



Charlevoix County

Local Ordinance Gaps Analysis

An essential guide for water protection

Tip of the Mitt Watershed Council
Written and compiled by Grenetta Thomassey, Ph.D.

Blank Page

Charlevoix County Local Ordinance Gaps Analysis

An essential guide for water protection

Tip of the Mitt Watershed Council

Written and compiled by Grenetta Thomassey, Ph.D.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. Mention of specific companies, organizations, or authorities in this book do not imply endorsement by the author or publisher, nor does the mention of specific companies, organizations or authorities imply that they endorse this book, its author or publisher.

Internet addresses and phone numbers given in this book were accurate at the time of printing.

Library of Congress Catalog
Thomassey, Grenetta
Charlevoix County Local Ordinance Gaps Analysis
ISBN 978-1-889313-05X
1. Government 2. Water Protection 3. Charlevoix County

© 2011 Tip of the Mitt Watershed Council
All rights reserved.
Printed in the United State of America

Photography by: Kristy Beyer

If you want to reproduce this book or portions of it for reasons
consistent with its purpose, please contact the publisher:

Tip of the Mitt Watershed Council
426 Bay Street
Petoskey, MI 49770
(231) 347-1181 phone
(231) 347-5928 fax
www.watershedcouncil.org

This work should be cited as follows:

Thomassey, Grenetta. Charlevoix County Local Ordinance Gaps Analysis 2011.
Tip of the Mitt Watershed Council, Petoskey, MI 49770

~ ACKNOWLEDGEMENTS ~

Tip of the Mitt Watershed Council and Dr. Grenetta Thomassey wish to thank the following individuals for their work toward completing this four-volume project, including Antrim, Charlevoix, Emmet, and Cheboygan Counties:

Claire Kafer, Michigan State University intern who collected and compiled all the local ordinances across a four-county area

Julia Kazmers, Case Western Reserve University Law School intern who gathered initial citation information for each jurisdiction and organized it into spreadsheets

Katie O'Neill, American University intern, for her additional work on the jurisdiction spreadsheets

Sarah Whitney, Bradley University intern who collected missing ordinances, and updated the rest of the compiled local ordinances

Josh Pugh, Alma College intern who collected and compiled all the Master Plans across a four-county area, and worked on final research steps needed for the Evaluation Checklist

Kurt Schindler, Wexford County Extension Director, Michigan State University Extension; **Dean Solomon**, Senior Extension Educator, Charlevoix County Michigan State University Extension; **Lee Kramer, Esq.**; and **Harry Burkholder**, AICP, Community Planner II, Land Information Access Association (LIAA) for their peer reviews of the Evaluation Checklist

Bridget Brown, Oregon State University intern and main researcher on The Literature Review

Kevin Cronk, Monitoring and Research Coordinator, and **Jen Gelb**, Restoration Ecologist, for edits and contributions to Literature Review

Ellen Kohler, Policy Specialist, The Watershed Center Grand Traverse Bay for her work to create Action Plans, using the raw data from this project, to get near-term efforts started by local governments in Antrim County

John Hoshaw, **Dudley Marvin**, **Larry Marvin**, **Ray McMullen**, and **Don Priest** for their work to complete Evaluation Checklists for Emmet County

Scott Smith, Volunteer, for his time spent proofreading and editing

Claire Rasmussen, Volunteer and Intern, who performed numerous Research Assistant duties over the course of the entire project, including updates and corrections to the spreadsheets; extensive proofreading, editing, and correcting the report; and other last minute but crucial tasks

Gail Gruenwald, Executive Director, for her extensive proofreading, editing, and correcting the report

Kristy Beyer, Communication Specialist, for her patience and flexibility as deadlines were missed in exchange for accuracy, and her talents applied to creating this final published report

Wil Cwikiel, for his valuable assistance with the Charlevoix County analysis work

Marc Seelye, **Kiersten Stark**, and **Shirlene Tripp** for their important assistance with items related to Charlevoix County

Funding for this project was generously provided by:

The US Environmental Protection Agency; The Michigan Department of Environmental Quality; The Joyce Foundation; The Charlevoix County Community Foundation; The Dole Family Foundation; The Herrington-Fitch Family Foundation; The Watershed Center Grand Traverse Bay; Burt Lake Preservation Association; Elk-Skegemog Lakes Association; Lake Charlevoix Association; Pickerel-Crooked Lakes Association; Three Lakes Association; and Michigan Environmental Council.

Table Of Contents

SECTION I: INTRODUCTION	1
SECTION II: LITERATURE REVIEW	5
SECTION III: ANALYSIS	
Introduction	19
Chapter 1 Charlevoix County	21
Chapter 2 City of Boyne City	31
Chapter 3 City of Charlevoix	41
Chapter 4 City of East Jordan	51
Chapter 5 Bay Township	61
Chapter 6 Boyne Valley Township	71
Chapter 7 Chandler Township	81
Chapter 8 Charlevoix Township	89
Chapter 9 Evangeline Township	99
Chapter 10 Eveline Township	113
Chapter 11 Hayes Township	125
Chapter 12 Hudson Township	139
Chapter 13 Marion Township	149
Chapter 14 Melrose Township	161
Chapter 15 Norwood Township	173
Chapter 16 Peaine & St. James Townships	183
Chapter 17 South Arm Township	193
Chapter 18 Wilson Township	205
Chapter 19 Village of Boyne Falls	215
SECTION IV: APPENDIX	
Appendix A: Document Review Checklist for Local Ordinance Gaps Analysis	219
Appendix B: Additional Resources	239
Appendix C: Charlevoix County Map	244

Blank Page

SECTION I: Introduction

Protecting Lakes, Streams, Wetlands and Ground Water

Prevent or Save?

It is much easier to prevent degradation of a lake than to save it from the brink of ruin.

Some Michigan lakes are in trouble. People love these lakes, but failure to prevent degradation has resulted in real and difficult challenges for communities. Drinking water sources are threatened, recreational use is limited, and habitat is disappearing. These factors impact quality of water - and quality of life - and place property values at risk.

Fortunately, in Northern Michigan, most of our treasured lakes, streams, and ground water sources are clean and plentiful. We still have wetlands to nurture those waters, drinking water is delicious and healthy, and recreational use abounds. Wildlife thrives among us, and property values are solid. Because these conditions exist, more and more people want to be here. In addition to new opportunities, this also brings a new set of challenges to our area, especially for local governments. This Local Ordinance Gaps Analysis is designed to help local governments deal with the water resource-related challenges that come with this growth.

Contrary to widely-held beliefs, state and federal regulations do not adequately protect water resources and wetlands from impacts that can be prevented at the local level. For example, federal regulations mainly address discharge of fill material into wetlands, but do not protect against other significant impacts. The state of Michigan does have a statutory Wetland Protection Program in place, but it is constantly threatened with budget cuts and attempts to weaken it. Additionally, it can fail to protect local wetlands that fall outside of its scope.

Growth pressures bring a new awareness of the limitations of state and federal protections, and local governments have come to realize the need to fill in the gaps. Sensible local regulations create a certainty that protects investments, not only for homeowners but also for small businesses and developers of larger projects. They also allow economic growth while protecting vital water resources.

Purpose

The purpose of this project is to give you, the local government official, a comprehensive picture of:

- the water resource protections now in place at the county and township levels, including your jurisdiction;
- our recommended local approaches to protect waters;
- and what we suggest could be improved, to better protect your water resources.

Obviously, the “comprehensive picture” being presented here is a snapshot in time. However, every attempt has been made to give you a “living document” that should serve you for planning purposes, years into the future. Several items noted here as needing improvements may already be improved, by the time this document is published. Also, you might find an error, as this work was quite detail-oriented and it’s possible that we missed something. Nevertheless, most of this information should be timely, useful, and provide helpful guidance.

The project was done across the entire service area of Tip of the Mitt Watershed Council: Antrim, Charlevoix, Emmet, and Cheboygan Counties. Every jurisdiction in each county was included. The project is divided into four reports, and this report is for Charlevoix County.

Critical Elements of this Project

This project was done with the underlying assumption that specific Critical Elements are considered vital to address, if a local government wants to create strong protections for local water resources. These Critical Elements are:

- Master Plan Components
- Basic Zoning Components
- Shorelines
- Impervious Surfaces and Stormwater Management
- Soil Erosion and Sediment Control
- Sewer/Septic
- Wetlands
- Groundwater and Wellhead Protection
- Other: Floodplains, Steep Slopes, and Critical Dunes

The reasons for creating this particular list are detailed in the Literature Review that is found in Section II. The Literature Review is a formal academic review, documenting the current relevant research literature for each of these items. It explains why the Critical Elements are considered important enough to include in this work.

Project Evaluation and Analysis

An Evaluation Checklist was created to focus on the Critical Elements listed above, in accordance with the Literature Review. You will find a copy in the Appendix.

The checklist was compared to each jurisdiction’s Master Plan and any ordinances in place. The checklist question was asked; the answer was found and noted. If the answer was “yes”, the question earned 3 points. If the answer was “yes, partially” the question earned 2 points. If the answer was “yes, minimally” the question earned 1 point. If the answer was no, the question earned 0 points and that item is considered to be missing. The score for each question was assigned and then the next question was asked, until the entire checklist was complete.

It is important to note that the scoring system used with the Evaluation Checklist does not penalize a jurisdiction for missing ordinances that are not appropriate for their area, because of geographic or other circumstances. We understand that there cannot be a cookie cutter approach to water protections for any region. The cover page of the Evaluation Checklist gives you a detailed explanation of the system used to accommodate those situations.

Upon completion of a checklist section, the points were totaled and the section was ranked. Here is the summary of the Ranking System:

STRONG	The section of the ordinance being reviewed can be identified as more protective or better than most ordinances in the state, for reasons that can be clearly articulated. For example, the section replicates a model ordinance on the same topic, or minimum standards are exceeded.
ADEQUATE	The section of the ordinance being reviewed is on par with other ordinances in the state; it is at least as protective as ordinances for areas with similar water resource features.
WEAK	The section of the ordinance being reviewed is deemed weaker than similar ordinances in the state, for a specific reason that can be clearly articulated. For example, a model ordinance is changed to delete some protection that should have remained intact.
MISSING	The topic is not included in the jurisdiction's ordinance.

An Analysis of the results was done when each checklist was finished, including Recommendations and Suggested Actions. Those are covered in Section III, with a Chapter devoted to each jurisdiction. Additionally, if an approved Watershed Management Plan exists for the jurisdiction, connections to plan implementation steps are also noted, where appropriate.

Conclusion

Pressure from growth is quickly felt on surface and ground water sources and the wetlands that guard them. If adequate protections are not put in place, our lakes and streams will degrade. Eventually, the natural resources that brought new growth and opportunity will suffer from neglect and abuse. The chain of threats to drinking water, habitat, recreation, and property values is strong and can become evident all too quickly.

At the point of degradation, we can decide to change things and try to reverse the trend. However, it is obviously much easier to think about these challenges ahead of time, and plan for prevention. Managing these threats improves our ability to protect this high quality of life, far into the future, for our grandchildren and beyond.

Prevention efforts can take some time to accomplish, which is all the more reason to evaluate where we are now, and what we should consider now to protect our water's future – which is our future, plain and simple. If we destroy our water, we destroy our health and property values.

It is our sincere hope that this project and report are helpful to you, when considering local planning and zoning decisions that can be used to protect your important water resources. Please do not hesitate to contact Tip of the Mitt Watershed Council with any questions you may have, or for additional help or information.

SECTION II: Literature Review

Introduction

Michigan has abundant water resources, including more than 11,000 inland lakes (Michigan DNR, 2009) and nearly 4,000 miles of Great Lakes shoreline (Michigan DEQ, 2008a). These lakes are intricately connected to the region's rivers, wetlands, and underground aquifers. If cared for properly, Michigan's water resources can offer clean drinking water, healthy ecosystems and vital wildlife habitat, as well as provide ample opportunities for recreation and scenic views.

Because Michigan is a home rule state¹, local Master Plans and ordinances play a crucial role in protecting environmental resources, such as water. We reviewed the water-related sections of local plans and ordinances within the Watershed Council's four-county service area. The review was based on several Critical Elements that account for the quality and reliability of local water resources:

- Master Plan Components
- Basic Zoning Components
- Shorelines
- Impervious Surfaces and Stormwater Management
- Soil Erosion and Sediment Control
- Sewer/Septic
- Wetlands
- Ground Water and Wellhead Protection
- Other: Floodplains, Steep Slopes, and Critical Dunes

Literature Review

This literature review was conducted to provide a more in-depth explanation of why these specific factors are important to maintain water quality and aquatic ecosystem integrity. It also provides resources for local government entities. You will find a complete annotated list of these resources at the end of this literature review, which is organized by each Critical Element.

¹ In Michigan, counties, townships, and villages meeting certain statutory requirements may become home-rule units of government. If those statutory requirements are not met, a local unit of government cannot engage in activities unless the state expressly grants authority for it to do so. By law in Michigan, all cities are home rule units (Public Sector Consultants, 2002).

Master Plan Components

“A master plan is a comprehensive long range plan intended to guide growth and development of a community or region” (Antrim County Master Plan, 2008).

The Michigan Planning Enabling Act (PA33 2008) describes a master plan as: “A land use plan that consists in part of a classification and allocation of land for agriculture, residences, commerce, industry, recreation, ways and grounds, public buildings, schools, soil conservation, forests, woodlots, open space, wildlife refuges, and other uses and purposes.” This Act provides for the formation of planning commissions and uniform procedures for preparing, adopting, amending, and implementing these plans. Master Plans are intended to provide a basis for a zoning ordinance within a jurisdiction, if justified, including natural resource protection or rehabilitation (Michigan Legislature 2008).

A master plan that is regularly updated provides your community with important tools. These include facts on existing conditions and trends to help understand the impact of decisions; and a description of where and what type of development is desired. It allows individuals and businesses to reliably plan for the purchase and use of property, consistent with community goals. It also promotes the wise use of resources by helping prioritize which projects to undertake while still preserving community character (Antrim County Master Plan, 2008).

Basic Zoning Components

The Michigan Zoning Enabling Act (PA 110 of 2006) stipulates that a local unit of government may provide for the regulation of land development by using a zoning ordinance. It also allows the establishment of districts within its jurisdiction that regulate the use of land and structures to meet the needs of citizens for “food, fiber, energy, and other natural resources, places of residence, recreation, industry, trade, service, and other uses of land, to ensure that use of the land is situated in appropriate locations and relationships, to limit the inappropriate overcrowding of land and congestion of population, transportation systems, and other public facilities, to facilitate adequate and efficient provision for transportation systems, sewage disposal, water, energy, education, recreation, and other public service and facility requirements, and to promote public health, safety, and welfare” (Michigan Legislature, 2006). Corrective amendments to the Act (PA 12 of 2008) included clarification in Article III for transfer of powers to the planning commission and Article IV, providing for Zoning Adoption and Enforcement (Ball and Sweet, 2008).

Shorelines

Great Lakes:

Development along coastal areas of the Great Lakes shoreline can have serious impacts on dunes, beaches, coastal wetlands, and the adjacent aquatic ecosystem. Coastal shorelines serve as an important interface between inland systems and the lake or ocean, both physically and biologically. For example, a review by Defeo et al. (2009) discussed the importance of coastal sandy beaches:

Physical: sand transport and storage, which protects the shoreline from permanent erosion; storm buffering; breakdown of pollutants; water filtration and purification; nutrient mineralization and recycling; aquifer recharge.

Biological: biodiversity; juvenile fish nurseries; nesting sites; prey resources for birds and terrestrial animals.

Whether Great Lakes coastal shorelines are sandy or rocky, the services and benefits of any natural shoreline can be impeded if they are overly developed, modified, or removed. Establishing a minimum setback distance can lessen these impacts by concentrating development away from the water body and other important features (e.g. dunes, beaches). Beach grooming, a major impact that uses heavy equipment to rake and sieve the sand, creates large unvegetated areas, which can result in erosion and kill eggs, juvenile fish, turtles and shorebirds that nest in these areas (Defeo et al., 2009). Recreation is another

major concern, as it can impact the behavior of species in the area. Motorized recreation, such as the use of Off Road Vehicles (ORVs), is particularly destructive due to trampling and loss of necessary dune vegetation (Defeo et al., 2009).

Inland Lakes and Streams:

Shoreline development impacts lakes and streams as well as the surrounding terrestrial ecosystems. However, appropriate planning and management techniques can lessen these impacts. Techniques that benefit and protect inland lake and stream ecosystems include the use of vegetated buffer strips using native plant species, shoreline setbacks, and limits on development density and other human disturbances.

Shorelines are vital transition zones between land and water, where many important interactions occur that benefit the aquatic ecosystem, including food and nutrient exchange. These benefits are diminished when shoreline properties are developed and vegetation removed, but can be recovered by planting vegetated buffer strips using a variety of native species. Establishing a diverse vegetated buffer strip encourages a shoreline to revert to natural conditions, which improves the effectiveness of the transition zone in protecting lakes and streams from the negative impacts of adjacent land-use activity.

In the literature discussed below, authors advocate buffer strips be anywhere from 50 to 600 feet in width, depending on their intended purpose. Brooks et al. (2003) write that buffer strips have the following benefits: 1) reducing runoff velocity, which allows sediments, nutrients, and chemicals in the water to filter out before reaching the water; and 2) reducing the amount of solar radiation entering the water, creating cooler temperatures in the shoreline waters, which increases dissolved oxygen and protects sensitive aquatic life. The District of Muskoka, Ontario, Canada (2003) presented the following additional benefits of buffers: erosion protection, flood control, wildlife food and habitat, increased property value, and aesthetic value.

In terms of water quality, Woodward and Rock (1995) found that vegetated buffer strips reduce both phosphorus and total suspended solids (TSS) inputs, provided the buffer strips were constructed and maintained properly. They noted that large areas of exposed soil increased sediment loads entering the water, so this point is critical. Improvements garnered by maintaining a vegetated buffer strip were the greatest at construction sites, where erosion is a major issue. A literature review by Norris (1993) concluded that three major factors affect how effective buffer strips are at improving water quality: 1) physical attributes of the buffer zone (width, vegetation type, soil type, etc.), 2) types of pollutants entering the buffer strip, and 3) proximity of buffer zone to pollution source.

Merrell, Howe and Warren (2009) studied 40 inland lakes in Vermont. They concluded that minimizing shoreline conversion to lawns and maximizing the extent of vegetated buffered shores will benefit lake ecosystems. Specifically, they found that compared to undeveloped or buffered sites, developed/unbuffered sites had less shoreline tree cover, less shading, less large and small woody structure in the shallow water zone, and less leaf litter; these sites also had less food sources, including biofilms on lakebed rocks, invertebrate exoskeletons, and aquatic plants. In a study focused on impacts of logging near small inland lakes, authors found that vegetated buffer strips prevented temperature increases in shallow waters along the shoreline (Steedman, Kushneriuk and France, 2001).

Shoreline setbacks are another tool used to lessen impacts of development on inland lakes and streams. Development directly along shorelines has been shown to have many negative effects on lakes. In a study of lakes in the Northeast United States, researchers observed that lakes with visible human activity in half of the shoreline area or more had highly disturbed shoreline habitat (Whittier et al., 2002). This point also relates to the issue of development density and keyhole funneling. Keyhole funneling allows direct access to lakes by people who do not own property on the lakeshore, thus increasing human impacts on that part of the shoreline.

In addition to protecting the lake ecosystem, lakefront property owners may benefit economically from utilizing shoreline protection techniques. A study in Minnesota found that property values increase as lake water clarity increases (Krysel, Boyer and Parson, 2003). According to Cappiella and Schueler (2001), natural shorelines are a major factor contributing to the high value of lakefront property and thus, shoreline buffers can be justified as much economically as ecologically. It therefore stands to reason that shoreline protection techniques that preserve and restore water quality and wildlife habitat are crucial for maintaining and increasing the value of shoreline properties.

Impervious Surface Reduction and Stormwater Management

Stormwater is water that accumulates on land as a result of storms, and includes runoff from urbanized areas that have impervious surfaces. Infiltration is the process of water entering the soil. Impervious surfaces, such as roads, parking lots, roofs and walkways prevent infiltration of stormwater. This significantly alters the quantity, quality and rate of stormwater entering surface waters. Conversely, pervious surfaces, such as unpaved ground, slow the movement of stormwater and allow sediments, nutrients and other contaminants

to infiltrate, rather than flow directly into the receiving water body. Best Management Practices (BMPs) are used to manage stormwater on site with simple, cost-effective practices by mimicking natural processes.



As water quality concerns grow, the demand for alternative surfacing materials increases. Today, materials such as porous asphalt are available as an alternative to traditional impervious materials. Porous asphalt has been shown to effectively remove contaminants from stormwater runoff. In a study examining runoff over porous versus non-porous (i.e., impervious) roads in Texas, scientists found that the porous asphalt removed approximately five times the amount of suspended solids (Barrett, Kearfort and Malina, 2006). Additionally, porous asphalt and comparable pavements reduce the volume of runoff from roads by allowing for infiltration (Roy and Braga, 2009).

Another option for protecting water bodies from contaminated stormwater runoff is to divert the water into treatment ponds or constructed wetlands. Under the correct conditions, appropriately constructed wetlands or detention ponds can be used for stormwater treatment. The long residence time of stormwater in treatment ponds and wetlands allows contaminants to settle out or be removed biologically through uptake by plants, thereby improving water quality and recharging groundwater supplies. Harper et al. (1986) found that constructed wetlands removed a significant amount of heavy metals; they recommend using constructed wetlands to treat road runoff, which often contains heavy metals. A study in Massachusetts found that bioretention cells (i.e., landscaped depressions adjacent to paved surfaces) were successful at capturing runoff from parking lots, and contributed to increased water quality in a nearby lake (Roy and Braga, 2009).

Because Michigan experiences severe freezing in the winter months, it is important to note that many Low Impact Design (LID) systems have been tested for performance under winter conditions (Roseen et al., 2009). All of the above-mentioned techniques were shown to function as well during winter months as summer months.

The traditional approach to stormwater is to design structural Best Management Practices (BMP) focused on drainage and flood control. Although effective at managing the stormwater volume, these approaches are less effective at protecting water quality. Traditional BMP design focuses on rainfall events that range from 2 to 10 inches of daily rainfall and occur at much longer return periods, ranging from 2- to 100-year storms. These standards, however, are not sufficient for the more frequent, smaller

runoff event because there is too little retention time for effective pollutant treatment. The need to strike a balance between accommodating large volumes of stormwater and promoting water quality is becoming more broadly recognized. As a result, municipalities are shifting their BMP design approach to encompass both the peak discharge hydrology and the more water quality-based small storm hydrology. One approach is to specify a treatment volume that is designed to capture the initial component of the stormwater runoff. In practice, this may be achieved by specifying a rainfall amount (e.g., the first ½-inch or 1-inch) or the capture of a stormwater runoff volume that correlates to a design storm (e.g., 6-month, 1-year, or 2-year frequency storm).

Soil Erosion and Sediment Control

Sediment is a major pollutant in Michigan's surface waters. Soil erosion often results in increased sediment loads to lakes and rivers, which can adversely impact aquatic ecosystems in a number of ways. Increased turbidity from sedimentation decreases photosynthetic production (Berry, Rubinstein and Melzian, 2003). Suspended sediments interfere with ingestion and respiration of aquatic insects (Berry et al., 2003), which can decrease populations and consequently, affect the dynamics of entire food chains. Erosion and sedimentation can also introduce into the water harmful contaminants contained in soils from human activities, such as pesticides, household cleaning products, automotive fluids, or nutrients from pet waste. Although erosion is a natural process, development alters and accelerates that process by removing vegetation necessary for soil stabilization. Construction activity creates increased opportunities for erosion due to exposed soil. However, these impacts can be minimized by utilizing proper soil stabilization techniques. For example, Faucette et al. (2009) found that erosion control blankets (ECBs) successfully prevented soil erosion at construction sites; thicker blankets were more effective than thinner blankets.

Steep slopes or bluffs are especially vulnerable to erosion, particularly in areas with sandy soils, or areas subject to wave action, surface or subsurface drainage, or heavy precipitation. Reducing the volume and rate of water that reaches the bluff can help slow the erosion process; often this can be accomplished simply by preserving natural vegetation and features (e.g., rocks, driftwood, etc.) on the slope or bluff (UMN, 2008). In some cases where natural features are inadequate to slow erosion, French drains or other water diversion systems may be used (UMN, 2008) until water-absorbing vegetation can be reestablished.

Sewer and Septic Systems

There are advantages and disadvantages to both public sewer systems (centralized) and septic or onsite systems (decentralized). Public sewers are necessary in heavily populated urban areas, mostly due to the amount of space septic tanks require and their low water-handling capacity (ANJEC, 2008). However, rural and sparsely populated areas have other options.

A big advantage of public sewer systems is that home and business owners are not responsible for maintenance and repair. Beyond reducing the user's burden of maintaining the system, public sewers also help protect surface waters that would otherwise potentially be polluted by individual septic systems that are not properly maintained. However, there are major drawbacks, such as the capacity of these systems to handle increasing loads of stormwater that often occur as a result of development (Minneapolis, 2009). Additionally, according to Kahn, et al. (2007), regional sewer systems in rural areas encourage loss of open space.



Public sewer systems can be either “combined” or “separate”. Combined systems send both stormwater runoff and wastewater to treatment plants. Separate systems send only wastewater to treatment plants; stormwater may or may not be handled separately. In combined systems, large volumes of water from major storm events can exceed the capacity of treatment plants, resulting in untreated sewage and wastewater being discharged directly into nearby water bodies, as well as sewage backing up into homes. Obviously, this can have detrimental impacts on both humans and the environment. One activity in particular that places added stress on combined systems is the use of downspouts that direct rainwater from households or commercial areas straight into sewer systems (Minneapolis, 2009).

According to the USEPA (2009), septic tanks serve almost 25% of U.S. households. Cappiella and Schueler (2001) point out that septic systems commonly serve households along inland lakeshores due to the difficulty and distance involved with hooking up to public sewer systems. It can be costly to extend sewer lines from existing systems, or to build new public sewers where none currently exist. One advantage of septic systems is their ability to provide wastewater treatment where public sewer systems cannot. Additional advantages include 1) they are less expensive to homeowners over the long-term; 2) installation and maintenance is less disruptive to the environment; 3) they help replenish ground water resources; and 4) they provide simple, yet effective treatment of wastewater (NESC, 2004). They also mimic the natural water cycle, according to ANJEC (2008).

If septic systems are not properly maintained or are overloaded with more water than they are designed to accommodate, they can fail and release untreated sewage into the environment (USEPA, 2003). Because of this risk, and the liability that falls on the home or business owner, it is important that septic systems be thoroughly inspected before a transfer of property transaction is completed. This will ensure that the new owner has an adequately functioning septic system at the time of transfer, thereby minimizing the risk of liability for environmental contamination and public health threats resulting from a malfunctioning system. A legal phrase used for this process is “point of transfer inspection”. Provisions can be added to local ordinances to accommodate property sales in winter months, when inspections are not feasible. In addition to protecting property owners, “point of transfer inspection” ordinances also reduce pollution to lakes and other water sources by finding those systems that need repair or replacement. This practice, along with others discussed below, can help ensure septic systems do not contaminate precious water resources.

Standley et al. (2008) found that surface waters were more contaminated in residential areas containing many septic systems, particularly with pharmaceuticals and hormones. In a study on septic tanks in Florida, Arnade (1999) found a strong relationship between the distance of septic tanks from wells and the amount of fecal coliform bacteria, phosphorus, and nitrates found in the wells. She found the relationship to be even stronger during rainy months, when the water table rises and soils become saturated. For this reason, many local governments require minimum setback distances for septic tanks. These setbacks can be described as either “horizontal” or “vertical”. Horizontal separation distance refers to the distance a tank must be from drinking wells, lakes, rivers, and houses, in order to protect environmental and human health. Vertical separation distance refers to the distance a tank must be from the water table, in order to provide enough space for contaminants to be removed and allow for aerobic digestion of nutrients (NESC, 2008). With proper setbacks, design, maintenance and sludge removal, septic systems will only discharge treated water (e.g., clean and not harmful) into the surrounding environment.

Wetlands

Wetlands are unique, diverse, and sensitive ecosystems. They provide important habitat for wildlife (particularly migratory birds), naturally filter surface water, and recharge ground water supplies. Wetlands also store large quantities of water, which dampens the effects of major flood events. One acre of wetlands can store up to 1.5 million gallons of flood-derived water (Ardizzone and Wyckoff, 2003).

Additional valuable functions provided by wetlands include: erosion reduction, shoreline stabilization, and scenic opportunities (Gordon, 1992). As they are difficult to re-create once destroyed, preserving and protecting wetlands today is the best option to ensure their benefits continue well into the future.

Wetlands in Michigan are found both inland and in coastal areas of the Great Lakes. Unfortunately, most coastal wetlands that once existed in the Great Lakes region have been drained or filled for development. As the ecological and water quality benefits of coastal wetlands become more readily acknowledged, more coastal wetland restoration projects are being implemented in the Great Lakes Basin (Mitsch and Wang, 2000). In fact, studies show that coastal wetland restoration can be a powerful tool for reducing nonpoint source pollution. Mitsch and Wang (2000) assessed the effectiveness of coastal wetland restoration in improving both water quality and wildlife habitat. They concluded that restoration is most effective when strategically located in areas receiving heavy nonpoint source pollution inputs with potential for productive habitat.

As with lakes, buffers and setbacks can be useful tools for wetland protection. However, Ludwa (1994) found that buffers and other mitigation measures only protected wetlands when land-use impacts were minimized throughout the watershed. Wetlands in watersheds that had less impervious surface cover and more forest cover had better resistance to impacts than those in more vulnerable areas with more impervious surfaces.

However, even with buffers and setbacks, activities adjacent to sensitive wetlands can still degrade the quality of wetlands (Gordon, 1992). To reduce these impacts, a basin-wide approach to wetland protection can be adopted. Local regulations are extremely important when it comes to wetlands. Federal legislation offers some protection, but the Clean Water Act was not designed with wetland protection in mind (Porter and Salvesen, 1995). To complement local wetland regulations, strategies such as preservation programs, restoration programs and public education can be implemented (Gordon, 1992). Ensuring that existing wetlands are functioning and healthy will improve and protect the water quality of all related surface waters.

Ground Water

Ground water is a major source of freshwater, contributing about half of the total water consumed by humans for drinking, agriculture, and other purposes (New Jersey Geological Survey, 2009). In addition, depending on water table depth, ground water may serve as a significant source of water to lakes, rivers and wetlands (Brooks et al., 2003). Ground water protection, which includes consideration of both quantity and quality, is therefore crucial.

When ground water resources are consumed using pumping and extraction, natural processes replenish them. This is known as “ground water recharge” and typically occurs through precipitation, infiltration and percolation (South Brunswick ERI, 2007). The capacity for ground water recharge in any given area depends on climate, soils, vegetation and land-use patterns (Charles et al., 1993). The relationship among soils, vegetation and land-use must be considered. In order to ensure ample ground water recharge, areas that offer the highest potential for recharge (referred to as “ground water recharge areas”) should be protected. Protection involves 1) identifying ground water recharge areas, then 2) limiting development and other activities that impede infiltration or negatively impact water quality in those areas.

Some areas in Northern Michigan have municipal well fields. Recharge areas for these well fields are known as “wellheads” and they should be protected by using plans that identify contaminant sources and provide recommendations to prevent contamination. In other areas, ground water recharge areas must be identified; various techniques, including mapping, can accomplish this. By combining local land-use/land-cover maps with local soil maps, approximate ground water recharge areas for counties or municipalities can be determined (Charles et al., 1993). Today, GIS technology and digital maps are readily available to expedite this process.

Once ground water recharge areas are identified, protection measures can be implemented to ensure their proper function. These include regulating development that increases impervious surface area, which can alter or obstruct ground water recharge. If recharge rates are reduced, ground water extraction can become unsustainable (Fayette County, 2000).

The quality of ground water can be compromised by various activities, such as storage and the subsequent leaking or spilling of hazardous materials, and the use of floor drains at commercial sites (Michigan DEQ, 2008b). According to the DEQ (2008b), even small traces of contaminants discharging into the ground can have enormous effects on ground water quality. This is because contaminants will both accumulate in the soil and spread quickly once reaching the water source. Proper storage of hazardous materials to mitigate these effects includes appropriate site selection and leak-proof containers. Furthermore, underground storage tanks for fuel and other substances pose a risk to groundwater and should be identified, evaluated, monitored and repaired or removed, as necessary.

Abandoned wells can also threaten ground water quality (Michigan DEQ, 2007). Because wells connect the Earth's surface with underground aquifers, the potential for harmful contaminants to enter ground water resources exists. Plugging, or closing off, wells that are no longer in use can thereby reduce threats to ground water quality.



Works Cited - Annotated

Antrim County Master Plan 2008 Chapter 1: What is a Master Plan? Retrieved from: <http://www.antrim-county.org/masterplan.asp>

This chapter summarizes the focus, elements and considerations in developing the Antrim County Master Plan.

Association of New Jersey Environmental Commissions. 2008. Clean Water, Sewers, Septics and Sprawl. Retrieved from: http://www.anjec.org/pdfs/Sewers_Web_Reader.pdf

This article stresses the importance of local wastewater management plans, and discusses the benefits and drawbacks of converting from septic systems to centralized sewer systems.

Ardizzone K.A. and Wyckoff M.A., FAICP. Filling the Gaps: Environmental Protection Options for Local Governments, Michigan DEQ, Coastal Management Program with financial assistance from NOAA, authorized by the Coastal Zone Management Act of 1972. June, 2003.

Addressing environmental protection at the county and city levels, this book pays special attention to water resources such as lakes, rivers, and wetlands. It discusses qualities, threats, and protection options.

Arnade J.A. 1999. Seasonal correlation of well contamination and septic tank distance. Ground Water: 37(6): 920-923.

This study examined the influence of seasonal precipitation on the relationship between well contamination from septic tanks, and the distance of the tanks. During the rainy months, the wells had higher concentrations of phosphorus, nitrates and fecal coliform.

Ball, J. and Sweet, L. 2008. Summary of Changes to the Michigan Zoning Enabling Act (PA 110 of 2006) Made by PA 12 of 2008. Planning and Zoning News 26 (5): 6-7.

This article summarizes changes to PA 110 of 2006 by the Michigan Legislature for each section amended including a brief explanation.

Barrett M.E., Kearfott P., and Malina J.F. 2006. Stormwater quality benefits of a porous friction course and its effect on pollutant removal by roadside shoulders. Water Environment Research 78(11): 2177-2185.

Stormwater study that examined the impact of porous friction courses (PFCs) on the quality of stormwater runoff from highways in Austin Texas, and additionally assessed the impact vegetative shoulder strips have on pollutant removal when used in conjunction with PFCs. The PFCs left very little (on average around 20 mg/L) total suspended solids (TSS) in the stormwater runoff, while the traditional asphalt left significantly more (on average over 100 mg/L).

Berry W., Rubinstein N. and Melzian B. 2003. The biological effects of suspended and bedded sediment (SABS) in aquatic systems: a review. United States Environmental Protection Agency Internal Report. Retrieved from: <http://www.epa.gov/waterscience/criteria/sediment/pdf/appendix1.pdf>

Published by the EPA, this report summarizes relevant literature pertaining to the impacts increased sediment loads have on lakes and rivers. Separate discussions are included for plants, invertebrates, fish, coral, etc.

Brooks K.N., Ffolliott P.F., Gregersen H.M., and DeBano L.F. Hydrology and the Management of Watersheds. Iowa 2003: Iowa State Press, pp. 334-337.

A textbook in which the authors draw upon various scientific studies to discuss watershed processes and recommend management practices for lakes, rivers, and other hydrologic systems.

Cappiella K. and Schueler T. 2001. Crafting a lake protection ordinance. Urban Lake Management 3(4): 751-768.

This article outlines the major necessary elements for ordinances to protect lakes in developed areas. It includes descriptions of protection measures from the lakeshore to the entire watershed.

Charles E.G., Behroozi C., Schooley J., and Hoffman J.L. 1993. *A method for evaluating ground-water recharge areas in New Jersey*. New Jersey Geological Survey Report (GSR) 32.

Published to assist municipalities with identifying ground water recharge areas and ranking them by importance, this report provides detailed methods of such, along with example maps and tables.

Defeo O., McLachlin A., Schoemann D.S., Schlacher T.A., Dugan J., Jones A., Lastra M., and Scapini F. 2009. *Threats to sandy beach ecosystems: a review*. *Estuarine, Coastal and Shelf Science* 81: 1-12.

This is a literature review, discussing the importance of coastal beaches, and activities that have great impacts on them. Surface and sub-surface physical and biological processes are addressed.

Faucette L.B., Scholl B., Beighley R.E., and Governo J. 2009. *Large-scale performance and design for construction activity erosion control best management practices*. *Journal of Environmental Quality* 38(3): 1248-1254.

This study examined the effectiveness of various impact-mitigation techniques at construction sites. Thick erosion control blankets (ECBs) over large areas significantly delayed riling and disturbance.

Fayette County, Georgia. *Groundwater Recharge Area Protection Ordinance (June 22, 2000 Ord. 2000-13)*. Retrieved from: <http://www.fayettecountyga.gov/engineering/pdf/Art11GroundwaterRechargeAreaProtectionOrdinance.pdf>

This is an example of an ordinance to protect ground water recharge areas from various pollution sources.

Gordon D.G. Ed. *Designing Wetland Preservation Programs for Local Governments: A Guide to Non-Regulatory Protection*. Washington State Department of Ecology, March 1992.

This is a manual discussing the importance of creating — as well as guidelines for designing — wetland preservation programs in order to meet federal, state and local goals of “no net loss”.

Harper H.H., Wanielista M.P., Baker D.M., Fries B.M., and Livingston E.H. 1986. *Treatment efficiencies for residential stormwater runoff in a hardwood wetland*. *Lake and Reservoir Management* 2(1): 351-356.

How effective wetlands are at removing heavy metals and nutrients? The results of this study suggest that wetlands are very effective at removing heavy metals, but not as effective at removing nutrients. The authors recommend wetlands be used to filter stormwater off of systems such as highways, where heavy metals are of a greater concern than nutrient pollution.

Kahn L., Hulls J., and Aschwanden P. *The Septic System Owner's Manual*. Bolinas, California 2007: Shelter Publications, Inc., p. 127

More than 28 million households have septic systems, but few homeowners know how they operate or how to maintain them. This illustrated guide addresses that need. It emphasizes conventional septic systems powered by gravity flow, filtering through soil, and the natural soil organisms that purify sewage. It also discusses maintenance, what to do if things go wrong, and alternative systems such as mounds and sand filters.

Kauffman Gerald J., Wozniak Sara L., Vonck Kevin J. March 2004, revised May 2005. *Source Water Protection Guidance Manual for the Local Governments of Delaware*. Retrieved from: http://www.wr.udel.edu/swaphome_old/phase2/SWPguidancemanual.html

The State of Delaware Source Water Protection Law of 2001 requires local governments with year-round populations of 2,000 or more to implement protections for the quality and quantity of public water supplies by 2007. The purpose of this manual was to provide local governments with measures meant to comply with the legislation, and encourage smaller jurisdictions protect their sources of public drinking water.

Krysel, C, Boyer E.M., Parson, C, and Welle, P. 2003. *Lakeshore Property Values and Water Quality. Evidence from Property Sales in Mississippi Headwater Region*. Submitted to the Legislative Commission on Minnesota Resources. Retrieved from: http://www.friendscvsf.org/bsu_study.pdf

From the Forward to this report: “For the first time, this study defines the dollar value of water quality to the northern Minnesota economy. The State of Minnesota consists of a well-educated popula-

tion, aware of the value of the State's most valuable resource, clean water. In today's political/budgetary climate, support of the environment that maintains water quality has been viewed as frivolous, anti-business, or an unnecessary expense. Through objective scientific method and hedonic modeling, this study attaches tremendous economic value to investing in a clean environment."

Ludwa K.A. 1994. *Wetland water quality impacts in developing watersheds: empirical models and biological indicators*. *Lake and Reservoir Management* 9(1): 75-79.

This study examined how deforestation and urban development can impact wetland systems, and how to best mitigate those impacts. Watershed-wide measures were found to be most effective.

Merrell K., Howe E.A., and Warren S. 2009. *Examining shorelines, littorally*. *Lake Line* 29(1): 8-13.

40 natural lakes in Vermont were examined in this study, observing differences between undeveloped or buffered sites, and developed/unbuffered sites. Many physical and biological differences were found.

Michigan Department of Environmental Quality. 2007. *Plugging abandoned wells*. *Groundwater Protection Fact Sheet 1*.

This fact sheet discusses how to identify abandoned wells and how to close them off. It also outlines the hazards associated with abandoned wells.

Michigan Department of Environmental Quality. 2008(a). *Michigan Great Lakes plan: our path to protect and restore Michigan's natural treasures*. Retrieved from: http://www.michigan.gov/documents/deq/Draft_MI_Great_Lakes_Plan_251564_7.pdf

This is a manual of strategies for restoration and increased protection in the state of Michigan, aligned with the 2005 Great Lakes Regional Collaborative "Strategy to Restore and Protect the Great Lakes." It also contains background information on Michigan's natural areas.

Michigan Department of Environmental Quality. 2008(b). *Pollution prevention at small commercial and industrial facilities*. *Groundwater Protection Fact Sheet 2*.

This fact sheet contains a list of commercial and industrial activities potentially hazardous to ground water. It also contains a section on floor drains.

Michigan Department of Natural Resources. 2009. *Michigan's Waters*.

Retrieved from: http://www.michigan.gov/dnr/0,1607,7-153-30301_31431---,00.html.

Description and maps for Michigan's waters.

Michigan Legislature. 2006 PA 110. *Michigan Zoning Enabling Act, Article II. Zoning Authorization and Initiation, Section 125.3201 (1)*. Retrieved from: [http://www.legislature.mi.gov/\(S\(taxk4345o1gumu550g1u2zfc\)\)/mileg.aspx?page=getObject&objectName=mcl-125-3201](http://www.legislature.mi.gov/(S(taxk4345o1gumu550g1u2zfc))/mileg.aspx?page=getObject&objectName=mcl-125-3201)

"AN ACT to codify the laws regarding local units of government regulating the development and use of land; to provide for the adoption of zoning ordinances; to provide for the establishment in counties, townships, cities, and villages of zoning districts; to prescribe the powers and duties of certain officials; to provide for the assessment and collection of fees; to authorize the issuance of bonds and notes; to prescribe penalties and provide remedies; and to repeal acts and parts of acts."

