protection/restoration/creation | 16 | 1 |
| Conservation easements | 2 | 0 |
| **Public Education** | | |
| Agricultural best management practices | 0 | 0 |
| Open space preservation | 0 | 0 |
| Water quality monitoring | 1 | 0 |
| Drain clearing | 0 | 0 |
| Road and bridge repair, and stream crossings | 0 | 0 |

# Resources to Assist Local Governments with Water Quality Protection

**1.** *Low Impact Development (LID) Manual for Michigan: A Design Guide for Implementers and Reviewers*
**What:** A free guidebook for the state of Michigan. Funding for the project was made available by the Michigan Department of Environmental Quality (MDEQ) and developed by Southeast Michigan Council of Governments (SEMCOG).
**Where:** http://www.semcog.org/lowimpactdevelopmentreference.aspx
**Description:** "This manual provides communities, agencies, builders, developers, and the public with guidance on how to apply LID to new, existing, and redevelopment sites. The manual provides information on integrating LID from the community level down to the site level. It not only outlines technical details of best management practices, but also provides a larger scope of managing stormwater through policy decision, including ordinances, Master Plans, and watershed plans."

**2.** *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*
**What:** A free handbook published by the U.S. Environmental Protection Agency (EPA).
**Where:** http://water.epa.gov/polwaste/nps/handbook_index.cfm
**Description:** "This handbook is intended to help communities, watershed organizations, and state, local, tribal and federal environmental agencies develop and implement watershed plans to meet water quality standards and protect water resources. It was designed to help any organization undertaking a watershed planning effort, and it should be particularly useful to persons working with impaired or threatened waters. The EPA intends for this handbook to supplement existing watershed planning guides that have already been developed by agencies, universities, and other nonprofit organizations. The handbook is generally more specific than other guides with respect to guidance on quantifying existing pollutant loads, developing estimates of the load reductions required to meet water quality standards, developing effective management measures, and tracking progress once the plan is implemented."

**3.** *Low Impact Development: An Integrated Design Approach*
**What:** Prince George's County, Maryland's handbook on low impact development. The handbook serves as both a case study and a guide for implementing local LID strategies; from planning stages to implementation and upkeep.
**Where:** http://www.epa.gov/owow/NPS/lid/lidnatl.pdf
**Description:** "The LID [low impact development] principles outlined in these pages were developed over the last three years specifically to address run-off issues associated with new residential, commercial, and industrial suburban development. Prince George's County, which borders Washington, DC, is rich with natural streams, many of which support game fish. Preserving these attributes in the face of increasing development pressure was the challenge, which led to the development of LID techniques."

# Resources to Assist Local Governments with Water Quality Protection (cont.)

**4.** *Filling the Gaps: Environmental Protection Options for Local Governments*
**What:** A free guidebook provided by MDEQ.
**Where:** http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3696-73358--,00.html
**Description:** "The goal of this book is to equip you, the local official, with the right information to gather and examine when making local land use plans, adopting new environmentally focused regulations, or reviewing proposed development to make decisions that are right for your community now and in years to come. By working in cooperation with other local governments and state agencies, we can assure the lasting value of Michigan's environment."

**5.** *Nonpoint Education for Municipal Officials (NEMO)*
**What:** A national network for municipal officials focusing on natural resource protection through local land use planning. Provides training, educational tools, case studies, and access to a wealth of practical regulations already in use.
**Where:** http://nemo.uconn.edu/index.htm
**Description:** "This website focuses on the site planning concepts presented in Connecticut's own Stormwater Quality Manual. The Planning for Stormwater website also provides site specific review considerations for LID in both residential and commercial settings. The website is organized by low impact development and site design elements. The LID elements are property level stormwater treatment practices that mimic natural hydrologic function. Site design elements are typical parts of the built landscape, such as roads and roofs. Vendor information and links to Connecticut case studies can also be found throughout this site. For more examples of CT LID practices, see the LID inventory on the CLEAR website."

**6.** *Center for Watershed Protection*
**What:** A research and educationally oriented website offering information on a variety of watershed-related topics, including the fundamentals of watershed science, contemporary studies, sample watershed plans, and more.
**Where:** http://www.cwp.org/
**Description:** "At the Center for Watershed Protection, we want everybody to know that an integrated watershed approach is the key to ensuring a future of fresh, clean water, healthy natural resources, and ultimately, life on earth. Since 1992, the Center for Watershed Protection has been working in numerous communities to provide the solutions for clean water and healthy natural resources. Our work is based on sound scientific research and guided by a passion for advancing the state-of-the art, ensuring practitioners have the right tools, and promoting the widespread implementation of the most effective watershed management techniques."

## Resources to Assist Local Governments with Water Quality Protection (cont.)

**7.** *Using Smart Growth Techniques as Stormwater Best Management Practices*
**What:** A free guidebook provided by the U.S. EPA.
**Where:** http://www.epa.gov/dced/stormwater.htm
**Description:** "The goal of this document is to help communities that have adopted smart growth policies and plans recognize the water benefits of those smart growth techniques and suggest ways to integrate those policies into stormwater planning and compliance. Taking credit for the work a community is already doing can be a low-cost and practical approach to meeting water quality goals and regulatory commitments."

**8.** *Michigan Citizen Planner Program Training*
**What:** An in-class or online certificate program for educating local elected and appointed officials on a variety of planning topics, from the fundamentals to more advanced and specific subjects, such as wind energy systems and complete streets.
**Where:** http://citizenplanner.msu.edu/
**Description:** "The Michigan Citizen Planner program at Michigan State University (MSU) offers land use education and training to locally appointed and elected planning officials throughout the state. Michigan Citizen Planner is a non-credit course series leading to a certificate of completion awarded by Michigan State University Extension (MSUE). Advanced training to earn the Master Citizen Planner (MCP) credential is also available. This program is offered through MSU Extension offices in a classroom setting and online. Along with the core series, Michigan Citizen Planner also provides education and training through specialty and regional workshops."

**9.** *Michigan Department of Environmental Quality Environmental Permit Information Checklist*
**What:** The MDEQ's checklist of most commonly required environmental permits with links to permit information (last updated 8/19/2008).
**Where:** http://www.michigan.gov/deq/0,1607,7-135-6830-89034--,00.html
**Description:** "The Michigan Department of Environmental Quality has prepared a list of key questions to help identify what departmental permits, licenses, or approvals of a permit-like nature may be needed for a project. By contacting the appropriate offices, you will help reduce the possibility that your project or activity will be delayed due to the untimely discovery of additional permitting requirements later in the process. While this list covers the existence of permits and approvals required from the MDEQ, it is not a comprehensive list of all legal responsibilities (i.e., planning requirements and chemical storage regulations may apply)."

**10.** *Water: Grants and Funding*
**What:** A U.S. EPA-operated webpage providing a consolidated list of available funding options for water resource related projects.
**Where:** http://water.epa.gov/grants_funding/