Michigan Legislature. 2008 PA 33. *Michigan Planning Enabling Act, Article II. Planning Commission Creation and Administration, Section 125.3811 and Article III. Preparation and adoption of Master Plan, 125.3833 Parts (2)(a),(c),(d)*. Retrieved from: [http://www.legislature.mi.gov/\(S\(xupi1mesibiknsmtqka5g55\)\)/mileg.aspx?page=GetObject&objectname=mcl-act-33-of-2008](http://www.legislature.mi.gov/(S(xupi1mesibiknsmtqka5g55))/mileg.aspx?page=GetObject&objectname=mcl-act-33-of-2008)

"AN ACT to codify the laws regarding and to provide for county, township, city, and village planning; to provide for the creation, organization, powers, and duties of local planning commissions; to provide for the powers and duties of certain state and local governmental officers and agencies; to provide for the regulation and subdivision of land; and to repeal acts and parts of acts."

Minneapolis, City of. 2009. *History of Stormwater and Wastewater Drainage Systems in Minneapolis*. Retrieved from: <http://www.ci.minneapolis.mn.us/stormwater/overview/construction-history.asp>

This site discussed both combined and separate sewer systems, mainly stressing the advantages of converting to separate systems.

Mitsch, W.J. and N. Wang. 2000. *Large-scale coastal wetland restoration on the Laurentian Great Lakes: Determining the potential for water quality improvement. Ecological Engineering 15: 267-282*

FROM THE ABSTRACT: Coastal wetlands around the Great Lakes are rarely restored for water quality enhancement of the Great Lakes, despite the need for minimizing phosphorus and other pollutant inputs to the lakes. A simulation model, developed and validated for a series of created experimental marshes in northeastern Illinois, was aggregated and simplified to estimate the nutrient retention capacity of hypothetical large-scale coastal wetland restoration in Michigan and Ohio. A wetland distribution model developed for a Saginaw Bay site illustrated a technique for identifying sites that have high potential for being transition zones between open water and upland and thus logical locations for wetland restoration.

Mortsch, L., M. Alden and J. Scheraga. August 2003. *Climate change and water quality in the Great Lakes Region – Risks, Opportunities and Responses. Retrieved from: http://www.ijc.org/rel/pdf/climate_change_2003_part3.pdf*

This report was prepared for the International Joint Commission (IJC). Recognizing that Climate Change was an emerging issue that required a survey of potential impacts and the ability to adapt, the IJC Great Lakes Water Quality Board commissioned this white paper to explore implications of a changing climate on the Great Lakes watershed. It addresses four broad questions: 1) What are the Great Lakes water quality issues associated with climate change? 2) What are the potential impacts of climate change on the “beneficial uses” in the Great Lakes Water Quality Agreement? 3) How might these impacts vary across the Great Lakes? and 4) What are the implications for decision-making?

Muskoka, District of, Planning and Economic Development Department. 2003. *Shoreline vegetative buffers. Retrieved: <http://muskoka.fileprosite.com/Documents/DocumentList.aspx?ID=4844>*

This publication defines vegetated buffer strips and discusses the various benefits of using them to protect water quality. Authors recommend different widths for buffers based on intended use and benefit (e.g. water quality versus mammal habitat).

National Environmental Service Center. 2004. *Septic systems—a practical alternative for small communities. Pipeline 15(3): 1-8.*

This article discusses septic systems, providing an insightful list of “pros” and “cons” for using septic systems versus sewer systems.

National Environmental Service Center. 2008. *Ground water Protection and Your Septic System. Retrieved from: http://www.nesc.wvu.edu/pdf/ww/septic/septic_tank3.pdf*

This document discusses the connection between ground water and septic tanks. Included is a description of both “horizontal” and “vertical” separation distances.

New Jersey Geological Survey. 2009. *Aquifer Recharge Mapping. Retrieved from: <http://www.state.nj.us/dep/njgs/enviroed/aqfrchrg.htm>*

This website describes the process of aquifer recharge, and presents an example of creating a map highlighting recharge areas.

Norris V. 1993. *The use of buffer zones to protect water quality: a review. Water Resources Management 7: 257-272.*

This literature review assesses how effective buffer strips are at filtering out harmful inputs due to land-use practices. The author concluded that their effectiveness can be attributed to three major factors: 1) physical attributes of the buffer zone (width, vegetation type, soil type, etc.), 2) types of pollutants entering buffer strip, and 3) proximity of buffer zone to pollution source.

Porter D.R. and Salvesen D.A. Eds. 1995. *Collaborative Planning for Wetlands and Wildlife. Washington D.C.: Island Press.*

This book offers a number of case studies centered on local planning for wetland protection.

Public Sector Consultants. 2002. *Michigan in Brief: 2002–03*. Retrieved from: <http://www.michiganinbrief.org/edition07/Chapter5/LocalGov.htm>

Michigan in Brief: 2002–03, prepared and published by Public Sector Consultants, Inc., provides information about Michigan and more than 40 public policy topics of concern to residents and elected representatives. Each policy topic is presented in four parts: a glossary; background information; discussion of policy options, including a balanced, nonpartisan presentation of various viewpoints; and sources of additional information, including telephone and FAX numbers as well as Web sites where available.

Roseen R.M., Ballesterio T.P., Houle J.J., Avalleneda P., Briggs J., Fowler G., and Wildey R. 2009. *Seasonal performance variations for storm-water management systems in cold climate conditions*. *Journal of Environmental Engineering* 135(3): 128-137.

Research shows that winter freezing does not inhibit the performance of certain low-impact design (LID) systems for storm-water management. Contaminant removal was not impeded by the freezing. Design systems that were tested included: bioretention systems, surface sand filter, subsurface gravel wetland, street tree, and porous asphalt.

Roy S.P. and Braga A.M. 2009. *Saving Silver Lake*. *Civil Engineering* 79(2): 72-29.

This article presented the findings of a study in Massachusetts, involving improving lake water quality. Techniques used included LIDs, such as porous pavement, bioretention cells, rain gardens, and vegetated swales.

Severson J.P., Nawrot J.R. and Eichholz M.W. 2009. *Shoreline stabilization using riprap breakwaters on a Midwestern reservoir*. *Lake and Reservoir Management* 25(2): 208-216.

This study explored an off-shore erosion mitigation technique that reduced wave height. The study areas that used breakwaters showed higher densities of shoreline vegetation than the control areas.

Standley L.J., Rudel R.A., Swartz C.H., Attfield K.R., Christian J., Erikson M., and Brody J.G. 2008. *Wastewater-contaminated ground water as a source of endogenous hormones and pharmaceuticals to surface water ecosystems*. *Environmental Toxicology and Chemistry* 27(12): 2457-2468.

This study examined the potential impacts of increased residential development—and resulting increase in septic systems—on the amount and concentrations of prescription pills and hormones in surface ponds. Authors found the level of development to be an indicator of pollution levels.

Steedman R.J., Kushneriuk R.S., and France R.L. 2001. *Littoral water temperature to experimental shoreline logging around small boreal forest lakes*. *Canadian Journal of Fisheries and Aquatic Sciences* 58: 1638-1647.

The effects of various logging practices on lake temperatures were examined in this study. The authors found that control and buffered areas did not experience the temperature increases (15%) that clear cut areas experienced.

Township of South Brunswick Environmental Resource Inventory of 2007. "Ground water Recharge Areas." Retrieved from: <http://www.sbntj.net/vertical/Sites/%7B9E5944A6-A9C2-418C-9E3F-EB23EB627DB9%7D/uploads/%7B10BD2265-5249-4D2D-8CD8-2F3B574EA6EB%7D.PDF>

South Brunswick, NJ compiled this Environmental Resource Inventory (ERI) to describe the state of various environmental resources in the community. It is a compilation of text and maps the community can use to evaluate, and possibly revise, planning documents, policy initiatives, and local ordinances.

University of Minnesota. 2008. *Stabilizing your shoreline to prevent erosion: shoreland best management practices*. Retrieved from: <http://www.extension.umn.edu/distribution/naturalresources/components/DD6946g.html>.

This is part 7 of an 18-document series on protecting water resources in Minnesota. The focus is on best management practices to reduce harmful consequences of increased shoreline erosion.

U.S. Environmental Protection Agency. 2003. *A Homeowners Guide to Septic Systems*. Retrieved from: http://www.epa.gov/owm/septic/pubs/homeowner_guide_long.pdf

Intended as a guide for homeowners, this document provides information on installation, operation and maintenance of onsite septic systems, as well as substances and activities that can result in septic failure.

USEPA. 2009. *Septic (Onsite) Systems*. Retrieved from: <http://cfpub.epa.gov/owm/septic/index.cfm>

This site provides information on individual and community septic systems, including links to case studies and data on U.S. septic system use, management, and preventative measures against pollution.

Whittier T.R., Paulsen S.G., Larsen D.P., Peterson S.A., Herlihy A.T., and Kauffman P.R. 2002. *Indicators of ecological stress and their extent in the population of Northeastern lakes: a regional scale assessment*. *Bioscience* 52(3): 235-247.

Authors assessed the results of a study conducted by the EPA and USFWS in the early 1990's, which examined 345 lakes in the northeast U.S. to determine how much of an impact various stressors have on lake ecosystems. Lakes with visible human activity in half of the shoreline area or more had highly disturbed shoreline habitat.

Woodward S.E. and Rock C.A. 1995. *Control of residential stormwater by natural buffer strips*. *Lake and Reservoir Management* 11(1): 37-45.

This study examined the effectiveness of natural buffer strips at removing pollutants such as Phosphorus (P) and TSS from residential runoff. All sites from the study showed 50 ft buffer strips to bring P levels within average control values; the authors recommend that this minimum width be implemented for single family homes. This width may need to be doubled for more impacting activities and greater slope locations. Exposed soil in buffer strips may actually increase sediment loads, though.

SECTION III: Analysis

Introduction

No matter where you are, you are in a watershed.

In a watershed, melting snow and rainfall create flowing water over the landscape. This flowing water eventually drains into surface water bodies, ground water recharge areas, and wetlands. This flow is also absorbed into the ground along the way, as it moves to the drainage destination. How this water flows and where it drains creates the boundaries of our watershed. In Charlevoix County, drainage destinations include lakes, streams, wetlands, and ground water – all familiar and important characteristics in our landscape. They provide us with numerous recreational uses, making significant and meaningful contributions to our local economies. And, the aesthetic character of these waters is also a source of immense value to local residential and business property owners.

Treated and untreated wastewater and stormwater flow directly into these valuable waters. If ignored, the waters will degrade, which is unfortunate because these same waters also provide habitat for numerous plants, animals, and birds. This illustrates an historic clash that can create a source of tension among various users of water and wetlands.

When land use in a watershed is changed, the flow it contributes to water bodies and wetlands is impacted by those changes. For example, when farmland is converted for housing, business, and entertainment uses, there is an increase in impervious surfaces – places where rain drops and snow melt cannot permeate the ground. The flow is then affected by these hard surfaces, such as rooftops and parking lots, creating what is known as nonpoint source water pollution. The flow collects oil, pollutants, salt, grit, etc., as it moves and eventually dumps into drainage areas – our beloved lakes, rivers, wetlands, and ground water recharge regions. Hard ground can also impact the amount and velocity of runoff water. Not surprisingly, this can lead to other undesirable conditions, such as increased flooding, erosion, and loss of habitats, in addition to decreased water quality.

This project is intended to help you protect the watershed that encompasses your jurisdiction, and work with watershed partners do to so. The following Chapters summarize results of this project for Charlevoix County. It begins with a chapter devoted to the county itself, and is followed by separate chapters devoted to each city, township, or village in the county.



SECTION III: Analysis

Chapter 1 Charlevoix County

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Charlevoix County, which borders Lake Michigan on the west and includes Beaver Island. The county also includes beautiful Lake Charlevoix, which is the drainage destination and major watershed of the county. However, parts of the county are also located in other watersheds, including the Grand Traverse Bay Watershed and the Little Traverse Bay Watershed.

The county is a partner in the Watershed Management Plan for Lake Charlevoix, which has a very active and engaged Advisory Committee to oversee implementation, including local government representatives. Therefore, at appropriate points in the Analysis below, any connection to implementation tasks for the Lake Charlevoix Watershed Management Plan is also highlighted.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 22, STRONG

Charlevoix County does not have zoning in place at the county level. It has a Future Land Use Plan in place, however, completed in 2009. The Introduction to the plan notes the following (bold is original): **“The Charlevoix County Future Land Use Plan is not intended to replace or supersede any local plan in the County. It has not been developed for, nor is it intended as the basis for developing a County Zoning Ordinance to replace township and city zoning ordinances.”** (http://www.charlevoixcounty.org/downloads/landuse_section1of3.pdf, p.1.1) The plan also notes that each city, village and township in Charlevoix County either has its own master plan, comprehensive plan, land use plan or the legal ability to create and adopt one. Each city and township also has a zoning ordinance in effect to regulate the use of land within their community (p.1.1).

Given the prevalence of local planning and zoning in the county, the plan notes that it was developed for the following reasons:

- Provide a county-wide vision to support county and local planning and zoning efforts.
- Facilitate planning within and between townships, cities, villages and the county.
- Foster consistency between plans and zoning ordinances among jurisdictions.

- Promote the use of the county-wide vision to assist all units of government in the county with the procurement of grants.
- Support local planning and zoning activities at all governmental levels with data, studies and educational resources.
- Promote continued economic growth and improvements in our quality of life by using all available tools.
- Serve as a guide to the Board of Commissioners, the County Planning Commission and County Departments in their decision-making process regarding County-owned properties (p.1.1).

The plan does indicate the watersheds in the county by referring to maps provided by the Michigan State University (MSU) Institute of Water Research website, with boundaries and information about Charlevoix County watersheds (p.5.15). It also refers to numerous other resources throughout Chapter 5 to provide an inventory of surface water and wetlands in the county. It does not mention mapping of ground water recharge areas.

Open space is an important feature of the plan. Chapter 4 includes a section called: “Protect Unique Natural Features and Open Spaces”. Actions to do so include having the Planning Commission, local units of government, and land conservancies work together to develop a coordinated program to protect lands with unique natural features and significant open spaces. Objective 2 under the same sections notes: “Develop and promote county-wide policies to maintain and enhance the County’s outstanding surface and groundwater quality.” This includes numerous specific actions for the Planning Commission, including providing sample zoning ordinance language to help townships use techniques for water quality protection, including buffer zones, site plan review standards, and overlay districts (p.4.4, 4.5).

Chapter 4, Objective 2, Actions also identifies stormwater management as an important community policy. It notes the following: “Any expansion or upgrading of County-owned facilities will incorporate site designs to treat on site or to reduce the impact of surface water runoff.” (p.4.5) Also, “The Planning Commission, in conjunction with the Drain Commissioner and the Soil Erosion and Sedimentation Control Officer, will research and provide recommendations to local units of government and developers on ways to reduce or eliminate stormwater runoff (e.g. rain gardens, pervious surface parking lots, stormwater retention, detention basins).” (p.4.5) The plan does not call for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration.

The Future Land Use Plan includes identification and protection of wildlife corridors, also in Chapter 4, under the Protect Unique Natural Features and Open Spaces section. The first Goal is: “Maintain and enhance the unique natural features and open spaces that draw people to Charlevoix County.” This is followed by Objective 1: “Develop and promote the adoption of a Countywide strategy linking key natural features and wildlife corridors.” (p.4.4)

The intent to preserve and protect natural areas and wetlands is made clear. Chapter 3 includes this definition of Sensitive Lands: “These lands fall into one of two classifications: 1) wetlands, based on the National Wetlands Inventory (NWI) and Michigan Resource Information System (MIRIS) maps, or 2) small islands in Lake Michigan, which by virtue of being islands have uniquely sensitive features. Not all of the lands depicted as being Sensitive Lands on this map will actually be wetlands because, in order to be accurate, wetland determinations require onsite evaluation of the land, which is not possible at a county level map scale. In addition, some wetland areas may exist, which are not depicted on this map. For purposes of this plan, the recommendation is one of no development on wetlands regardless of whether or not they are depicted on this map. Some of the lands within the Sensitive Lands category are publicly owned, serve as wildlife habitat and provide recreational opportunities.” (3.2).

The plan does not acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources.

Master Plan Components: RECOMMENDATIONS

We applaud Charlevoix County for its excellent Future Land Use Plan. We have only two suggestions for when the plan is updated, which should be in 2014.

SUGGESTED ACTION: Consider addressing the importance of preventing new impervious surfaces, and the various tools and incentives available for doing so.

SUGGESTED ACTION: Consider addressing road stream crossings, where proper construction and design techniques are critical to avoid excessive sedimentation in streams.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 0, MISSING

As noted above, Charlevoix County does not have zoning in place at the county level. The local entities are all very active and have taken steps to do planning and zoning. The county is an active partner in supporting those efforts at the city, township, and village levels. That has been working for a very long time, and we respect this process. However, it should be noted that for water protection efforts, in particular, there are situations where county zoning, or specific ordinances, offer more effective and coordinated protections.

For example, townships may have shorelines on a common water body, but they can be uncoordinated in their protection efforts. One township could require protections that are strong or adequate, while the neighboring township does not require the same protective steps, at all. This does not help the water body in question.

As noted earlier, the county has a strong Future Land Use Plan in place to guide cities, townships, and villages. But you will also see, in subsequent chapters, that some of those jurisdictions are still weak on certain items, or missing protections completely. We generally support and encourage zoning at the county level for the purpose of providing help and water protections to the other local entities, if they cannot enact them for any reason.

For now, we have no further recommendations for this element. In the future, if circumstances change, we may have different recommendations to ensure that the vital water resources in Charlevoix County are protected to the fullest extent, because those resources provide our key economic driver.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 0, MISSING

For this element, we acknowledge the statements in the Future Land Use Plan that support providing model ordinances to local entities, including various efforts at shoreline protection such as setbacks and buffer strips (p.4.4). As noted in the Literature Review, shorelines are vital transition zones between land and water, where many important interactions occur that benefit the lake ecosystem, including food and nutrient exchange. These benefits are diminished when shoreline properties are developed and vegetation is removed, but they can be recovered by planting vegetated buffer strips using a variety of native species. The county should continue efforts at educating citizens on these points and encouraging local governments to enact shoreline protections.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 0, MISSING

As noted above, the Future Land Use plan does not address using tools or incentives to prevent unnecessary increases in impervious surfaces. The more a local government can do to reduce impervious surfaces, the better for water quality.

As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces (streets, roofs, sidewalks, etc.) generate much more stormwater runoff than natural forested, or even agricultural, land uses.

Lake Charlevoix has three relatively large urban areas on its shorelines – East Jordan, Boyne City, and the City of Charlevoix. A portion of all these cities have paved streets with curbs, gutters, and subsurface drainage pipes called storm sewers.

The main purpose of storm sewers is to prevent flooding and water damage. Unfortunately, some of these were installed many decades ago. Additionally, substances finding their way onto the streets and sidewalks are likely to be washed into Lake Charlevoix, or tributary streams, by rainfall and snowmelt. This includes things like bacteria from pet and animal wastes, fertilizer, oil and grease, sediment, heavy metals, salt, etc. A multitude of studies from around the nation and world have documented that urban stormwater is a serious source of pollution.

Additionally, the four Goals identified in the Lake Charlevoix Watershed Management Plan are:

Goal 1. Aquatic life and wildlife--Protect the diversity of aquatic habitats within the Lake Charlevoix Watershed by reducing the contribution of sediment, nutrient, and toxic pollutants.

Goal 2. Cold water fishery--Reduce sediment and nutrient loads which threaten to harm habitat conditions for the cold water fishery in Lake Charlevoix and its tributaries.

Goal 3. Partial or total body contact--Maintain the excellent recreational opportunities in the rivers and lake by reducing sediment and nutrient contributions.

Goal 4. Navigation--Maintain navigation in the rivers and lake by reducing any sediment inputs.

In order to accomplish these goals, each one includes the objective to reduce the pollutant load from stormwater in the urban areas. Reducing impervious surfaces supports this objective. Among other low cost approaches to reduce impervious surfaces, a community can increase the retention or restoration of native vegetation in riparian areas and in open spaces. Minimizing impervious surfaces can be also addressed in creative and cost-effective ways, ranging from using Low Impact Design (LID) techniques in development plans, to incentives for limiting impervious surface lot coverage in zoning ordinances.

Ordinances can be crafted to guide overall development design to benefit water quality, such as incentives to protect natural vegetation throughout the development site. Lot design and general development provisions in zoning ordinances provide great opportunities to encourage alternatives to and reductions of impervious surfaces, such as shared driveways. We reiterate our recommendation that the county include this element in the next plan update, and in the interim, discourage the increase of impervious surfaces wherever possible.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 24, STRONG (AS PROPOSED; MUST BE PASSED IN COUNTY MUNICIPALITIES)

In 2006, the Grand Traverse County Prosecutor queried the State Attorney General (AG) Office about stormwater management. In response, a letter from the AG stated that counties cannot regulate stormwater runoff beyond what is needed for soil erosion and sediment control, and said that only townships, cities and villages have authority to control flooding. Tip of the Mitt Watershed Council disagreed strongly with the conclusions of the AG's office on this matter. We sent two letters to them over the course of the following year, endorsed by local officials in Emmet County, Charlevoix County, and Grand Traverse County, asking for a review of the opinion delivered in the AG's letter.

After the second letter was sent, the AG's office telephoned us to say that our letters were well-received and raised excellent points for additional legal research to address. However, the AG's office exists to respond to questions of law from the Governor, the legislature, departments and agencies of state government, and in certain circumstances, county prosecutors. The AG's office is required to prioritize this work according to their primary mission, and letters from entities such as Tip of the Mitt Watershed Council do not have priority. Despite numerous efforts, we found no other way to have these letters formally reviewed, and most counties in the state rescinded their stormwater ordinances, including Charlevoix County. Doing so means that stormwater control is now left up to individual townships to address, but most find that a burden, due to limited resources.

After much discussion and consideration, Charlevoix County officials decided to address this situation in a manner similar to what was done in Grand Traverse County. A draft has been prepared for a new Storm Water Control (SWC) Ordinance that would need to be passed by individual municipalities, giving the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating municipalities would have to pass identical language and participate in an Intergovernmental Agreement. We support this approach for two reasons: the draft ordinance is strong, and this approach is being successfully used in Grand Traverse County.

Stormwater Management: RECOMMENDATIONS

The new ordinance is being prepared for presentation, as of this writing, and we urge all county municipalities to pass it. Construction concerns are not the only issues with stormwater management, but that aspect is a very important factor. Additionally, in keeping with the Charlevoix County Future Land Use Plan, the county should incorporate Best Management Practices (BMPs) for county facilities, and help local units of government address stormwater management.

SUGGESTED ACTION: Finish the Storm Water Control Ordinance and Intergovernmental Agreement and present it to all county municipalities for passage in each of their separate jurisdictions.

SUGGESTED ACTION: Per the Future Land Use Plan, ensure that any expansion or upgrade of county-owned facilities incorporates site designs to treat on site or reduce the impact of stormwater runoff, using BMPs.

SUGGESTED ACTION: The County Planning Commission, in conjunction with the Drain Commissioner and the Soil Erosion and Sedimentation Control Officer, should follow through with research and recommendations to local units of government and developers on ways to reduce or eliminate stormwater runoff (e.g. rain gardens, pervious surface parking lots, stormwater retention, detention basins)", per the Future Land Use Plan.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 14, STRONG

At the state level, Part 91 of the Natural Resources and Environmental Protection Act 1994 PA 451, as amended, addresses Soil Erosion and Sedimentation Control (SESC). From Part 91, a state program was implemented to regulate the pollution of Michigan waters, due to improper construction site management practices, including improper stormwater runoff. Counties are mandated to administer and enforce Part 91, and Charlevoix County has two state-recognized agencies that do so: The Soil Erosion Control Officer and the County Road Commission. If any project is within 500 feet of a lake or stream, OR if a project disturbs more than one acre of earth, applicants are required to contact the county's Soil Erosion Control Officer for a permit.

We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 5, WEAK

Chapter 5 of the County Future Land Use Plan includes a section called: “Public Facilities: Utilities, Sewer & Water”. Here it notes that the county’s three cities (Boyer City, Charlevoix, and East Jordan) provide sewer service to the majority of the area within their municipal boundaries, and also to limited areas outside of their boundaries (p.5.19). The same section also notes that conditional transfer of lands between cities and townships (under Public Act 425 of 1984) has been used in the county as a vehicle for the extension of sewer and water from cities into townships (p.5.17). Additionally, it is important to note that due to soil limitations, smaller areas within the county generally cannot expand without the provision of sewer and/or water service.

The Future Land Use Plan also notes that septic systems require periodic maintenance. It emphasizes that neglecting to do so can result in failure, which carries the risk of localized ground water contamination issues (p.5.23). The same section goes on to make this important point: “These localized contamination areas tend to go undetected for long periods of time due to individual wells not being tested for a broad range of contaminants on a frequent basis.” It does not mention the fact that failing septic systems can also contaminate surface waters, such as lakes and streams. However, if septic systems are left unchecked on a shoreline, they can be a source of trouble for all water resources in the area.

As noted in the Literature Review, septic systems that are not properly maintained can fail and release untreated sewage into the environment. Because of this risk, and the liability that falls on the home or business owner, it is important that septic systems be thoroughly inspected before a transfer of property is completed. This will ensure that the new owner has an adequately functioning septic system at the time of transfer, thereby minimizing the risk of liability for environmental contamination and public health threats resulting from a malfunctioning system. In addition to protecting property owners, “point of transfer inspection” ordinances also reduce pollution to lakes and other water sources by identifying those systems that need repair or replacement.

There exists a real need for broad education about septic system maintenance and some oversight to ensure failing systems are not transferred to new owners. To ensure strong coordination, a point of transfer septic ordinance is something we would suggest for consideration as a county-wide ordinance. In the absence of a county-wide ordinance, we urge all the municipalities in the county to enact such an ordinance.

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: Educate residents about proper septic system management and encourage them to maintain septic systems on a regular basis.

SUGGESTED ACTION: Enact a county “point of transfer” septic inspection ordinance, working in coordination with local municipalities and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, MISSING

We applaud the strong encouragement by the county to protect wetlands in the Future Land Use Plan. However, there is no county regulation of wetlands and even though many municipalities have taken steps to protect wetlands on their own, you will see in the following chapters that we recommend more steps, in most cases.

As time passes, we learn more and more about the significance of wetlands, and they are appreciated now even more than just a decade ago. Citizens in Charlevoix County continue to be interested in wetland protections because of the public benefits they provide, such as fish and wildlife habitat, high water quality, and flood water storage. These benefits extend well beyond the bounds of wetlands themselves. Wetlands are critical to the health of Charlevoix County's vast water resources, and they are difficult to restore once they are damaged or filled.

Federal and state protections do exist, but to fully protect Charlevoix County wetlands a county-wide ordinance should be enacted to fill in gaps of protection. This would provide a layer of support for all municipalities in the county, most of which have expressed a strong desire to protect these important resources. If nothing else, the debate should take place and if municipalities prefer to do this at the local level, then so be it. Where the Wetland Critical Element is weak or missing in the following chapters, we make recommendations to correct it. However, we believe an ordinance at the county level would be the most efficient and cost-effective way to provide protections for wetlands.

Wetlands: RECOMMENDATIONS

Ensuring that existing wetlands are functioning, healthy, and able to provide ecosystem services improves overall water quality and provides a method to keep it protected.

SUGGESTED ACTION: Given the crucial role that wetlands play in overall water health, broadly educate citizens about the benefits of wetland protections.

SUGGESTED ACTION: Eventually, enact a wetland protection ordinance for the county.



Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 0, MISSING

We have no recommendations for this element at the county level. However, we will take this opportunity to explain the types of wellhead protection included in the voluntary state program.

The Michigan State Wellhead Protection Program assists local communities to protect their water sources, if they use ground water for their drinking water supply systems. There are two types of plans that can be submitted for approval. The first is a Source Water Protection Area, which designates plans that are done for community well fields that do not test positive for tritium, a radioactive isotope of hydrogen. If the tritium test is positive, a Wellhead Protection Area plan is done, which is a more extensive process. Eight communities in Charlevoix County have taken part in this program, and they will be noted in their respective chapters.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 20, ADEQUATE

We have no further recommendations on this element, which includes floodplains, high risk erosion areas, and critical dunes that will be addressed at the local level.

Conclusion

We applaud the water protection measures that exist in Charlevoix County. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

Charlevoix County

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	22	Strong
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	0	Missing
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	0	Missing
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	0	Missing
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	24 (as proposed)	Strong (As proposed; must be passed in the county municipalities)
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	14	Strong
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	5	Weak
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	0	Missing
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	0	Missing
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	20	Adequate



SECTION III: Analysis

Chapter 2 City of Boyne City

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for the beautiful City of Boyne City, which is located where the Boyne River flows into Lake Charlevoix, in Charlevoix County. It also offers direct access to Lake Michigan, being situated on the eastern shores of Lake Charlevoix. This popular tourist destination has 11 acres of waterfront recreation area and is truly a scenic spot. Additionally, the city website notes the following: "Boyne City grew 6% from the 2000 census to 2010, making us the fastest-growing city in Northern Michigan." This chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix, which includes Boyne City and the Boyne River.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 20, ADEQUATE

The City of Boyne City has a current Master Plan dated 2007. It is noted in the Master Plan that Lake Charlevoix and the Boyne River form watersheds, but they are not identified (Chapter 6 Built Environment, Public Art).

Chapter 5 of the Master Plan, Managing Our Land, includes: Existing Land Use Map (p.5.10), Aquifer Map (p.5.11) and Aerial Photo (unnumbered online; final pages of Chapter 5), all showing key aquatic features. Chapter 8, Community Environment, notes that Boyne City should prepare an Open Space Protection Plan to help create a comprehensive land conservation program for the city. Areas recommended for identification and mapping are: wetlands; land containing critical habitat for migratory waterfowl, fish, and other wildlife; shorelines of surface waters, to include the Boyne River, Lake Charlevoix, wetlands, tributaries, and natural drainage ways; and ground water.

Additionally, Chapter 8 notes that Lake Charlevoix and the Boyne River are two of the region's most valued resources. Also: "Besides protecting the lake, river and streams, the city must consider its groundwater... vital that Boyne City protects the quality of these essential water resources." (p. 8.1) It notes that their shorelines are particularly fragile and greenbelts are needed to stabilize the shoreline, filter surface water runoff before it hits the lake or river, and provide habitat.

On the topic of stormwater, the city envisions the design and retrofitting of “stormwater detention basins as natural wetland/prairie systems to enhance water quality and other environmental benefits.” (Chapter 8 Community Environment, Natural Landscaping) The same section also calls for reduction in the amount of impervious surfaces by substituting vegetation, where appropriate. It also notes that current wetland regulations should be reconsidered, placing value on the functions that wetlands provide for keeping waters clean.

The Master Plan includes identification and protection of wildlife corridors. Chapter 5 states, “The shorelines outside of the downtown and along the river have a network of protected conserved lands including natural areas offering habitat and travel corridors for wildlife...” (p. 5.1) Chapter 8 advocates for Proactive Conservation to identify high priority sites for protection and set aside these lands. The recommended approach is creation of a Boyne City Conservation Fund by the city, and the establishment of a Conservation Legacy Program, which will guide the acquisition of conservation land (p. 8.7).

Boyne City also has a separate Waterfront Master Plan (2006). This plan acknowledges the importance of both environmental protections for the city’s outstanding water resources, as well as economic protections for their role as drivers of the local economy. This balance has been appreciated for awhile now, and the section called Previous Planning Efforts for the Project Area notes the following: “Key to enhancing, preserving and protecting the character and quality of downtown /Boyne City is to focus on the community’s greatest resources – Lake Charlevoix and Boyne River. These two water bodies created the framework and form of the city as it evolved over the years. They are vital to the city’s economic base.” (p. 6, from the 2004 “Boyne City, Michigan Resource Team Report”)

The plan also notes that the State of Michigan wetland regulations are the primary source of environmental protections, and the city ordinance is not as stringent as those used in surrounding townships (p. 31). Finally, the Waterfront Master Plan recommends that it be reviewed at each point of implementation, and every 5 years to reaffirm or amend, as appropriate. 2011 is the year this plan update process should begin for the waterfront plan.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: When the Master Plan is updated (due in 2012), identify the watersheds in which the city is located and educate about the fact that you are always in a watershed, and everyone’s actions impact the water resources upon which you depend.

SUGGESTED ACTION: Improve the emphasis on stormwater management techniques and reduction or prevention of impervious surfaces, and note the importance of well-maintained road stream crossings for water quality.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 42, STRONG

Boyne City has some very strong Basic Zoning Components in place to aid in protection of water resources. The stated purpose of the Zoning Ordinance is to “secure the most appropriate use of land.... facilitating adequate water, sewers.... all in accordance with a comprehensive plan.” (Art I Sec 1.10) The purpose of the Waterfront Residential District includes: provide an environment of low density; ensure that development remains at a sustainable density and scale, and that lots and public rights-of-way do not unreasonably degrade the quality of Lake Charlevoix and other bodies of water (Art V Sec 5.10). It also includes protections for sensitive areas (Art V Waterfront Residential District; Art IX Waterfront Marina District; Art XVI Flood Hazard District).

A fee system is in place to cover costs to the community for review of proposal applications, authorized by the ordinance: “The City Commission may, from time to time, prescribe and amend, by resolution, a reasonable schedule of fees to be charged to applicants wishing to rezone, seek development plan approval, or obtain a

zoning permit within the City of Boyne City.” (Art XXVIII Sec 28.40) It also has methods in place for enforcement, including a clearly defined process for inspections and correction of violations [Art XXVIII Section 28.60(A)].

The Zoning Ordinance proposal review process is coordinated with the receipt of other applicable county, state, and/or federal permits: “Other Agency Reviews. The applicant has provided documentation of compliance with other appropriate agency review standards, including, but not limited to, the Michigan DNR, Michigan DEQ, Michigan DOT, Charlevoix County Drain Commissioner, Northwest Michigan Community Health Agency, Charlevoix County Building Department, and other federal and state agencies, as applicable.” [Art XIX, Sec 19.40, Development Approval Criteria (T)]

Site Plan Review is also required by the Zoning Ordinance “for all activities except single-family detached residences and accessory buildings.” (Art. XIX Development Plan Requirements Sec 19.10) There is also strong coordination with the county for Soil Erosion permits [Art XIX Sec 19.40 Development Approval Criteria (L) Soil Erosion Control; Art XXI Sec 21.19 Waterfront Overlay District Regulations (6)]. Importantly, Site Plan Review also includes Open Space provisions, reflecting the intent of the Master Plan [Art XIX Sec 19.40 Development Approval Criteria (K)].

Additionally, Boyne City makes use of Planned Unit Development (PUD) provisions to “offer an alternative to traditional residential developments and subdivisions through the use of planned unit development legislation.” (Art XVIII Open Space Community Option Sec 18.10) PUDs also require inclusion of a minimum twenty-five percent (25%) of the total site area designated as permanent open space, and contain preservation of natural assets [Art. XVIII Sec 18.40 (B); (C)(1)]. There are also flexible site design criteria available to encourage developers to include open space or cluster design provisions [Art XVIII Sec 18.40 (K)(1-2)&(L)(1-4)]. Finally, the same section requires a Guarantee of Open Space to ensure proper maintenance, including use of conservation easements as an option, in agreement with the Master Plan [Sec 18.40 (E)].

Basic Zoning Components: RECOMMENDATIONS

We applaud Boyne City for having most of what we consider to be essential Basic Zoning Components for water resource protections. We have only the following recommendations:

SUGGESTED ACTION: Consider restricting any allowable uses in open spaces to low impact uses, managed in a natural condition, to preserve natural assets as intended and stated in the ordinance.

SUGGESTED ACTION: Consider ways to encourage retention of native vegetation in dedicated open spaces of PUDs and prohibit the use of invasive species.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 13, WEAK

Shoreline protection efforts in Boyne City could be improved – and should be, as a priority, given the economic importance of clean water to the community. And, there are some positive protection aspects upon which to build. Setbacks are in place to minimize harmful runoff and erosion. All structures except docks, shoreline protection structures, and walkways six feet or less in width are required to be set back a minimum of thirty-five feet from the high water elevation [Art V Sec5.60 (A, Art IX Sec. 9.50(A) & Art XX Sec 20.30 (m)(1)].

The Boyne City Zoning Ordinance also regulates dock lot minimum frontage, including allowances for legal nonconforming structures. No more than one dock is allowed per every 100 feet of waterfront. However, any waterfront lot, regardless of frontage, without a dock as of the adoption of the ordinance, is permitted one dock. Additionally, each single family detached dwelling is limited to three watercraft, per dock [Art V Sec. 5.40(E) Waterfront Residential District - Watercraft / Dock Limitation]. The ordinance does not regulate the size of docks, and there are no keyhole/funneling prevention provisions.

Boyne City regulates marinas using Article IX, Waterfront Marina District. Fueling stations are minimally regulated, using coordination with federal requirements for hazardous materials or waste [Art XIX Sec 19.40 Development Plan Approval Criteria (S)].

Despite stated Master Plan goals, no shoreline buffer zone or greenbelt requirements are in place to protect the health of rivers and lakes in the city. As noted in the Literature Review, shorelines are vital transition zones between land and water, where many important interactions occur that benefit the lake ecosystem, including food and nutrient exchange. These benefits are diminished when shoreline properties are developed and vegetation removed, but can be recovered by planting vegetated buffer strips, using a variety of native species. Establishing a diverse vegetated buffer strip encourages a shoreline to revert to natural conditions, which improves the effectiveness of the transition zone in protecting the lake ecosystem from the negative impacts of adjacent land-use activity. Additionally, these greenbelts can be designed to blend in well, according to desires of a property owner. They can range from a very landscaped and attended look that is still protective of erosion and harmful stormwater runoff, to a very wild and natural shoreline that still provides easy lake access for recreation.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Consider how to encourage or require a vegetated buffer within the building setback for sites on water bodies. Encourage native plantings and prohibit invasive species from being used in the buffer strip.

SUGGESTED ACTION: Consider including keyhole prevention provisions by placing restrictions on the size and type of multi-boat launch and docking sites.

SUGGESTED ACTION: Restrict boat repair and maintenance activities in marinas to clearly marked areas, to prevent contaminants and debris from falling into the water and limit the spread of invasive species.

SUGGESTED ACTION: Require marina fueling stations to have spill containment equipment that is stored in a clearly marked location. Also, require a spill contingency plan and post emergency phone numbers in a prominent location. Finally, signs of leakage or spillage should be investigated immediately, and undertake cleanup in accordance with applicable Best Management Practices (BMPs).

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 13, ADEQUATE

The Lake Charlevoix Watershed Plan includes an objective to reduce the pollutant load from stormwater in urban areas. Reducing impervious surfaces supports this objective. Among other low cost approaches to reduce impervious surfaces, a community can increase the retention or restoration of native vegetation in riparian areas and in open spaces. Minimizing impervious surfaces can be also addressed in other creative and cost-effective ways, ranging from using Low Impact Design (LID) techniques in development plans, to incentives for limiting impervious surface lot coverage in zoning ordinances (Lake Charlevoix Watershed Plan, 2008 Update. Chapter Four: Lake Charlevoix Watershed Project Goals, Objectives, and Recommended Actions, 1. Goals and Objectives).

Ordinances can be crafted to encourage the use of techniques that benefit water quality, such as incentives to protect natural vegetation throughout a development site. Lot design and general development provisions in zoning ordinances provide great opportunities to encourage alternatives to, and reductions of, impervious surfaces.

In Boyne City, a maximum of forty percent (40%) of the front yard of a lot may be covered with inorganic material, such as asphalt or cement concrete, paving stone, flagstone, rock or gravel [Art IV Sec 4.40(B)& Sec 5.4(B) Landscape/Hardscape Material]. To provide a comparison, our checklist awards highest ranking for rural, low density areas that limit impervious coverage to 15% maximum to be most protective of water quality. It also awards high marks for flexible lot coverage standards that allow creative approaches to mitigate impacts from larger footprints. The city does not limit the extent of lawn area for residential lots.



The Zoning Ordinance does require some portion of proposed parking lots to be planted with trees/vegetation within the parking lot paving [Art XXIII Sec 23.30 Parking Lot Landscaping (A-C) Specific Landscaping requirements]. This is beneficial because landscaping, if done with BMPs for stormwater control, can help mitigate the effects of new impervious surfaces.

City streets can be designed with the minimum required pavement width needed to support travel lanes, emergency, maintenance and service vehicles. The required pavement width may be reduced by the Planning Commission to a minimum twenty-two (22) foot width easement of at least forty (40) feet, where primary or secondary conservation areas will be preserved [Art XVIII Sec 18.50 (N)(2) private streets]. Boyne City cul-de-sacs should be designed with a central island planted with native trees and shrubs [Art XVIII Sec 18.50(N)(1)(b)].

Impervious Surfaces: RECOMMENDATIONS

The Zoning Ordinance could allow flexible lot coverage standards to encourage cost-effective, creative approaches that limit impervious surfaces for both single lots and larger developments; rural or urban. It could also limit parking space numbers and space sizes, among other options for easily curbing the amount of new impervious surface that is created in the area. Additionally, it could allow for relaxation of yard setbacks to reduce driveway lengths and overall site imperviousness.

The following suggested actions relate directly to the Watershed Management Plan for Lake Charlevoix, which includes reducing the pollutant load from stormwater runoff. Reducing impervious surfaces helps to accomplish this objective to protect township waters from sediment, nutrients, and toxic substances.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative and cost-effective approaches to limiting impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider setting parking space dimensions as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum.

SUGGESTED ACTION: Consider allowing shared parking for the reduction of parking requirements.

SUGGESTED ACTION: Consider requiring spillover parking areas to be pervious surfaces, or planted in grass. Require that parking lot landscaping be designed to help address pollutant removal from stormwater runoff (i.e. providing curb cuts to allow flow of stormwater into landscaped areas).

SUGGESTED ACTION: Consider ways to encourage shorter driveways, and shared driveways, where appropriate.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 10, ADEQUATE

Stormwater Management in Boyne City is weakened because it intends to coordinate with the county, but the county ordinance is no longer in effect, as addressed in Chapter 1 of this Section. This creates some holes in the provisions for protective stormwater regulation. In the Site Plan Review process, however, a grading plan is required, including indicating where stormwater runoff is appropriately channeled into an approved drain or detention/retention pond. A general description and location of the stormwater management system is also required [Art XIX Sec 19.30 Application Requirements (H, I)]. All plans must comply with the Charlevoix County Stormwater Ordinance, which is no longer in effect, as noted. There is also a provision for coordination with the county Drain Commissioner and other appropriate agency review standards [Art XIX Sec 19.40 Development Plan Approval Criteria (T)].

Stormwater management areas and facilities, whether on-site or off-site, are required to be designed, constructed, and maintained to prevent flooding and protect surface and ground water quality. "Appropriate measures shall be taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions shall be made to accommodate stormwater which complements the natural drainage patterns and wetlands, prevent erosion and the formation of dust. Sharing of stormwater facilities with adjacent properties shall be encouraged. The use of detention/retention ponds may be required. ... All such measures shall comply with the Charlevoix County Stormwater Ordinance." [Art XIX Sec 19.40 Development Plan Approval Criteria (N) Stormwater Management]

Stormwater outfalls that discharge into surface waters or wetlands must have appropriate state and federal permits, and the status of those applications must be available. Direct discharge of stormwater into natural watercourses, including lakes, ponds, rivers, streams and wetlands is not prohibited, unless regulated as a pollutant discharge at the state or federal level. Specific prohibitions do not exist for stormwater that exits property after exposure to harmful sources; however, businesses that include exposure to hazardous materials for their normal operation must demonstrate compliance to state and federal standards.

For various property zoning designations, "a soil erosion plan and a stormwater plan submitted to and approved by the Charlevoix County Soil Erosion Officer shall be required prior to obtaining a Zoning Permit. For property zoned WMD, MFRD, and CBD an engineered stormwater plan meeting the requirements of the Charlevoix County Soil Erosion Sedimentation and Stormwater Runoff Control Ordinance shall be required prior to obtaining a Zoning Permit." Again – those specific protections no longer apply, since the county ordinance is no longer in effect.

Stormwater Management: RECOMMENDATIONS

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Boyne City for passage.

SUGGESTED ACTION: Consider adding review of stormwater BMPs and other water quality protections in the site plan review ordinance.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 9, ADEQUATE

This element is also importantly linked to the county. "The site shall have adequate lateral support so as to ensure that there will be no erosion of soil or other material. The final determination shall be made by the Planning Director or City Engineer, and have a valid Charlevoix County Soil Erosion permit." [Art XIX Sec 19.40 Development Plan Approval Criteria (L) Soil Erosion Control]

“For property zoned RED, TRD, WRD and CSD, a soil erosion plan and a stormwater plan submitted to and approved by the Charlevoix County Soil Erosion Officer shall be required prior to obtaining a Zoning Permit. For property zoned WMD, MFRD, and CBD an engineered stormwater plan meeting the requirements of the Charlevoix County Soil Erosion Sedimentation and Stormwater Runoff Control Ordinance shall be required prior to obtaining a Zoning Permit.” [Art XXI Sec 21.19 Waterfront Overlay Regulations, Zoning and Use Regulations (6)] The lack of a county stormwater ordinance impacts this section.

Soil Erosion and Sediment Control: RECOMMENDATIONS

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from the City of Charlevoix.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 6, WEAK

The Boyne City Master Plan does not include some key points of protection for its sewer system. Private wells and septic systems are not allowed within the City of Boyne City. However, there is a rural zoning district that does allow for the use of wells and septic systems. Regulations that pertain to septic systems are coordinated with the County Health Department regulations. Art XXXIII Sec 28.20 (B) states: “The written approval of the sewage disposal facilities, when required from the Charlevoix County Health Department or the Boyne City Water and Sewer Department shall accompany the zoning permit, which shall be filed and retained by the office of the Planning Director or Zoning Administrator.”

SUGGESTED ACTION: If not already done, ensure the Sewer Service Area is mapped, including sewers that currently exist, areas that will be sewerred in the future, and areas that will not be sewerred.

SUGGESTED ACTION: Require that existing infrastructure be inventoried for age and condition, and ensure that a maintenance and replacement schedule is provided in the Master Plan.

SUGGESTED ACTION: Require the community to have a program to identify sanitary sewer or septic systems that are seeping into the storm water system, surface waters or ground water.

SUGGESTED ACTION: In the rural zoning district that allows septic systems, require that systems be located at least 100 feet from streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement for the rural septic district, whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 5, WEAK

Boyne City has adopted some local wetland ordinance provisions. Site plans must indicate all existing natural features, and, “Judicious effort shall be used to preserve the integrity of the land, in particular wetlands designated or regulated by the Michigan DEQ and to a lesser extent, wetlands which are not regulated by the Department.” [Art XIX Sec 19.40 Development Plan Approval Criteria (C) - Preservation of Significant Natural Features]

Additionally, Site Plan Application requirements include specifying the location of regulated wetlands, including a wetland delineation by a qualified consultant, and the status of any needed wetland permit, including any mitigation requirements. It also requires specifying the location of other significant unregulated wetlands larger than two contiguous acres.

Finally, the Zoning Ordinance requires a building setback of 25 feet from areas defined as wetlands by the Boyne City Comprehensive Plan [Art V Sec 5.60(B), Art IX Sec 9.60(B), Art XXI(3) & Art XX Sec 20.30(m)(2)].

Wetlands: RECOMMENDATIONS

As noted above, the Master Plan acknowledges that the State of Michigan wetland regulations are the primary source of environmental protections in Boyne City, and the city ordinance is not as stringent as those used in surrounding townships (p. 31). Federal and state protections for wetlands do exist, but to fully protect Boyne City wetlands in the absence of a county ordinance, a local wetland ordinance should be enacted to fill in gaps of protection. Ensuring that existing wetlands are functioning, healthy, and able to provide ecosystem services improves overall water quality and provides a method to keep it protected.

SUGGESTED ACTION: Given the crucial role that wetlands play in overall water health, broadly educate citizens about the benefits of wetland protections.

SUGGESTED ACTION: Enact a local wetland protection ordinance, as suggested by the city Master Plan. Also, consider establishing a wetland setback similar to shoreline setbacks. This would protect wetlands and be simple to administer, in the short term.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 7, ADEQUATE

The Boyne City Master Plan and the Boyne City 2010 Water Quality Report indicate that the city gets its drinking water from municipal wells. The city participates in the State Wellhead Protection program, with a plan that was approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step to protect these precious drinking water sources.

Additionally, the city takes steps to protect its ground water in the zoning ordinance. From Chapter 70, Utilities, Art II - Water system, Sec. 70-24 (a-b) Protection of Potable water supply: "No person shall introduce any chemical, biological, or other substance into the waterworks system with the intent to cause the water supply to be unfit for human or animal consumption under applicable state and/or federal safe drinking water standards. Any person violating this provision shall be guilty of a misdemeanor. The department of public works shall regularly monitor and test the water within the waterworks system for the purpose of detecting water contamination and to ensure that the water continues to meet all applicable state and federal safe drinking water standards."

Storage of hazardous materials is regulated under Part 5 Rules issued for Part 31 Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the city continues to grow, and more people rely on ground water drinking water supplies.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 29, ADEQUATE

Boyne City participates in the National Flood Insurance Program, and includes ordinance language that regulates floodplain development. (Art XVI Flood Hazard District, Sec 16.10) We have no additional recommendations for this Element.

Conclusion

We applaud the water protection measures that exist in Boyne City. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

City of Boyne City

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	20	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	42	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	13	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	13	Adequate
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	10	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	9	Adequate
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	6	Weak
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	5	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	29	Adequate

SECTION III: Analysis

Chapter 3 City of Charlevoix

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for the City of Charlevoix, located at the junction of Lake Charlevoix and Lake Michigan. Affectionately known as “Charlevoix the Beautiful,” the city includes parts of both the Lake Charlevoix and Lake Michigan watersheds. Round Lake is a focal point for the city, and Stover Creek is a focus for some excellent restoration and protection projects.

With a year-round population of about 3,000, the summertime average population is closer to 9,000 and on a festival or holiday, the city can expect as many as 30,000 visitors during a summer weekend. This Chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix, where appropriate.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 21, STRONG

The City of Charlevoix Master Plan is hot off the presses! The Planning Commission approved it on January 10, 2011. The City Council then held a public hearing on February 7th and unanimously approved Resolution 2011-02-01, officially adopting the Master Plan. We congratulate them on this important accomplishment and thank them for this badly needed update. We also thank them for their strong emphasis on the unique connection to water that exists in the community.

The Master Plan specifically identifies the watershed in which the city is located using a watershed map that includes an inventory of surface water features (Chapter 2, Community Profile 2.3 Environment, Water - Map p.11). It also has a goal statement to protect water in Chapter 3, Community Vision & Goals: “Work with organizations like Tip of The Mitt Watershed Council, the Little Traverse Land Conservancy, and the Lake Charlevoix Association to inform the public on water quality protection measures.” (3.5 Community Goals, Objectives & Action Items, Item 3.4 Coordinate Efforts on Natural Resource Protection p.40)

The City of Charlevoix’s plan also includes goals for open space, which protects surface water, ground water, and wetlands. Infill development is encouraged in Chapter 2 (Community Profile, p.24-25). Chapter 4 notes that some undeveloped open spaces, both public and private, have high scenic and recreational value. Many of those include shorelines, which are extremely important to water quality, and extremely sensitive. It recommends that any development in these areas should pay special attention to setbacks, stormwater

Best Management Practices (BMPs), and other environmental considerations (Chapter 4 Charlevoix Tomorrow, Scenic Reserve p. 51).

Stormwater management is also addressed in the city plan. In recent years, Charlevoix partnered with Tip of the Mitt Watershed Council on this topic, and recommendations for stormwater control were received by the city (included in Master Plan Appendix G). Two Rain gardens and a stormwater filtration device have been implemented, so far, and the plan acknowledges the need to incorporate BMPs. This is a great policy approach for water protection. The city demonstrates to citizens, businesses, and visitors that cost effective, sustainable technology is available to keep water quality high that can also be very attractive or non-intrusive (Chapter 2 Community Profile, 2.11 City Utilities; Stormwater page 31).

The plan also includes this crucial point: “Work cooperatively with all jurisdictions to adopt a unified Stormwater Control Ordinance for Charlevoix County.” (Chapter 3 Community Vision & Goals, 3.5 Community Goals, Objectives & Action Items, Item 3.4, p. 40) The need for doing so is described below, in the Stormwater Element, and in more detail in Chapter 1 of this project, covering Charlevoix County.

Master Plan Components: RECOMMENDATIONS

Again, we congratulate the city on the new Master Plan and the hard work it took to complete. The City Planning office is now starting an update of the existing Zoning Ordinance, and this plan will serve as the basis for that work, in accordance with state law. We understand that decades went by before a new Master Plan update was attempted, but it is now finished and that is a wonderful accomplishment. We urge city officials to adopt the practice of review and updating the plan every five years. When this plan comes up for review in 2016, we recommend the following points.

SUGGESTED ACTION: In the next plan update, consider calling for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration. Encourage incentive-based approaches that are creative and effective, and educate citizens and businesses about the need to do so.

SUGGESTED ACTION: Ensure that the plan update acknowledges the importance of well-constructed and maintained road stream crossings on the quality of Stover Creek.

SUGGESTED ACTION: Finally, the next plan update should also include identification and protection of any wildlife corridors that may exist in the city, working with neighboring jurisdictions to make them effective.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 19, ADEQUATE

As noted above, the Zoning Ordinance is now up for review, which we hope is good timing for this Local Ordinance Gaps Analysis project, in terms of opportunities to improve water protection measures for the City of Charlevoix. The score for this element for Charlevoix is 19 of a possible 54. It scored “Adequate” but one less point would have put it into the “Weak” category. However, that is not to diminish the good basic components that are evident and can be used as a foundation for improvement.

The ordinance includes a fee system to cover costs for review of proposal applications or appeals: “The fees for processing planning and zoning requests within the City of Charlevoix shall be as specified by the city council in the annual City of Charlevoix budget ordinance.” (CHAPTER 52 FEE SCHEDULE--ZONING AND SUBDIVISION REVIEW; 5.295) It also has methods in place for enforcement, including a clearly defined process for inspections and correction of violations: “Any person, partnership, corporation, or association

who creates or maintains a nuisance per se as defined in subsection (a) above or who violates or fails to comply with this Chapter or any permit issued pursuant to this Chapter shall be responsible for a municipal civil infraction punishable by a fine of no more than \$500.00 as determined by the court.” [Chap 51 Art XII Sec 5.291 Penalties (b)]

The city Zoning Ordinance proposal review process is also coordinated with the receipt of other applicable permits. Approval is based upon, among other things, compliance with requirements of the city for fire and police protection, water supply, sewage disposal or treatment, storm drainage, and other public facilities and services. Also, approval is based on compliance with the standards of other government agencies, where applicable, and the approval of these agencies must be obtained or somehow assured [Chap 51 Art V General Provisions Sec 5.188 Development Plan (2)(b-c)]. This is good policy that allows more certainty early in the process. It is good to know about everything that is required before spending thousands of dollars. It is our experience that developers, including individuals who propose development projects on a single-family scale, appreciate understanding what is needed, up front. They often need to be educated about working in water and wetlands, or about concerns for ground water that is underfoot and out of sight, but nevertheless, crucial for the community.

Site plan review is required for all activities, except in R-1 and R-2 [Chap 51 Art V General Provisions Sec 5.188 Development Plan (1)]. Additionally, they are not required to include open spaces. However, Planned Unit Development (PUD) proposals are included in the ordinance, and they are required to provide 40 percent Open Space [Chapter 51, Art IV PUD Sec 5.73(1)(i)].

Site plans are only minimally required to indicate all existing natural features; this could be improved [Chapter 51 Art V Sec 5.188 Development Plan Review (3)(f)(9)]. In the R-4 zone, which is Multiple Family Dwelling areas, natural features are required, where possible [Chapter 51, Art IV Sec 5.64 Area Regulations, R-4 Planned Residential Zone (13)].

Basic Zoning Components: RECOMMENDATIONS

SUGGESTED ACTION: Consider requiring a pre-application or pre-construction meeting for new development or redevelopment proposals. This can help applicants to understand what is needed, up front, and create a climate of certainty.

SUGGESTED ACTION: Consider improving site plan requirements to indicate all existing natural features, including the location and elevations of existing water courses and water bodies, man-made drainage pathways, flood plains, county drains, wetlands and ground water recharge areas.

SUGGESTED ACTION: Consider requiring open spaces in all districts of the city, and require open spaces to be managed in a natural condition with retention of native vegetation. Open space allowable uses should also be restricted to low impact activities. Finally, open spaces should be protected, using a conservation easement or other similar mechanism, to ensure they continue to serve the purpose of protecting water quality in the watershed.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 13, WEAK

The City of Charlevoix is blessed with a Great Lakes shoreline, forming part of the special northeastern shore of Lake Michigan. It also has a significant, mostly hardened, urban shoreline surrounding Round Lake, which connects Lake Michigan to Lake Charlevoix. The urban shoreline of Lake Charlevoix in the city limits eventually gives way to parkland or private residences, or water-related, recreational business concerns. Charlevoix is a true gateway to some of the most prized water resources in the state, and it is visited by thousands of people from around the world, every year. These people come to the city for the shoreline and the waters,

and special care must be taken to ensure this enthusiasm also incorporates efforts to protect those beloved shorelines and waters.

On the topic of shoreline protection, the city could improve. We recognize the enormous challenges of doing so, and appreciate the work already done in this regard. Two of the most effective ways that local governments can protect water quality is to require setbacks from the water's edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer.

All principal uses located in the R-1 and R-4 districts of the City of Charlevoix must have a setback of 50 feet from the ordinary high water mark (OHWM) of Lakes Michigan and Charlevoix and Round Lake, as well as the Pine River Channel Marine-Commercial district (Art V Sec 5.198 Setback from Water bodies). The Scenic Reserve (SR) District also requires a minimum structure setback of 50 feet from the OHWM on the adjacent lake or water body [Art IV Sec 5.134 Scenic Reserve; Other Regulations (1)]. The SR has one stated purpose of providing for appropriate residential development along lake shores that will protect both the environment and the scenic qualities of this unique land area, which includes both public and private lands.

Charlevoix does not require vegetative buffers, except in the SR District, and even there, the provisions should be improved. It is generally recommended that a vegetative buffer should be at least 30 feet deep. The Other Regulations section in the SR includes: "Natural trees, shrubbery, or other vegetation shall be preserved as far as practicable, and where removed shall be replaced with other vegetation that is equally effective in retarding run off, preventing erosion and preserving natural beauty." [Art IV Sec 5.134 Scenic Reserve; Other Regulations (1)]

As you can see, there is no minimum depth for the vegetative strip. Elsewhere in the ordinance, there are conflicting definitions of greenbelt. In Art II Sec 5.5 Definitions, Greenbelt is noted as having a minimum depth of 10 feet. However, Art V General Purposes, Sec 5.203 addresses plant materials and landscaping requirements, and notes that if a greenbelt is required, it has to be at least 8 feet deep [9(e)]. Neither of these specifies greenbelts to serve as vegetative buffers, and both have limited effectiveness for shoreline protection because of their narrow depth.

As noted in the Literature Review, shorelines are vital transition zones between land and water, where many important interactions occur to benefit the lake ecosystem. These benefits are diminished when shoreline properties are developed and vegetation is removed, but can be recovered by planting vegetated buffer strips using a variety of native species. It is clear that some areas, such as the Marine-Commercial district and similar areas will not provide a practical setting for a riparian buffer. But other low cost and effective techniques exist to mitigate impacts of polluted stormwater runoff from impervious surfaces, directly into our lakes and streams.

Boating use of inland lakes can impact water quality, wildlife habitat, and the use and enjoyment of the lake by residents and visitors. A common way for local governments to address boating use is through dock restrictions and provisions. The Definition section of the ordinance defines Boat Docking Space as 26 lineal feet. If you have more than 2 docking spaces, each 1 ½ spaces more must have an on-site parking spot available. There are no keyhole prevention provisions to place restrictions on the size and type of multi-boat launch and docking sites, which may or may not make sense, given the site specifics and historic uses.

Since even a very small amount of petroleum products or hazardous chemicals can impact a large amount of water, it is important to ensure proper management of these liquids. Charlevoix does not have much oversight of marinas, even though the Marine-Commercial District provides principle uses for berthing, launching, handling or servicing of recreational or commercial boats [Art IV Sec 5.142 (1)]. It does not specify restrictions of boat repair and maintenance activities to prevent debris from falling into the water and prevent invasive species. It also does not specify fueling station spill prevention and containment measures, or BMPs.

Site plan review and special use permits require the disclosure of the use of hazardous or toxic materials in a development plan, but there is no mention of coordinating permit approvals from state or federal agencies, or requiring designs to prevent spills and (unless permitted by state or federal statute) discharges to surface or ground water.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Maintaining native vegetation along the shoreline is critical to preserving water quality and providing wildlife habitat. Shoreline protection strip provisions should be required in all shoreline districts in the city, with some exception. In the exception areas, however, low cost and effective methods can and should be used to mitigate the impacts of polluted stormwater runoff directly into the city lakes and streams.

SUGGESTED ACTION: Encourage a minimum depth of 30 feet for all Shoreline Protection Strips. Require the maintenance and re-establishment of native vegetation and prohibit the use of invasive species.

SUGGESTED ACTION: Restrict boat repair and maintenance activities in marinas to clearly marked areas to prevent debris from falling into the water and prevent the spread of invasive species.

SUGGESTED ACTION: Require marina fueling stations to have spill containment equipment that is stored in a clearly marked location. Also require a spill contingency plan, and post emergency phone numbers in a prominent location. Finally, signs of leakage or spillage should be investigated immediately, and undertake cleanup in accordance with applicable BMPs.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 6, WEAK

The more a local government can do to reduce impervious surfaces, the better for water quality. As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces (streets, roofs, sidewalks, etc.) generate much more stormwater runoff than natural forested, or even agricultural, land uses. That polluted runoff discharges directly into Lakes Michigan and Charlevoix and Round Lake from pavement and rooftops, and includes bacteria from pet and animal wastes, fertilizer, oil and grease, sediment, heavy metals, salt, etc. To reduce impervious surfaces, a community should increase the retention or restoration of native vegetation in riparian areas and in open spaces, and install simple and effective solutions, ranging from rain barrels and rain gardens, to engineering approaches that treat stormwater that has traveled across impervious surfaces, before it discharges into the water.

On a positive note, Article V, Section 5.206 (2) requires parking areas to have canopy trees and planting areas that increase, with the increased size of the lot. Additionally, the SR district limits impervious surfaces to no more than 30 percent of the usable lot area [Art IV Sec 5.133 Lot Requirements for Scenic Reserve (4)].

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater running into our water resources. We encourage the City of Charlevoix to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Consider reducing the parking space dimensions and setting them as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot. Provide incentives for using LID techniques to mitigate the impacts of impervious surfaces, in exchange for a larger building footprint.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 3, WEAK

A multitude of studies from around the nation and world have documented that urban stormwater is a serious source of pollution. The city has some minimal oversight of stormwater. Site plan review requires that the drainage plan for proposed developments is adequate to handle anticipated stormwater runoff, and will not cause undue runoff onto neighboring property or overloading of watercourses in the area [Chap 51 Art IX Sec 5.263.3 Special Use Permit (7)(j)].

The city Zoning Ordinance also limits grading: “No premises shall be filled or graded so as to discharge surface runoff on abutting premises in such a manner that will cause inconvenience or damage to adjacent properties. When property is developed adjacent to existing properties previously developed, existing grades shall have priority.” (Art V Sec 5.186)

Stormwater Management: RECOMMENDATIONS

As noted in Chapter 1, the county stormwater ordinance is no longer in effect. This should be remedied as soon as possible.

SUGGESTED ACTION: Consider adding review of stormwater BMPs and other water quality protections in the site plan review ordinance.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to the City of Charlevoix for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 1, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded (as typically happens during the construction process), there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. The City of Charlevoix Site Plan Review requires that a proposed development will not cause soil erosion or sedimentation problems [Art IX Sec 5.263.3 Special Use Permit (7)(i)].

As noted in the first chapter, counties are mandated to administer and enforce Part 91, and Charlevoix County has two state-recognized agencies that do so: The Soil Erosion Control Officer in the Department of Building Safety, and the County Road Commission.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local units require all earth movement activities associated with development or construction projects to follow BMPs to control erosion and ensure that any sediment-laden runoff does not enter waterways. Coordination between townships and the county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from the City of Charlevoix.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 11, ADEQUATE

The city's Master Plan includes goals to closely monitor the municipal water supply system to minimize or prevent leaks and/or ruptures; and integrate GIS and revise capital improvement plans to more effectively predict and plan for future infrastructure upgrades [Chapter 3 Community Vision & Goals, 3.5 Community Goals, Objectives & Action Items, 1.12 and 1.13(v)].

City regulations that pertain to septic systems are coordinated with the County Health Department regulations: "Every buildingshall be provided with a safe and sanitary water supply system. For those areas of the city not served by water and sewer, the written approval by the district health department of proposed facilities for water generation and treatment of waste, shall be filed with an application for a zoning permit." (Art V Sec 5.181)

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: If not already done, ensure the Sewer Service Area is mapped, including sewers that currently exist, areas that will be sewerred in the future, and areas that will not be sewerred.

SUGGESTED ACTION: Require that existing infrastructure be inventoried for age and condition, and ensure that a maintenance and replacement schedule is provided in the Master Plan.

SUGGESTED ACTION: Require the community to have a program to identify sanitary sewer or septic systems that are seeping into the storm water system, surface waters or ground water.

SUGGESTED ACTION: In the rural zoning district that allows septic, require that septic systems be located at least 100 feet from streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a "point of transfer" inspection requirement for the rural septic district, whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 1, WEAK

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances that provide an additional layer of protection to wetlands that fall under state jurisdiction and provide protection to wetlands not protected by the state statute. In addition to adopting and implementing a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider expanding the Shoreland Protection Strip to include setbacks from wetlands. This would help to protect wetlands and cost less to administer than a separate ordinance, in the short term. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.



Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

The city relies on Lake Michigan for its drinking water (Master Plan, Chapter 2, 2.11 City Utilities, Water Supply p. 30). However, there could be protections in place for ground water sources in the city, which are important to surface water sources. For example, site plan review can be used to ensure direct discharge of potentially hazardous material is prevented, and required to be coordinated with state statutes.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the city until required state permits are received by the applicant. Storage of hazardous material is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the city continues to grow.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 24, ADEQUATE

The City of Charlevoix participates in the National Flood Insurance Program, and the Zoning Ordinance coordinates efforts by requiring proposed development properties to respect floodways and floodplains on or in the vicinity of the subject project [Art IX Special Use Permits Sec 5.263 (7)(g)]. We have no additional recommendations for this element.

Conclusion

We applaud the water protection measures that exist in the City of Charlevoix. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

City of Charlevoix

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	20	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	42	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	13	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	13	Adequate
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	10	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	9	Adequate
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	6	Weak
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	5	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	29	Adequate

SECTION III: Analysis

Chapter 4 City of East Jordan

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for the City of East Jordan in Charlevoix County. The city's website notes that it is located at the mouth of the Jordan River, where it flows into the South Arm of Lake Charlevoix. The city slogan is: "Where river, lake, and friendly people meet." It is an attractive tourist destination with outstanding fresh water resources. This chapter includes the evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Lake Charlevoix Watershed Management Plan, which includes East Jordan and the Jordan River subwatershed.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30
TOTAL SCORE: 14, ADEQUATE

The City of East Jordan has a Master Land Use Plan. According to the city website, the plan is dated June 11, 1992. However, the plan that is linked from the website notes an update being done in August of 1998. Regardless, it is recommended that Master Plans be updated every five years, so this one is due for an update as soon as feasible.

The existing plan does not identify the watersheds in which the city is located. No maps of natural resource areas could be found, but the city website does include a detailed zoning map that shows some water features. There are goal statements that reflect a clear intent to protect water resources: "Conserve or wisely use the wetlands, Jordan River, drainageways, so that they can continue to function for their natural purpose;" and "Preserve or at least conserve or wisely use all existing natural environmental conditions including... surface water and drainage features, wetlands, etc. so that development will least disturb or change the present natural conditions wherever possible." [Appendix Part A-8, Summary (8, 12) pages xxxiii, xxxiv]

The importance of protecting open space is expressed in various sections of the plan, but not explicitly. It refers to the critical importance of protecting and enhancing the large wetland, wildlife, and Jordan River flow area into Lake Charlevoix [Section 1 Introduction (12)]. It also refers to setbacks as important for shoreline protection [Part IV Prescriptions for Future City Development (2) Waterfront Areas], and there are specific prohibited activities in wetlands listed (Appendix Part A-11 Uses Permitted & Prohibited in Wetlands page 1x).

Stormwater management is only minimally mentioned, and the plan does not call for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration. It also does not acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: Because the current plan is so old, consider an update as soon as possible.

SUGGESTED ACTION: When the plan is updated, be sure to address the importance of dedicated open space, stormwater management, and the prevention of increased impervious surfaces.

SUGGESTED ACTION: When the plan is updated, consider including the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 40, STRONG

The Zoning Ordinance for the City of East Jordan has a statement of purpose that includes protection of water: "...to provide for ... the conservation of open space lands, wetlands and land areas containing natural or cultural resources or features necessary to the social and economic well-being of present and future generations..." (Chap 48 Art I Sec 48-2 Purpose)

Additionally, the purpose of the Conservation Reservation District is "...to provide for the arrangement of land uses that are compatible with the conservation and preservation of large tracts of land presently having a most desirable natural environment that should not be disturbed, except minimally, or natural habitat for wildlife, native flora, natural water features including extensive wetlands..." (Chap 48 Art III Sec 48-561 Purpose)

The ordinance also includes a fee system to cover costs to the community for review of proposal applications or appeals, and a method in place for enforcement of the ordinance. [Chap 48 Art II Sec 48-38(d) Fees; Sec 48-40 Penalties] Importantly, the city also attempts to coordinate the local zoning permitting process to ensure that a project applicant receives all applicable permits from other agencies. "All uses of land, buildings or structures shall conform to all applicable local, county, state and federal laws, rules and regulations that have been promulgated and administered by the respective responsible public agency or official as well as the provisions of this chapter." (Chap 48 Art III Div 1 Sec 48-189)

The city also offers a pre-application or pre-construction meeting with the Planning Commission for the purpose of reviewing and discussing a proposed preliminary site plan (Chap 48 Art II Div 2 Sec 48-74). The Planning Commission may also require the applicant to provide an impact statement for a Planned Unit Development (PUD) that includes environmental impacts, such as soils, topography, and natural features on the site that could be impacted by the proposed development (Chap 48 Art III Div 15 Sec 48-600).

Site plans are required for all activities except single-family and mobile homes located on separate lots or parcels (Chap 48 Art II Div 2 Sec 48-70 & 48-71). The site plan is required to indicate all existing natural features, with the intent to preserve existing conditions of the natural environment (Chap 48 Art II Div 2 Sec. 48-7). Site plan approval requires that the applicant meet all requirements of the state soil erosion and sedimentation control provisions of part 91 of Public Act No. 451 of 1994 [Chap 48 Art II Div 2 Sec. 48-75(d)].

Site plan review for East Jordan does not include open space provisions, but PUDs are required to include a minimum open space threshold. A land, water, or land/water area making up not less than twenty five percent (25%) of the total land area of a lot or parcel shall be designed as permanent open space [Chap 48

Art III, Div 15 Sec 48-602 (c)]. Additionally, “The city commission may require upon recommendation of the planning commission, that unique natural amenities such as ravines, rock outcrops, wooded areas, tree or shrub specimens, unusual wildlife habitats, ponds, streams, and marshes be preserved as part of the open space system.” [Chap 48 Art III Div 15 Sec 48-602(3)(e)] Fortunately, the open space is also required to be protected through a conservation easement or other similar mechanism. “Legal instruments setting forth the manner of permanent maintenance of common area and facilities shall be submitted to the city attorney for review before the city commission approves a final site plan or final plat, if a subdivision is planned to be part of the PUD.” [Chap 48 Art III Div 15 Sec 48-602 (7)(a)]

Basic Zoning Components: RECOMMENDATIONS

We applaud the City of East Jordan for its strong basic zoning components, and have only two additional suggestions.

SUGGESTED ACTION: Consider requiring open space provisions in the site plan review process.

SUGGESTED ACTION: Consider ways to encourage retention of native vegetation in dedicated open spaces of PUDs.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 13, WEAK

Shoreline protection efforts in East Jordan could be improved – and should be, as a priority, given the economic importance of clean water to the community. We recognize the enormous challenges of doing so in an urban environment, however, and appreciate the work already done in this regard. There are some positive protection aspects upon which to build.

Two of the most effective ways that local governments can protect water quality is to require setbacks from the water’s edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer.

East Jordan has some good shoreline setbacks. The Single Family Residential District (RA) requires a minimum setback of 40 feet from the shoreline of any surface water features, except as otherwise required for special uses, and unless a greater setback from the shoreline is required by the state department of environmental quality or other public agency [Chap 48 Art III Div 2 RA Single Family Sec. 48-223(5)(a)]. The Waterfront District (WF) has a minimum required waterfront yard setback from the established shoreline of 50 feet [Chap 48, Art III Div 12 Sec 48-513(b)]. The Industrial District (I) requires a minimum of 75 feet from all waterfront shorelines [Chap 48, Art III Div 12 Div 13 Sec 48-541(4)(a)].

However, on the subject of shoreline protection strips, the city could improve its requirements, which are minimal. In the RA district, permitted principal special uses on a waterfront shall be landscaped in trees, shrubs and grass and be maintained in a healthy condition [Chap 48, Art III, Div 2 Sec 48-220(2)(b)]. However, this is not a true shoreline buffer; grass is permitted to the water’s edge, and that is less than ideal. Although they are not impervious surfaces, manicured lawns generate more runoff than does ground covered in native plants, trees, and shrubs.

As noted in the Literature Review, shorelines are vital transition zones between land and water. Natural shorelines benefit lake and river ecosystems by providing habitat and improving water quality. These benefits are diminished when shoreline vegetation is removed for development, but they can be recovered by planting vegetative buffer strips using a variety of native species.

Establishing a diverse buffer strip in an urban area may not recover habitat conditions, but it can mimic natural conditions to protect water quality in the lake or river. It improves the effectiveness of the shoreline transition zone to prevent negative impacts of adjacent land-use activity.

East Jordan permits marinas as part of provisions in the WF district [Chap 48 Art III Div 12 Sec. 48-509 (20)]. However, we could find no evidence of other basic oversight for marina operations.

Shorelines: RECOMMENDATIONS

We encourage the City of East Jordan to consider the following, in order to better protect the valuable shorelines in their jurisdiction.

SUGGESTED ACTION: Where feasible, establish a shoreline protection strip immediately adjacent to lakes, streams, and other water bodies. To be most effective, the shoreline protection strip should be 30 feet wide, maintained in native vegetation, prohibit pesticide or herbicide use, with minimum cutting to afford a filtered view of the water.

SUGGESTED ACTION: Restrict boat repair and maintenance activities in marinas to clearly marked areas to prevent contaminants and debris from falling into the water and limit the spread of invasive species.

SUGGESTED ACTION: Require marina fueling stations to have spill containment equipment that is stored in a clearly marked location. Also require a spill contingency plan, and post emergency phone numbers in a prominent location. Finally, signs of leakage or spillage should be investigated immediately, and undertake cleanup in accordance with applicable best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 0, MISSING

The Lake Charlevoix Watershed Plan includes an objective to reduce the pollutant load from stormwater in urban areas. Reducing impervious surfaces supports this objective. Among other low cost approaches to reduce impervious surfaces, a community can increase the retention or restoration of native vegetation in riparian areas and in open spaces. Minimizing impervious surfaces can also be addressed in other creative and cost-effective ways, ranging from using Low Impact Design (LID) techniques in development plans, to incentives for limiting impervious surface lot coverage in zoning ordinances (Lake Charlevoix Watershed Plan, 2008 Update. Chapter Four: Lake Charlevoix Watershed Project Goals, Objectives, and Recommended Actions, 1. Goals and Objectives).

Ordinances can be crafted to encourage the use of techniques that benefit water quality, such as incentives to protect natural vegetation throughout a development site. Lot design and general development provisions in zoning ordinances provide great opportunities to encourage alternatives to, and reductions of, impervious surfaces.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Management Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater runoff into our water resources. We encourage East Jordan to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts to limit impervious surfaces throughout the township. Consider limiting the percent lot coverage to 15% of the total lot.

SUGGESTED ACTION: Add a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Allow reductions in the size of parking and loading areas when appropriate for water quality protection, or encourage use of grass parking areas or pervious pavers.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 1, WEAK

Stormwater runoff from buildings, driveways, parking lots, streets, and other impervious surfaces is a major source of pollutants to northern Michigan's waterways. Local governments can do much to reduce stormwater runoff as part of their zoning ordinance.

Although East Jordan does not have a stand-alone stormwater provision, there are places in the ordinance where stormwater management is addressed. For example, the criteria for site plan review includes: "Surface water drainage. Special attention shall be given to proper site surface drainage so that the flow of surface waters will not adversely affect adjacent and surrounding properties or the public storm drainage system. If necessary, stormwater shall be removed from all roofs, canopies and paved areas and carried away in an underground piped drainage system." [Chapter 48 Art II Div 2 Sec. 48-77(4)]

Stormwater Management: RECOMMENDATIONS

As noted in Chapter 1, the county storm water ordinance is no longer in effect. This should be remedied as soon as possible.

SUGGESTED ACTION: For the short term, consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to the City of East Jordan for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local units require all earth movement activities associated with development or construction projects to follow Best Management Practices (BMPs). This is done to control erosion and ensure that any sediment-laden runoff does not enter waterways. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA).

The City of East Jordan does coordinate efforts with the county for soil erosion and sediment control, but it could be clearer so that applicants understand a permit is issued in a separate county process. Site plan approval requires that the applicant "...meet all of the requirements of the state soil erosion and sedimentation control

provisions of part 91...” [Chap 48 Art II Div 2 Sec. 48-75(d)]. Additionally, the same section notes that conditions for approval of a grading permit may include provisions for control of possible erosion.

Finally, the Zoning Ordinance requires site plan approval prior to earth changing actions. No grading, removal of trees or other vegetation, land filling, or construction of improvements shall commence until a final site plan is approved and is in effect, unless the ordinance grants exceptions (Chap 48 Art II Div 2 Sec. 48-73).

Soil Erosion and Sediment Control: RECOMMENDATIONS

Coordination between townships and the county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from the City of East Jordan.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 15, ADEQUATE

East Jordan has a delineated Sewer Service Area and it has been mapped. The map can be accessed on the city website (http://www.eastjordancity.org/info/PDF/Sewer_map.pdf). The city requires that all developments, new and old, hook up to the city sewer [Chapter 46 Art III Sec 46-124 (a-f) Use of Public Sewers Required].

Where a public sanitary sewer is not available, the building must be connected to a private sewage disposal system. The owner must first obtain a written permit signed by a district health department officer [Chap 46 Art III Sec 46-125(a-b)].

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: Require the community to have a program to identify sanitary sewer or septic systems that are seeping into the storm water system, surface waters or ground water.

SUGGESTED ACTION: In the areas that allows septic, require that septic systems be located at least 100 feet from streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement for the rural septic district, whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.



Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, MISSING

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances that provide an additional layer of protection to wetlands that fall under state jurisdiction and provide protection to wetlands not protected by the state statute. In addition to adopting and implementing a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

Wetlands: RECOMMENDATIONS

There are a few steps that East Jordan could consider to better protect existing wetland resources.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider setting a wetland setback provision to all other zoning classifications in the city. This would protect wetlands and cost less to administer than adopting a local wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 7, ADEQUATE

Importantly, East Jordan participated in the state Wellhead Protection Plan process, getting its plan approved in 2005. This is a voluntary program, and we applaud the township for taking this critical step toward protecting these precious drinking water sources.

The Zoning Ordinance mentions ground water in the following instances. First, the ordinance section that addresses solid waste includes this statement: "The storage container shall be placed on a smooth cleanable surface (i.e. concrete) and shall be properly managed to prevent discharge of waste grease into the soil, surface water or groundwater or into a drain or sewer." [Ch 36 Art II Div 2 Sec 36-58 (d)]

Next, the utilities section notes the following:

No person shall discharge or cause to be discharged any waters or sewage into the city system that will cause violation of the city's groundwater discharge permit. No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer. [Ch 46 Art III Div 2 Sec 46-129 (a) (b)]

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. We did not find in the ordinance how proposed discharges to ground water that do not involve city sewers are to be addressed for new developments. If it does not exist, this should be clearly stated as being prohibited by the city, until required state permits are received by the applicant. Storage of hazardous materials is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the city continues to grow.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, if not already required, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48
TOTAL SCORE: 26, ADEQUATE

The City of East Jordan participates in the National Flood Insurance Program (FEMA Flood Ins Program CID #: 260372# EAST JORDAN, CITY OF CHARLEVOIX COUNTY 07/11/75 07/19/82 07/19/82 07/19/82). The Zoning Ordinance coordinates efforts by creating a basis for establishing the areas of special flood hazard (Chap 18 Sec 18.3, 18.4, 18.5).

Additionally, Section 18.7 and 18.8 state purposes and objectives to provide restrictions where there is a danger to health, safety, or property due to flood waters, and to build protections into construction controls to prevent flood water from altering the landscape. We have no other recommendations for this Element.

Conclusion

We applaud the water protection measures that exist in East Jordan. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

City of East Jordan

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	14	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	40	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	13	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	0	Missing
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	1	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	15	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	0	Missing
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	26	Adequate



SECTION III: Analysis

Chapter 5 Bay Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Bay Township, which is blessed with shoreline along both Walloon Lake and Lake Charlevoix, and is subsequently located in both the Lake Charlevoix and Little Traverse Bay Watersheds. The chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plans for both Lake Charlevoix and Little Traverse Bay.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 27, STRONG

A Master Plan exists for Bay Township, and the current version was adopted in 2006. No update is scheduled but it is generally recommended that Master Plans be reviewed every five years, so this year would be a good time to do so. Prior versions were dated 1981 and 1995, so the tradition has been to review it every 10-15 years but we recommend at least a casual review in 2011.

The existing Master Plan earns a Strong ranking in this project for protection of water resources. It specifically identifies the watersheds in which the community is located. Chapter 5 notes, under Natural Resources Inventory, Surface Water Resources that Lake Charlevoix forms the township southwestern boundary and Walloon Lake forms the township eastern boundary (p.5-1). In the same chapter, under Watersheds: the Western portion of Bay Township is located within the Lake Charlevoix-Lake Michigan Watershed; the remainder of the township is located within the Walloon Lake-Bear River-Little Traverse Bay-Lake Michigan Watershed (p.5-8). The Master Plan also includes an inventory of lakes, rivers, and wetlands, and groundwater (Map Environmentally Sensitive Areas, Chapter 5 Natural Resources page 5-4a).

The Bay Township Master Plan also has a focused goal statement of intent to protect water resources: “Within Bay Township the long term quality and conservation of natural resources, water quality protection and environmental protection should be considered of significant importance when making land use decisions.” (Chap 8 Future Land Use, Policies, Goals & Actions; General Policy Statements - p.8-1) It includes goals for community acquisition or conservation of open space to protect surface water, ground water, and wetlands. It recommends securing Open Spaces by utilizing planning tools and techniques including land trusts/

conservancies, purchase of development rights, conservation easements, promote conservation design and low impact development. Also: “Protect groundwater and surface waters from contamination, depletion and degradation. Promote the protection of wetlands in maintaining and improving water quality within the township.” (Chap 8 Future Land Use, Policies, Goals & Actions; General Policy Statements (3) Environment - pgs.8-4, 8-5)

Importantly, the Master Plan also identifies stormwater management as an important community policy. It recommends review of the existing overlay district, including on-site stormwater management techniques and percent impermeable surface requirements, to protect water quality and property values along inland lakeshores, and stream and creek banks (Chap 8 Future Land Use, Policies, Goals & Actions; General Policy Statements (3) Environment - p.8-4).

The Master Plan also takes special note of important ecosystem components of Bay Township, with a very strong effort to educate citizens about the important biological diversity surrounding them. This includes identification and protection of wildlife corridors with the following: “In the review of future development plans, Bay Township will consider and seek to conserve open space and natural buffers, and recognize the need for interconnected tracts of land as wildlife corridors.” (Chap 8 Future Land Use, Policies, Goals & Actions; General Policy Statements (3) Environment - p.8-4) Additionally, the following items are included in the Plan: In Chapter 5, Natural Resource Inventory, Fish & Wildlife, common species observed are listed (p.5-10). In Chapter 6, Public & Private Facilities, Table 35 lists Land Preserves, with size and location, belonging to Little Traverse Conservancy and Walloon Lake Trust and Conservancy within Bay Township (p.6-3). Table 33 lists all the protected species in Bay Township including plants, mammals, birds, and invertebrates (p.5-11).

Master Plan Components: RECOMMENDATIONS

The Bay Township Master Plan lost points on only one section of the evaluation: it does not acknowledge the importance of road stream crossings, where proper construction and design techniques are critical to avoid excessive sedimentation in streams.

SUGGESTED ACTION: When the Master Plan is updated, include the importance of well-constructed and maintained road stream crossings on the quality of local water resources.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 44, STRONG

The Bay Township Zoning Ordinance also scored a ranking of Strong in the evaluation stage of this project. It includes a statement of purpose or intent to protect water: Encourage the use of lands and natural resources in accordance with their traditional character, establish minimum standards and regulations applicable to open spaces (Art II Sec 2.1). Fees are in place to cover costs to the community for review of proposal applications or appeals [Art XII Sec 12.7(a)]. The Zoning Administrator is responsible for instituting proceedings for enforcement of the ordinance, as well (Art XVIII).

Importantly, the Zoning Ordinance proposal review process is also coordinated with the receipt of other applicable county, state, and/or federal permits. All site plans require review and approval by the Charlevoix County Soil Erosion and Sedimentation Control Officer, Northwest Michigan Community Health Agency, MDEQ and MDNR, and Charlevoix County Planning Department [Art XII Sec 12.7(c)]. Zoning permit applications must demonstrate that all required federal, state, and county licenses or permits have been acquired, or that applications have been filed and are in progress [Art XVIII Sec 18.2 (i)].

The Zoning Ordinance requires site plan review. Prior to submitting an application for site plan review, applicants are encouraged to meet with the Zoning Administrator or Planning Commission to discuss the process, to present a preliminary or conceptual site plan, and to allow the Planning Commission to provide

comments (Art XII Sec 12.6). Additionally, applicants are required to attend a pre-application conference with the Zoning Administrator and/or township planner to present Planned Unit Development (PUD) concepts for informal, non-binding, informational purposes (Art XI Sec 11.4). These meetings are beneficial for water resources because they present opportunities to ensure full understanding about what is required ahead of time, before significant investment of time and money. Plans can be done in sustainable ways that provide economic opportunities while also protecting water resources that drive the economy.

The site plan is required to include the location and type of significant vegetation, including woodlots and individual trees twelve inches and larger in diameter. It also must include the location and elevations of existing water courses and water bodies, including county drains, man-made surface drainage ways, 100-year flood plains, and wetlands [Art XII Sec 12.8(j, k)]. The site plan review process is required to include a detailed description of measures to control soil erosion and sedimentation during and after completion of grading and construction [Art XII Sec 12.8(i)]. All site plans require review/approval by Charlevoix County Soil Erosion and Sedimentation Control Officer [Art XII Sec 12.7(c)]. The site plan review process does not include open space provisions.

The Bay Township PUD provisions require inclusion of a minimum open space threshold. Not less than sixty percent (60%) of the total land is required to be dedicated open space [Art XI Sec 11.8 (a)(2)]. Importantly, flexible site design criteria or incentives are available to encourage developers to include open space or cluster design provisions [Art XI Sec 11.8 (a) (3)]. Additional units may be developed by the applicant by using natural and cultural resource conservation, in accordance with density-bonus incentives outlined in Table 1 Conservation Point System Chart (p.47). The open space does not have to be managed in a natural condition, but they are restricted to low impact uses. To the greatest extent feasible, open space includes but is not limited to: scenic vistas; pathways; or other recreation areas [Art XI Sec 11.8 (a)(2)].

The open space is required to be protected by the applicant through an irrevocable conveyance acceptable to the township. The open space will be protected from all forms of development, except as shown on an approved site plan, and cannot be changed to another use without approval by the Planning Commission [Art XI Sec 11.8 (a)(2)]. Finally, the Zoning Ordinance includes sensitive area protections. The Waterfront Overlay District "WF" encompasses all land within 100 feet of the Lake Charlevoix and Walloon Lake shorelines, and the banks of all natural and built watercourses such as rivers, streams, and channels (Art VI).

Basic Zoning Components: RECOMMENDATIONS

We applaud the Bay Township for its strong basic zoning components, and have only a few additional suggestions.

SUGGESTED ACTION: Consider requiring open space provisions in the site plan review process.

SUGGESTED ACTION: Consider ways to encourage retention of native vegetation in dedicated open spaces of PUDs.

SUGGESTED ACTION: Because Bay Township has already taken such care with protected species in the Master Plan, consider how to coordinate using this information to improve the permit application process to ensure protection of resources.



Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 30, ADEQUATE

The Bay Township Zoning Ordinance requires a minimum shoreline setback of sixty-five (65) feet from the OHWM of a water body or the bank of a river, stream or creek [Art VI Sec 6.4 a (1)]. It also requires vegetative buffers; the Waterfront Overlay District encompasses all land within 100 feet of the shorelines of Lake Charlevoix and Walloon Lake, and the banks of all natural and built watercourses such as channels, rivers and streams (Art VI).

Existing vegetation that shades water surfaces is required to be preserved to the maximum extent possible [Art VI Sec 6.4 (b)(2)]. Existing natural ground cover and native vegetation must be preserved to the fullest extent feasible. If it has been removed, it must be replaced with native vegetation that is equally effective in retarding runoff, preventing erosion, preserving property values, and protecting community scenic values. Non-native exotic or noxious plants and shrubs, including poison ivy, poison sumac, purple loosestrife, *Phragmites*, etc. may be removed at the homeowner's discretion [Art VI Sec 6.4 b. (8)]. Additionally, the natural vegetation buffer must be fenced with silt fence and construction barrier fencing, prior to grading or other on-site construction activities. This protective fencing must be maintained until the completion of construction [Art VI Sec 6.4 (b)(3)].

The Zoning Ordinance does not include specific keyhole prevention provisions, but it does place restrictions on the size and type of docking sites and dock lot minimum frontage. Each legally created lakefront lot is entitled to one seasonal dock. A minimum of 200 hundred feet of frontage is required for a second dock. Each additional dock or boat hoist shall require an additional 100 hundred feet of water frontage [Art VI Sec 6.4 (h)(1)]. Additionally, not more than three motor-powered-watercraft are allowed to be docked at any single dock, at any time [Art VI Sec 6.4 (h)(2)]. One swimming/diving raft is allowed per legally created waterfront lot. A minimum of 200 hundred feet of water frontage is required for a second raft. Each additional raft requires an additional 100 hundred feet of water frontage [Art VI Sec 6.4 (h)(3)].

Bay Township does not regulate road ends. Marinas are regulated in the Commercial Zoning District (Art X). However, it does not specify marina practices. Drainage provisions require proper state permits for hazardous substances, but boat repair and maintenance at the water's edge is not specified.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Consider local regulation of road ends that terminate at the edge of navigable waters. Ensure the right of public access does not include the ability to install private docks or boat hoists for the overnight mooring of boats, or the right to use public road ends for lounging, sun-bathing or picnicking.

SUGGESTED ACTION: Consider preventions against the practice of keyhole/funneling.

SUGGESTED ACTION: Consider regulations for marinas to ensure water protection. Include restricting boat repair and maintenance activities to clearly marked areas, in order to prevent debris from falling into the water and prevent invasive species. Require fueling stations to have spill containment equipment that is stored in a clearly marked location. Require a spill contingency plan, posting emergency phone numbers in a prominent location. Require signs of leakage or spillage to be investigated immediately, and undertake cleanup in accordance with applicable Best Management Practices (BMPs).

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 13, ADEQUATE

A large majority of impervious surfaces within a community are roads or parking lots. Most road design is significantly influenced by the county road commission and local fire departments. However, townships can address the design of private roads, and Bay Township has an ordinance to do so.

Unfortunately, in Bay Township, there are not flexible lot coverage standards to allow creative approaches that limit impervious surfaces in all zoning districts, and we encourage that. However, there are protections in place according to parcel slope, which is a good thing. In the waterfront overlay district, there is a standard for the maximum percentage of lot coverage. For lots with a sealed surface, such as roofs, structures, asphalt, concrete, etc., maximum percentages are as follows:

Maximum % lot coverage with impervious surface by slope:

- average parcel slope 0-25%: maximum impervious surface coverage 50%
- average parcel slope 26-35%: maximum impervious surface coverage 25%
- average parcel slope > 35%: maximum impervious surface coverage 10% [Art VI Sec 6.4 (f)]

Additionally, the PUD requirements for parking are good for reducing impervious surface impacts: “Common parking areas shall provide stormwater management systems that infiltrate to groundwater to prevent off-site impacts of any kind. The use of innovative stormwater management, treatment and disposal is strongly encouraged, such as rain gardens, grassed waterways, constructed wetlands, etc. The direct discharge of stormwater from parking areas to natural watercourses, wetlands, or other surface waters is prohibited.” [Article XI Planned Unit Development (PUD) Zoning District (11.8)(10)]

Impervious Surfaces: RECOMMENDATIONS

SUGGESTED ACTION: Consider impervious cover limits for all zoning districts, in addition to the sloped lots.

SUGGESTED ACTION: The private road ordinance gives dimensions for private roads that act as shared driveways. Consider ways to encourage shorter driveways, and shared driveways, where appropriate in all existing zoning districts.

SUGGESTED ACTION: Consider reducing the parking space dimensions and setting them as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 16, ADEQUATE

In spite of the lack of a county stormwater ordinance, Bay Township has taken steps to manage stormwater. Development cannot alter, modify or restrict stormwater runoff from adjoining lots, or result in discharge onto adjoining lots, lakes or streams. Stormwater generated by a 100-year event is to be retained, treated, and disposed of by using innovative methods, such as infiltration basins, constructed wetlands, rain gardens, pervious pavements, etc., with township approval. Waterfront Overlay District runoff is to be directed away from the lake ward side of a lot [Art IV Sec 4.20, Art VI Sec 6.4 (g)].

Areas that are improved to handle stormwater are managed to prevent off-site impacts. Stormwater plan review and approval is required from Charlevoix County and/or state agencies in accordance with Section 11.6 (Step 5, #4 Charlevoix County Soil Survey). Failure to demonstrate stormwater plan approval from the county and/or state agencies may be a basis for PUD denial by the Planning Commission or Township Board [Art XI Sec 11.8(15)].

Additionally, site plans must include a map of stormwater retention and detention areas. All site plans also require review/approval by the Charlevoix County Soil Erosion and Sedimentation Control Officer, the Northwest Michigan Community Health Agency, MDEQ & MDNR, and the Charlevoix County Planning Department [Art XII Sec 12.8 (t)(5)].

Stormwater management areas and facilities, whether on-site or off-site, are required to be designed, constructed, and maintained to prevent flooding and protect surface and ground water quality. Special attention is given to proper site drainage so that stormwater runoff will not affect neighboring properties or overload watercourses in the area. Stormwater management systems are to be designed in accordance with professionally accepted principles, and provide on-site retention or detention facilities designed to hold runoff from a 50-year frequency storm event. Naturally occurring and pre-existing drainage ways are used for the movement of stormwater [Art XII Sec 12.11(d)].

Additionally, discharge of stormwater runoff from any site which may contain oil, grease, toxic chemicals, or other hazardous substances or polluting materials is prohibited unless measures to trap pollutants meet the requirements of the Michigan Department of Environmental Quality, based upon professionally accepted principles [Art XII Sec 12.11(d)].

Stormwater Management: RECOMMENDATIONS

SUGGESTED ACTION: Consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the Charlevoix County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Bay Township for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18
TOTAL SCORE: 6, WEAK

All properties that are located near lakes, streams, wetlands, ponds, or drainage ways---essentially any water body or water course---have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local units require all earth movement activities associated with development or construction projects follow BMPs to control erosion and ensure that any sediment-laden runoff does not enter waterways. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA). Coordination between townships and the county is essential to ensure that soil erosion and sedimentation is controlled.

Soil Erosion and Sediment Control: RECOMMENDATIONS

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a lake, stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Bay Township.

Sewer/Septic

POSSIBLE SCORE: 24
TOTAL SCORE: 10, ADEQUATE

Both the Lake Charlevoix and Little Traverse Bay Watershed Protection Plans emphasize the need to educate citizens about the importance of septic system maintenance. The Master Plan notes that all of Bay Township is served by private septic systems and ground water drinking sources (p.5-6). There is no public

sewer access. The Master Plan recommends that the community have a program to identify septic systems that are seeping into the stormwater system. It calls for promoting the protection of water quality and ground water recharge areas by exploring the creation of point-of-sale septic inspection program encouraging the efficient use of septic treatment/disposal and promoting water resource protection.

Additionally, the Master Plan recommends an inventory be compiled of active and inactive licensed septage application/disposal sites within Bay Township to ensure compliance with Part 117: Septage Disposal Act of Michigan's P.A. 451 of 1994, as amended [p.8-5, Chap 8 Future Land Use, Policies, Goals & Actions; General Policy Statements (3) Environment].

Regulations that pertain to septic systems in Bay Township are coordinated with the County Health Department regulations. Zoning permit applicants are required to provide evidence of Northwest Michigan Community Health Agency approval of septic disposal and potable water supply, prior to final site plan (Art IV Sec 4.18).

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: Consider requiring that a septic system be located at least 100 feet from a wetland or open water feature, and specify a minimum isolation distance from all nearby wells.

SUGGESTED ACTION: Consider adopting a “point of transfer” septic inspection ordinance.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 2, WEAK

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances that provide an additional layer of protection to wetlands that fall under state jurisdiction and provide protection to wetlands not protected by the state statute. In addition to adopting and implementing a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

There are a few steps that Bay Township could consider in order to better protect existing wetland resources. The township already requires a building setback from wetland areas. Wetlands are included in the Conservation Point System for Density Bonus Incentives and Credits (p.47): Wetland Buffers (25.0 feet for a no-grade buffer and 40.0 foot building setback buffer is required (Art XI Sec 11.8 Table 1).

Wetlands: RECOMMENDATIONS

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider expanding the wetland setback provision to all other zoning classifications in the township. This would protect township wetlands and cost less to administer than adopting a local wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 15, STRONG

Ground water is the sole source of drinking water for Bay Township, as noted in the Master Plan (p.5-6). Site plan review is required to ensure there are no unnecessary threats posed to ground water by new or redevelopment proposals. Art XI 11.5(e) requires site plan applications to include: A natural and cultural features inventory identifying primary conservation areas such as wetlands, waterways, floodplains, shorelines, views into and from the site, etc. and secondary conservation areas such as steep slopes, ridgelines, old buildings/structures, historic/archeological features, farmland, ground water recharge/discharge areas, significant plant/wildlife habitat, etc., and potential development areas.

Additionally, the Zoning Ordinance prohibits both direct and indirect discharge of hazardous substances to ground water without appropriate approvals/permits. Site plans must conform to all applicable requirements of state and federal statutes, and approval and an occupancy permit may be conditioned on the applicant receiving necessary state and federal permits applicable to wetlands, lakes, streams, floodplains, hazardous substances, and ground water discharges [Art XII Sec 12.11 (i)].

Ground water protection requirements for mining operations are included in the Zoning Ordinance. Art IV Sec. 4.28(a)(2)(vii)(b) Mining & Extractive Operations supplemental standards notes: "Groundwater conditions, including groundwater depth, flow direction and gradient, flow velocity, and background water quality (i.e. dissolved oxygen, specific conductivity, alkalinity, iron, manganese and other heavy metals, etc.) and the results of a valid and reliable aquifer pump test submitted to the Planning Commission to determine any possible impact on groundwater wells, including residential, commercial industrial and/or agricultural wells in the area."

Storage of hazardous materials is regulated by the state under Part 5 Rules issued for Part 31 Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

The township has strong protections in place for ground water; we have only a few recommendations:

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water.

SUGGESTED ACTION: Since many common activities can impact ground water quality, provide ground water education materials to township residents.

SUGGESTED ACTION: Require Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 26, ADEQUATE

Bay Township participates in the National Flood Insurance Program (FEMA Flood Ins Program CID #:260796 BAY, TOWNSHIP OF CHARLEVOIX COUNTY), and ordinance language regulates floodplain development. "No principal structure shall be constructed within the 100-year floodway. Any permitted structures within the 100-year flood plain shall be constructed in a manner that allows for the free flow through of water, complies with all state and/or federal regulations, and compensates for flood plain losses, if any." [Art VI Sec 6.3(d)]

Additionally, Art XII Sec 12.11 (i) requires site plans to conform to all applicable requirements of state and federal statutes. Site plan approval and an occupancy permit may be conditioned on the applicant receiving necessary state and federal permits applicable to floodplains.

We have no additional recommendations for this section.

Conclusion

We applaud the water protection measures that exist in Bay Township, and the fact that they are among some of the strongest we have evaluated in certain areas. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

Bay Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	27	Strong
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	44	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	30	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	13	Adequate
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	16	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	10	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	2	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	15	Strong
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	26	Adequate

SECTION III: Analysis

Chapter 6 Boyne Valley Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Boyne Valley Township, which is located in the southeast portion of Charlevoix County. The Boyne River, including much of the North and South Branch of the Boyne, is among the important water resources in Boyne Valley Township. Additionally, the township includes a sizeable portion of Deer Lake, numerous streams, and a variety of wetland types. Other than a small portion in the northern part of the township (Gimlet Creek, which is part of the Little Traverse Bay Watershed), the entire township is located in the Lake Charlevoix Watershed. This analysis includes evaluation scores, recommendations, and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix, which includes Boyne Valley Township.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 0, MISSING

Boyne Valley Township does not currently have a Master Plan. A Master Plan is a comprehensive long range plan that would serve to guide the growth and development of Boyne Valley Township. These Master Plans include an inventory of existing land use and natural resources, including lakes, streams, wetlands, ground water recharge areas, wildlife habitat, and scenic areas and a description of where and what type of development is desired. Such a plan provides a strong basis for implementation of the zoning ordinance, as well as enabling individuals and businesses to reliably plan for the purchase and use of property in a way that is compatible with community goals.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: Initiate a process to develop a township Master Plan that includes public involvement, does a comprehensive inventory of water resources, and integrates recommendations of the Lake Charlevoix Watershed Management Plan.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 30, ADEQUATE

The Boyne Valley Zoning Ordinance includes several items that promote water resource protection. For example, the statement of purpose encourages “the use of lands and natural resources in accordance with their character, adaptability and suitability for particular purposes.” (Article I Section 1.0)

One important aspect of the local zoning permitting process is to ensure that a project applicant receives all applicable permits from other agencies. The standards for granting site plan approval state that “Site plans shall conform to all applicable requirements of Township, County, State and Federal statutes and approval shall be conditioned on the applicant receiving all necessary permits before final site plan approval.” [Article V Section 5.4 (11)] As well, Article XIV Section 14.2(E) states that zoning permit applications shall contain “Evidence that all federal, state and county licenses or permits have been acquired.” These requirements help to ensure that protection of resources, such as rivers, lakes, wetlands, and endangered species, are integrated into a proposed development as part of the planning process.

Although Boyne Valley Township does not have Planned Unit Development (PUD) provisions, the R-3 Multiple Family Residential District does provide flexible site design criteria. It also includes a minimum open space threshold of 50% of the gross area of a development, which is required to be maintained as open space or non-profit recreational uses, and density bonuses to promote cluster design [Article VIII Section 8.2 (E)(2 and 3)].

Boyne Valley’s ordinance includes a fee system that helps to fund administration of the ordinance, as well as provide penalties for those who fail to obtain a permit prior to construction (Article XV 15.1). It authorizes the township Zoning Administrator to issue civil infraction citations directing alleged zoning ordinance violators to appear in court [Article XIV, Section 14.4(D)]. These provisions help to ensure that prospective developers go through the zoning process, and in so doing consider the protection of water resources.

Basic Zoning Components: RECOMMENDATIONS

We have a few recommendations for Boyne Valley Township to consider, in order to strengthen water protection measures in the Zoning Ordinance.

SUGGESTED ACTION: Pre-application or pre-construction meetings can help to identify water resource protection needs and opportunities early in the development process, thereby avoiding potential problems and saving money. Consider including a pre-application meeting with the applicant as part of the zoning application process.

SUGGESTED ACTION: Require that all designated open space, established as part of a multi-family development, be protected in perpetuity to ensure that it actually remains open space into the future. In addition, to ensure the maintenance and protection of wildlife habitat, open space designed as part of an R-3 development should be managed in a natural condition.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 22, ADEQUATE

Two of the most effective ways to protect and maintain water quality through zoning are building setbacks, and the establishment of vegetated buffers, or shoreline protection strips.

Boyne Valley Township addresses setbacks in two locations. First, in the general provisions section of the Zoning Ordinance, Section 4.21-Shoreline Protection Strip states that “no building or structure, except docks and ramps shall be erected closer than 50 feet from the shoreline at normal high water level of any lake,

stream, or creek in the township.” (Article IV Section 4.21) Second, the development standards for the Rural Residential District (RR-1 zone) exceeds this minimum standard when it stipulates that lots, building envelopes or site condominium units must be located 100 feet upland from the high water elevation of any lake, river or stream or 50 feet upland of any area designated as wetland [Article VIII Section 8.3(J)(4)].

These two sections also address the issue of vegetative buffers. In Section 4.21, Shoreline Protection Strip, the ordinance requires “a strip of land 35 feet wide from the normal high water mark bordering the body of water shall be maintained in trees and shrubs in their natural state. Trees and shrubs may be pruned, however, to afford a view of the water.” (Article IV Section 4.21) In the RR-1 development standards, it appears as though the intention of the ordinance is to have the entire setback area serve as a shoreline protection strip: “Except for the planting of trees or shrubs said setback areas shall remain in an undisturbed state.” [Article VIII Section 8.3(J)(4)]

Dockage regulations are a valuable tool to address the character of the natural shoreline, recreational enjoyment, and the rights of waterfront owners. No general provisions address dockage issues. However, the zoning provisions for the Resort Residential (C-1) district addresses dockage in two ways. First, the location of docks must comply with side yard requirements for this district, not less than twenty five (25) feet setback from the adjacent property line. Second, docks, boat landings, and similar structures shall not be longer than what is required to reach a water depth of four (4) feet at normal low water [Article VIII, Section 8.4 (F)(1)].

Since even a very small amount of petroleum products or hazardous chemicals can impact a large amount of water, it is important to ensure proper management of these liquids. Boyne Valley Township addresses these issues minimally in the section of the ordinance addressing Application for Site Plan Review. For facilities or uses where hazardous substances are stored, used, or generated, the following information is required as part of the site plan review: 1) location of structures to be used for storage, use, loading/unloading, recycling, or disposal of hazardous substances; 2) Location of any above or underground hazardous material storage tanks; 3) location or exterior drains or any facilities designed to collect, store, or transport storm water and the points of discharge for all drains and sumps; and 4) copies of all required Federal, State, or County permits [Article V, Section 5.2(A)(2)(t,v)].

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Maintaining native vegetation along the shoreline is critical to preserving water quality and providing wildlife habitat. Specifically encouraging the maintenance and re-establishment of native vegetation in the Shoreline Protection Strip (Section 4.21) is recommended.

SUGGESTED ACTION: Currently, Boyne Valley’s ordinance only addresses docks in the Resort Residential (C-1) district. This zone includes only a small percentage of the Deer Lake shoreline. In order to protect the rights of all waterfront owners and maintain the character of the shoreline, docks should be addressed in all zones that include shoreline.

SUGGESTED ACTION: Initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in Boyne Valley Township. This would involve an initial inventory to determine if there are invasive stands of *Phragmites*, treat them if they exist, and conduct a follow up inventory and treatment, if necessary. Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters, and this step would help to ensure that Deer Lake and the Boyne River do not become invested with this invasive species.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 5, WEAK

As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces prevent rainwater and snowmelt from naturally percolating into the soils. This reduces the opportunity for contaminants to be removed from stormwater runoff, before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

The only provision in the Boyne Valley Township ordinance that helps to encourage reduction of impervious surfaces is Article VI, Section 6.3(A)(1), which stipulates that the private road roadbed minimum is 18 feet. This is a reasonable width, and by specifically mentioning this number, the ordinance encourages road beds of this width. Some local governments have their minimum roadbed width larger, which encourages more impervious surface in the jurisdiction.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities to reduce impervious surfaces in local zoning ordinances. We encourage Boyne Valley Township to integrate these provisions into their ordinance.

SUGGESTED ACTION: Consider establishing impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Establish a process whereby parking and loading requirements in Article X, Section 10.1-3 can be modified to reduce impervious surfaces by reducing the number of spaces or the square footage of parking spaces and loading areas.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 11, ADEQUATE

Local governments can do much to reduce stormwater runoff as part of their zoning ordinance. Although Boyne Valley Township does not have a stand-alone stormwater provision, there are several places in the ordinance where stormwater management is addressed. The site plan review standards [Article V Section 5.4 (3)] state that special attention shall be given to proper drainage, so as not to adversely affect neighboring properties. Runoff from such sites must run through detention and settling basins, before being discharged off site. Such basins shall have the capacity to handle all stormwater runoff from a 3.5 inch in 24 hour period rainfall event.

The section on grading regulations (Article IV Section 4.16) states that no property shall be filled or graded so as to discharge surface runoff onto abutting premises. Additionally, the site plan review section requires the location of hazardous materials storage, handling, disposal, exterior drains, retention areas, facilities to collect, store or transport stormwater [Article V Section 5.2(A)(2)(v)(3)]. Together, these provisions provide the opportunity for adequate review of stormwater management through the local zoning process.

Stormwater Management: RECOMMENDATIONS

Stormwater runoff from buildings, driveways, parking lots, streets, and other impervious surfaces is a major source of pollutants to northern Michigan's waterways. Boyne Valley Township's ordinance does address stormwater in several places, and we recommend adding the following to strengthen this ordinance provision:

SUGGESTED ACTION: For the short term, consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Boyne Valley Township for passage.



Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 3, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded (as typically happens during the construction process), there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction or use of steep or unstable slopes can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Currently, Boyne Valley Township does not specifically regulate soil erosion and sedimentation. However, soil erosion is mentioned in three locations:

- 1) The removal of soil, sand, or other material is not permitted in any zone regulated by the county Soil Erosion and Sedimentation Control program, except under a temporary permit (Article IV Section 4.18). These zones are not specified in the Boyne Valley Township ordinance, however.
- 2) In the general provisions, the private roads section states that soil erosion control measures shall be applied, as per Charlevoix County Soil & Water Conservation standards and specifications. [Article VI, Section 6.2 (c)]; and
- 3) The “other development regulations” for the Resort Commercial District (“C-1”) stipulate that all fill material shall not be allowed to enter the water by erosion or mechanical means, and that excessive soil erosion will be avoided [Article VIII Section 8.4(F)(3-4)].

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near lakes, streams, wetlands, ponds, or drainage ways – essentially any water body or water course – have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local governments require all earth movement activities, associated with development or construction projects, to follow Best Management Practices (BMPs) to control erosion and ensure that any sediment-laden runoff does not enter waterways. The Charlevoix County Department of Building Safety administers Part 91 of Michigan’s Natural Resources and Environmental Protection Act (NREPA). Coordination between townships and the county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a lake, stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Boyne Valley Township.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 9, ADEQUATE

Sewer and septic management are critical to both human health and water quality. The Lake Charlevoix Watershed Management Plan includes an Objective to educate citizens about the importance of septic system maintenance in order to reduce the amount of harmful nutrients in our waters. Boyne Valley Township, as part of its general provisions, states that “Every building shall be provided with a safe and sanitary water supply and sewage disposal system. The written approval of such facilities by the District Department of Health, No. 3, Charlevoix, shall be filed with an application for zoning permit.” (Article IV Section 4.13)

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for a septic system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement, whereby septic systems must be inspected to ensure they are operating properly, before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 6, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

Boyne Valley Township has several provisions that specifically mention wetlands. First, the site plan review application section requires that the location of wetlands is noted on the site plan [Article V, Section 5.2 (d)]. Second, the Rural Residential district (“RR-1”) requires that building envelopes or site condominium units shall be setback a minimum of 50 feet upland of any area designated as a wetland [Article VIII Section 8.3(J)4]. This section also stipulates that this setback area shall remain in an undisturbed state, which amounts to a buffer zone of natural vegetation. Buffer zones between buildings and wetlands can be a very effective protection tool.

Wetlands: RECOMMENDATIONS

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances that regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies, prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: For the short term, consider expanding the wetland setback provision to all other zoning classifications in the township. This would protect township wetlands and cost less to administer than adopting a local wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 7, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important. The Boyne Valley Township ordinance mentions the importance of ground water protection in the description of the Mobile Home Park Residential District (“R-2”): “Because of the potential for groundwater contamination from septic systems due to the porous nature of the soils in Boyne Valley Township and density of development allowed in this District, R-2 shall only be established in areas serviced by a minimum of primary and secondary sewage treatment facilities.” [Article VIII Section 8.1(A)]

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous material is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Importantly, Boyne Valley Township participated in the state Source Water Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step and protecting these precious drinking water sources.

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 30, ADEQUATE

There are no additional provisions in the Boyne Valley Township ordinance that could contribute to water resource protection. There are no high risk erosion or steep slopes restrictions, or critical dunes in the township. The Deer Creek Watershed, which includes Deer Lake and all its tributaries, is not included in the Jordan River Natural River Zone. Despite this, the township could consider implementing their own natural river zoning overlay for protection of these precious waters.

Conclusion

We applaud the water protection measures that exist in Boyne Valley Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Boyne Valley Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	0	Missing
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	30	Adequate
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	22	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	5	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	11	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	3	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	6	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	30	Adequate



SECTION III: Analysis

Chapter 7 Chandler Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Chandler Township, located in the northeast portion of Charlevoix County. Chandler Township is situated in the upper reaches of two main watersheds: Little Traverse Bay and the Cheboygan River.

Arising from the base of the Chandler Hills, which essentially bisect the township from north to south, numerous ground water seeps and springs provide cold, high quality ground water to various flowing waters. These include the north and south branches of Spring Brook, which join and then flow into the Bear River, and ultimately into Little Traverse Bay. Also fed by these seeps and springs are Minnehaha Creek and the West Branch of the Sturgeon River, which ultimately flow into the Cheboygan River Watershed via Pickerel and Burt Lakes, respectively.

This analysis includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Little Traverse Bay.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 18, ADEQUATE

Chandler Township has a Master Plan in place, which was adopted in 2009. Although the Master Plan does not specifically mention the watersheds that occur in the township, it does contain a contour map (fig. 3-2) and a surface geology map (fig. 3-1) with water features.

Chapter 6 of the Master Plan contains a Natural Resource Goal that addresses community concerns for protecting water resources: "Protect and preserve groundwater, surface water, woodlands, wetlands, open space, wildlife habitat, and steep slopes." (Chapter 6--Goals) Stated objectives to accomplish this goal include:

- encouraging a land use pattern that respects the natural features of the area by evaluating type and density of proposed developments based on soil suitability, slope, potential for ground water and surface water degradation and contamination, compatibility with adjacent land uses, and impacts to sensitive natural areas like wetlands, greenways and wildlife corridors;
- strengthening of ground water protection and stormwater management regulations while encouraging the continued natural use of wetlands as ground water recharge, stormwater filtering, and stormwater holding areas; and
- supporting erosion control measures.

Although the Master Plan shows the distribution of forested land in the township and mentions predominant wildlife, it does not specifically identify wildlife corridors or call for their protection. Conservation-reserve is the most extensive land use category recommended in the Master Plan. Including all state lands as well as some private lands, this category is designed to provide protection to existing recreation property, areas planned for future recreation use, or other environmentally sensitive areas and natural resources, while allowing for very limited and low intensity development to occur (Chapter 7). Finally, the Little Traverse Bay Watershed Management Plan notes that road stream crossings are important sources of sediment pollution, and maintaining them helps to protect aquatic life, the cold water fishery, and recreation and navigational interests.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: In the next Master Plan update, specifically mention the watersheds of the township, and the importance of ground water seeps and springs that feed these watersheds.

SUGGESTED ACTION: In the next Master Plan update, acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources.

SUGGESTED ACTION: In the next Master Plan update, identify wildlife corridors and recommend use of conservation easements or other measures to permanently protect wildlife corridors that occur on private land.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 37, STRONG

The Chandler Township Zoning Ordinance includes several basic components that contribute to water quality protection. The statement of purpose includes several comments that contribute to water quality protection, including encouraging the use of the lands and resources in accordance with their character and adaptability and to conserve life, property and natural resources (Article I, Section 1.5). In addition, Article IX Planned Unit Development (PUD) District includes the following criteria: “long-term protection and/or preservation of natural resources and natural features.” [Article IX, Section 9.2(1)]

An important aspect of the local zoning permitting process is coordination with other applicable county, state, or federal permits. The data required for site plan review includes water courses, wetlands, and measures being taken to control erosion. It also includes a statement that the Zoning Administrator or Planning Commission may request that copies of the site plan be submitted to other agencies for review [Article X, Sec. 10.3(2)]. However, the only statute beyond the township that is specifically mentioned as being required for coordination is the sanitary code. Requiring permits such as soil erosion, lakes and streams, or wetlands, prior to granting site plan approval, helps to ensure that protection of resources is integrated into a proposed development as part of the planning process.

The Chandler Township ordinance includes a fee system that helps to fund administration of the ordinance, and a provision whereby the township can require additional fees to cover the costs of professional review (Article XIV, Section 14.4). The ordinance authorizes the township Zoning Administrator to initiate appropriate action for proceedings to prevent, restrain, correct or abate any illegal act in violation of the ordinance (Article XIV, Section 14.2). These provisions help to ensure that prospective developers comply with the zoning ordinance, and in so doing, consider the protection of water resources.

Chandler Township’s PUD District provides flexible site design criteria and density incentives to encourage developers to include open space or cluster design provisions in their projects. All PUDs require a minimum of 50% of the project area to be protected under a conservation easement, or an equivalent recorded legal instrument acceptable to the township [Sec 9.2 (4)(l)]. The minimum open space threshold to qualify for a density bonus is sixty (60) percent and ranges up to eighty (80) percent on the following sliding scale:

- 60 % = 5% more dwelling units;
- 70% = 10% more dwelling units;
- 80% = 15% more dwelling units [Article IX Sec 9.2 (4)(n)(1)]

The open space set aside in PUDs is not limited to low impact uses, but the ordinance does stress the importance of water resources by requiring that all sensitive natural features shall remain unencumbered by any principal or accessory buildings and structures (Article IX Sec. 9.2(4)(h)). This includes features such as drainage ways and streams, wetlands, land within the 100 year flood plains, and stream or river banks, which by virtue of soil and slope may create highly erodible hazards to the public health and safety.

Basic Zoning Components: RECOMMENDATIONS

SUGGESTED ACTION: There are multiple laws at the county, state, and federal level designed to protect water resources. One of the simplest ways that local governments can ensure that county, state, and federal laws are enforced, is to require that all required permits from other governmental entities have been issued before a local zoning permit is issued.

SUGGESTED ACTION: Pre-application or pre-construction meetings can help to identify water resource protection needs and opportunities early in the development process, thereby avoiding potential problems and saving money. Consider including a pre-application meeting with the applicant as part of the zoning application process.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 26, ADEQUATE

Two of the most effective ways to protect and maintain water quality through zoning are building setbacks, and the establishment of vegetative buffers, or shoreline protection strips.

Chandler Township addresses both of these zoning methods in Article III, Section 3.16, Stream Bank Protection Strip. This provision states that “no building or structure, except docks or launch ramps, shall be erected closer than fifty (50) feet from the shoreline at normal high water level of any stream or creek within the township. In addition, a strip of land thirty-five (35) feet wide from normal high water level bordering the body of water shall be maintained in trees and shrubs in their natural state. Trees and shrubs may be pruned, however, to afford a view of the water.” (Article III, Section 3.16)

Shorelines: RECOMMENDATIONS

Section 3.16, Stream Bank Protection Strip is an effective way to ensure that Chandler Township’s valuable streams and springs are protected. We offer the following recommendations to strengthen this zoning provision and to encourage the township to consider additional measures to protect the township’s streams.

SUGGESTED ACTION: Maintaining native vegetation along the shoreline is critical to preserving water quality and providing wildlife habitat. We recommend that you specifically encourage the maintenance and re-establishment of native vegetation in the Stream Bank Protection Strip (Sec. 3.16).

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are invasive stands of *Phragmites*, treat those if they exist, and conduct a follow up inventory and treatment, if necessary.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, WEAK

The Little Traverse Bay Watershed Plan notes that impervious surfaces limit opportunities for rainwater to naturally percolate into the soils. This reduces the opportunity for contaminants to be removed from stormwater runoff, before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

The only provision in the Chandler Township ordinance that helps to encourage reduction of impervious surfaces is the maximum allowable impervious surface coverage contained in the PUD provisions. Article IX, Sec 9.2(4)(k) states that the maximum allowable impervious surface coverage is 20% of the entire project area. To provide a comparison, 15% is recommended for watershed health.

Impervious Surfaces: RECOMMENDATIONS

SUGGESTED ACTION: Consider revising impervious surface lot coverage limits in all zoning districts to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Establish a process whereby parking and loading requirements in Article III can be modified to reduce impervious surfaces by reducing the number of spaces or the square footage of parking spaces and loading areas, or allowing pervious surfaces such as grass, gravel, or brick pavers.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 4, WEAK

Chandler Township does not have a stand-alone stormwater provision, but there are several places in the ordinance where stormwater management is addressed. This includes Article X Sec 10.3(2)(b), which authorizes the Zoning Administrator or Planning Commission to request that applicants distribute copies of the site plan to the Charlevoix County Drain Commissioner for review and comment. Article X Sec 10.3(1)(s and aa) requires the applicant to provide site plan data regarding all facilities designed to collect, store, or transport storm water. By requesting the information, one can assume that the Township requires applicants to manage stormwater. However, this expectation is not stated clearly.

Stormwater Management: RECOMMENDATIONS

Stormwater runoff from buildings, driveways, parking lots, streets, and other impervious surfaces is a major source of pollutants to northern Michigan's waterways. Local governments can do much to reduce stormwater runoff as part of their zoning ordinance. Chandler Township's ordinance does address stormwater in several places. In addition, we recommend considering adding the following stormwater management practices, either as a separate item in general provisions, or as part of the site plan review.

SUGGESTED ACTION: Consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Chandler Township for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction or use of steep or unstable slopes can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Currently, Chandler Township does not specifically regulate soil erosion and sedimentation. However, Charlevoix County Department of Building Safety administers a county-wide soil erosion control program. In addition, the Chandler Township Zoning Ordinance mentions soil erosion control in two locations. First, Article X, Section 10.3 (h) Site Plan Data Required, calls for a detailed description of measures to be taken to control soil erosion and sedimentation during and after completion of grading and construction operations. Second, Article X, Section 10.4 stipulates that no grading, removal of vegetation, filling of land, nor construction of buildings (all activities that can cause erosion) is permitted until a site plan has been approved by the Planning Commission.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation of nearby waters. Accordingly, it is recommended that local units of government require all earth movement activities associated with development or construction projects to follow Best Management Practices (BMPs) to control erosion and ensure that any sediment-laden runoff does not enter waterways. Coordination between the township and the county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Chandler Township.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 9, ADEQUATE

Sewer and septic management is critical to both human health and water quality. Chandler Township, as part of its general provisions, states that “All buildings shall provide water supply and sewage disposal facilities, as appropriate to their use, as required by the Charlevoix County Sanitary Code.” (Article III, Section 3.11) Simply requiring sanitary permits, prior to being granted a local zoning permit, is an effective way of ensuring that waters are protected from inappropriate sewer and septic facilities.

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can influence the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic systems to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae. The Little Traverse Bay Watershed Management Plan includes an Objective to educate citizens about the importance of septic system maintenance in order to reduce the amount of harmful nutrients in our waters.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, MISSING

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

Chandler Township requires information on the location of wetlands as part of the PUD application process and the site plan review process. Otherwise, the ordinance is silent with respect to wetlands. Given the proximity of high quality riparian wetlands adjacent to streams in the township, the Stream Bank Protection Strip section of the ordinance (Article III, Section 3.16) could result in some wetland protection.

Wetlands: RECOMMENDATIONS

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances to provide protection for wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning, and by requiring wetland permits from state and federal agencies, prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider expanding the Stream Bank Protection Strip to include wetlands as water bodies from which a setback is required. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Require applicants seeking zoning permits to secure state wetlands permits before issuing a local zoning permit. This is the most cost-effective way to ensure that wetlands are protected.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

The six points scored in the ground water evaluation simply account for items that are not applicable to the township, and ensures the township is not penalized for those items. The Chandler Township Zoning Ordinance is silent with respect to ground water, according to our research. This is somewhat ironic, given that Chandler Township's ground water resources are a key reason why Spring Brook and the West Branch of the Sturgeon Rivers are such high quality trout streams. In addition to the environmental importance of ground water, it is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous materials is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water as a drinking water source.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 30, ADEQUATE

There are no additional provisions in Chandler Township's ordinance that contribute to water resource protection, such as floodplain ordinances. There are no high risk erosion or steep slopes restrictions, or critical dunes in the township. We have no additional recommendations for this element.

Conclusion

We applaud the water protection measures that exist in Chandler Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Chandler Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	18	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	37	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	26	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	3	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	4	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	0	Missing
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	30	Adequate

SECTION III: Analysis

Chapter 8 Charlevoix Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Charlevoix Township in Charlevoix County. The township surrounds the City of Charlevoix to the northeast and the southwest, but the city has its own planning and zoning (see Chapter 3).

Charlevoix Township is located in the Lake Charlevoix Watershed, but it also has waters draining directly into Lake Michigan. Stover Creek is another notable water resource in the township. The Little Traverse Wheelway is a 26-mile paved trail extending along the beautiful Lake Michigan coast, through Petoskey, and into Harbor Springs, and the trailhead is located at the Charlevoix Township hall. Additionally, Mt. McSaubia Preserve is located in the township, which is a 28-acre dune and wooded area along the Great Lake coastline.

This chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 18, ADEQUATE

Charlevoix Township has a Master Plan that was adopted 2005. It is recommended that Master Plans be updated every five years, so this plan should be reviewed again, as soon as it is feasible. The plan does not identify the watersheds in which the township is located, but it does include maps showing lakes, streams, creeks, ponds, and wetlands (Chapter 2). Additionally, Chapter 4 includes this goal statement: Optimum utilization of land, water, air and natural resources including their preservation and conservation.

Importantly, Chapter 5 states that it is the intent of the township to protect water quality, in addition to the beauty of the lakes and streams by establishing buffer areas along the water's edge. These buffers should consist of natural vegetation and undisturbed open space, to impede the flow of surface water and minimize soil erosion and siltation of the township's water resources.

Chapter 5 also notes the importance of interconnecting valuable natural resources that define the township. This includes lakes, wetlands, and stream corridors, and the intent to create a system of connected open spaces and natural environmental corridors as the organizing structure of future development.

Chapter 6 recognizes the importance of acquiring and protecting land for public use by purchase or the imposition of conservation easements. The same chapter notes that a minimum of a 100 foot buffer is intended on both sides of Stover Creek to protect it from stormwater incursion. The intent is also to protect water quality and appearance by the employment of stormwater Best Management Practices (BMPs) and the establishment of buffers for the region's riparian lands already occupied by homes.

Master Plan Components: RECOMMENDATION

We have a few suggestions that will strengthen the Master Plan, when the next update is done.

SUGGESTED ACTION: Consider addressing the importance of preventing new impervious surfaces, and the various tools and incentives available for doing so.

SUGGESTED ACTION: Consider addressing the importance of road stream crossings, where proper construction and design techniques are critical to avoid excessive sedimentation in streams.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 38, STRONG

The Charlevoix Township Zoning Ordinance has a statement of purpose that includes protection of water. “It is the purpose of this Zoning Ordinance to promote the safety, health, morals, convenience, and general welfare; to encourage the use of lands and natural resources in the Township in accordance with their character, adaptability, and suitability for particular purpose. Recognizing the waterfront along Lake Charlevoix and Lake Michigan as a unique and valuable resource, it is the purpose of Charlevoix Township to adopt provisions to insure wise, proper, and compatible uses of this property.” (Art I Sec 1.1)

The ordinance includes a fee system to cover costs to the community for review of proposal applications or appeals, including professional reviews [Art XII Sec 12.1(G)(1)]. For enforcement, the Zoning Administrator and Supervisor are designated as authorized township officials to issue municipal civil infraction citations that require alleged violators to appear in court [Art XII Sec 12.2(D)].

The need for coordination is recognized in the Planned Unit Development (PUD) section, giving the Planning Commission Chair discretion to solicit comments from other agencies [Art V Sec 5.5 (E)(1)(c)]. In Site Plan Review, “The Planning Commission Chair shall circulate site plans to the appropriate officials for comments and recommendations as to their conformance with applicable standards and requirements.” [Art IX Sec 9.3(A)(3)] This coordination could be improved by specifically stating that applicants are responsible for securing needed permits from county, state and federal agencies prior to having a permit issued by the township.

Applicants may also request a meeting with the Chairperson of the Planning Commission, the township Supervisor and the township Zoning Administrator, together with consultants, local officials, and staff [Art V Sec 5.5 (E)(1)(a)]. This is an important step that allows applicants to understand what is needed, early in the process, to protect water resources and include all the necessary elements for township approval of their proposals.

Site Plan Review is required, and the location and elevation of “water bodies and courses, floodplains, drainage ways and wetlands and how they will be protected or altered by the project.” [Art IX Sec 9.4(A)(2) (e-f)] There are also density bonuses in the Planned Unit Development (PUD) section that involve open space protection, and at least 40 percent of the PUD is required to include open space or recreational facilities [Art V Sec 5.5(D)(5)]. The open space does not have to be managed in a natural condition, nor is it restricted

to low impact uses. However, the PUD Site Master Plan does require a description of the uses of common open space, its proposed ownership, and the legal steps to be taken that will restrict and maintain such open space.

Finally, the Zoning Ordinance includes sensitive area protections with provisions for Critical Dune Areas (Art III Sec 3.16); the Scenic Reserve District SRD (Art V Sec 5.11); and the Mineral Resource District (Art V Sec. 5.12).

Basic Zoning Components: RECOMMENDATIONS

The basic components of the Charlevoix Township Zoning Ordinance create a solid framework for considering impacts to the township's water resources from development. We applaud this strong effort, and have only one additional suggestion.

SUGGESTED ACTION: Consider requiring open space to be managed in a natural condition and be restricted to low-impact uses.

Shorelines

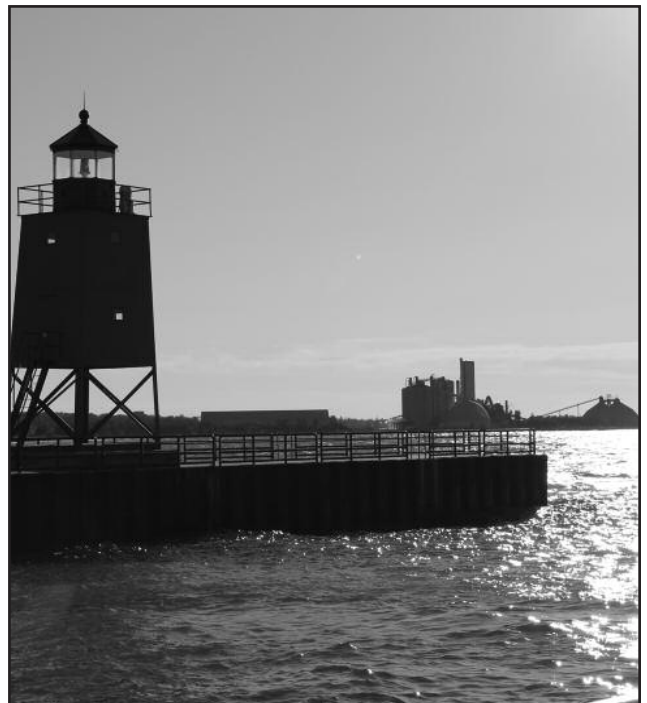
POSSIBLE SCORE: 60

TOTAL SCORE: 28, ADEQUATE

Two of the most effective ways for a local government to protect water quality using zoning is to require setbacks from the water's edge, and require a shoreline protection strip. These measures protect shoreline habitat, as well. The shoreline protection strip, also called a vegetative buffer zone, should require native vegetation between the water and the upland land use.

Charlevoix Township requires both of these important protections. Article III, General Regulations includes a Shoreline Protection Zone. The purpose of this zone is to protect surface waters from detrimental stormwater runoff. It also intends to maintain the natural shoreline appearance from the water, while still allowing landowners to enjoy views of the water. "No buildings or structures, except docks and launch ramps shall be erected within a shoreline protection zone closer than 50 feet from the shoreline of Lake Michigan, Lake Charlevoix, or any stream or creek as measured from the ordinary high water mark, or the top of bank, whichever is higher." [Art III Sec 3.13 (B)]

The Shoreline Protection Zone also prohibits areas located below the Ordinary High Water Mark from being altered [Art III Sec 3.13(C)(1)]. Additionally, "no more than one-third of the trees and shrubs shall be removed. Such trees and shrubs shall be cut flush with the ground but stumps shall not be removed. Significant trees (12 inches and larger in diameter measured at breast height) shall be preserved, wherever possible. The remaining trees and shrubs may be trimmed and pruned to create views to the water from the property." [Art III Sec 3.13(C)(2)] Importantly, within the first 25 feet above the high water mark, "native vegetation shall be maintained to filter storm water flows. No cultured varieties of vegetation or grass shall be permitted within this zone." [Art III Sec 3.13(C)(3)] The township allows boathouses, docks, and launch ramps as long as requirements of the Shoreline Protection Strip are satisfied and appropriate permits are secured. [Art III Sec 3.14]



The community regulates marinas using the Marine Industrial District. The purposes of this district are “to provide water related sites and locations for businesses that manufacture, repair, sell, and store boats and marine equipment and provide boat harborage.” [Art V Sec 5.9(A) 1-2] Later in the same section, the ordinance notes that marinas may not emit toxic or corrosive fumes or gases, except those produced by internal combustion engines under designed operating conditions [Art V Sec 5.9(G)(5)].

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Although marinas are regulated using the Marine Industrial District, we encourage the township to consider expanding their oversight by adding standards related to preventing the spread of invasive species, having spill containment equipment, and otherwise following BMPs.

SUGGESTED ACTION: Keyhole, or “funnel,” developments increase impacts to lakes and streams. The township may want to consider adopting a provision that specifically addresses these types of developments.

SUGGESTED ACTION: *Phragmites* is a concern mostly on Great Lakes shorelines, but it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are non-native stands of *Phragmites*, treat those stands if they are in existence, and conduct a follow up inventory and treatment, if necessary. To do so, we suggest you coordinate your efforts with the Lake Charlevoix Association’s *Phragmites* eradication program.

Impervious Surfaces

POSSIBLE SCORE: 33
TOTAL SCORE: 0, MISSING

The more a local government can do to reduce impervious surfaces, the better for water quality. As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces (streets, roofs, sidewalks, etc.) generate much more stormwater runoff than natural forested, or even agricultural, land uses. Polluted runoff discharges directly into Lakes Michigan and Charlevoix from pavement and rooftops, and includes bacteria from pet and animal wastes, fertilizer, oil and grease, sediment, heavy metals, salt, etc.

To reduce impervious surfaces, a community should increase the retention or restoration of native vegetation in riparian areas and in open spaces, and install simple and effective solutions, ranging from rain barrels and rain gardens, to engineering approaches that treat stormwater that has traveled across impervious surfaces, before it discharges into the water.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater running into our water resources. We encourage Charlevoix Township to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Consider reducing parking space dimensions and setting them as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot. Provide incentives for using Low Impact Development (LID) techniques to mitigate the impacts of impervious surfaces, in exchange for a larger building footprint.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 3, WEAK

A multitude of studies from around the nation and world have documented that urban stormwater is a serious source of pollution. As noted in Chapter 1, the county storm water ordinance is no longer in effect. This should be remedied as soon as possible.

Stormwater Management: RECOMMENDATIONS

SUGGESTED ACTION: Consider adding review of stormwater BMPs and other water quality protections in the site plan review ordinance.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Charlevoix Township for passage.



Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. As noted in the first Chapter, counties are mandated to administer and enforce Part 91, and Charlevoix County has two state-recognized agencies that do so: The Soil Erosion Control Officer and the County Road Commission.

Charlevoix Township Site Plan Review states that "...no grading, or excavation shall be commenced on any lot or parcel until a site plan that meets all of the requirements of this Article has been approved by the Planning Commission." [Art IX Sec 9.2(A)] It also requires a storm water management and soil erosion control plan [Art IX Sec 9.4 (A)(2)(p)], but it does not specify approval by the county. It does, however, require approval by the Planning Commission. PUD procedures require Planning Commission Chair review and notes the Chair shall have discretion to solicit comments from the county [Art V Sec 5.5 (E)(1)(c)]. Soil erosion is also mentioned in the Manufactured Home Development District (R-3) and the Special Land Uses Articles but again, county approval is not specified.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local units require all earth movement activities associated with development to follow BMPs to control erosion and ensure that sediment-laden runoff does not enter waterways. Coordination between township and the county is essential.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Charlevoix Township.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 12, ADEQUATE

Most of Charlevoix Township is served by the sewer system for the City of Charlevoix. The township Master Plan notes that the urban neighborhood is served by sewer and water (Chapter 6 Future Land Use Plan, Urban Neighborhood p.25) and that water and sewer is supplied to some areas designated as single family neighborhoods (Chapter 6 Future Land Use Plan, Single Family Neighborhood p.22).

Additionally, the township Zoning Ordinance notes that every building shall be provided with a safe and sanitary water supply system and sewage disposal facilities. The written approval of such facilities by the Northwest Michigan Community Health Agency shall be filed with an application for a Zoning Permit, so if there is a property that needs a private well for drinking water or a septic system, they are regulated (Art III Sec 3.10). We have no additional recommendations for this element.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, MISSING

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated.

Local governments have the opportunity to supplement the state's wetland protection program. Even though the Charlevoix Township Zoning Ordinance specifically mentions wetlands in several places, these points fall short, in terms of what can be done to ensure township wetlands are viable and continue to protect water quality.

The R-3 District requires location of wetlands to be included in the Review Standards (Art V Sec 5.3 D(6)). Both the Planned Residential (PRD) District and the PUD District award density bonuses that include consideration of wetlands [Art V Sec 5.4 D(2)(b); Art V Sec 5.5 D(2)(b)]. The PUD Submittal Requirements also require a development plan that includes unbuildable areas such as wetlands [Art V Sec 5.5 F(1)(a)(2)] and Article VIII, Special Land Uses, requires wetlands to be included on an Impact Assessment [Sec 8.1 B (2)(c)(5)]. Finally, Article IX, Site Plan Review requires wetland locations to be noted, and specify how they will be protected or altered by the project [Sec 9.4 (A)(2)(f)].

Wetlands: RECOMMENDATIONS

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances to regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection by taking the following steps:

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider requiring a 25-foot wetland setback provision to all zoning districts in the township. This would protect township wetlands in the short run, and cost less to administer than adopting a wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection, perhaps in coordination with the City of Charlevoix.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state and federal wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 0, MISSING

Charlevoix Township relies on Lake Michigan for its drinking water because it is served by the City of Charlevoix Water Treatment Facility (Annual Drinking Water Quality Report of the City of Charlevoix Water Supply, January 2011 p. 4). However, there could be protections in place for ground water sources in the township, which are important to surface water sources. For example, site plan review can be used to ensure direct discharge of potentially hazardous material is prevented, and required to be coordinated with state statutes.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the city until required state permits are received by the applicant. Storage of hazardous material is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 23, ADEQUATE

Charlevoix Township participates in the National Flood Insurance Program [FEMA Flood Ins Program CID #: 260790 CHARLEVOIX, TOWNSHIP OF CHARLEVOIX COUNTY Map (NSFHA) Emer-Reg Date 09/18/87]. For PUDs, the Zoning Ordinance requires mapping and descriptions of existing conditions that must include floodplains [Art V Sec 5.5 (E)(2)(f)(1)(a)(3)PUD Master Development Plan].

Charlevoix Township Lake Michigan Shoreline has designated MDEQ Critical Dune Areas. (http://www.michigan.gov/documents/deq/lwm_sanddunes_statewide_CDA_262858_7.pdf) No permits are issued by the township for construction within any Critical Dune Area, whether or not shown on the Zoning Map, until approved by the Michigan Department of Environmental Quality in accordance with the Sand Dune Protection and Management Act, Part 353 of PA 451 of 1994 (Art III Sec 3.16). We have no additional recommendations for this element.

Conclusion

We applaud the water protection measures that exist in Charlevoix Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Charlevoix Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	18	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	38	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	28	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	0	Missing
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	3	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	6	Weak
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	0	Missing
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	0	Missing
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	23	Adequate



SECTION III: Analysis

Chapter 9 Evangeline Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Evangeline Township, located in both the Lake Charlevoix and Little Traverse Bay Watersheds in Charlevoix County. Evangeline Township's character can be defined by abundant water resources, including shoreline frontage on Lake Charlevoix and Walloon Lake, several creeks and a small portion of the Boyne River, and Mud Lake, which is situated wholly within the township. This chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix and for Little Traverse Bay.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 19, ADEQUATE

The Evangeline Township Land Use and Recreation Plan was last updated in 2001. Since it is recommended that Master Planning documents be updated every five years, this one should be considered for review as soon as feasible. The plan acknowledges the township's abundant natural resources and contains a good listing of water resources, including shoreline frontage on Lake Charlevoix and Walloon Lake, a significant number of wetlands located adjacent to Lake Charlevoix, Walloon Lake and Mud Lake, and the Boyne River, which crosses through a small portion the township. The Evangeline Township webpage (www.charlevoixcounty.org/evangeline.asp) does not provide the existing Land Use Plan, but contains several useful graphic resources, including a contour map, environmentally sensitive areas map, land cover map, relief map, priority parcels map, and wetlands map.

The Evangeline Township Land Use Plan contains several goals related to protecting water resources. In the Goals, Objectives and Actions section, a primary goal is to "Protect the natural environment, wildlife habitat and waterways within the township." Other goals include minimizing growth within environmentally sensitive areas; conserving unique natural areas, such as wetlands, that perform important environmental functions; utilizing conservation design when development occurs; regulating development in areas designated as unsuitable, such as floodplains and wetlands; and limiting development in sensitive areas along lakes, rivers, and streams (Section III, Evangeline Township Land Use Plan).

In addition, the Community Planning Principles, General Statements section of the plan notes that site design should encourage open space; that sensitive and fragile lands should be protected from degradation; and

that wildlife habitat corridors should be interwoven with development to achieve environmental balance and achieve biodiversity (Section I, Evangeline Township Land Use Plan).

Master Plan Components: RECOMMENDATIONS

We applaud the water resource information and goals that are contained in the Evangeline Township Land Use and Recreation Plan. We offer the following suggestions for the next plan update, to further strengthen the role this document can play in guiding water resource protection.

SUGGESTED ACTION: As soon as possible, make the township Land Use and Recreation Plan available online.

SUGGESTED ACTION: As soon as possible, update the current Land Use and Recreation Plan, dated 2001. Updates are recommended every five years.

SUGGESTED ACTION: When updating the township's plan, include comments on the problems associated with impervious surfaces and identify stormwater management as an important community priority.

SUGGESTED ACTION: When updating the township's plan, acknowledge the importance of well-constructed and maintained road-stream crossings with regard to the quality of streams in the township.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 40, STRONG

The statement of purpose articulated in the Evangeline Township Zoning Ordinance contains several elements that promote water resource protection, including the following:

- Provide for the orderly development of the Township while minimizing the impacts of incompatible adjoining land uses and preventing nuisances from interfering with the reasonable use and enjoyment of private property. In all cases, it is the purpose of this Ordinance to regulate the use of real property so that it does not adversely impact upon broader public interest;
 - Insure the public health, safety and general welfare;
 - Promote the use of lands and natural resources of the Township in accordance with their character and adaptability and, in turn, limit their improper use;
 - Reduce hazards to life and property;
 - Facilitate the development of an adequate system of transportation, education, recreation, sewage disposal, safe and adequate water supply and other public requirements;
 - Conserve life, property and natural resources and the expenditure of funds for public improvements and services to conform to the most advantageous uses of land, resources and properties.
- [Article I, Section 1.02 (A,B,C,D,G,H)]

The Evangeline Township Zoning Ordinance includes a fee system to assist in defraying the costs of investigating, reviewing and administering the Zoning Ordinance [Article X, Section 10.05 (A,B)], and a provision whereby the township can require additional fees, set aside in an escrow account by the applicant, to cover the costs of additional professional review when necessary [Article X, Section 10.05 (C)]. The ordinance also authorizes the township to require performance guarantees for development activities, in connection with the construction of improvements authorized through site plan approval, special land use approval, or a Planned Unit Development (PUD) in an amount equal to the estimated costs of the improvements [Article X, Section 10.06 (A)].

Article X of the Zoning Ordinance also addresses the issue of enforcement. Any person or other entity who creates or maintains a nuisance, or who violates or fails to comply with the ordinance or any permit issued pursuant to the ordinance, shall be responsible for a municipal civil infraction and be subject to a fine of not more than five hundred dollars. Each day of violation is considered a separate and distinct offence. The Zoning Administrator is authorized to issue infraction citations directing alleged violators to appear in court. In addition to enforcing this ordinance as a civil infraction, the township may initiate proceedings in any court of competent jurisdiction to address any other violations of the Zoning Ordinance [Article 10, Section 10.09 (A-B)].

One important aspect of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. The Evangeline Township Zoning Ordinance addresses this with respect to those projects that require a site plan review, using the following blanket statement: “the site plan shall conform to all applicable requirements of Township, County, State and Federal statutes.” [Article VI, Section 6.02(E)(3)(i)] In addition, the ordinance specifically mentions coordination with soil erosion control and wetland statutes. The section on required site plan data states that “all site plans shall comply with part 91 of Public Act 451 of 1994 as amended, and any applicable local Soil Erosion Sedimentation and/or Stormwater Runoff Control Ordinances, with documentation of approval to be provided by the applicant.” [Article VI, Section 6.02(C)(15)] The site plan review standards section states that “if the area is in a State regulated wetlands, permits to build in those areas will be needed prior to final action on a site plan.” [Article VI, Section 6.02(D)(5)] Conditioning local approval on required state and federal permits is an effective way to ensure that water resources are considered, early in the development process, and their protection is properly integrated into the development proposal.

Pre-application meetings are another excellent way to ensure that the protection of water resources is considered, early in the development process. There are two pre-application opportunities written into the Evangeline Township Zoning Ordinance. The first one is required as part of the review process for an application to split a property under the Conservation Design option in the Rural Residential/Farm Forest (RRF) district. The purpose of the pre-application conference is “to discuss the applicant’s objectives and how these may be achieved under the Ordinance.” (Article V, Section 5.08.12) The second opportunity is in the site plan review process: “An applicant may request to be placed on the agenda of a meeting of the Planning Commission to review and discuss a proposed site plan prior to a formal site plan application being filed.” [Article VI, Section 6.02(A)]

An important aspect of the implementation of any Zoning Ordinance is the review process. The effectiveness of the review process is determined by the quality of the information provided to the township by the applicant. The section of the ordinance that deals with site plan review (Article VI) requires the applicant to submit a comprehensive description of the project, including the following: “the location of existing environmental features, such as watercourses, wetlands, shorelines, man-made drains, areas with slopes of twelve (12%) percent or greater, mature specimen trees, wooded areas, scenic view sheds or any other unusual environmental features.” [Article VI, Section 6.02(C)(7)] This section also requires the applicant to provide a statement that assesses “the impact of the proposed development on soil erosion, shoreline protection, wildlife habitat, air pollution, water pollution (ground and surface), noise and the scale of development in terms of the surrounding environment.” [Article VI, Section 6.02(C)(17)] Such requirements help to ensure that water resource protection is fully considered as part of the site plan review process.

Some townships integrate open space provisions into their site plan review process. The Evangeline Township open space stipulations are integrated into provisions for the specific zoning districts in which open space or cluster development is likely to occur, including the Mixed Use and RRF districts. Most relevant to watershed management considerations are the open space provisions in the RRF district.

The Conservation Design option in the RRF district includes an open space provision that allows an area equivalent to 50% of the master parcel’s buildable net acreage to be divided into small lots, or 35% of the master parcel’s total acreage, whichever is greater. The maximum density of small lots shall be one lot for every 5 full acres of the total master parcel acreage. For example, a 40-acre master parcel could have a maximum of 8 small lots. The remainder of the master parcel will remain as conservation lands. A minimum of 20% of the conservation lands shall be under common ownership of a homeowner’s association, and the

remainder shall be protected by a permanent conservation easement or similar legal instrument [Article V, Section 5.08.7(C)]. There appear to be no density bonuses or other incentives to encourage developers to use open space or cluster design options.

Basic Zoning Components: RECOMMENDATIONS

The basic components of Evangeline Township's Zoning Ordinance create a good framework for considering impacts from development to the township's water resources. The following actions are suggested to help strengthen the ordinance:

SUGGESTED ACTION: Consider requiring open space to be managed in a natural condition and be restricted to low-impact uses.

SUGGESTED ACTION: Consider implementing a density bonus or other incentives to encourage conservation design.

Shorelines

POSSIBLE SCORE: 60
TOTAL SCORE: 6, ADEQUATE

Evangeline Township employs both of the most effective ways a local governments can protect water quality and shoreline habitat through zoning. The first is to require setbacks from the water's edge. The second is to require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer zone.

Evangeline Township has established a consistent 50-foot setback from Lake Charlevoix and Walloon Lake in all the waterfront zoning districts. In steep slope situations, waterfront setback shall be increased based on existing slope. For example, a 100 foot setback is required for areas identified on the Evangeline Township Shoreline Steep Slopes Map (Article III, Section 3.07).

In addition, the waterfront setback in the Rural Residential/Farm Forest District is 100 feet [Article V, Section 5.08.4(G)]. Setbacks are measured from the high water elevation, which is defined in Article II Definitions in the following manner: "for Lake Charlevoix this is the highest water level elevation for Lake Michigan/Huron as recorded by the United States Army Corps of Engineers (currently 582.35' IGLD recorded in October 1986), plus one (1) foot. For Walloon Lake this level is the elevation of the outlet dam or as set by the courts, plus one-half (1/2) foot. For all other lakes and streams this level is the 100-year flood plain elevation plus one-half (1/2) foot." (Article II, Section 2.01)

Evangeline Township's greenbelt provisions are located in the General Provisions section of the ordinance (Article III). The stated purpose of the township Natural Vegetation Waterfront Buffer Strip provision is to enhance protection of water quality. For properties being developed or re-developed that do not have existing vegetation, establishment of a buffer strip meeting ordinance standards is a required condition for site plan approval [Article III, Section 3.06(A)]. The minimum depth of the greenbelt is twenty-five feet and shall extend across the full width of the waterfront portion of the lot. The depth is required to be fifty feet for lots with steep slopes. The buffer strip shall be planted with native trees and low growing woody shrubs suitable for the site. Shrubs shall be of sufficient size and planted to provide 100% ground coverage, except as allowed in district regulations for a viewing platform and path. No supplemental plant nutrients, nor maintained lawn, shall be between the buffer strip and the water's edge [Article III, Section 3.06(B)(1-6)].

Townships have the opportunity to manage the environmental and recreational quality of lakes by regulating docks. Evangeline Township addresses dockage in each of the waterfront residential districts, but is consistent throughout, allowing one seasonal dock per lot, with a length of 150 feet or the length necessary to extend out to a water depth of four feet, whichever is greater [Article V, Sections 5.01-5.05]. Lot widths depend upon the zoning district. The ordinance does not mention the number of boat parking spaces per dock.

Evangeline Township regulates activities on road endings that terminate on the shoreline of lakes and rivers in the township. Such “police power” ordinances both ensure the right of the public to access the lake, while at the same time controlling nuisance activities and regulating potential environmental impacts from use at the road end. The Evangeline Township road end ordinance regulates the placement of docks or other structures; anchoring or mooring a boat for more than five hours; using the road end in a manner that would cause a disturbance or nuisance; trespassing on adjacent private properties, or littering; camping; starting a fire unless it is in an approved device installed by the township; removing water from the lake, other than for fire suppression purposes; or launching a boat, unless it is a designated township boat launch (Evangeline Township Ordinance No.3 of 2002).

Marinas are not specifically mentioned in the ordinance, likely because there is no waterfront zone where marinas would be considered an allowable use. However, all business or industries which store, use or generate hazardous substances in quantities greater than 25 gallons or 220 pounds, whichever is less, shall meet all state and federal requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of said hazardous substances (Article III, Section 3.05).

Shorelines: RECOMMENDATIONS

The Evangeline Township Zoning Ordinance has many good provisions with respect to protecting shorelines. Here are a few suggestions that the Township may want to consider to further strengthen their shoreline management:

SUGGESTED ACTION: Although the Evangeline Township Zoning Ordinance has regulations that state the number of dwellings per front foot in their waterfront zoning districts, the township may want to consider adopting a provision that specifically addresses funnel or keyhole developments.

SUGGESTED ACTION: Although Evangeline Township regulates the number of docks per lot, the ordinance does not address the number of boats per dock. This can help to ensure that lakes are not subject to excessive use.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are invasive stands of *Phragmites*, treat those stands if they exist, and conduct a follow up inventory, and treatment, if necessary. To do so, we suggest you coordinate your efforts with the Lake Charlevoix Association’s *Phragmites* eradication program.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 23, STRONG

Impervious surfaces stop rainwater and snowmelt from naturally percolating into soils, thus reducing the opportunity for contaminants to be removed from the resulting stormwater runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

The Evangeline Township Zoning Ordinance addresses impervious surfaces in several places. The definitions and the general provisions section of the ordinance both clearly define impervious surfaces and how they are to be calculated, with regard to lot coverage. The Impervious Surface Regulations in the General Provisions also provide for special considerations when using pervious paving systems [Article III, Section 3.24(B)].

The individual descriptions of the zoning districts and the schedule of regulations establish the maximum impervious lot coverage. All Lake Charlevoix shoreline districts have 15% maximum impervious coverage, or 2,500 square feet, whichever is greater. This is the percentage recommended by watershed managers. The exception is the Pinehurst Waterfront Residential District, which is 25%, or 3,000 square feet, whichever is greater, but no more than 15% within 500 feet of the waterfront.

For the Walloon Waterfront Residential District, the maximum is 15% or 3,000 square feet, whichever is greater. No more than 15% of the lot area within 200 feet of the waterfront may be impervious surface (Article V, Section 5.11.1). Maximum imperviousness in the non-waterfront districts ranges from 20% in the Residential District to 70% in the Mixed Use District, depending on the use (Article V, Section 5.11.2).

The ordinance also provides some flexibility with respect to the stated maximum lot coverage. For example, in the waterfront districts, the impervious maximum can be increased to 3,125 square feet, provided that the depth of the required natural vegetation buffer strip is increased to twice the depth required by Section 3.06. It may also be increased from 15% to 20%, provided that the depth of the natural vegetation waterfront buffer strip is doubled, that the waterfront setback for all structures is doubled, and that all other setbacks are met without the need for a variance (Article V, Section 5.11.1).

The ordinance also allows the Planning Commission to approve a smaller parking area than required, when the property owner can demonstrate that the required amount of parking is excessive, provided that the area to meet the parking requirements is set aside as open space. As well, citing stormwater concerns, the ordinance limits the amount of parking to no more than 10% of the minimum, unless approved by the Planning Commission and based on documented evidence [Article III, Section 3.12(C,D)].

Evangeline Township also has a private road ordinance that addresses some of the impervious surface issues associated with roads. The ordinance allows for the construction of a “T” or “hammerhead” instead of a cul-de-sac, which can encourage more creative solutions to drainage [Evangeline Township Private Road Ordinance, Article V, Section 5.01(D)]. It also allows for the reduction of pavement width to 12 feet, if only serving three lots or less, which can dramatically reduce the overall square footage of a typical road [Evangeline Township Private Road Ordinance, Article V, Section 5.02(A)(2,5)].

The ordinance also requires that all soil erosion and stormwater control measures shall be maintained in a workable condition at all times, and that the township may enter the property to inspect these measures to ensure they continue to be in compliance with the ordinance [Evangeline Township Private Road Ordinance, Article V, Section 5.01(F)].

Impervious Surfaces: RECOMMENDATIONS

Between the Zoning Ordinance and the stand-alone Private Road Ordinance, Evangeline Township has strong provisions with respect to impervious surfaces. The following recommendations are offered to assist the township in strengthening their efforts to address the problems associated with impervious surfaces.

SUGGESTED ACTION: Consider limiting the extent of lawn area in lakeshore zoning districts. Although not impervious, manicured lawns generate more runoff than does ground covered in trees and shrubs.

SUGGESTED ACTION: Consider reducing the minimum radii of cul-de-sacs to 35 feet to reduce impervious surface coverage.

SUGGESTED ACTION: Consider encouraging grass or turf parking where appropriate.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 10, ADEQUATE

Evangeline Township does not currently regulate stormwater as a stand-alone ordinance. However, there are provisions of the Zoning Ordinance where stormwater management planning and implementation is required as part of the zoning review process.

For example, the standards for the site plan data state that “all site plans shall comply with part 91 of Public Act 451 of 1994 as amended, and any applicable local Soil Erosion Sedimentation and/or Stormwater Runoff Control Ordinances, with documentation of approval to be provided by the applicant.” [Article VI, Section 6.02(C)(15)] Similarly, the general development standards for the Mixed Use District requires: “as a condition for approval the applicant shall provide official documentation indicating the stormwater run-off system as proposed meets the requirements of the Charlevoix County Storm Water Control Ordinance, and has been reviewed and approved by the Charlevoix County Soil Erosion Officer.” [Article V, Section 5.07.23(F)] As noted in Chapter 1, this county ordinance was rescinded, but a replacement is currently being worked on to present to townships for consideration.

Steep slopes and road construction are of particular concern with stormwater management. The Construction on Steep Slopes section of Evangeline Township’s Zoning Ordinance requires that “all new development shall be constructed according to Charlevoix County Soil Erosion and Sedimentation Control standards.” [Article III, Section 3.23(J)] With respect to private roads, the Evangeline Township Private Road Ordinance states that “all erosion and stormwater control measures shall be maintained in a workable condition at all times.” [Evangeline Township Private Road Ordinance, Article V, Section 5.01(F)]

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that the township continue to cooperate with the county in the enforcement of county-wide standards. As noted above, Charlevoix County officials are in the process of preparing a comprehensive, county-wide Storm Water Control Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in the Lake Charlevoix and Little Traverse Bay Watershed Management Plans. To this end, we encourage the following actions.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Evangeline Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, continue to utilize the county’s expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Evangeline Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 7, ADEQUATE

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Sediment, by volume, is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard.

Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized. Soil erosion control is an essential component in watershed management efforts.

Although Evangeline Township does not regulate soil erosion and sedimentation control directly, it is clear in the township ordinance that soil erosion is taken seriously in the zoning process. In the General Provisions section of the ordinance that addresses construction on steep slopes, the ordinance requires that “all new development shall be constructed according to Charlevoix County Soil Erosion and Sedimentation Control standards.” [Article III, Section 3.23(J)]

To ensure that all permits are in place before earth movement activities commence, the ordinance states that no “excavation, tree removal or filling of land commence until a Zoning Permit application has been filed with the township Zoning Administrator and a Zoning Permit has been issued by the Zoning Administrator.” [Article X, Section 10.02(A)]

The section on required site plan data states that “all site plans shall comply with part 91 of Public Act 451 of 1994 as amended, and any applicable local Soil Erosion Sedimentation and/or Stormwater Runoff Control Ordinances, with documentation of approval to be provided by the applicant.” [Article VI, Section 6.02(C)(15)] Part 91 is administered by the Charlevoix County Department of Building Safety.

In addition to these requirements, the section on sand and gravel mining also requires that the reclamation plan for these operations contain provisions for “grading, drainage, re-vegetation/re-forestation, and stabilization that will minimize soil erosion, sedimentation, and public safety problems, and re-establish a natural resource base.” [Article VII, Section 8.12(6)(c)]

Soil Erosion and Sediment Control: RECOMMENDATIONS

The simplest and most effective way to control erosion at the township level is to partner with the county enforcement agents. It appears that this is happening, given the several instances noted above where applicants are required to receive soil erosion permits from Charlevoix County as a prerequisite to township approval. To strengthen the township’s role in soil erosion and sediment control, we recommend the following:

SUGGESTED ACTION: Clearly state that all zoning applicants for any construction or earth change activity proposed within 500 feet of a stream, river, or lake, must receive a soil erosion and sedimentation control permit from the county, prior to issuance of an Evangeline Township Zoning Permit.

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be established prior to earth change activities, and maintained and monitored on a periodic basis until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 12, ADEQUATE

From the perspective of water quality, the main concern with septic systems and water quality is the potential for a septic system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae. Although Evangeline Township does not provide water or sanitary sewer services, Glenwood Beach and Young State Park are served by the Boyne City municipal sewer system.

The majority of Evangeline Township residents rely on private wells for domestic drinking water needs, and private on-site septic systems for wastewater disposal. The importance to water quality of properly addressing septic and sewer treatment is acknowledged in the Goals, Objectives, and Actions section of the Evangeline Township Land Use Plan, which includes the following: Encourage the protection of Lake Charlevoix and Walloon Lake surface waters from degradation due to failing septic systems, and encourage routine county inspections of septic systems (Section III, p. 18).

The Evangeline Township Zoning Ordinance requires that all buildings used for any purpose that may generate waste must be provided with a safe and sanitary water supply, and a means of collecting and disposing of human excreta and all other waste water that may adversely affect health. The ordinance requires that written “approval of such facilities by the Northwest Michigan Community Health Agency shall be filed with an application for a Zoning Permit.” [Article III, Section 3.04]

Sewer/Septic: RECOMMENDATIONS

The simplest and most effective way for townships to ensure compliance with the county or district health code is to require that all permits for residences and businesses receive local health department approval prior to granting a township permit. Evangeline Township’s Zoning Ordinance clearly does this. In addition, local units of government can regulate the siting of septic fields to ensure protection of water resources.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems in the township must be inspected to ensure they are operating properly before ownership is transferred. The Evangeline Township Land Use Plan calls for this sort of a program on a county-wide scale, and we would support that, as well.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 7, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

The Evangeline Township Zoning Ordinance specifically mentions wetlands. The Critical Areas section of the General Provisions addresses wetlands by requiring a Michigan Department of Environmental Quality (MDEQ) approved wetland delineation for all areas mapped as potential wetland areas on the MDEQ Wetland Inventory Maps, unless specifically waived by the Zoning Administrator after a site visit. Furthermore, lot coverage in areas deemed as wetlands will be no greater than five (5) percent [Article III, Section 3.08 (A)(1,2)]. This attention to wetlands is supported by the site plan review standards which clearly state that “if the area

is in a State regulated wetlands, permits to build in those areas will be needed prior to final action on a site plan.” [Article VI, Section 6.02(D)(5)]

In addition to this coordination with the MDEQ permitting process, the ordinance requires a 25 foot building setback from wetlands in the Rural Residential/Farm Forest District [Article V, Section 5.08.6(E)(2)]. And please note: applicants on Lake Charlevoix also need an Army Corps of Engineers permit, but the state application process provides them with a Joint Permit Application that will automatically coordinate with the Corps. Nevertheless, two permits are needed before starting any work in regulated wetlands.

Wetlands: RECOMMENDATIONS

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances to protect wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection by educating their residents about the importance of wetlands, by requiring zoning setbacks and buffers, and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider expanding the 25-foot wetland setback provision in the Rural Residential/Farm Forest District to all other zoning districts in the township. This would protect township wetlands in the short run, and cost less to administer than adopting a wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state and federal wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 15, STRONG

Ground water is the primary source of drinking water for nearly all Northern Michigan residents, and all but a few Evangeline Township residents get their drinking water from private wells. Protecting ground water resources from contamination is vitally important.

The data required in Evangeline Township’s site plan review process includes an impact statement that addresses the following with respect to ground water protection: volume of water consumption related to ground water reserves, and statements relative to the impact of the proposed development on ground and surface water pollution [Article VI, 6.02(17)(B,C)].

Ground water protection is specifically mentioned in General Provisions with respect to proper treatment of septic and hazardous wastes (Article III, Sections 3.04 and 3.05). With regard to hazardous substances, the ordinance is very clear: “no discharge to groundwater, including direct and indirect discharges, shall be allowed without required permits and approvals.” (Article III, Section 3.05)

The Zoning Ordinance also specifically addresses two uses that carry a high risk of contaminating ground water: salvage yards and sand and gravel excavation operations. With regard to salvage yards, the following provisions to protect ground water resources apply:

- No oils, lubricants, or other liquids from vehicles, machinery, or equipment or other materials, shall be disposed of on-site, unless State of Michigan approved facilities are properly in place and properly functioning. No burial of wastes shall be permitted on the property under this ordinance section.
- The applicant shall state in writing and/or illustrate how potentially hazardous liquids are to be prevented from entering the groundwater, and present a written plan for handling and disposal of such hazardous liquids.
- The applicant shall be required to provide a written contingency plan for hazardous/toxic spills. The Planning Commission may require a roofed work area with an impervious floor with floor drain collection system.
- The proposed site shall have a minimum of six (6) feet of vertical isolation from groundwater, and be at least one thousand (1,000) feet from an identified body of surface water [Article VIII, Section 8.11 (B)(3-6)]

With respect to sand and gravel excavation operations, the ordinance contains the following to specifically address groundwater impacts: “extractive operations shall be managed and designed so as to not cause any negative impact on groundwater and potable water supply, whether as a result of contamination or reduction in the rate and/or volume of flow.” [Article VIII, Section 8.12 (D)(4)]

Importantly, Evangeline Township participated in the state Wellhead Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step and protecting these precious drinking water sources.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Evangeline Township has several provisions that both raise awareness and work to protect ground water resources. In addition, we encourage the township to consider the following to help strengthen ground water protection:

SUGGESTED ACTION: Identify critical groundwater recharge areas and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.



Other

POSSIBLE SCORE: 48

TOTAL SCORE: 30, ADEQUATE

With respect to other provisions in the ordinance that may contribute to water resource protection, Evangeline Township participates in the National Flood Insurance Program. Additionally, floodplains are specifically addressed twice in the general development standards for the Rural Residential/Farm Forest District. First, “new development (including septic systems) will not be sited in areas of wetlands, floodplains or on slopes greater than 33%.” [Article V, Section 5.08.6(B)] Secondly, the Planning Commission is given authority to reduce the public road setback in the Rural Residential/Farm Forest District in the case where strict compliance would cause building sites to encroach on wetlands, floodplains or areas of steep slopes [Article V, Section 5.08.6 (E)].

With regard to steep slopes, the Evangeline Township Zoning Ordinance contains special regulations on new construction proposed for areas where the natural grade is 18% or greater. Construction in these areas is permissible subject to site plan review and meeting a range of conditions designed to protect the slope and nearby resources from erosion. Examples of the conditions for construction in steep slope areas include:

- New buildings shall not be located within 200 feet of lakes or rivers.
- Clearing and grading of a site shall be the minimum area to accommodate the proposed buildings or structures.
- All new development shall be constructed according to Charlevoix County Soil Erosion and Sedimentation Control standards and the Evangeline Township Stormwater Control Ordinance Standards.
- All erosion and stormwater control measures shall be maintained in a workable condition at all times. All new lots created shall be required to have an agreement with the Township allowing the Township to enter the property to inspect these measures to insure that they continue to be in compliance (Article III, Section 3.23)

Other: RECOMMENDATIONS

The additional provisions regarding floodplains and steep slopes help contribute to an overall framework of conscious development and water resource protection.

SUGGESTED ACTION: In order to help ensure that floodplains throughout the township are considered in the zoning permit review process, require that floodplain locations be delineated on all site plans.

Conclusion

We applaud the quite excellent water protection measures that exist in Evangeline Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Evangeline Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	19	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	40	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	36	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	23	Strong
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	10	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	12	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	7	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	15	Strong
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	30	Adequate



SECTION III: Analysis

Chapter 10 Eveline Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Eveline Township, which is located in the Lake Charlevoix Watershed in Charlevoix County. Eveline Township is rich in water resources, including 24.5 miles of Lake Charlevoix shoreline (41% of the total Lake Charlevoix shoreline); several small lakes, including Nowland, Steele, and Mud Lakes; and many creeks, including Dyer, Sear, Monroe, and Porter. This chapter includes the evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 12, ADEQUATE

Although the Eveline Township Master Plan does not specifically mention watersheds, the Hydrology and Lakefronts section of the Natural Resources Overview provides a comprehensive listing of the lakes and streams, as well as inventory maps of wetlands, streams, lakes, septic limitations, topography, and steep slopes (Eveline Township Master Plan, pp. 30-36).

The Community Goals and Objectives section of Eveline Township's Master Plan addresses water quality and aquatic habitat in several places. The overall goal of the Master Plan includes the following statement: "support the protection of surface water, ground water, wetlands, and the quality of ecological, environmental, natural, and recreational resources of the township." (p. 3)

Specific strategies to achieve this goal are articulated in Objective 3, which reads "promote the preservation of scenic resources, recreational resources, natural features, environmentally significant features, and ecologically important resources in the township." (p. 4)

Strategy #3 calls for the support of any county or region-wide purchase of development rights. Strategy #5 is to promote ground and surface water protection through encouraging individual property owners to be stewards of the land especially to protect groundwater resources by adhering to appropriate agricultural practices (p.4). Strategy #6 is to design local zoning to protect lake water quality to the highest possible standard...and promoting the standards recommended by outside agencies such as the Tip of the Mitt Watershed Council and other, similar agencies." (p.4) Strategy #7 calls for recognizing the importance of linking greenways and wildlife corridors when approving development proposals (p.4).

Master Plan Components: RECOMMENDATIONS

The Eveline Township Master Plan does a good job of highlighting the importance of water resources in the township, and establishing goals and specific objectives for water resource protection. The following recommendations arise from the Lake Charlevoix Watershed Management Plan and are offered to help strengthen the Master Plan, the next time it is updated:

SUGGESTED ACTION: Add a description of the township's sub-watersheds (all watersheds in the township eventually run into Lake Charlevoix) and how water quality is determined by human actions in the watershed.

SUGGESTED ACTION: Mention the importance of minimizing impervious surfaces in new construction to increase infiltration and reduce stormwater runoff.

SUGGESTED ACTION: Acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 31, ADEQUATE

The Eveline Township Zoning Ordinance statement of purpose has several elements that promote water resource protection, including the following:

- Promote the use of lands and natural resources of their character and adaptability and in turn, limit their improper use.
- Facilitate the development of adequate systems of transportation, education, recreation, sewage disposal, safe and adequate water supply, and other public requirements.
- Conserve life, property and natural resources and the expenditure of funds for public improvements and service to conform with the most advantageous uses of land, resources, and properties. [Article I, Section 1.3 (C, G, and H)]

In addition, the purpose statement for the Multiple Family Residential District includes the following statement: "To provide a more desirable living environment by preserving the natural characteristic of open fields, stands of trees, flood plains, bodies of water, and similar natural assets." [Article II, Section 2.1(B)(1)(a)].

As well, the purpose statement for the Farm-Forest District includes the following: "To conserve areas containing unique and sensitive natural features such as steep slopes, floodplains and wetlands, by setting them aside from development." [Article II, Section 2.1 (E)(1)(a)]

The Eveline Township Zoning Ordinance includes a fee system to fund administration of the ordinance, and a provision whereby the township can require additional fees to cover the costs of additional professional review when deemed necessary [Article 5, Section 5.3 (A,B)]. The ordinance also authorizes the township to require financial guarantees for development activities in the Village Area Mixed Use District of a sufficient sum to assure that the project is completed (Article 5, Section 5.7).

Additionally, the Zoning Ordinance addresses the issue of enforcement. Violations of the ordinance or conditions of permits are declared to be a nuisance, per se, and the persons responsible for the nuisance shall be responsible for a municipal civil infraction. Each day of violation is considered a separate and distinct offence. The Zoning Administrator is authorized to issue infraction citations directing alleged violators to appear in court, and the township may initiate proceedings in the Circuit Court to address any other violations of this ordinance [Article 5, Section 5.5 (A-D)].

One important aspect of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. The Eveline Township Zoning Ordinance addresses this with respect to those projects that require a site plan review. This is essentially for a proposed use other than a single-family home, and comes under the following blanket statement: “Site Plans shall fully conform to all applicable state and federal statutes.” [Article VII, Section 8.5(l)]

In addition, compliance with Charlevoix County Drain Commission standards to address drainage and erosion is specifically mentioned [Article VII, Section 8.5(E, F)]. In order to simplify administration, many townships simply condition local approval on the applicant receiving necessary state and federal permits before final site plan approval or a zoning permit is granted. This is the only way for the applicant to show that the proposed project conforms to applicable state and federal statutes.

The level of specificity required on applications and site plans is an important factor in making a decision on a zoning application. There appears to be some discrepancy in the ordinance with respect to the level of detail required. For example, the Preliminary Development Plan to be submitted in the Village Area Mixed Use District calls for the “delineation of any wetlands (as defined by the State of Michigan), including both regulated and unregulated, and areas within the 100 year floodplain.” [Article III, Section 3.2(A)(c)] However, the information requirements for the site plan include the “general locations of natural features such as woodlots, water bodies, wetlands, high-risk erosion areas, slopes fifteen (15%) percent and over, beach, sand dunes, drainage, and similar features.” [Article VIII, Section 8.3(B)(12)]

Although Eveline Township does not have a specific Planned Unit Development (PUD) provision, the Village Area Mixed Use District accomplishes the same objectives as the traditional PUD process, but limits it to the unincorporated Advance or Ironton Village areas. Whereas most PUD ordinances require 50% open space, the Village Area Mixed Use District requires a minimum of 35% open space that is readily accessible and available to all of the residents and provides access “to Lake Charlevoix and/or to the adjacent rivers or tributaries where the property borders or contains surface water. Such water access shall be active and may include a beach, marina, fishing access, or waterfront walkway.” [Article III, Section 3.3 (L)(1-3)]

In a similar manner, the Conservation Subdivision District allows for creative development on any legally created Master Parcel in the Township. This is intended to protect farmland while allowing development, as only 40% of a parcel developed in this District is allowed to be divided into sublots [Article II, Section 2.8(L)].

Basic Zoning Components: RECOMMENDATIONS

The basic components of the Eveline Township Zoning Ordinance create a good initial framework for considering impacts to the township’s water resources from development. The following actions are suggested to help strengthen the ordinance:

SUGGESTED ACTION: Clearly state that no zoning permit for a project that might impact wetlands, lakes, or streams will be issued without county, state, or federal permits anywhere in the township.

SUGGESTED ACTION: Consider implementing a PUD process, whereby developers are encouraged to set aside open space and permanently protect it through a conservation easement, deed restriction, or similar permanent legal instrument, and stipulate that open space is to be managed in a natural condition.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 41, STRONG

Two of the most effective ways that local governments can protect water quality through zoning is to require setbacks from the water's edge and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer zone. Eveline Township employs both of these measures.

The waterfront setback requirements in Eveline Township do a great job of ensuring that buildings are set back from the waterfront an appropriate distance. Waterfront setbacks in the Single Family Residential District, Multiple Family District, and the Government/Utility District are all 100 feet. In the Light Industrial District and the Commercial Recreation District, the waterfront setbacks are 200 feet. In the Mobile Home Park District and the Rural Residential District, the waterfront setbacks are 300 feet. In the Village Commercial District, "a minimum fifty (50) foot building setback from all water bodies shall be observed. Setbacks shall be measured from the all time high water level (582.35 feet International Great Lakes Datum 1985) or, in the case of a stream or river, the observed edge of the shoreline." [Article III, Section 3.3(H)(2)]

Eveline Township's greenbelt provisions are located in the General Provisions section of the ordinance (Article IV) and apply to "any land abutting on lakes, rivers, or streams." (Article IV, Section 4.6) The 50-foot waterfront greenbelt is measured from the 582.35 feet elevation on Lake Charlevoix (International Great Lakes Datum 1985), or from the observed edge of the shoreline of smaller lakes, rivers, and streams. Decks not exceeding 200 square feet and walkways not exceeding 4 feet in width are allowed in the greenbelt area. All vegetation within a waterfront greenbelt area shall remain in an undisturbed or natural state. Natural ground cover shall be preserved to the fullest extent feasible, and where removed it shall be replaced with vegetation that is equally effective in retarding runoff, preventing erosion, and preserving natural beauty. A combination of grasses, shrubs, and trees shall be introduced in a naturalized planting pattern where native shoreline vegetation does not exist.

Trees may not be removed within the waterfront greenbelt area unless specifically allowed by a permit. However, the ordinance allows minimal selective pruning of trees in order to afford a view of the water. The ordinance also lists invasive and exotic species to be avoided, including purple loosestrife, reed canary grass, crown vetch, white and yellow sweet clover, Russian olive, autumn olive, and Tartarian honeysuckle. The ordinance also states that no application of supplemental nutrients, pesticides or herbicides will be allowed in the waterfront greenbelt area or between the waterfront greenbelt area and the water's edge [Article IV, Section 4.6 (A-G)].

In July of 2009, Eveline Township passed a stand-alone ordinance to address the threat of the invasive *Phragmites*. There are two strains of *Phragmites*, one of which is invasive and has the potential to dramatically impact shorelines by crowding out all native vegetation, blocking access to the shoreline and obscuring views of the water. The ordinance describes potential problems associated with *Phragmites* and provides a framework for control, including reporting, property access and inspection, public hearing process, obtaining required permits, treatment, and cost. This stand-alone ordinance compliments the greenbelt and setback provisions in the zoning ordinance [Eveline Township *Phragmites* Ordinance (Ordinance No. 0714 of 2009)].

Townships have the opportunity to manage the environmental and recreational quality of lakes by regulating docks. The General Provisions article of the Eveline Township Zoning Ordinance contains a section specific to docks. This section states that except for properties upon which a marina is permitted by local, state, and federal agencies, "only one dock will be permitted for each one hundred (100) feet of lake frontage." [Article IV, Sec 4.19 (A)] The ordinance also states that only two boat parking spaces may be provided for each one hundred feet of lake frontage in any zoning district, other than Village Mixed Use or an approved marina, and that the legal resident of the lot must own all boats stored on that lot [Article IV, Sec 4.19 (B)].

Although the ordinance does not regulate dock length, Section 4.19(D) does state that each dock shall be located at least ten feet from the riparian boundary line, and that all docks must receive proper permits from the township, the MDEQ, and the Army Corps of Engineers [Section 4.19(C)]. The Corps and MDEQ permit processes usually consider dock length with regard to navigation and environmental issues.

A major concern for water quality and recreational use are “keyhole” or “funnel” developments, whereby residents of a large non-waterfront parcel gain access (like a funnel) to a small lakefront. Eveline Township addresses this issue in the General Provisions article, as well. Section 4.18 (Access to Water Frontage) clearly states that “not more than one (1) single-family home, cottage, condominium or apartment unit may gain water access for each one hundred (100) feet of lake or stream frontage.” [Article IV, Section 4.18(C)] The only exceptions are developments located within the Village Mixed Use District.

Another area of concern on inland lakes is the use of road ends. Townships have the authority to regulate road end usage to ensure both the right of the public to access the water and the rights of adjacent property owners by limiting such activities as installing docks or boat moorings, lounging, sunbathing, or partying. The Eveline Township ordinance does not mention road ends.

Given the sailing and boating opportunities provided by Lake Charlevoix, marinas are an important commercial use in Eveline Township. Marinas, if not properly located, developed, and operated, can cause harm to water resources. Eveline Township considers marinas as a special use in the Mixed Village Use and the Commercial Recreation districts. As such, they require a special use permit and must also go through the site plan review process.

In determining whether to grant a special use permit, the ordinance states that the Township Planning Commission must determine that an application will be “designed, constructed, operated and maintained so as to be harmonious with the existing or intended character of the general vicinity and that such a use will not change the essential character of the area in which it is proposed to be located” and that the project “will not be hazardous or disturbing to existing or future nearby uses.” [Article VII, Section 7.3(A)(1,2)]

Similarly, the standards for site plan approval state that projects must retain as many natural features as possible, conform to applicable fire safety, drainage, erosion, hazardous waste management, and public health requirements, and fully conform to all applicable state and federal statutes [Article VIII, Section 8.5 (B, D, E, F, G, H, I)].

Shorelines: RECOMMENDATIONS

The Eveline Township Zoning Ordinance is strong with respect to shorelines. Here are a few suggestions to further strengthen shoreline management.

SUGGESTED ACTION: Conduct an inventory of road ends that may provide access to Lake Charlevoix and other water bodies in the township. The inventory could include the location of the road end, its legal status (is it still in the possession of a public entity), its current use, and potential to cause environmental damage (based on location and use pattern). Once complete, the township could then determine if specific standards to regulate road ends are necessary.

SUGGESTED ACTION: We applaud the township’s efforts to control *Phragmites*. There are two strains of *Phragmites* — one is invasive and the other is native. We encourage the township to distinguish between the two strains in the ordinance to ensure that the native strain is not eradicated from the shoreline.

SUGGESTED ACTION: Although marinas are regulated through the special use and site plan review provisions of the ordinance, we encourage the township to consider expanding the role that they play in regulating marinas by adding standards related to preventing the spread of invasive species, having spill containment equipment, and otherwise following best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 4, WEAK

As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces prevent rainwater and snowmelt from naturally percolating into the soils. This reduces the opportunity for contaminants to be removed from stormwater runoff, before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

Eveline Township limits impervious lot coverage in the provisions found in the section on waterfront greenbelts, which state the following: a maximum of twenty percent (20%) lot coverage shall be allowed on any parcel within five hundred (500) feet of any lake, river or stream, unless stricter standards apply elsewhere in this ordinance.” [Article IV, Section 4.6(F)]

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Management Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater runoff into our water resources. We encourage Eveline Township to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (not just the waterfront greenbelt district) to limit impervious surfaces throughout the township. Consider limiting the percent lot coverage to 15% of the total lot.

SUGGESTED ACTION: Add a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Allow reductions in the size of parking and loading areas when appropriate for water quality protection, or encourage use of grass parking areas or pervious pavers.



Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 5, WEAK

Eveline Township does not regulate stormwater as a stand-alone ordinance. However, there are provisions of the Zoning Ordinance where stormwater management planning and implementation is required as part of the zoning review process. In the site plan review information standards, the applicant is required to provide the location and dimension of all “facilities designed to collect, store or transport stormwater or wastewater as well as point of discharge.” [Article VIII, Section 8.3(B)] The site plan review standards state that site plans shall be “designed to retain as many natural features as possible, particularly where such features...help control soil erosion or stormwater runoff” and that site plans “shall fully conform to the Charlevoix County Drain Commission standards.” [Article VIII, Section 8.5(B, E)]

Steep slopes are of particular concern with stormwater management. Eveline Township’s ordinance has additional standards to address steep slopes, including this warning: “particular caution shall be taken to prevent increases in the rate of stormwater runoff and erosion downslope of any steep slope development site.” [Article IV, Section 4.26(B)(2)] As well, Section 4.26 clearly requires that the applicant must provide an approved soil erosion permit before Township approval is granted.

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that townships cooperate with counties in the enforcement of county-wide standards. Charlevoix County officials are in the process of preparing a comprehensive county-wide Storm Water Control Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in the Lake Charlevoix Watershed Management Plan. To this end, we encourage the following actions.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Eveline Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, utilize the county’s expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Eveline Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

Sediment, by volume, is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Although Eveline Township does not regulate soil erosion and sedimentation control directly, the following sections of the ordinance require that applicants receive permits from the Charlevoix County Soil Erosion and Sedimentation Control Officer, or that the standards must be met, as a condition of Township approval: Sand and Gravel Mining [Article II, Section 2.8(M)(4)]; Grading Permits [Article IV, Section 4.11(B)(1)]; Steep Slopes Protection Overlay Standards [Article IV, Section 4.26(B)(2)]; and Standards for Granting Site Plan Approval [Article VIII, Section 8.5(F)].

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Soil erosion control is an essential component in watershed management efforts. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA), Michigan's Soil Erosion and Sedimentation Control statute.

The simplest and most effective way to control erosion at the township level is to partner with the county enforcement agents. It appears that this is happening given the several instances noted above where applicants are required to receive soil erosion permits from Charlevoix County as a prerequisite to township approval. To strengthen Eveline Township's role in soil erosion and sediment control, we recommend the following:

SUGGESTED ACTION: Clearly state that all zoning applicants for any construction or earth change activity proposed within 500 feet of a stream, river, or lake, must receive a soil erosion and sedimentation control permit prior to issuance of an Eveline Township Zoning Permit.

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be maintained and monitored on a periodic basis until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 11, ADEQUATE

The importance of proper septic systems for disposal of wastewater is mentioned in several portions of the Eveline Township Comprehensive Plan, including a goal to establish a county-wide point of sale inspection for septic systems (p. 5); an acknowledgement that other than a few private associations, the majority of residents are served by individual septic systems (p. 20); and that in an effort to discontinue practices that

could contaminate drinking water wells, sandy soils near Lake Charlevoix have been reclassified to indicate that they are severely limited as sites for septic systems (p.31).

However, the Eveline Township Zoning Ordinance has minimal standards that relate directly to waste water treatment. Although it may be present, we found no clear blanket provision requiring all residences and businesses to have a sanitary waste permit from the district health department prior to receiving township approval. Rather, sanitary requirements were mentioned in the context of individual processes, such as standards for Bed and Breakfast facilities [Article II, Section 2.8 (B)(7), the use of boats for temporary dwelling places in the Village Marina District [Article III, Section 3.3(L)(4)(f), and granting site plan review approval [Article VIII, Section 8.5(H)], which is not required on single-family residential projects.

Sewer/Septic: RECOMMENDATIONS

The simplest and most effective way for townships to ensure compliance with the county or district health code is to require that all permits for residences and business receive local health department approval prior to granting a township zoning permit. In addition, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for the system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Clearly state that a septic permit from the Health Department of Northwest Michigan is required as a prerequisite to issuing any Eveline Township zoning permit for a residential or commercial use that may generate human waste in any zoning district.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems in the Township must be inspected to ensure they are operating properly before ownership is transferred (the Township’s Comprehensive Plan calls for this sort of a program on a county-wide scale).

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 1, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

Despite the value of wetlands to water resources and habitat in Eveline Township, the Comprehensive Plan and the Zoning Ordinance barely mention these resources. In the Master Plan’s Natural Resources Overview, wetlands are referred to as “wet areas,” and there is no mention of the functions they provide (p.31).

The Zoning Ordinance mentions wetlands in these sections:

- Wetland protection is one of the purposes of the Farm Forest (FF) District [Article II, Section 2.1(E)(2)(a)];
- The “general” location of wetlands must be noted on site plans as part of the informational requirements, Article VII, Section 8.3(B)(12)];
- Wetlands are included as a consideration in the designation of Class A nonconforming uses [Article VIX, Section 9.4(C)(3)].

Although not specifically mentioned, it is safe to assume that wetlands are considered in the following standard for site plan approval: “Site Plans shall fully conform to all applicable state and federal statutes.” [Article VII, Section 8.5(J)]

Wetlands: RECOMMENDATIONS

Michigan’s wetland statute specifically authorizes local governments to adopt wetland protection ordinances to protect wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Include information about wetlands and their importance to the township’s water resources the next time the Comprehensive Plan is updated.

SUGGESTED ACTION: Amend the township ordinance to make it clear that state and federal wetland permits are required prior to the issuance of any township zoning permit on a parcel where wetlands are present and may be impacted, regardless of the zoning district.

SUGGESTED ACTION: Consider establishing a wetland setback similar to the shoreline setbacks in the Zoning Ordinance. Even a short setback from the wetland edge (e.g., 25 feet) is much better than constructing a use at the edge of the wetland. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents, and all but a few Eveline Township residents who reside in private associations with central sewer and water systems get their drinking water from private wells. Protecting ground water resources from contamination is vitally important.

Article IV (General Provisions) of Eveline Township Zoning Ordinance contains a section titled “Ground Water Protection.” The purpose of this section is to protect ground water from hazardous substances and to in turn protect surface waters recharged by ground water. This section states that: “No storage of or direct or indirect discharge of any materials that may pollute ground water shall be permitted in any location in the Township unless evidence of required permits and approvals from all pertinent Federal, State or County agencies is provided to the Township.” [Article IV, Section 4.10(B)] As a general provision, this standard applies to all activities that may require a zoning permit in all districts.

Eveline Township also has a stand-alone ordinance that authorizes the Township to recover emergency cleanup costs from those responsible for spilling hazardous materials [Eveline Township Hazardous Spills Expense Recover Ordinance (Ordinance No. 0308 of 2011)].

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

SUGGESTED ACTION: Although the general provision noted above applies to all activities that may require a permit in all zoning districts, it may be useful to include similar information in the site plan review section of the ordinance, particularly with respect to providing the township with information regarding measures taken to reduce the likelihood of hazardous materials spills and what measures will be taken if a spill occurs.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 27, ADEQUATE

With respect to other provisions in the ordinance that may contribute to water resource protection, Eveline Township participates in the National Flood Insurance Program. It requires the 100 year floodplain to be delineated on preliminary development plans to be submitted when developing parcels within the Village Area Mixed Use District [Article III, Section 3.2(A)(2)(c)].

The Eveline Township Zoning Ordinance also contains steep slopes protection overlay standards that are “intended to protect resources in environmentally sensitive areas to ensure that development does not result in erosion and in flooding during site preparation and the development process.” [Article IV, Section 4.26(A)] Any slope disturbance over 15% shall be minimized, and those proposed disturbances on slopes greater than 25% shall be allowed only under certain circumstances. All finished slopes of cuts and fills shall not exceed three-to-one (3:1) slope, unless the applicant can demonstrate that steeper slopes can be stabilized and maintained adequately [Article IV, Section 4.26(B)].

Other: RECOMMENDATIONS

SUGGESTED ACTION: In order to help ensure that floodplains throughout the Township are considered in the zoning permit review process, require that floodplain locations be delineated on all site plans.

Conclusion

We applaud the water protection measures that exist in the Eveline Township Zoning Ordinance. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Eveline Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	12	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	31	Adequate
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	41	Strong
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	4	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	5	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	11	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	1	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	9	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	27	Adequate

SECTION III: Analysis

Chapter 11 Hayes Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Hayes Township, located in the northwest portion of Charlevoix County. The township is located in the Lake Charlevoix Watershed, but also has waters that drain directly into Lake Michigan. The township also includes two inland lakes, Susan and Mud, and several creeks, including Susan Creek and a portion of Horton Creek. This chapter includes the evaluation scores, recommendations, and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30
TOTAL SCORE: 16, ADEQUATE

The Hayes Township Master Plan is current, dated August 2008, so the next update should be scheduled for 2013. Although the Hayes Township Master Plan does not specifically mention watersheds, the Natural Resources chapter provides a very good summary of the importance of water resources and a comprehensive listing of lakes, wetlands, and streams. This chapter also contains a good description of ground water and the importance of protecting this vital resource upon which all Hayes Township residents rely for their drinking water (Hayes Township Master Plan, pp. 3-1 to 3-5). Maps and inventories include a map of septic limitations (Fig. 3-1) and existing land use, which shows water and wetlands (Fig 4-1). A map of all water features, including their watersheds and sub-watersheds would be helpful.

Chapter 7 of the Master Plan presents the Hayes Township strategic goals, policies, and action plans. There are two goals specific to water resources: to protect and preserve ground and surface water for all township residents, and to limit the impact of waterfront development to maintain the quality of adjoining surface waters. These goals are supported by specific policies and a range of actions, including maintaining vegetative buffer strips along shorelines and watercourses; educating the public regarding ground water resources; and limiting new development along shorelines to no less than one dwelling per 100 feet of shoreline frontage (Hayes Township Master Plan, p. 7-3).

In addition, the Community Character, Natural Resources and Open Space Goals address water resources. They call for maintaining the integrity of open space, ecosystems and wildlife habitats, and protecting shorelines

and wetlands (Hayes Township Master Plan, p. 7-2). Given that wetlands and shorelines are considered sensitive natural areas, the Planning and Use Goal, also contributes to water resource protection: “to plan for and guide new development that preserves renewable resources and open space, protects environmentally sensitive areas, and maintains the historically rural character of Hayes Township”. (Hayes Township Master Plan, p. 7-3)

Master Plan Components: RECOMMENDATIONS

The Hayes Township Master Plan provides many elements that promote the long term protection of water resources. The following suggestions are recommended in an effort to strengthen the Master Plan, when it is time for the next update.

SUGGESTED ACTION: Include a water resources map in the Master Plan that shows lakes, streams, wetlands, and watershed/sub-watershed boundaries.

SUGGESTED ACTION: The Master Plan only discusses runoff in the context of natural wetlands and woodlands helping to ameliorate the negative effects of stormwater. Consider addressing the importance of reducing impervious surfaces to help prevent long term stormwater runoff impacts.

SUGGESTED ACTION: The Hayes Township Master Plan discusses the importance of open space protection. When the plan is updated, consider including the value of identifying wildlife corridors and urging their protection, in cooperation with neighboring jurisdictions.

SUGGESTED ACTION: Creeks and their adjacent riparian wetlands are critical natural features in Hayes Township. A discussion of the importance of well-constructed and maintained road stream crossings would help to promote protection of these resources.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 41, STRONG

The statement of purpose in the Hayes Township Zoning Ordinance contains several elements that promote water resource protection, including the following:

- Promote the public health, safety and general welfare;
- Encourage the use of lands in accordance with their character and adaptability and limit the improper use of land;
- Control sprawl and maintain rural character; and
- Facilitate adequate provisions for a system of...sewage disposal, safe and adequate water supply... recreation and other public requirements [Article I, Section 1.02 (A,B,C,E)]

Furthermore, in the Lakefront Regulations section of General Provisions, the Zoning Ordinance states that “waterfront property owners have a special obligation to preserve and protect natural resources, water quality and community scenic and recreational values; therefore a shoreland protection strip shall be established and maintained on all waterfront property.” (Article III, Section 3.14)

The Hayes Township Zoning Ordinance includes a fee system to assist in defraying the costs of investigating, reviewing and administering the Zoning Ordinance [Article IX, Section 9.05 (1)]. It also includes a provision whereby the township can require additional fees, set aside in an escrow account by the applicant, to cover the costs of additional professional review when necessary [Article IX, Section 9.05 (2)]. The ordinance also authorizes the township to require performance guarantees for development activities, in an amount equal to

the estimated costs of the improvements. This can be done in connection with the construction of improvements authorized through site plan approval, special land use approval, or a Planned Unit Development (PUD) [Article IX, Section 9.06).

Article IX of the Zoning Ordinance also addresses the issue of enforcement. Any person or other entity who creates or maintains a nuisance, or who violates or fails to comply with the ordinance or any permit issued pursuant to the ordinance, shall be responsible for a municipal civil infraction and be subject to a fine of not more than five hundred dollars. Each day of violation is considered a separate and distinct offence. The Zoning Administrator is authorized to post a stop work order on site and to issue infraction citations directing alleged violators to appear in court. In addition to enforcing this ordinance as a civil infraction, the township may initiate proceedings in the any court of competent jurisdiction to address any other violations of the Zoning Ordinance. (Article IX, Section 9.07.1-.4).

An important element of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. The Hayes Township Zoning Ordinance contains several provisions that call for permit coordination or compliance with other statutes.

In the section of General Provisions that deals with hazardous substances, the Zoning Ordinance requires that “all business or industries that store, use or generate hazardous substances...shall meet all state and federal requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of said hazardous substances.” (Article III, Section 3.17)

The site plan review process requires that “site plans shall conform to all applicable requirements of state and federal statutes and the Hayes Township Master Plan, and approval may be conditioned on the applicant receiving necessary state and federal permits before the actual zoning permit authorizing the special land use is granted.” [5.03(5)(A)(11)]

Additionally, the ordinance specifically requires compliance with any soil erosion sedimentation and stormwater runoff control ordinance and notes it is the applicant’s responsibility to provide proof of compliance [5.03(3)(N)]. Conditioning local approval on required state and federal permits is an effective way to ensure that water resources are considered, early on in the development process, and that their protection is properly integrated into the development proposal.

Pre-application meetings are another excellent way to ensure that the protection of water resources is considered early on in the development process. The Hayes Township site plan review process provides the township with authority to conduct a pre-application meeting with the applicant. This is to assist the applicant with understanding ordinance requirements and the site plan review process. It is also intended to provide insight as to what portions of the proposed development may be of special concern. Although recommended, this conference is not mandatory. However, meeting in advance does give the applicant time to prepare needed information for the Planning Commission to make a proper review [Article V, Section 5.03(2)]. In addition, the PUD section of the ordinance calls for a pre-application conference with the applicant, unless waived by the applicant. The purpose of this meeting is to determine the eligibility of the proposed PUD application and to review the procedures and standards for PUD approval [Article VI, Section 6.03(D)(1)].

An important aspect of the implementation of any Zoning Ordinance is the review process. The effectiveness of the review process is determined by the quality of the information provided to the township by the applicant. The section of the ordinance that deals with site plan review (Article V) requires the applicant to submit a comprehensive description of the project, including the following: the location of existing environmental features, such as watercourses, wetlands, shorelines, and man-made drains; the topography of the existing and finished site; generalized soil analysis data; and documentation that the site plan complies with applicable soil erosion and sedimentation control ordinances [Article V, Sec 5.03(3)(F,L,M,N)].

As part of the site plan data, the applicant is also required to prepare an impact statement that addresses the following with respect to water resources: volume of sewage that will need to be treated; volume of water consumption related to ground water reserves or community system capacity; and statements relative to the impact of the proposed development on soil erosion, shoreline protection, wildlife habitat, air pollution, and

water pollution [Article V, Sec 5.03(3)(P)(3)]. By requiring an impact statement, the township encourages the applicant to thoroughly consider their development proposal with respect to environmental protection.

The Hayes Township PUD provisions require a minimum of 50% of the entire project area to be set aside as open space. This open space “shall be dedicated to the public or set aside for the common use of the owners and users within the PUD, and shall remain perpetually in an undeveloped state...” It is also required to be protected by the developer in a conservation easement, or other legal means acceptable to the township [Article VI, Section 6.03(2)(C)(3)]. Density bonuses are awarded on the following schedule: “for each ten (10) acres of contiguous protected open space within the PUD, excluding state regulated wetlands, other areas characterized with hydric soils and areas with slopes of greater than 25 percent, the PUD project shall be eligible for one (1) additional bonus unit.” [Article VI, Section 6.03(2)(C)(2)]

Basic Zoning Components: RECOMMENDATIONS

The basic components of Hayes Township’s Zoning Ordinance create a solid framework for considering impacts to the township’s water resources from development. We applaud this strong effort, and have only one additional suggestion.

SUGGESTED ACTION: Consider requiring open space to be managed in a natural condition and be restricted to low-impact uses. This may be assumed in the ordinance with the term “undeveloped state,” but some clarification could be useful.

Shorelines

POSSIBLE SCORE: 60
TOTAL SCORE: 41, STRONG

Two of the most effective ways for a local government to protect water quality through zoning is to require setbacks from the water’s edge, and require a shoreline protection strip. Both of these measures also protect shoreline habitat. The shoreline protection strip, also called a vegetative buffer zone, requires native vegetation between the water and the upland land use. Hayes Township employs both of these measures in the Lakefront Regulations section of the township ordinance General Provisions.

Hayes Township has established a consistent 100-foot setback from Lake Charlevoix and Lake Michigan, and an 80-foot setback from Susan Lake (as measured from the maximum recorded high water level). No structures, except for launching ramps and docking facilities including steps and retaining walls, shall be allowed within the waterfront setback [Article III, Section 3.14(1)(A)]. A shoreland protection strip 50 feet wide shall be established and maintained on all waterfront property. The strip is to have at least 70% natural vegetation cover, including trees, shrubs, or herbaceous plants. The following use regulations apply to the shoreline protection strip:

- leaves, grass clippings, and other yard wastes may not be burned or stored within the shoreland protection strip;
- septic tanks or septic system filtration fields may not be located within the shoreland protection strip;
- pruning of trees, shrubs or other native vegetation is prohibited within the shoreland protection strip, except for the removal of parts of the trees, shrubs or other vegetation that are already dead; and
- removal of invasive species is encouraged within the shoreland protection strip

In cases where the vegetation or soils are disturbed within the Shoreland Protection Strip, the following restoration and replanting requirements shall be met:

- Any and all fill material placed within the Shoreland Protection Strip shall be removed. New soils, consistent with soils already found on the property may be added as needed to provide for growth of new vegetation;
 - The replanted strip shall consist of native vegetation, trees no less than 2.5 inch diameter at 6 inches above grade, and shrubs, as best suited to soil conditions on the property, as recommended by the Charlevoix Conservation District or the MSU Extension Service;
 - The shoreland protection strip shall not be replanted with invasive and/or exotic species such as: Phragmites, Purple Loosestrife, Reed Canary Grass, Crown Vetch, White and Yellow Sweet Clover, Russian Olive, Autumn Olive, Tartarian Honeysuckle any other invasive or exotic species as identified by Tip of the Mitt Watershed Council; and
 - A combination of native vegetation shall be introduced in a naturalized planting pattern where native shoreline vegetation does not exist.
- [Article III, Section 3.14(2)(A-D)]

In 2009, Hayes Township passed a stand-alone ordinance to address the threat of the invasive Phragmites. There are two main strains of Phragmites, one if which is invasive and has the potential to dramatically impact shorelines by crowding out native vegetation, blocking access to the shoreline, and obscuring views of the water. The ordinance describes potential problems associated with Phragmites and provides a framework for control, including reporting, property access and inspection, public hearing process, obtaining required permits, treatment, and cost. This stand-alone ordinance compliments the greenbelt and setback provisions in the zoning ordinance (Hayes Township Phragmites Ordinance).

Townships have the opportunity to manage the environmental and recreational quality of lakes by regulating docks. The Lakefront Regulations section of the General Provisions article of the Hayes Township Zoning Ordinance contains a section specific to docks. This section specifies restrictions that allow “Not more than one (1) mooring, or one (1) slip, or one (1) dock space for each one hundred (100) feet of lake frontage.” [Article III, Sec 3.14 (3)] This provision goes on to clarify that this stipulation refers only to space for a single boat that is powered by an engine, including a sailboat powered by an auxiliary engine, and does not apply to small sailboats or any other non-motorized boat powered by hand or foot power. The ordinance is silent with regard to dock length or placement.

Funnel, or keyhole, developments have the potential to put excessive recreational pressure on lakes. In addition to boating congestion, overuse can have water quality and aquatic habitat impacts. Hayes Township addresses this issue by stipulating that “not more than one (1) single family home or cottage or one (1) condominium unit or one (1) apartment unit shall use or be permitted to use each one hundred (100) feet of lake or stream frontage as measured along the normal high water mark of the lake or stream.” [Article III, Section 3.14(4)] Furthermore, “this restriction shall apply to any parcel regardless of whether access to the water shall be gained by easement, common fee ownership, single fee ownership or lease.” [Article III, Section 3.14(4)]

Hayes Township regulates road ends terminating at the shoreline, other than the Eastern Avenue road ending. Road end ordinances both ensure the right of the public to access the lake, while at the same time controlling nuisance activities and regulating potential environmental impacts from boating use. The Hayes Township road end ordinance prohibits the placement of docks or other structures; anchoring or mooring an unattended boat except in emergency situations; using the road end in a manner that would cause a disturbance or nuisance; overnight parking or camping; launching a boat into Lake Charlevoix (Hayes Township Road Ending Ordinance); making noise that endangers, annoys, or disturbs others; littering; trespassing on adjacent property; building a fire; or remaining at the road ending after being asked to leave by a police officer. The ordinance also articulates penalties for violators and provides for enforcement by the township Ordinance Enforcement Officer or deputies of the Charlevoix County Sheriff (Hayes Township Road Ending Ordinance 2010, Sections 3-7).

Although Hayes Township does not regulate marinas, per se, there are two provisions in the Zoning Ordinance that could serve as a framework for marina regulation if the need arose. First, the marine sewage pump-out facility provision states that “any dock facility providing dockage for four (4) or more boats with marine sewage holding tanks on board shall provide a marine sewage pump-out facility which shall be capable of providing pump-out service to a local health department approved sewage disposal facility.” [Article III,

Section 3.14(5)] Secondly, the Hazardous Substances section of the General Provisions states that: all business or industries that store, use or generate hazardous substances...shall meet all state and federal requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of said hazardous substances. No discharge to groundwater, including direct and indirect discharges, shall be allowed without required permits and approvals.

Shorelines: RECOMMENDATIONS

The Hayes Township Zoning Ordinance has many good provisions with respect to protecting shorelines. Here are a few suggestions that the township may want to consider to further strengthen their shoreline management:

SUGGESTED ACTION: We applaud the township's efforts to control *Phragmites*. There are two types of *Phragmites* — one is invasive and the other is native. We encourage the township to distinguish between the two types in the ordinance, to ensure that the native strain is not eradicated from the shoreline.

SUGGESTED ACTION: Consider adding additional standards regarding dock placement (e.g. side yard setbacks), width, and length so as not to interfere with the rights of other waterfront owners or negatively affect the character of the shoreline.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 10, WEAK

Impervious surfaces stop rainwater and snowmelt from naturally percolating into soils, thus reducing the opportunity for contaminants to be removed from the resulting stormwater runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality. The Hayes Township Zoning Ordinance addresses impervious surfaces in several places. The Definitions and the General Provisions Articles of the ordinance clearly define impervious surfaces and how they are to be calculated with regard to lot coverage. The schedule of regulations articulates the maximum impervious lot coverage in each of the zoning districts. Maximum imperviousness ranges from 15% to 60% (Article IV, Section 4.13).

The ordinance has some creative approaches that allow reductions of impervious surfaces related to parking and loading areas. When the property owner can demonstrate that the required amount of parking is excessive, the Planning Commission may approve a smaller parking area. An area large enough to meet the parking space requirements shall be retained as open space, in case the need arises to construct the parking space at a later date [Article III, Section 3.23(3)]. As well, citing aesthetic and stormwater concerns, the ordinance limits the amount of parking to no more than 10% more than the minimum unless approved by the Planning Commission and based on documented evidence [Article III, Section 3.23(4)]. In addition, the ordinance requires that there shall be one tree for every 8 parking spaces [Article III, Section 3.24(5)(A)].

Impervious Surfaces: RECOMMENDATIONS

Although the Zoning Ordinance refers to "Township private road standards" in the standards for granting site plan approval [Article V, Section 5.03(5)(A)(10)], these standards could not be found on the Townships website nor in the Zoning Ordinance itself. The following recommendations are made based on not having access to these standards.

SUGGESTED ACTION: Consider limiting the extent of lawn area in lakeshore zoning districts. Even though they are not impervious, manicured lawns generate more runoff than yards covered in trees and shrubs.

SUGGESTED ACTION: Consider developing private road standards and add provisions that would help reduce impervious surfaces, such as creating maximum road widths and cul-de-sac radii.

SUGGESTED ACTION: Consider encouraging grass or turf parking where appropriate.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 11, ADEQUATE

Hayes Township does not currently regulate stormwater as a stand-alone ordinance. However, there are several provisions in the Zoning Ordinance where stormwater management planning and implementation is required as part of the zoning review process.

First, one of the General Provisions specifically addresses Storm Water Retention. As a general provision, the following applies to all uses: “Stormwater drainage in excess of natural conditions shall be retained on site.” (Article III, Section 3.09) This section goes on to state that compliance with this provision may require the construction of a stormwater retention pond and that exceptions may be made for water leaving a site via an adequately sized existing facility, or one that is created at the same time as the proposed new use. All stormwater management efforts shall be consistent with the provisions of the Charlevoix County Stormwater and Soil Erosion Control Program (Article III, Section 3.09). This overarching provision is supported throughout the site plan review process, from the data to be required to the standards for granting site plan approval [Article V, Sections 5.03(3,5)]. In addition, the Planning Commission may distribute the site plan to the Charlevoix County Soil Erosion and Sedimentation Control Officer and the Charlevoix County Drain Commissioner for comment prior to consideration for approval.

One way to reduce the discharge of polluted stormwater during construction is to limit the amount of land disturbance and grading in a project. The standards for granting site plan approval include the following components:

- All elements of the site plan shall be designed so that there is a limited amount of change in the overall natural contours of the site,
 - The landscape shall be preserved in its natural state by minimizing tree and soil removal, and by topographic modifications which result in smooth natural appearing slopes as opposed to abrupt changes in grade between the project and adjacent areas, and
 - Special attention shall be given to proper site drainage so that removal of storm waters will not adversely affect neighboring properties.
- Article V, Section 5.03(5)(A)(1-3)

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that Hayes Township cooperate with the county in the enforcement of county-wide standards. Charlevoix County officials are in the process of preparing a comprehensive, county-wide Storm Water Control Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in the Lake Charlevoix Watershed Management Plan. To this end, we encourage the following actions.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to

administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Hayes Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, continue to utilize the county's expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Hayes Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 1, WEAK

All properties located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Sediment, by volume, is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Soil erosion control is an essential component in watershed management efforts. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA), Michigan's Soil Erosion and Sedimentation Control statute.

Although Hayes Township does not regulate soil erosion and sedimentation control directly, the Hayes Township ordinance makes some specific references to the importance of soil erosion control, and the need for applicants to comply with the Charlevoix County Soil Erosion and Sedimentation Control statutes. For the site plan review process, the Zoning Ordinance states that "all site plans shall comply with the terms of any applicable soil erosion sedimentation and stormwater runoff control ordinance." [Article V, Section 5.03(3)(N)] This principal is re-emphasized in site plan requirements in the section on resource mining, extraction, and fill [Article VII, Section 7.01.(15)(A)(8)].

Soil Erosion and Sediment Control: RECOMMENDATIONS

The simplest and most effective way to control erosion at the township level is to partner with the county enforcement agents. It appears that this is happening, given the instances noted above where applicants are required to receive soil erosion permits from Charlevoix County as a prerequisite to township approval. To strengthen Hayes Township's role in soil erosion and sediment control, we recommend the following:

SUGGESTED ACTION: Clearly state that all zoning applicants for any construction or earth change activity proposed within 500 feet of a stream, river, or lake, must receive a soil erosion and sedimentation control permit prior to issuance of a Hayes Township Zoning Permit.

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be maintained and monitored on a periodic basis, until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 10, ADEQUATE

Although Hayes Township does not provide water or sanitary sewer services, the township Master Plan notes that “small portions of Hayes Township may have access to municipal sewer systems (to the East in Charlevoix Township at the Charlevoix Country Club, and to the West in the Bay Harbor development) at some point over the long-term.” (Hayes Township Master Plan, p. 3-3) The Master Plan goes on to note that it is impractical to assume, however, that such systems will be available to larger areas of the township in the future. Accordingly, the majority of township residents and business owners must rely on private wells for domestic drinking water needs, and private on-site septic systems for wastewater disposal.

Important determinants for adequate on-site septic system treatment include percolation rates, shallow soils over bedrock, or steep slopes. Chapter 3 of the Hayes Township Master Plan discusses the soils of the township and their suitability for on-site septic treatment. Figure 3-1, titled “Septic Limitations Map,” shows the range of soils in the township, from those that have only slight constraints to those that are severely limited. In addition, the water resource goal in the Master Plan recommends the following action item: “Encourage the maintenance of septic systems on a regular basis to assure proper and safe functioning over the long-term.” (Hayes Township Master Plan, p. 7-4).

The General Provisions section of the township ordinance states that “all water supply and sanitary sewage disposal systems either public or private, for any building hereafter erected, altered or moved upon any premises shall be subject to compliance with the local health department sanitary code requirements. Plans must be submitted to and approved by the responsible agencies. The written approval of such facilities by local health department shall be filed with application for a Zoning Permit.” (Article III, Section 3.08) In addition to this over-arching provision that applies to all decisions, the Zoning Ordinance also authorizes the Zoning Administrator and the Planning Commission to consult with and seek recommendations from the District Health Department [Article V, Section 5.03 (4)(B)(5) and (5)(B)].

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.



Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 1, WEAK

As noted in the Hayes Township Master Plan, wetlands are important to the character of the township and “provide important wildlife habitat and play an important role in the hydrologic cycle. Wetlands store and filter storm and flood waters.” (Hayes Township Master Plan, p. 3-1) Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

Although Hayes Township does not have a stand-alone wetland protection ordinance, the Zoning Ordinance mentions wetlands in some sections:

- The location of wetlands on the parcel is to be shown on site plan maps [Article V, Section 5.03(3)(F)];
- State regulated wetlands are not to be considered when calculating density bonus in PUD developments, but may count toward the open space requirements [Article VI, Section 6.03(2)(C)(2,3)]; and
- No portion of any cemetery that is partially located in a wetland shall be developed or platted for gravesites [Article VI1, Section 7.01(3)(A)].

Although not specifically mentioned, it is safe to assume that wetlands are considered in the following standard for site plan approval: “site plans shall conform to all applicable requirements of state and federal statutes and the Hayes Township Master Plan, and approval may be conditioned on the applicant receiving necessary state and federal permits before the actual zoning permit authorizing the special land use is granted.” [Article V, Section 5.03(5)(A)(11)]

Wetlands: RECOMMENDATIONS

Michigan’s wetland statute specifically authorizes local governments to adopt wetland protection ordinances to protect wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits. It appears as though Hayes Township’s Zoning Ordinance contains these basic elements. We offer the following recommendations to further encourage wetland protection in the township.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Amend the township ordinance to specifically mention that state and federal wetland permits are required, prior to the issuance of any township zoning permit on a parcel where wetlands are present and may be impacted, regardless of the zoning district.

SUGGESTED ACTION: Consider establishing a wetland setback similar to the shoreline setbacks in the Zoning Ordinance. Even a short setback from the wetland edge (e.g., 25 feet) is much better than constructing a use at the edge of the wetland. This would protect wetlands and be simple to administer, in the short term. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 15, STRONG

Protecting ground water resources from contamination is vitally important. As noted in the Hayes Township Master Plan, “groundwater serves as the sole source of drinking water for the majority of residents of the township and region.” (Hayes Township Master Plan, p. 3.1) The Master Plan also states that “the township will strive to protect groundwater from the harmful effects of intensive and incompatible development” and will “educate the public regarding the township’s reliance on groundwater resources.” (Hayes Township Master Plan, p. 7.4)

Perhaps the most direct ground water protection provision in the township Zoning Ordinance is found in the General Provisions section that relates to hazardous substances. In this section, all entities that store, use or generate substances that could contaminate ground water “shall meet all state and federal requirements for storage, spill prevention, record keeping, emergency response, transport and disposal of said hazardous substances. No discharge to groundwater, including direct and indirect discharges, shall be allowed without required permits and approvals.” (Article III, Section 3.17) Consideration for ground water protection is an important part of the site plan review process, with the applicant having to provide information on ground water in the impact statement [Article V, Section 5.03(3)(P)(2)]. As well, the supplemental regulations for Resource Mining, Extraction and Fill has special provisions for excavations that will encounter ground water, including the requirement that a hydro-geological report be conducted [Article VII, Section 7.01(15)(A)(5)].

Ground Water and Wellhead Protection: RECOMMENDATIONS

Importantly, Hayes Township participated in the state Source Water Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step and protecting these precious drinking water sources.

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 24, ADEQUATE

With respect to other provisions in the ordinance that may contribute to water resource protection, Hayes Township participates in the National Flood Insurance Program. Additionally, floodplains are noted in the Master Plan as one of many “resources that are essential to the region’s economic base.” (Hayes Township Master Plan, p. 3-1) Floodplains are mentioned twice in the Hayes Township Zoning Ordinance. First, floodplains may count toward up to a maximum of twenty-five (25%) percent the required open space in a PUD development [Article VI, Section 6.03(2)(C)(2,3)]. Second, no portion of any cemetery that is partially located in a floodplain shall be developed or platted for gravesites. [Article VI1, Section 7.01(3)(A)].

Other: RECOMMENDATIONS

The additional provisions regarding floodplains help contribute to an overall framework of conscious development and water resource protection. Although applicants may already provide this information, we encourage you to amend the site plan review section of the ordinance to ensure that floodplain information is provided on all applications.

SUGGESTED ACTION: In order to help ensure that floodplains throughout the Township are considered in the zoning permit review process, require that floodplain locations be delineated on all site plans.

Conclusion

We applaud the very good water protection measures that exist in Hayes Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any other questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

Hayes Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	16	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	41	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	41	Strong
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	10	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	11	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	1	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	10	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	1	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	15	Strong
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	24	Adequate



SECTION III: Analysis

Chapter 12 Hudson Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Hudson Township, located in the southeastern corner of Charlevoix County. The township contains numerous inland lakes, including Thumb Lake (Lake Louise), Huffman Lake, and many other smaller lakes, as well as the headwaters of three main watersheds: Lake Charlevoix (via the North Branch of the Boyne River), the Cheboygan River (via the West Branch of the Sturgeon River), and Little Traverse Bay (via a small portion of the South Branch of Spring Brook's Watershed).

This analysis includes evaluation scores, recommendations and suggested actions from the Local Ordinance Gaps Analysis project. The western portion of Hudson Township is located in the Lake Charlevoix Watershed, and where appropriate, this analysis also relates suggested actions to the Lake Charlevoix Watershed Management Plan.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 21, STRONG

The Hudson Township Comprehensive Plan was updated in January, 1994. Although it doesn't specifically mention the watersheds in which the township is located, Chapter 3 does a nice job of listing the lakes and streams, and providing a description of the wetlands that occur in the township. This chapter also includes a description of the forested habitat.

Hudson Township's original 1974 "Sketch Land Use Plan" had several goals addressing the need to protect water resources, especially the lakes in the township. The 1993 Comprehensive Plan updated these goals, with respect to water resources, in the following manner: "Protect environmental resources within the Township including air, water, soils, forests, wildlife, and historic structures."

- A. Support enforcement of soil erosion controls, especially in hilly or erodible areas.
- B. Require stormwater management as part of site development.
- C. Strengthen water quality controls through greenbelt regulations.
- D. Preserve scenic views of hills and lakes.
- E. Preserve fish and wildlife resources. (Chapter 6: Goals and Objectives—1993 Comprehensive Plan)

Chapter 7, the Future Land Use section of the Comprehensive Plan, calls for the management of forest lands and shoreline properties. It recommends that planning and zoning strategies be put in place to ensure that they maintain their natural character, including minimum lot sizes, greenbelt provisions, and various water quality protection measures.

Master Plan Components: RECOMMENDATIONS

Although it is eighteen years old, the Hudson Township Comprehensive Plan is still strong with regard to water resource protection. However, updates to Master Planning documents are recommended every 5 years, and we encourage the township to consider doing this in order to review other aspects. When this is done, we suggest the following:

SUGGESTED ACTION: Call for minimizing impervious surfaces in new construction and redevelopment projects, to reduce stormwater runoff and improve infiltration.

SUGGESTED ACTION: Acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

SUGGESTED ACTION: Identify wildlife corridors and recommend use of conservation easements or other measures to permanently protect wildlife corridors that occur on private land.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 23, ADEQUATE

The Hudson Township Zoning Ordinance includes several basic components that contribute to water quality protection. The statement of purpose includes the following: “to encourage the use of lands and natural resources in the township in accordance with their character, adaptability and suitability for particular purposes.” (Article I, Section 1.0) In addition, the purpose statement for the R-1 zoning district (Single Family Residential District, Lake and Stream) states that the purpose is to encourage the proper development of lands along the shores of water bodies within the township, to avoid pollution of these water bodies, and to preserve the natural resources of the township [Article VI, Section 6.0(a)].

The Zoning Ordinance includes a fee system that helps to fund administration of the ordinance, and a provision whereby the township can amend such fees, from time to time, to reflect the changing costs of administration (Art XI Sec 11.5). The section of the ordinance dealing with enforcement was amended in 2003 to streamline addressing violations. Originally, the Township Board was to initiate criminal proceedings and there was a limit on penalties of five hundred (500) dollars, or imprisonment at the discretion of the court. The amendments make it clear that each day of violation is a separate offence; that the Zoning Administrator can initiate civil citations and direct alleged violators to appear in court; and there are limits on the severity of penalties for violation (Zoning Ordinance Amendment No. 4 of 2003).

One important aspect of the local zoning permitting process is to ensure that a project applicant receives all applicable permits from other agencies. The Hudson Township zoning permit application process requires that applications provide “evidence that all required federal, state and county licenses or permits, including any necessary soil erosion and sediment control permit, have been acquired or that applications have been filed for same.” [Article XI, Section 11.2(e)] This requirement helps to ensure that protection of resources, such as rivers, lakes, wetlands, and endangered species, are integrated into a proposed development as part of the planning process.

There is no site plan review process spelled out. However, a site plan is required as part of the Special Use Permit process (Article IX). Although the special use application requirements call for the applicant to identify the location of unusual environmental features, there are no specific open space requirements.

There are, however, open space incentives in the R-4 (Multiple Family Residential) district. Density bonuses are awarded based on this schedule:

- 50 percent open space, plus 4 units/acre ;
- 55 percent open space, plus 6 units/acre;
- 60 percent open space, plus 8 units/acre;
- 70 percent open space, plus 10 units/acre [Art VI Sec 6.3 (e)(3)].

Unfortunately, the only condition on the use of the open space is that it be maintained as “open space or non-profit recreational uses.” [Article 6, Section 6.3(e)(2)]

Basic Zoning Components: RECOMMENDATIONS

Although the Hudson Township ordinance contains some basic provisions that provide a framework for water resource protection, there are several ways to strengthen it. We encourage the township to consider the following:

SUGGESTED ACTION: Require a pre-application or pre-construction meeting for new development or redevelopment proposals. Such meetings ensure that applicants understand all requirements of the ordinance and are more likely to consider all water resource issues, early in the process.

SUGGESTED ACTION: Modify the fee schedule to include a process by which the applicant establishes an escrow fund that pays for the costs of professional environmental or engineering review, if necessary.

SUGGESTED ACTION: Require that all open spaces established are restricted to low impact uses that allow for the landscape to be managed and maintained in a natural condition, and permanently protect all designated open space through conservation easements, covenants, or other permanent legal instruments.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 20, WEAK

Two of the most effective ways to protect and maintain water quality through zoning are building setbacks and the establishment of vegetated buffers or shoreline protection strips.

Hudson Township addresses both of these zoning methods in Article IV, Section 4.21, Shoreland Protection Strip. This provision states, “No building, fence or structure, except docks or launch ramps, shall be erected closer than fifty (50) feet from the shoreline at normal high water level of any lake, stream or creek within the Township.” In addition, the ordinance requires that “a strip of land thirty-five (35) feet wide from the normal high water mark bordering the body of water shall be maintained in trees and shrubs in their natural state.” (Article IV, Section 4.21) Within the 35 foot strip, the ordinance allows trees and shrubs to be pruned in order to afford a view of the water. It allows only 15 feet per 100 feet of frontage to be removed for pedestrian access, and discourages the use of pesticides or herbicides, or burning or storing of vegetation.

Dockage regulations are a valuable tool to address the character of the natural shoreline, recreational enjoyment, and the rights of waterfront owners. No general provisions address dockage issues in Hudson Township. However, the zoning provisions for the R-1 district (Single Family Residential District, Lake and Stream) address dockage in two ways. First, the placement of docks must comply with the side yard requirements for the district (15 feet from adjacent properties and 35 feet from a road-end). Second, the dock length “shall not be longer than is required to reach a water depth of six (6) feet at normal low water, provided no dock shall exceed fifty (50) feet.” [Article VI, Section 6.0(f)(1)] Although these measures are positive, the ordinance could also include restrictions on the number of water crafts, docks, or rafts per lot.

Since even a very small amount of petroleum products or hazardous chemicals can impact a large amount of water, it is important to ensure proper management of these liquids. Hudson Township addresses these

issues minimally in the section of the ordinance addressing special use permits. It simply requests that applicants note “the location of any areas where toxic or hazardous materials will be used, stored, as well as the safety precautions proposed where such materials are used or stored.” [Article IX, Section 9.1(12)]

Shorelines: RECOMMENDATIONS

The heart of the Hudson Township shoreline provisions are embedded in the R-1 (Single Family Residential District, Lake and Stream) district. In addition to these provisions, we encourage the township to consider the following actions:

SUGGESTED ACTION: Maintaining native vegetation along the shoreline is critical to preserving water quality and providing wildlife habitat. The Shoreline Protection Strip (Article IV, Section 4.21) provisions could be strengthened by specifically encouraging the maintenance and re-establishment of native vegetation and prohibiting the use of non-native species.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland lakes, streams, and roadside ditches. Because of the high quality of Hudson Township’s inland lakes, and the ability to effectively control *Phragmites* if it is addressed early, we encourage the Township to initiate a program to ensure that the invasive strain of *Phragmites* does not become established in Hudson Township’s waters. This would involve an initial inventory to determine if there are non-native stands of *Phragmites*, treat those stands if they are in existence, and conduct a follow up inventory and treatment, if necessary.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 2, WEAK

Impervious surfaces stop rainwater and snowmelt from naturally percolating into soils, thus reducing the opportunity for contaminants to be removed from the resulting stormwater runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality. The Lake Charlevoix Watershed Management Plan recommends reducing the pollutant load from stormwater runoff. Reducing impervious surfaces helps to accomplish this objective to protect Township waters from sediment, nutrients, and toxic substances.

Impervious Surfaces: RECOMMENDATIONS

There are no provisions in the Hudson Township Zoning Ordinance that reduce the amount of impervious surfaces associated with proposed or existing uses. We encourage you to consider the following measures to reduce impervious surfaces:

SUGGESTED ACTION: Consider revising impervious surface lot coverage limits in all zoning districts to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Establish a process whereby parking and loading requirements in Article VII can be modified to reduce impervious surfaces by reducing the number of spaces or the square footage of parking spaces and loading areas, or allowing pervious surfaces such as grass, gravel, or brick pavers.

SUGGESTED ACTION: Consider removing the condition in the R-4 (Multiple Family Residential) District that requires “all areas provided for use by vehicles shall be surfaced with bituminous asphalt, concrete or similar materials.” [Article VI, Section 6.3(g)(3)] There are numerous impervious and pervious surfaces available that serve as suitable parking surfaces to allow stormwater infiltration rather than runoff.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 5, WEAK

Hudson Township does not have a stand-alone stormwater regulatory program, but there are several places in the ordinance where stormwater management is addressed. Article IV, General Provisions, Section 4.15 (Storm Water Drainage and Grades) requires that: “No premises shall be filled or graded so as to discharge surface runoff on abutting premises in amounts and at intervals which exceed the natural or preceding conditions on site. When property is developed adjacent to existing properties previously developed, existing grades shall have priority.” (Article IV, Section 4.15)

In addition, Article VI (Zoning District Regulations) includes two comments regarding drainage. One is included in the R-1 district requirement and states, “no subsoil footings drain system shall empty directly into any water body.” [Article VI, Section 6.0(f)(2)] The other is in the R-3 district requirements: “All property in any mobile home court shall be graded so as to be well drained, and a means of conveying storm water away from structures and streets shall be provided.” [Article VI, Section 6.2(b)(1)]

Stormwater Management: RECOMMENDATIONS

Stormwater runoff from buildings, driveways, parking lots, streets, and other impervious surfaces is a major source of pollutants to northern Michigan’s waterways. The existing stormwater management language in the Hudson Township Zoning Ordinance serves as a foundation upon which to build additional protection for the township’s waters. To build on this base, we recommend adding the following stormwater management practices, either as a separate item in general provisions, or as part of the site plan review:

SUGGESTED ACTION: Consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Hudson Township for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction or use of steep or unstable slopes can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Hudson Township does not specifically regulate soil erosion and sedimentation. However, by requiring zoning applicants to receive soil erosion permits from the Charlevoix County Department of Building Safety, which administers a county-wide soil erosion control program, the township effectively ensures that soil erosion is addressed. In addition to Article XI, Section 11.2(e), which requires a soil erosion and sediment control permit, there are two other places where soil erosion is addressed in the Hudson Township ordinance. First, Article IV, Section 4.17 regulates the removal of soil, sand or other material and prohibits the land surface from being left in an unstable condition. Second, Article VI, Section 6.0(f)(4) requires that any development in the R-1 (Single Family Residential District, Lake and Stream) district be done in a way that avoids excessive soil erosion.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA). Coordination between the township and the county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Although Hudson Township states that soil erosion permits must be received before a zoning permit can be issued, it may be helpful to specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County. This will help to ensure that no projects “fall through the cracks.”

Sewer/Septic

POSSIBLE SCORE: 24
TOTAL SCORE: 9, ADEQUATE

Sewer and septic management are critical to both human health and water quality. In two separate places, the Hudson Township Zoning Ordinance clearly requires a permit from the District Health Department as part of the zoning application process. First, the zoning permits section states that “all buildings shall provide water supply and sewage disposal facilities as required & permitted by the District Department of Health Sanitary Code.” (Article IV, Section 4.12) Second, “the written approval of the water supply and sewage disposal facilities, as obtained from the District Health Department, and as required in Article IV, Section 4.12 of this Ordinance, shall be accompanied by one copy of both plans and specification.” [Article XI, Section 11.2(e)] This simple provision that requires sanitary permits, prior to submitting an application for a local zoning permit, is a very effective way to ensure that Hudson Township’s high quality lakes, streams, and wetlands are protected from inappropriate sewer and septic facilities.

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can influence the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement, whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.



Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 2, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state's wetland protection program.

Hudson Township requires information on the location of wetlands as part of the special use permit application process [Article IX, Section 9.1 (a)(5)]. Otherwise, the ordinance is silent with respect to wetlands. Given the proximity of high quality riparian wetland adjacent to streams in the township, the Shoreland Protection Strip section of the ordinance (Article IV, Section 4.21) could result in some wetland protection.

Wetlands: RECOMMENDATIONS

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances that provide protection to wetlands not protected by the state statute. In addition to adopting and implementing a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies, prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider expanding the Shoreland Protection Strip to include setbacks from wetlands. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 6, WEAK

The six points scored in the ground water evaluation simply account for items that are not applicable to the township, and ensures that the township is not penalized for those items. The Hudson Township zoning ordinance is silent with respect to ground water protection. This is unfortunate, because Hudson's Townships ground water resources are a key reason why the lakes and streams are of such high quality. In addition to the environmental importance of ground water, it is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous materials is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water as a drinking water source.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 30, ADEQUATE

There are no additional provisions in Hudson Township's ordinance that contribute to water resource protection, such as floodplain ordinances. There are no high risk erosion or steep slopes restrictions, or critical dunes in the township. We have no additional recommendations for this element.

Conclusion

We applaud the water protection measures that exist in Hudson Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Hudson Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	21	Strong
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	23	Adequate
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	20	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	2	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	5	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	2	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	6	Weak
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	30	Adequate



SECTION III: Analysis

Chapter 13 Marion Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Charlevoix County's Marion Township, which is located in both the Lake Charlevoix and Elk River Watersheds, with a small western portion of the township draining directly to Lake Michigan. The Marion Township landscape features drumlins and numerous small lakes, creeks, and wetlands. In addition to Lake Charlevoix (a portion of which is located in the northeast corner of the Township), small lakes in the Township include Adams Lake, Cunningham Lake, East and West Twin Lakes, Lake Marion, Matchett Lake, Mitchell Lake, Nowland Lake, and Skinner Lake. Bordering the lakes and their associated creeks are numerous wetland areas, comprising 25.4% of the township's land area. This chapter includes the evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Lake Charlevoix.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE:	30
TOTAL SCORE:	15, ADEQUATE

Marion Township's current Land Use Plan was adopted July 22, 2008. Although the Plan does not specifically mention the large watersheds in which Marion Township is located, it does provide a good description of the township's water resources.

Fig 2-1 in the Marion Township Land Use Plan (p. II A – 2) maps water features and wetlands, both forested and non-forested. Fig. 2-3 (p. II A-3) also maps wetland soils. The Plan indicates that both groundwater and surface water are vital resources, and the majority of the township “is located in an area where vulnerability of drinking water aquifers to surface contamination is high due to permeable soils or sensitive drift lithology.” (p. II B-1)

The Community Goals and Policies section of the Land Use Plan addresses water quality and aquatic habitat in several places. One of the policies stated in the Community Planning and Development Goal (to maintain an ecologically sound balance between human activities and the environment to retain and enhance the Township's quiet, scenic and rural character) is to “encourage the preservation and protection of scenic views of hills, valleys, farms, lakes and streams.” (p. III-2)

The Natural Environment and Waterfront Goal is to “Protect and preserve the natural resources, including the waterfront areas.” (p. III-3) Specific policies to promote this goal include:

- Encourage a land use pattern that is oriented to and respects the natural features and water resources of the area;
- Evaluate the environmental impact of all new development;
- Protect land resources and water quality related to our lakes, streams and wetlands;
- Encourage the continued natural use of wetlands as groundwater recharge and stormwater holding areas; and
- Protect lake and river shorelines (Plan, p. III-3)

In addition to these, policies such as those established to promote the goal of preserving open space can also serve to protect water resources.

Master Plan Components: RECOMMENDATIONS

We applaud the water resource information and goals contained in the Marion Township Land Use Plan. We offer the following suggestions to further strengthen the role this document can play in guiding water resource protection.

SUGGESTED ACTION: To help ensure citizens can learn more about the township, make the most recent Land Use Plan available online.

SUGGESTED ACTION: When updating the Land Use Plan, include a description of the watersheds in the township and how land use impacts anywhere in a watershed influence water quality throughout the watershed.

SUGGESTED ACTION: When updating the Land Use Plan, include comments on the problems associated with impervious surfaces and identify stormwater management as an important community priority.

SUGGESTED ACTION: When updating the township’s Land Use Plan, acknowledge the importance of well-constructed and maintained road-stream crossings with regard to the quality of streams in the township.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 38, STRONG

The Marion Township Zoning Ordinance does not have an over-arching purpose specific to water resource protection (though water resources are surely part of the purpose of promoting “public health, safety, and welfare” stated in Article I, Section 1.02). The preamble to the Greenbelt section of the ordinance states the following purpose: “to preserve natural resources, water quality and community scenic and recreational values.” (Article III, Section 3.11)

The Marion Township Zoning Ordinance includes a fee system to assist in defraying the costs of investigating, reviewing and administering the Zoning Ordinance [Article X, Section 10.05(1)]. The township can require additional fees, set aside in an escrow account by the applicant, to cover the costs of additional professional review when necessary [Article X, Section 10.05(2)]. The ordinance also authorizes the township to require performance guarantees to ensure the construction of roads, lighting, utility, sidewalk, landscaping and drainage improvements associated with a project in an amount equal to the estimated costs of the improvements (Article X, Section 10.06).

Article X of the Zoning Ordinance also addresses the issue of enforcement. Any person or other entity who creates or maintains a nuisance, or who violates or fails to comply with the ordinance or any permit issued pursuant to the ordinance, shall be responsible for a municipal civil infraction and be subject to a fine of not more than five hundred dollars. Each day of violation is considered a separate and distinct offence. The Zoning Administrator is authorized to issue infraction citations directing alleged violators to appear in court. In addition to enforcing this ordinance as a civil infraction, the township may initiate proceedings in the any court of competent jurisdiction to address any other violations of the Zoning Ordinance [Article 10, Section 10.07.3(1-3)].

One important aspect of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. This concept is reiterated in the purpose statement of Article VI (Site Plan Review), which reads: “The purpose of this chapter is...to ensure that a proposed land use or development activity is in compliance with this ordinance, other local ordinances, and state and federal statutes and regulations. Despite this broad purpose, there is not a specific provision that codifies this notion into a tangible standard by requiring other local, state, or federal permit approvals as a condition of a local zoning permit. Rather, the Zoning Ordinance states that the township “may distribute a site plan to various county agencies for comment prior to consideration for approval.” [Article VI, Section 6.03(5)(G)]

Additionally, this same section states that the Planning Commission shall base their decision for approval on “the ability of the sewage disposal and water systems to meet the applicable health and sanitary codes and ordinances,” among other things [Section 6.03(5)(A)]. However, it does not require a permit from the Health Department prior to permit issuance. Nowhere in the site plan review standards is the requirement for state or federal permits stated, such as those required for wetland or lakeshore project.

In order to simplify administration, many townships simply condition local approval on the applicant receiving necessary state and federal permits before final site plan approval or a zoning permit is granted. This is the only way for the applicant to prove that the proposed project conforms to applicable state and federal statutes.

Pre-application meetings are another excellent way to ensure that the protection of water resources is considered, early on in the development process. There are two opportunities for pre-application conferences in Marion Township's Zoning Ordinance. The first is an optional meeting between the developer and the township representatives to discuss the site plan review process, other ordinance requirements, and to provide insight as to what portions of a project may be of special concern to the Planning Commission. Such pre-meetings allow the applicant to understand the site planning process and prepare the needed information for a proper review [Article VI, Section 6.03(2)]. The second opportunity is required as part of the Planned Unit Development (PUD) approval process. The Zoning Administrator may request or recommend that the applicant request representatives from township or county agencies to ensure that the applicant can consider a broad range of issues before preparing a preliminary plan [Article VIII, Section 8.01(20)(C)(1)]

An important aspect of the implementation of any Zoning Ordinance is the site plan review process. The effectiveness of the review process is determined by the quality of the information provided to the township by the applicant. The section of the ordinance that deals with site plan review requires the applicant to submit a description of the project, including “the location of existing environmental features, such as watercourses, wetlands, shorelines, man-made drains, high risk erosion areas, mature specimen trees, wooded areas, scenic viewsheds or any other unusual environmental features.” (Article VI, Section 6.03(3)(F) This section also requires the applicant to provide a statement that assesses “the impact of the proposed development on soil erosion, shoreline protection, wildlife habitat, air pollution, water pollution (ground and surface), noise and the scale of development in terms of the surrounding environment.” [Article VI, Section 6.03(3)(P)(3)]

In addition, this section requires the applicant to assess expected demands on community services, including the “volume of sewage for treatment, volume of water consumption related to ground water reserves or community system capacity.” [Article VI, Section 6.03(3)(P)(3)] Unfortunately, in Marion Township, site plans are required for all activities except one and two-family residential units, which is the typical development pattern on lakeshores in northern Michigan.

Open space provisions that allow for clustering development on one portion of a parcel, while protecting the remainder in its natural state, can help to protect water quality. Marion Township encourages open space development by establishing open space minimums in the PUD provisions and providing density bonuses in one of the land division options.

The Marion Township Zoning Ordinance Planned Unit Development (PUD) requirements state that at least 50 percent of the total land area shall be designated as dedicated open space. Unlike many Townships that do not count unbuildable lands toward the open space requirements, the Zoning Ordinance states that “the open space may consist of areas which contain physical characteristics that limit the development potential such as steep slopes or wetlands.” [Article VIII, Section 8.01(20)(B)(1)(d)] The Zoning Ordinance requires that a permanent conservation easement be placed on the property. There is no stipulation that the open space must be limited to low impact (non-construction) uses, nor that it be managed in its natural state.

The Land Division Options provided for parcels in the Agricultural (A) District, provide another option for open space protection, articulated in the Conservation Subdivision Planned Unit Development Option. This development option requires a minimum of 50% of the parcel’s buildable land area to be designated as Conservation Lands to be permanently protected from further lot splits by a conservation easement. Wetlands, land within the 100-year floodplain, and land on slopes greater than 25% are not to be included in the calculation. The easement would still allow all uses allowed in the Agriculture District, as well as the construction of two additional dwelling units. The density of the area to be developed is based on how many lots could be built on the buildable area of the master parcel. This assumes one dwelling unit per two acres, with a consideration of the number of homes that could be supported by individual septic systems on conventional lots.

In addition to the maximum lot density as determined above, when the required easement covering Conservation Lands shall be held in part by a locally recognized non-profit land conservancy, a maximum of two additional lots shall be allowed for the purpose of funding an endowment to cover expenses for monitoring compliance with the conservation easement [Article V, Section 5.07.6(3)].

Basic Zoning Components: RECOMMENDATIONS

The basic components of Marion Township’s Zoning Ordinance create a good framework for considering impacts to the Township’s water resources from development. The following actions are suggested to help strengthen the ordinance:

SUGGESTED ACTION: Consider requiring open space to be managed in a natural condition and be restricted to low-impact uses. In so doing, the township will ensure that these developments are contributing to water resource protection.

SUGGESTED ACTION: Specifically require that applicants must receive approval for all applicable county, state, and federal permits (such as soil erosion control, wetlands, inland lakes and streams, etc.) prior to receiving a township zoning permit.

SUGGESTED ACTION: Require site plan review for all activities (even single family residences) on lakeshore properties. Such review will help to ensure that impacts to water resources are avoided as much as possible.

Shorelines

POSSIBLE SCORE: 60
TOTAL SCORE: 16, WEAK

Two of the most effective ways that local governments can protect water quality and shoreline habitat through zoning is to require setbacks from the water’s edge and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer zone. Marion Township employs both of these measures in the Greenbelt section of their General Provisions article.

As noted above, the purpose of Marion Township’s greenbelt provision is to “preserve natural resources, water quality and community scenic and recreational values.” (Article III, Section 3.11) This provision calls for a consistent 50-foot setback from the ordinary high water mark of all lakes or streams in the township. No structures or septic system filtration fields may be located within the greenbelt except for boathouses,

launching ramps and docking facilities, so long as they meet the side yard setback requirements for the district in which they are located.

The ordinance states that no dredging or filling shall be allowed except for reasonable sanding of beaches where permitted by state or federal law (Article III, Section 3.11). In addition to the greenbelt provision that applies to all zoning districts, the minimum building setback in the Agricultural District is “one hundred (100) feet from any lake, river or stream and twenty five (25) feet from any designated wetland area.” [Article V, Section 5.07.5(3)]

With regards to natural vegetation, this provision requires that at least seventy percent (70%) of the lake or stream frontage within the greenbelt be covered with natural vegetation, including trees, shrubs or herbaceous plants. Beach sand, gravel, cobblestone or rock may be substituted for vegetated areas where these materials naturally exist. The use of pesticides, herbicides and fertilizers is prohibited and leaves, grass clippings and similar yard and garden wastes may not be burned or stored (Article III, Section 3.11). The Conservation Subdivision Planned Unit Development Option in the Agricultural District calls for the maintenance or creation of “an undisturbed upland buffer of natural native vegetation of at least 100 feet in depth adjacent to surface waters, including lakes, rivers and streams.” [Article V, Section 5.07.6(3)]

Townships have the opportunity to manage the environmental and recreational quality of lakes by regulating dock length, location, and number of boat spaces allowed. Other than stating that docks shall meet the side yard setback for the district in which they are located and meet setback requirements for the riparian line as determined by state law (Article III, Section 3.11), the Marion Township Zoning Ordinance is silent on the issue of regulating boat dockage.

Shorelines: RECOMMENDATIONS

Marion Township’s Zoning Ordinance greenbelt and setback provisions are useful tools to help protect shorelines and water quality. Here are a few suggestions that the Township may want to consider to further strengthen their shoreline management:

SUGGESTED ACTION: Keyhole, or “funnel” developments are those that utilize a small portion of lake frontage to provide lake access to a large number of back lot owners. We encourage Marion Township to consider adopting a provision that specifically prohibits this sort of development.

SUGGESTED ACTION: Although Marion Township’s side yard setbacks apply to dock placement, the ordinance does not address the number of docks per lot or the number of boats per dock. Such provisions can help to ensure that lakes are not subject to excessive use.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are non-native stands of *Phragmites*, treat those stands if they are in existence, and conduct a follow up inventory, and treatment, if necessary. To do so, we suggest you coordinate your efforts with the Lake Charlevoix Association’s *Phragmites* eradication program

SUGGESTED ACTION: Conduct an inventory of road ends that may provide access to Lake Charlevoix and other water bodies in the township. The inventory could include the location of the road end, its legal status (is it still in the possession of a public entity?), its current use, and potential to cause environmental damage (based on location and use pattern). Once complete, the township could then determine if specific standards to regulate road ends are necessary.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, WEAK

As noted in the Lake Charlevoix Watershed Management Plan, impervious surfaces prevent rainwater and snowmelt from naturally percolating into the soils. From a ground water standpoint, this reduces the aquifer recharge. From a surface water standpoint, this reduces the opportunity for contaminants to be removed from runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

The Marion Township Zoning Ordinance does a nice job of defining impervious surfaces and calculating lot coverage of impervious surfaces (see Article II, Section 2.01). There is apparently only one provision that actually serves to reduce impervious surfaces. The Agricultural District provisions state that “no more than 20% of the total area of any lot shall be covered by impervious surface.” [Article V, Section 5.07.5(6)]

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Management Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater runoff into our water resources. We encourage Marion Township to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (not just the agricultural district) to limit impervious surfaces throughout the township. Consider limiting the percent lot coverage to 15% of the total lot.

SUGGESTED ACTION: Allow reductions in the size of parking and loading areas when appropriate for water quality protection, or encourage use of grass parking areas or pervious pavers.

SUGGESTED ACTION: Provide guidance for reducing impervious surfaces with respect to private road construction, including right of way widths, pavement widths, radii of cul-de-sacs, etc.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 1, WEAK

Marion Township does not regulate stormwater as a stand-alone ordinance. However, there are provisions of the Zoning Ordinance where stormwater management is addressed. The first is in the section that articulates the data required for the site plan review process: “all site plans shall comply with the terms of the Soil Erosion and Charlevoix County Stormwater Runoff Control Ordinance.” [Article VI, Section 6.03(3)(N)] Although requiring the applicant to comply with a county stormwater ordinance is an effective way to regulate stormwater, the Charlevoix County stormwater ordinance was rescinded in 2009 and is currently being reworked (see Chapter 1).

The site plan review approval process notes that the Planning Commission may distribute the site plan to the Charlevoix County Soil Erosion and Sedimentation Control Officer and the Charlevoix County Drain Commissioner (both of whom have stormwater expertise) for review and comment prior to making a decision [Article VI, Section 6.03(5)(G)]. The only other place that stormwater is mentioned in the Zoning Ordinance is with respect to supplemental site development standards for home improvement centers and lumber yards, which requires that “storage uses, buildings, parking lots, and sidewalks, shall provide a minimum setback of ten (10) feet from one side yard and forty (40) feet from the side property line to afford transition space for storm water, snow storage, and/or landscaped buffers.” [Article VIII, Section 8.01(9)(C)]

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that townships cooperate with counties in the enforcement of county-wide standards. Charlevoix County officials are in the process of preparing a comprehensive county-wide Storm Water Control Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in the Lake Charlevoix Watershed Management Plan. To this end, we encourage the following actions.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Marion Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, utilize the county's expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Marion Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 2, WEAK

Marion Township does not have detailed standards in their ordinance to address soil erosion and sediment control. However, the issue of soil erosion control is addressed to some extent in the site plan review section of the Zoning Ordinance. First, the data required for site plan review includes "generalized soil analysis data, which may include data prepared by the Charlevoix County Soil Conservation District regarding the soils and their adaptability to the use." [Article VI, Section 6.03(3)(M)] This section goes on to say that more detailed information may be required for a more critical review of soils, but provides no detail regarding upon what criteria that more critical analysis may be based. The site plan data requirements also include an impact statement relative to the impact of the proposed development on soil erosion (among other items) [Article VI, Section 6.03(3)(M)].

As part of the site plan review approval process, the Planning Commission may distribute the site plan to the Charlevoix County Soil Erosion and Sedimentation Control Officer for review and comment prior to making a decision [Article VI, Section 6.03(5)(G)]. Although the Township Zoning Ordinance indicates an interest in soil erosion control, the ordinance does not clearly state that a soil erosion and sedimentation control permit from the local Soil Erosion Control enforcement agent is required before a Marion Township permit will be issued.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near lakes, streams, wetlands, ponds, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local governments require all earth movement activities associated with development or construction projects to follow Best Management Practices (BMPs) to

control erosion and ensure that any sediment-laden runoff does not enter waterways. The Charlevoix County Department of Building Safety administers Part 91 of Michigan’s Natural Resources and Environmental Protection Act (NREPA). Coordination between the township and county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a lake, stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Marion Township.

SUGGESTED ACTION: Specifically require a pre-winter meeting to assess whether the existing soil cover on a development site will provide adequate soil erosion and sedimentation control during winter months.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 9, ADEQUATE

The importance of proper septic systems for disposal of wastewater is mentioned in several portions of the Marion Township Land Use Plan, including Figure 2-5, which maps the township’s limitations to on-site septic disposal. Although a sewer extends from the northern township border at Marion Center Road south to the high school, most township residents rely on private, on-site septic systems to safely dispose of their human waste (Marion Township Land Use Plan, p. II E-1). Accordingly, it is in the township’s best interest to ensure that on-site septic systems are managed properly.

From a water quality perspective, the primary concern with failing septic systems is the potential to contribute excess nutrients to lakes and streams, which in turn cause weed growth and algae blooms. Marion Township’s greenbelt provision states that no septic system filtration fields may be located within the greenbelt (50 feet of the shoreline) [Article III, Section 3.11(6)]. The “Water Supply and Sewage Disposal Facilities” section of the General Provisions requires that “all water supply and sanitary sewage disposal systems shall be subject to compliance with District Health Department sanitary code requirements. The written approval of such facilities by District Health Department shall be filed with the application for a Zoning Permit.” (Article III, Section 3.14). This requirement ensures that all activities that might generate human waste have met Health Department standards.

Sewer/Septic: RECOMMENDATIONS

The simplest and most effective way for townships to ensure compliance with the county or district health code is to require that all permits for residences and business receive local health department approval prior to granting a township permit. Marion Township’s Zoning Ordinance clearly does this. In addition, local units of government can regulate the siting of septic fields to ensure protection of water resources.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems in the township must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 2, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state's wetland protection program.

The Marion Township Land Use Plan does a nice job of articulating the functions and values of wetlands, and provides an inventory map of the general wetland areas (Marion Township Land Use Plan, p. II A-2, II B-1). In addition, the Land Use Plan's Natural Environment and Waterfront Goal contains several policies that effectively promote wetland protection (Marion Township Land Use Plan, p. III-3).

Although the Marion Township Zoning Ordinance does not have a general provision that provides for wetland protection, such as a broad requirement that no wetlands will be impacted without applicable state and federal permits, it does mention these valuable resources in three different sections:

- The Agricultural District includes special considerations for wetland protection in several locations, including:
 - Avoiding wetlands in the design and construction of access roads,
 - Requiring a 25 foot building setback from all wetlands,
 - Excluding wetlands from the building areas calculations and determining maximum allowable density in the Conservation Subdivision Planned Unit Development Option, and
 - Considering the extent to which a plan protects wetlands in the final approval process. (Article V, Section 5.07)
- The data required for site plans includes the location of existing environmental features, such as watercourses, wetlands, shorelines, etc. [Article VI, Section 6.03(3)(F)]
- The supplemental site development standards state that "no portion of any cemetery that is located in a wetland shall be developed or platted for grave sites." [Article VII, Section 8.01(5)(A)]

Wetlands: RECOMMENDATIONS

Michigan's wetland statute specifically authorizes local governments to adopt wetland protection ordinances to protect wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the crucial role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Amend the township ordinance to make it clear that state and federal wetland permits are required prior to the issuance of any township zoning permit on a parcel where wetlands may be impacted, regardless of the zoning district.

SUGGESTED ACTION: Consider establishing a wetland building setback in all zoning districts similar to the 25 foot setbacks in the Agricultural District. Even this narrow setback from the wetland edge is much better than constructing a use at the edge of the wetland. This would protect wetlands and be simple to administer, in the short term. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 10, ADEQUATE

According to the Marion Township Land Use Plan, the majority of the township relies on ground water for drinking water (Marion Township Land Use Plan, p. II B-1). Protecting ground water resources from contamination is vitally important.

The Marion Township Zoning Ordinance contains several over-arching provisions that are intended to protect ground water resources. The Dumping of Materials section of General Provision states that (among other things), “the material to be placed on the site shall be of such a composition as not to create potential contamination of the natural environment including groundwater... [and] dumping of toxic materials and/or nuclear wastes shall not be allowed in Marion Township.” [Article III, Section 3.15 (2,3)] The data required for the site plan review process requires an impact statement that addresses the proposed project’s expected demands on the volume of water consumption related to ground water reserves or community system capacity [Article VI, Section 6.03(3)(P)(2)].

In addition to these provisions that apply to many different activities, there are special considerations for salvage yards, including:

- the applicant must state how potentially hazardous liquids are to be prevented from entering the ground water and present a written plan for handling and disposal of hazardous liquids;
- the applicant may be required to provide a written contingency plan for toxic spills;
- the Planning Commission may require a roofed work area with an impervious floor with floor drain collection system; and
- The proposed site shall have a minimum of six (6) feet of vertical isolation from groundwater, and be at least one thousand (1,000) feet from an identified body of surface water [Article VIII, Section 8.01(24)(2,3)]

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous materials is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Marion Township has information in its Land Use Plan and several provisions in its Zoning Ordinance that both raise awareness and work to protect ground water resources. In addition, we encourage the township to consider the following to help strengthen ground water protection:

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water as a drinking water source.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 26, ADEQUATE

With respect to other provisions in the ordinance that may contribute to water resource protection, Marion Township participates in the National Flood Insurance Program. The only place floodplains are mentioned in the Zoning Ordinance is in the Conservation Subdivision Planned Unit Development land division option in the Agricultural District. Floodplains are to be considered when calculating the minimum conservation land requirement, maximum lot density, and the siting of lots in conservation subdivision PUDs [Article V, Section 5.07.6(3)].

Other: RECOMMENDATIONS

SUGGESTED ACTION: In order to help ensure that floodplains throughout the township are considered in the zoning permit review process, require that floodplain locations be delineated on all site plans.

Conclusion

We applaud the water protection measures that exist in Marion Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

Marion Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	15	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	38	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	16	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	3	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	1	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	2	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	2	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	10	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	26	Adequate

SECTION III: Analysis

Chapter 14 Melrose Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Melrose Township, located primarily in the Little Traverse Bay Watershed via the Bear River in Charlevoix County. However, small southern portions of the township are in the Lake Charlevoix Watershed, via the Boyne River. The chapter includes the evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plans for both Little Traverse Bay and Lake Charlevoix.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30
TOTAL SCORE: 13, ADEQUATE

The Melrose Township Land Use Plan was adopted in 2000. Although the land use plan does not have a detailed inventory map of water resources in the township, the Community Profile section does a nice job of describing the wetlands, creeks, and shoreline attributes for the Walloon Lake watershed. It also notes the flow of the Bear River from Walloon to Lake Michigan's Little Traverse Bay. Perhaps most importantly, the land use plan speaks to the importance of water resources to residents and landowners in Melrose Township, and seeks to maintain and protect these resources through several related goals.

Section III of the Land Use Plan, titled "Goals, Objectives, and Actions for Melrose Township," contains the following six sections, with goals that address water resources in some fashion: Water and Wastewater, Natural Resources, Recreation, Boat Launches, Water Front, and Growth Management. For example, the Water and Wastewater goal reads: "Protect and improve the water quality of our lakes and streams to ensure the health and well-being of the Township and the residents." The Natural Resources goal reads: "Preserve, protect and enhance Melrose Township's natural features and environment." (Section III) Each goal is followed by specific objectives that guide efforts to accomplish these goals. These objectives range from specific actions, such as "inventory, map and protect the significant natural features (wetlands, slopes, wooded areas, scenic views, lake and streams) in the Township," to more general recommendations, such as "continue to work with the Walloon Lake Association and Tip of the Mitt Watershed Council to maintain and improve the water quality of Walloon Lake." (Section III)

In addition to the Melrose Township Zoning Ordinance, the recommendations of the Land Use Plan are addressed in two "police power" ordinances, one titled "Boat Launch Ordinance" (Ordinance No. 1 of 2010) and the other titled the "Melrose Township Lake Access and Mooring Ordinance" (Ordinance No.3 of 2010).

Together, these two ordinances regulate the use of township-owned boat launches and public road ends to ensure access to the lake by the public and protect the lake and adjacent property owners from impacts of inappropriate use by boaters.

Master Plan Components: RECOMMENDATIONS

As noted above, the Melrose Township Land Use Plan does a nice job of highlighting the importance of water resources in the township and establishing goals and specific objectives for water resource protection. The following recommendations are offered to help strengthen the Land Use Plan:

SUGGESTED ACTION: Include maps and a comprehensive inventory of the Township's water resources, including Spring Brook, Haymarsh Creek, and the other creeks flowing into the Bear River or Walloon Lake.

SUGGESTED ACTION: Include a discussion of the impacts of stormwater runoff and the importance of minimizing impervious surfaces and otherwise managing stormwater, especially in Walloon Village.

SUGGESTED ACTION: Acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 40, STRONG

The statement of purpose for the Melrose Township Zoning Ordinance includes the following: "to encourage the use of lands and natural resources in the township in accordance with their character, adaptability and suitability for particular purposes." (Article I, Section 1.0) In addition to this general statement, the purpose statement of the Melrose Township Walloon Lake Shoreline Protection Overlay District state that the provisions "are intended to protect the unique and sensitive natural environment of the lake as well as the shore areas adjacent to Walloon Lake in Melrose Township." [Article VI, Section 6.11(C)(1)]

The Melrose Township ordinance includes a fee system that helps to fund administration of the ordinance and a provision whereby the township can require additional fees (set aside in an escrow account by the applicant) to cover the costs of additional professional review when deemed necessary [Art XIII, Section 13.4(B,C)]. From an enforcement standpoint, the ordinance makes it clear that any person violating any provision of the ordinance is guilty of a misdemeanor, and that each day of violation is considered a separate offence. The Zoning Administrator reports offenses to the Township Board, who, in turn, initiates prosecution proceedings [Article XII, Section 13.5 (C,D)].

One important aspect of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. The Melrose Township Zoning Ordinance addresses this in several locations. In provisions to receive a zoning permit in the Walloon Lake Overlay Protection District, the ordinance states that "a zoning permit shall be withheld pending verification that the applicant has received all required county, state or federal permits, including septic and water well permits; soil erosion and sedimentation control permits; wetland permits; flood plain and culvert permits; and/or driveway permits." [Article VI, Section 6.11(C)(2)(b)(2)] This very clear and detailed statement ensures that all requirements of state and federal environmental regulations are addressed on every development proposal that may impact Walloon Lake.

Furthermore, this requirement is stated in general terms for the entire township in Article 13, Section 13.2(e) that requires the following with a zoning permit application: "Evidence that all required federal, state and county licenses or permits have been acquired except building, electrical or plumbing permits." In addition, the Township's development plan review process states that "the Zoning Administrator shall mail one (1)

copy of the Application for Development Plan review and one (1) copy of the development plan to the following agencies” and lists several local agencies and relevant state and federal agencies [Article XI, Sec 11.3(A)(1-9)]. The ordinance further states that the agencies have 15 days after delivery to review and comment on the applications.

Many impacts to water resources from development projects can be avoided or minimized if the developer is able to understand the resources at risk, and design the project around them. One way to do this is to require pre-application meetings for development proposals. Article XIV, Section 14.6 requires that all applicants for planned unit developments (PUDs) shall meet with the zoning administrator or the planning commission “for the purpose of determining the eligibility of the proposed PUD application and to review the procedures and standards for PUD approval.” [Article XIV, Section 14.6]

The key to the implementation of any zoning ordinance is the review process. The effectiveness of the review process is determined by the quality of the information provided to the township by the applicant. The section of the ordinance that deals with development plan review (Section 11) includes two important requirements. First, it states that the application must contain a written narrative stating the anticipated impacts upon the natural environment. It also requires a development plan map that includes the “location and elevations of existing water courses and water bodies, including county drains and man-made surface drainage ways, floodplains and wetlands” and “identification of any significant amenities or unique natural features [Section 11.1(A)(2)(d) and (u)]. Describing and mapping water features helps to serve as the basis for a dialogue between the developer and the township about how to reduce potential impacts on those resources.

PUDs provide the opportunity to combine multiple uses, or cluster development in a way that reduces overall impacts on water resources and the environment compared, to traditional development. The Melrose Township ordinance contains open space minimums and density bonuses designed to concentrate development on one portion of a parcel, while maintaining the rest of the parcel.

In the R-4 (Multiple Family) District, the ordinance stipulates a minimum open space of 50%. Developers who set aside additional open space receive density bonuses on the following schedule:

- Open Space Density 50% - 4-Units per acre;
- Open Space Density 55% - 6-Units per acre;
- Open Space Density 60% - 8-Units per acre;
- Open Space Density 70% - 10-Units per acre
[Article VI, Section 6.3 (E) (2-3)]

The minimum open space requirement for PUDs is 25% of the project area [Article XIV, Section 14.1(C)(2)] and density bonuses are also awarded [Article XIV, Sec 14.1(D)(2)].

Basic Zoning Components: RECOMMENDATIONS

The basic components of Melrose Township’s Zoning Ordinance are very strong and create a sound framework for considering impacts to the township’s water resources from development. The following action is suggested to help strengthen the ordinance:

SUGGESTED ACTION: Require open space that is set aside as part of a PUD to be permanently protected through a conservation easement, deed restriction, or similar permanent legal instrument, and stipulate that open space is to be managed in a natural condition.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 34, ADEQUATE

Two of the most effective ways that local governments can protect water quality is to require setbacks from the water's edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer. Melrose Township employs both of these measures.

For those waters not included in the Walloon Lake Shoreline Protection Overlay District, the "Shoreland Protection Strip" provision in Article IV (General Provisions) requires a setback of 50 feet from the ordinary high water mark and furthermore states that a "strip of land forty (40) feet deep from the normal high water level bordering the body of water...shall be maintained in trees and shrubs in their natural state. Up to 20% of the trees and shrubs may be pruned, however, to afford a view of the water." (Article IV, Section 4.20)

For those properties adjacent to Walloon Lake, Melrose Township has established the Walloon Lake Shoreline Protection Overlay District. Like the Shoreline Protection Strip provisions for other waters, the minimum setback from the ordinary high water mark is 50 feet [Article VI, Section 6.11(C)(2)(c)(1)]. Additionally, the Overlay District requires a lake front vegetative buffer zone 40 feet landward of the ordinary high water mark. The ordinance requires that the buffer remain natural and undisturbed, but allows cutting of vegetation to create a filtered view or to remove fallen, dead, diseased or dangerous trees. Cutting of trees on the parcel is limited to 20 percent (30 percent in the case of dead and dying trees). Cutting or removal of trees and vegetation need to be approved by the Zoning Administrator. In cases where native vegetation does not exist within a buffer zone, the landowner is encouraged to replant the buffer zone with native plant species. [Article VI, Section 6.11(C)(3)(a-c)]

Boating use of inland lakes can impact water quality, wildlife habitat, and the use and enjoyment of the lake by residents and visitors. The two most common ways for local governments to address boating use is through dock restrictions and provisions that address use at road ends.

The zoning district regulations for the R-1 (Single Family Residential District, Lake & Stream) District require that boat docks, landings, and similar structures are subject to state regulations. In addition, "boat docks shall not exceed one (1) per one hundred fifty (150) feet of lot width at the shore" and "not more than three (3) motor powered crafts shall be moored per one hundred fifty (150) feet of lot width." [Article VI, Section 6.0(b)(3-4)] Furthermore, "only one (1) raft will be allowed per one hundred fifty (150) feet of lot width." [Article VI, Section 6.0(b)(3-4)] Although the ordinance does not regulate the size of the dock, it does state that the "the location of any dock must respect adjoining property uses" [(Article VI, Section 6.0(b)(3))] and such considerations are also part of the state permitting review process.

Melrose Township regulates the road ends terminating at the shoreline of Walloon Lake through their police powers. Such ordinances ensure the right of the public to access the lake, while at the same time controlling nuisance activities and regulating potential environmental impacts from boating use. The Melrose Township road end ordinance regulates the placement of docks or other structures; anchoring or mooring a boat for more than five hours; using the road end in a manner that would cause a disturbance or nuisance; picnicking or lounging; removing water from the lake (other than for fire suppression purposes); or launching a boat, unless it is a designated township boat launch (Melrose Township Ordinance No. 3 of 2010). Designated boat launching facilities are managed pursuant to the rules and regulations put forth in the Melrose Township Boat Launch Ordinance (Ordinance No. 1 of 2010).

Walloon Village is an important location for marina services, which often store, use, and generate hazardous materials that could impact water resources. Although Melrose Township's ordinance does not have a provision to address marinas specifically, Article XI (Development Plan Review) does require that those developments where hazardous substances are stored, used, or generated follow these guidelines:

- be designed in such a manner to prevent spills and discharges to the air, ground, or any waters (including groundwater and wetlands);
- provide secondary containment ; and
- restrict the construction of general purpose floor drains [Article XI, Section 11.4 (E)(1-3)]

Such provisions help to ensure a consciousness regarding spills that could impact water resources, and ensure that applicants are aware of state and federal permit processes and that they are followed.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Keyhole, or “funnel,” developments allow direct access to water bodies by people who do not own riparian property, thus increasing human impacts to the lake or stream. Although the Melrose Township ordinance has regulations that state the number of dwellings per front foot, the township may want to consider adopting a provision that specifically addresses funnel or keyhole developments.

SUGGESTED ACTION: Consider regulating marinas to ensure that they do not obstruct navigation or otherwise interfere with the rights of boaters and take measures that prevent the spread of invasive species.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are non-native stands of *Phragmites*, treat those stands if they are in existence, and conduct a follow up inventory (and treatment, if necessary). To do so, we suggest you coordinate your efforts with the Lake Charlevoix Association’s *Phragmites* eradication program.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 5, WEAK

Impervious surfaces limit opportunities for rainwater to naturally percolate into the soils, thus reducing the opportunity for contaminants to be removed from runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

The only provision in the Melrose Township ordinance that helps to encourage reduction of impervious surfaces is Art XI Sec 11.4(D), which stipulates that the traveled portion of the road shall be a minimum of eighteen (18) feet in width with a two (2) foot shoulder on each side. This is a reasonable width, and by specifically mentioning this number, the ordinance encourages road beds of this width. Some local governments have their minimum roadbed width larger, which encourages more impervious surface in the jurisdiction.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities to reduce impervious surfaces in local zoning ordinances. We encourage Melrose Township to consider integrating the following provisions into their ordinance. Additionally, both the Lake Charlevoix and the Little Traverse Bay Watershed Management Plans call for reduction of impervious surfaces to reduce the pollutant load from stormwater runoff into our water resources.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Modify Article VIII, Section 8.2 to allow reductions in the size of parking and loading areas when appropriate, or encourage use of grass parking areas or pervious pavers.

SUGGESTED ACTION: Consider modifying Article XI, Section 11.4(A)(14) to limit private road widths to 18 feet and to allow more narrow rights of way, when appropriate, to reduce mass clearing and grading.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 11, ADEQUATE

Although Melrose Township does not regulate stormwater as a stand-alone ordinance, there are several provisions in the zoning ordinance where stormwater management planning and implementation is required as part of the zoning review process. Article IV, General Provisions, Section 4.14 (Grades), states that “No premises shall be filled or graded so as to discharge surface runoff on abutting premises in such a manner that will cause inconvenience or damage to adjacent properties.” (Article IV, Section 4.14)

A similar general statement is conveyed in Section 14.10 - Standards for PUD Approval; Conditions; Waiver of Standards, which reads: “The planned unit development shall not result in any greater storm water runoff to adjacent property after development, than before. The open space shall be provided with ground cover suitable to control erosion, and vegetation which no longer provides erosion control shall be replaced.” [Section 14.10(A)(11)]

These general guidelines are made more specific in Article XI, which articulates the Standards for Development Plan Approval. Article XI, Section 11.4(A)(3) states that “special attention shall be given to proper development drainage so that removal of storm waters will not adversely affect neighboring properties.” This section goes on to specifically state that “run-off from such developments must run through detention and settling basins before being discharged off development. Such basins shall have the storage capacity to handle all storm water runoff from a four and two tenths (4.2) inch rainfall (a 100 year rain fall event) in a twenty-four (24) hour period.” [Article XI, Section 11.4(A)(3)]

Such requirements, if enforced and monitored, could go far to address the problem of stormwater runoff in Melrose Township. It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that townships cooperate with counties in the enforcement of county-wide standards. Charlevoix County officials are in the process of preparing a comprehensive county-wide Storm Water Control (SWC) Ordinance that would be passed by individual townships, giving the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

While the Melrose Township Zoning Ordinance contains valuable stormwater provisions, there is also great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Melrose Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, utilize the county’s expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Melrose Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 7, ADEQUATE

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

Although Melrose Township does not specifically regulate soil erosion and sedimentation, by requiring zoning applicants to receive soil erosion permits from the Charlevoix County Department of Building Safety the Township effectively ensures that erosion is addressed. Zoning permits for properties within the Walloon Shoreline Overlay district are withheld, pending verification that a Soil Erosion and Sedimentation Control permit has been received by the applicant [Article VI, Section 6.11(C)2(b)(2)]. The Township's website prominently features a notice to inform all applicants that any building or construction within 500 feet of a lake or stream requires a Soil Erosion and Sedimentation Control Permit. In addition, Article IV, Section 4.16 regulates the removal of soil, sand or other material and requires Soil Erosion and Sedimentation Control permits before a project can proceed, and states that soil cannot be taken within 200 feet of adjacent lot lines and the land must be left in a stable condition (Article IV, Section 4.16).

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA)—Michigan's Soil Erosion and Sedimentation Control statute. The Melrose Township Ordinance and website does a nice job of informing potential applicants of the need to receive a Soil Erosion and Sedimentation Control permit from Charlevoix County (the local enforcement agent). To further strengthen this cooperative working arrangement, we recommend the following:

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be maintained and monitored on a periodic basis until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 11, ADEQUATE

According to the Natural Resources section of the township Master Plan, properties within the township rely on private septic systems and drain fields. Limitations for on-site septic systems occur in locations of hydric (wetland) soils and areas where slopes are in excess of 12%. There is a privately owned sewer system located in Walloon Village that could offer limited waste disposal, but it has been contaminated with hydrocarbons and is presently inoperable (Melrose Township Land Use Plan, p. 7).

Section III of the Land Use Plan conveys Melrose Township’s Goals, Objectives and Actions. The water and wastewater goals include providing adequate potable water and sewer services for the community. Objectives and actions include:

- encourage land uses that protect well water from degradation;
- maintenance and upgrade of existing water supplies;
- encourage protection for the surface waters of Walloon Lake and the Bear River from degradation, due to failing septics;
- encourage on-going inspections for septic tanks and systems;
- encourage the development of a sewer district for the Village of Walloon; and
- establish an ordinance to have all septics inspected and repaired, prior to the sale or transfer of existing structures (Melrose Township Land Use Plan, pps. 15, 16)

The township has a long history of working closely with the Tip of the Mitt Watershed Council and the Walloon Lake Association to inventory problem shoreline septic systems, and providing information to landowners on how to properly maintain and upgrade their systems.

The “General Provisions” in Melrose Township’s zoning ordinance have a section that makes it very clear that every building must have a safe and sanitary water supply system, as well as means to dispose of sanitary and industrial wastes. To verify these systems are in place, “the written approval of such facilities by the District Department of Health shall be filed with an application for a zoning permit.” (Article IV, Section 4.11)

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic systems to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21
TOTAL SCORE: 2, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

The Melrose Township Land Use Plan provides a good overview of the importance of wetlands and includes goals that encourage wetland protection. The Melrose Township Zoning Ordinance specifically mentions wetlands in several areas. This includes requiring the location of wetlands on all development plan review applications [Article XV, Section 11.1(A)(2)(d)], and making it clear that wetland permits are required prior to issuance of a zoning permit in the Walloon Lake Shoreline Overlay District [Article VI, 6.11(C)(2)(b)(2)].

Wetlands: RECOMMENDATIONS

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances to regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Although it is implied that wetland permits are required prior to zoning approval, the only place this is clearly stated is in the Walloon Lake Shoreline Overlay District. Consider amending the ordinance to make it clear that wetland permits are required prior to any zoning permit on a wetland parcel is issued, regardless of the zoning district.

SUGGESTED ACTION: Consider establishing a wetland setback similar to shoreline setbacks. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.



Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important. The Melrose Township ordinance requires that state and federal permits be provided for any facilities or uses where hazardous substances are stored, used or generated, prior to local township approval for that use. Although there are many other activities that can impact ground water, such as individuals draining their oil onto the ground when changing the oil in their automobiles, requiring state and federal permits for proposed uses that involve hazardous materials is a good first step for protecting ground water in Melrose Township.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous material is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Importantly, Melrose Township participated in the state Wellhead Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step and protecting these precious drinking water sources.

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 30, ADEQUATE

There are no additional provisions in Melrose Township's zoning ordinance that contribute to water resource protection, such as a floodplain ordinance. However, it is important to note that floodplains and steep slopes are required to be identified on development plan maps. There are no critical dunes in the township. We have no additional recommendations for this element.

Conclusion

We applaud the good water protection measures that exist for Melrose Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Melrose Township

Category	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	13	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	40	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	34	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	5	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	11	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	7	Adequate
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	11	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	2	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	9	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	30	Adequate



SECTION III: Analysis

Chapter 15 Norwood Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Norwood Township in Charlevoix County. Norwood is situated along the beautiful shoreline of Lake Michigan, where waters drain directly into the Great Lakes. It is also blessed with many inland water features, including Inwood Creek, McGeach Creek, and Whiskey Creek; Harwood Lake; and the lovely Fisherman's Island State Park. This chapter includes the evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which is relevant to Norwood Township.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 7, WEAK

The Norwood Township Master Plan is dated 2008. Since it is recommended that Master Plans be updated every five years, an update should be scheduled for 2013. The plan does not specify the watershed in which the community is located. Wetlands are noted in the Community Profile, Section II. A map in the Generalized Land Use Patterns also shows lakes, streams and wetlands. There is a goal statement related to water protection in Section IV, Sensitive Overlay District: to maintain environmentally sensitive areas such as wetlands and creeks.

Master Plan Components: RECOMMENDATIONS

We understand that the township has undergone some major planning and zoning battles in recent years, and that a review is being considered of the Master Plan and Zoning Ordinance. We support such a review, and have the following suggestions for the next update of the Master Plan:

SUGGESTED ACTION: In the next Master Plan update, specifically mention the watersheds of the township. Also, clearly articulate a focused goal statement to protect the valuable water resources in the township.

SUGGESTED ACTION: In the next Master Plan update, note the importance of ground water seeps and springs that feed the water resources in the township.

SUGGESTED ACTION: When updating the township plan, include comments on the problems associated with impervious surfaces and identify stormwater management as an important community priority.

SUGGESTED ACTION: In the next plan update, acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources.

SUGGESTED ACTION: When updating the township plan, identify wildlife corridors and recommend use of conservation easements or other measures to permanently protect wildlife corridors that occur on private land.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 36, ADEQUATE

The Norwood Township Zoning Ordinance includes the following statements of purpose to protect water and natural resources:

- Meet the needs of the citizens for food, fiber, energy, and other natural resources (Art I Sec 1.02)
- The land uses in the Conservation Reserve District are intended to promote the proper use, enjoyment and conservation of water, land, topographic and forest resources of the township particularly adapted to recreational and forest uses (Art V Sec 5.02.1)

The Zoning Ordinance also includes the following: “To assist in defraying the costs of investigating, reviewing, and administering zoning applications, appeals, rezoning requests from individual property owners, and other types of decisions which result in extra costs to the Township, the Township Board may from time to time adopt by resolution a fee schedule establishing basic zoning fees...” (Art VIII Sec 8.05) Additionally, the ordinance has methods in place for enforcement. The Zoning Administrator is authorized to issue municipal civil infraction citations directing alleged violators to appear in court. In addition to enforcing the ordinance as a municipal civil infraction, the township may also initiate proceedings in Circuit Court to take action against violations. [Art VIII Sec 8.07.3(2-3)]

One important aspect of the local zoning permitting process, in terms of water protection, is to ensure coordination with county, state, and federal permits or approvals. The Norwood review process does not do so, but it should. In order to simplify administration, condition local approval on the applicant receiving necessary state and federal permits before final site plan approval or a zoning permit is granted. This is the only way for the applicant to prove that the proposed project conforms to applicable state and federal statutes.

Importantly, the procedure for application and approval of a Planned Unit Development (PUD) permit includes one or more informal conferences between the applicant, Township Planning Commission designee, and Zoning Administrator [Art VII Sec 7.03(9)(c) (1)]. This is required for PUDs only, but should be made available for all local reviews. Pre-application meetings are an excellent way to ensure that the protection of water resources is considered, early on in the development process.

The township Zoning Ordinance also requires Site Plan Review for:

- A. All new uses except one-family residential units.
- B. Expansion or renovation of an existing use, other than 1 or 2-family residential where floor space increases > 25%.
- C. Changes of use for an existing structure or lot.
- D. Other uses as required by this Ordinance.
- E. Establishment via the Land Division Act, Subdivision Control Act, Condominium Act or any combination. [Art VI Sec 6.01(1)(A-E)]

The location of existing environmental features, such as streams, wetlands, shorelands, and other unusual environmental features are required to be noted in site plans [Art VI Sec 6.01(2)(f)].

The PUD process requires open space. Fifty percent of the gross project area must be open space, and is required to be protected under a conservation easement or an equivalent recorded legal instrument acceptable to the township. The full extent of common open space area dedicated for use by residents, or the public, must also be shown on the site plan [Art VII Sec. 7.03.(9)(B)(3)(l)].

Additionally, flexible site design criteria or incentives are available to encourage developers to include open space or cluster design provisions. Projects must provide a minimum of sixty percent dedicated open space in order to be considered for bonus dwelling units. This is based on the following sliding scale:

Percent Dedicated Open Space / Percent Dwelling Unit Bonus

60% / 5% more dwelling units

70% / 10% more dwelling units

80% / 15% more dwelling units

Basic Zoning Components: RECOMMENDATIONS

The Norwood Township Zoning Ordinance has some very good provisions for water protection. To strengthen these, we suggest the following:

SUGGESTED ACTION: Specifically require that applicants must receive approval for all applicable county, state, and federal permits (such as soil erosion control, wetlands, inland lakes and streams, etc.) prior to receiving a township zoning permit.

SUGGESTED ACTION: Pre-application or pre-construction meetings can help to identify water resource protection needs and opportunities early in the development process, thereby avoiding potential problems and saving money. Consider including a pre-application meeting with all applicants as part of the zoning application process, not just for PUDs.

SUGGESTED ACTION: Require site plan review for all activities, even single family residences, on lakeshore properties. Such review will help to ensure that impacts to water resources are avoided as much as possible.

SUGGESTED ACTION: Consider requiring open space to be managed in a natural condition, not just to qualify for a density bonus. Restrict open space to low-impact uses. In so doing, the township will ensure that these developments are contributing to water resource protection.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 24, ADEQUATE

Two of the most effective ways that local governments can protect water quality and shoreline habitat through zoning is to require setbacks from the water's edge and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer zone. Norwood Township uses both of these tools to protect their Great Lake coastline and inland stream banks.

For lots that border a lake or stream, the minimum structure setback on the waterfront side is 50 feet from the ordinary high water mark [Art V Sec 5.08(a)]. Greenbelt is another word used to mean a shoreline protection strip, under the right conditions. In Norwood Township, shoreline greenbelts must include all the land area located within 50 feet of the ordinary high water mark of a lake or stream abutting or traversing the property

in question (Art III Sec 3.14). The township also requires natural vegetation cover in the greenbelt, including trees, shrubs or herbaceous plants and they shall be maintained on a least 70 percent of the lake or stream frontage. An exception can be made when a landscape plan is submitted and approved by the Planning Commission. Beach sand, gravel, cobblestone or rock may be substituted for vegetated areas where such materials naturally exist [Art III Sec. 3.14(7)]. Invasive plants are not specifically prohibited from being used in the greenbelt.

Norwood Township has a stand-alone Phragmites Ordinance adopted in 2009. It covers doing a phragmites inspection; reporting the results; gaining access to property to do the inspection; consent of property owners to treat; a public hearing process; obtaining required permits; treatment process; and the cost of doing all this.

Any dock in the township must comply with setback requirements for the riparian line, as determined by the state law [Art III Sec 3.14(1)]. Other than that, there are no dock regulations in place. Marinas are subject to Special Approval under Art V Sec 5.06.2 (12), but only minimal requirements are spelled out in the ordinance. This is because there are no marinas that exist, currently, and limited opportunity for marinas in the future.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Specify that invasive plants are prohibited from being used in the greenbelt.

SUGGESTED ACTION: Consider using a dock lot minimum frontage and specifying the size of docks allowed so as not to interfere with the rights of other waterfront owners, or negatively affect the character of the natural shoreline.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 8, WEAK

The more a local government can do to reduce impervious surfaces, the better for water quality. As noted in the Grand Traverse Bay Watershed Management Plan, impervious surfaces (streets, roofs, sidewalks, etc.) generate much more stormwater runoff than natural forested, or even agricultural, land uses. That polluted runoff discharges directly into lakes and streams from pavement and rooftops, and includes bacteria from pet and animal wastes, fertilizer, oil and grease, sediment, heavy metals, salt, etc.

To reduce impervious surfaces, a community should increase the retention or restoration of native vegetation in riparian areas and in open spaces, and install simple and effective solutions, ranging from rain barrels and rain gardens, to engineering approaches that treat stormwater that has traveled across impervious surfaces, before it discharges into the water.

In Norwood Township, PUD Site Design Standards state a maximum impervious surface limit to 20% of project area; 15% is recommended [Art VII Sec 7.03 9 (k)]. The permanent right-of-way easement for private roads is stated as a minimum of 40 feet in width, unless additional right-of-way is required for adequate construction. It should be stated as a maximum of 45 feet, where feasible. On a positive note, as stated above, flexible site design criteria are available to encourage developers to include open space or cluster design provisions. However, more could be done to limit the creation of new impervious surface in the township.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Grand Traverse Bay Watershed Management Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater running into our water resources. We encourage Norwood Township to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Consider reducing parking space dimensions and setting them as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot. Provide incentives for using Low Impact Development (LID) techniques to mitigate the impacts of impervious surfaces, in exchange for a larger building footprint.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 19, STRONG

Norwood Township has strong protections in place regarding stormwater. Art III Sec. 3.18 notes: Stormwater drainage in excess of natural conditions shall be retained on site. This provision may require stormwater retention ponds where appropriate. An exception may be made for water leaving the site via an adequately sized existing stormwater ditch, stormwater pipe or through other stormwater facilities that will be developed at the same time as the proposed new use. Stormwater management efforts shall be consistent with the provisions of the Charlevoix County Stormwater and Soil Erosion Control Program. In the case of conflicting regulations, between the Township Zoning Ordinance and the Charlevoix County Stormwater and Erosion Control Program, the more stringent of the two shall apply. Written approval from the Michigan Department of Transportation (MDOT) shall be required for an additional site run-off directed into a state trunkline ditch, i.e.US-31.

Additionally, "...to protect soil resources, adjacent properties, public roads, public watercourse, and to provide for adequate drainage of surface water, the following rules shall apply to all construction activities requiring permits pursuant to this Ordinance.

1. Clearing of a Site: Stripping and removal of topsoil from the site is prohibited.
2. Flow Restrictions: The final grade surface of ground areas surrounding a building or structure shall be designed and landscaped such that surface water flows away from the building or structure and is managed in a manner which avoids increase flow (volume or speed) onto adjacent properties or public roads, the erosion or filling of a roadside ditch, the blockage of a public watercourse or creation of standing water over a private sewage disposal drainage field.
3. Elevation Restrictions: Filling a parcel of land with earth or other materials to an elevation above the finished grade of adjacent development land or the natural grade for adjacent undeveloped land is prohibited without written approval of the Planning Commission." (Art III Sec 3.32)

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that townships cooperate with counties in the enforcement of county-wide standards. As noted in Chapter 1, Charlevoix County officials are in the process of preparing a comprehensive county-wide Storm Water Control (SWC) Ordinance to replace the one that was rescinded. The new one must be passed by individual townships, giving the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

While the Norwood Township Zoning Ordinance contains valuable stormwater provisions, there is also great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the SWC Ordinance and Intergovernmental Agreement, and present it to Norwood Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, utilize the county's expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in Norwood Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 4, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

In the Norwood Township Zoning Ordinance, Art VIII Sec 8.02(1) notes the following: "No building or structure subject to the provisions of this Ordinance shall hereafter be erected, structurally altered, reconstructed, used, or moved, nor shall any excavation of land commence until a Zoning Permit application has been filed with the Township Zoning Administrator and a Zoning Permit has been issued by the Zoning Administrator."

As noted in Chapter 1, counties are mandated to administer and enforce Part 91 of the state Natural Resources and Environmental Protection Act 1994 PA 451, as amended. Charlevoix County has two state-recognized agencies that do so: The Soil Erosion Control Officer and the County Road Commission.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local units require all earth movement activities associated with development to follow BMPs to control erosion and ensure that sediment-laden runoff does not enter waterways. Coordination between the township and the county is essential.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Charlevoix Township.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 10, ADEQUATE

The Norwood Township Zoning Ordinance states that all water supply and sanitary sewage disposal systems, either public or private, are subject to compliance with District Health Department sanitary code requirements. Plans must be submitted to and approved by the responsible agencies, and written approval by the District Health Department must be filed with the application for a Zoning Permit (Art III Sec 3.17). The township also prohibits septic tanks and septic system filtration fields from being located in a greenbelt [Art III Sec 3.14 (6)].

In addition to ensuring compliance with the local health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic systems to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae. The Grand Traverse Bay Watershed Management Plan emphasizes education of citizens about the importance of septic system maintenance in order to reduce the amount of harmful nutrients in our waters.

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 3, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

As noted earlier, wetlands are required to be noted in site plans and for PUD design standards. Other than that, wetlands are not given much attention in the Zoning Ordinance.

Wetlands: RECOMMENDATIONS

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances that regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Ensure that all state and federal wetland statutes are followed and that wetland permits are received before Norwood Township zoning permits are issued.

SUGGESTED ACTION: Consider establishing a wetland setback similar to shoreline setbacks. This would protect wetlands and be simple to administer, in the short term. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 8, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important. The Norwood Township Zoning Ordinance has the following provisions in place to protect ground water that apply to persons, businesses, or entities that use, generate, or store hazardous substances in quantities greater than 25 gallons, or 220 pounds per month:

1. Sites at which hazardous substances and polluting material are stored/used/generated shall be designed to prevent spills or discharges to ground water, surface water, or wetlands, among other features.
2. Secondary containment measures must be in place.
3. Floor drains are allowed only if connected to a public sewer system, an on-site holding tank, or a system authorized through a state ground water discharge permit.
4. State and federal agency requirements for storage/ spill prevention/ record keeping/ emergency response, transport and disposal of hazardous substances and polluting materials shall be met. No discharges to ground water are allowed. [Art III Sec 3.19(1-4)]

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Compile and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

SUGGESTED ACTION: Since many common activities can impact ground water quality, provide ground water education materials to township residents.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 25, ADEQUATE

Norwood Township participates in the National Flood Insurance Program [FEMA Flood Ins Program CID #: 260769 NORWOOD, TOWNSHIP OF CHARLEVOIX COUNTY Map (NSFHA) Emer-Reg Date 09/18/87]. The township PUD Design Standards require land within the 100 year to remain unencumbered by any principal or accessory buildings and structures [Art VII Sec 7.03(9)(b)(3)(h)].

There are critical dunes in the township, primarily in Fisherman's Island State Park that are on public land, under state jurisdiction. The township should clarify, if unknown, exactly what critical dunes are under their jurisdiction, and work with the state to identify any needed protections. If there are dunes to protect, the Zoning Ordinance should be amended to do so.

We have no additional recommendations for this element.

Conclusion

We applaud the water protection measures that exist in Norwood. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Norwood Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	7	Weak
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	36	Adequate
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	24	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	8	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	19	Strong
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	4	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	10	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	3	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	8	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	25	Adequate



SECTION III: Analysis

Chapter 16 Peaine & St. James Townships

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Peaine and St. James Townships in Charlevoix County. These townships are located on Beaver Island, a special, remote island in the middle of Lake Michigan with a year-round population of 650 people, accessible by ferry, boat, or airplane. In the spring, summertime, and fall, visitors swell the population of the island to swim the beautiful beaches, view and hunt wildlife, fish, hike, and generally enjoy themselves.

Beaver Island waters drain directly into Lake Michigan, or into numerous small inland lakes, including Font Lake, Barney's Lake, Fox Lake, Greens Lake, and Lake Geneserath. This chapter includes evaluation scores, recommendations, and suggested actions.

Additionally, since both townships use the same Master Plan and Zoning Ordinance, we will refer to them simply as "the townships" or "Beaver Island" below.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30
TOTAL SCORE: 16, ADEQUATE

Peaine and St. James Townships both adopted the Beaver Island Master Plan in June, 2006. This document, as well as the jointly adopted Zoning Ordinance, serves as a good example of intergovernmental cooperation. However, Master Plans should be updated every five years, and as such, this one was due for a review this year. If not already scheduled, that review should be done as soon as feasible.

The Master Plan notes that Beaver Island is the largest island in Lake Michigan. Although the plan does not provide a complete inventory of the streams, inland lakes, and wetlands, it does provide a list of the lakes and a description of wetlands on the island. In addition, the plan includes the 1992 Land Cover Map, which shows lakes and streams, and the general location of wetlands on the island. The Master Plan does not identify the relevant watersheds of the island.

The Beaver Island Master Plan has several specific and focused goal statements that seek to protect aquatic habitats and water quality. Chapter Two of the Master Plan features ten Guiding Principles. Aquatic habitats are noted in Principal #2, Protect and Preserve the Environment: "Streams, lakes, wetlands, woodlands,

beaches, shorelines, critical dunes, steep slopes, wildlife habitat, and view sheds also need to be preserved and protected or prudently cared for because they are the natural features that shape and define this place. They are continuously connected systems from one property to another that are essential to the health of the natural landscape while maintaining the island's natural beauty. The intent is to protect these natural elements." (Beaver Island Master Plan, Chapter 2, Page 2)

Water quality is the focus of Principal #9: "One of the most crucial elements of a location is water quality; this is especially the case on an island. The quality of water which people drink is fundamental to their standard of living. If a place does not have high water quality, the population base can disappear. The water quality of the lakes and streams directly affects the natural environment. If the water quality is degraded, the environment is directly impacted. It is important that prior to the approval of developments and other land uses, the impact to ground water and the watersheds (surface water) is investigated." (Beaver Island Master Plan, Chapter 2, Page 4)

Beaver Island natural resource protection goals are also an important part of Chapter 5, Future Land Use Plan. The chapter begins with a description of the features to protect. Water-related features include shorelines, public open space, critical dunes, and sensitive features such as wetlands around the inland lakes on the Island. Chapter 5 goes on to provide a future vision and some protection strategies for each feature. For example, the protection strategies for shoreline preservation include the following:

- Establish a "no soil disturbance" zone along the water's edge.
- Maintain a natural vegetative buffer area along the water's edge.
- Regulate the design of development so impervious surfaces such as driveways, sidewalks, and rooftops drain away from the water's edge.
- Limit size and number of structures within this boundary.
- Regulate keyhole developments, but allow designated areas for public access for recreational uses.
- Use zoning to establish setbacks and development standards for these areas. (Beaver Island Master Plan, Chapter 2, Page 2)

Master Plan Components: RECOMMENDATIONS

The Beaver Island Master Plan does a good job of highlighting the importance of water resources for the future of the island, and establishing a vision, goals, and specific objectives for water resource protection. The following recommendations are offered to help strengthen the Master Plan, the next time it is updated.

SUGGESTED ACTION: Identify and map the watersheds of the island.

SUGGESTED ACTION: Add a description of the creeks that flow on Beaver Island and acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

SUGGESTED ACTION: Add a description of the threatened and endangered shoreline plants that occur on Beaver Island, including the Lake Huron Tansy, Michigan Monkey Flower, and Pitcher's Thistle. These plants are an important part of Beaver Island's natural heritage.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 44, STRONG

The Beaver Island Zoning Ordinance has a statement of purpose: to encourage the use of lands and natural resources in accordance with their character, adaptability and suitability for particular purposes (Art I Sec 1.0). It includes a fee system that helps to fund administration of the ordinance [Art XII Sec 12.08 (A)]. It also has an enforcement process. The township Zoning Administrator is designated as the authorized official to issue civil infraction citations to alleged violators of the ordinance [Art XII Sec 12.10 Enforcement (C)].

One important aspect of the local zoning permitting process is to ensure that the issuance of permits is coordinated with county, state, and federal permits or approvals. In the Beaver Township Zoning Ordinance, the review process is coordinated with the receipt of other applicable county, state, and federal permits. The Planning Commission may require an applicant to submit one copy of the application for development plan review, along with any applicable maps and changes by the Planning Commission, to county officials, the Health Department, state and federal agencies. This includes the Charlevoix Erosion and Sedimentation Control Officer [Art. XIV Sec 14.03(a)].

The Zoning Ordinance requires site plan review, called a Development Plan Review [Art. XIV Sec 14.01(a)]. The Planned Unit Residential Development (PURDs) Overlay “is intended to be employed as a vehicle to arrange housing in clusters and other patterns that permanently preserve large areas of natural open space and the Township’s rural character by allowing for variations in density, lot area, lot width and setback.” [Art XVI Sec 16.00] It is also intended to be flexible and provide incentives, such as density bonuses, in exchange for extraordinary efforts to preserve large areas of the site. In addition to preserving the Island’s rural character, it also describes preservation of land in its “existing natural, topographic, and wooded state...” Such efforts protect hydrology that feeds creeks, streams, wetlands, ground water and lakes, and provides water quality protection for the waters of the island and Lake Michigan.

Density bonuses of up to 100 percent may be considered if the Planning Commission finds six of eight potential additional requirements to be satisfied. These include preserving at least fifty percent of the project site area in permanent open space; avoiding the grading and development of steep slopes; and protecting an upland buffer of at least 100 feet of native vegetation along water bodies and critical dunes [Art XVI Sec 16.03(b)].

A PURD must comply with the requirements and standards of the County Drain Commissioner and the County Soil Erosion Control Officer regarding grading, storm water management, and soil erosion control. [Art XVI Sec 16.05(b)(4)(d)]. It must also retain a minimum of twenty five percent of the project site as permanent open space [Art XVI Sec 16.04(a) (d)]. Lands used to meet the minimum area requirements for designated open space prohibit: roads and road rights-of-way or easements; required front, side, and rear yards of buildings; hard surfaced recreational facilities such as tennis and basketball courts; or permanently submerged lands including marinas and submerged wetlands. Not more than fifty percent of the minimum required open space shall include wetlands.

Additionally, the ordinance requires the applicant or agent of the applicant to be present at any meeting considering the Development Plan [Art XIV Sec 14.02 (a)]. In the Critical Dune (CD) District, the Planning Commission may require additional information to evaluate the proposed development, including an environmental assessment [Art VI Sec 6.14(g)(3)(j)].

The basic components of the Beaver Island Zoning Ordinance are very strong, and create a sound framework for considering impacts to water resources from development. We have no additional recommendations for this element and applaud the island townships for their work.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 42, STRONG

Two of the most effective ways that local governments can protect water quality is to require setbacks from the water's edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer. Beaver Island townships employ both.

Except for the Marine Related District, no building or structure is allowed to be closer than 50 feet from the high water elevation of inland lake, stream, or creek (Art IV Sec 4.21). Additionally, shoreline protection strips are required by preserving at least 2/3 of the trees and shrubs in a strip twenty-five feet landward from the ordinary high water elevation of Lake Michigan or the high water mark on any lake, stream or creek (Art IV Sec 4.21).

The Zoning Ordinance also regulates dock lot minimum frontage. Boat docks shall not exceed one per one hundred feet of lot width. Additionally, no dock shall be located in a manner that will impede the use of the lake by adjoining properties [Art XIV Sec 14.04(c)(4)(3-5)]. No more than three motor powered crafts shall be moored per one hundred feet of lot width. Only one raft is allowed per one hundred feet of lot width [Art XIV Sec 14.04(c)(4-5)].

The townships also regulate marinas: Land, buildings, docks or other structures in the Marine Related District may be used for designated purposes such as commercial docks, charters, and marinas [Art VI Sec 6.12(b) Marine Related District Use Regulations (1-12)]. This district is intended to accommodate businesses and facilities that have a relationship to boating [Art VI Sec 6.14(a)]. While there are requirements in the same section for storage of petroleum or chemical products only upon written permission from the township Planning Commission, this could be improved.

Finally, the work of Beaver Island townships to manage the invasive reed *Phragmites* along its shorelines should be mentioned here. To be clear – it was groundbreaking. The *Phragmites* ordinance for Beaver Island, passed in 2008, has been used dozens of times across the state, serving as a model for other townships and counties. The effort on Beaver Island was a partnership of concerned and active citizens, local government, and businesses to take effective action against this invasive species. We thank those people for such forward thinking and hard work, which had benefits that reached far beyond the island borders.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Specify that invasive plants are prohibited from being used in the shoreline protection strip.

SUGGESTED ACTION: Per the island Master Plan, consider including preventions against the practice of keyhole/funneling that still allow designated areas for public access for recreational uses.

SUGGESTED ACTION: Consider some additional steps to better regulate marinas to ensure water protection. Restrict boat repair and maintenance activities to clearly marked areas, in order to prevent debris from falling into the water and prevent invasive species. Require fueling stations to have spill containment equipment that is stored in a clearly marked location. Require a spill contingency plan, posting emergency phone numbers in a prominent location. Require signs of leakage or spillage to be investigated immediately, and undertake cleanup in accordance with applicable Best Management Practices (BMPs).

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 5, WEAK

Impervious surfaces prevent rainwater and snowmelt from naturally percolating into the soils. This reduces the opportunity for contaminants to be removed from stormwater runoff, before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

Even though the Beaver Island Master Plan notes the importance of designing impervious surfaces so that driveways, sidewalks, and rooftops drain away from the water's edge, this is not yet reflected in zoning efforts. However, Article VIII, Off-Street Parking, does include this statement: "The Planning Commission may reduce or eliminate the parking requirements as part of a Development Plan review upon a finding by the Planning Commission that the parking required by this Ordinance is not needed and the reduction or elimination of parking will not be detrimental to surrounding properties." [Art VIII Sec 8.01 (d)]

Impervious surfaces are also mentioned in the CD District: The total impervious surface area of the site (structures, paved areas, patios, etc.) shall not exceed 10% of the total area of the lot, except non-conforming lots where it shall not exceed 30% total lot area [Art VI Sec 6.14 (4) Review Standards (e)]. This is good, but impervious surfaces should be addressed in other ordinance sections, as well.

Impervious Surfaces: RECOMMENDATIONS

SUGGESTED ACTION: In addition to the CD District, consider limiting impervious surfaces to no more than 15% of the total lot in all zoning districts, including residential. Provide incentives for using Low Impact Development (LID) techniques to mitigate the impacts of impervious surfaces, in exchange for a larger building footprint.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Consider reducing parking space dimensions and setting them as a maximum. Also consider reducing the number of required parking spaces and setting the number as a maximum number, as opposed to a minimum. Also, consider allowing grass or turf parking, where appropriate.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 14, ADEQUATE

There are provisions of the Beaver Island Zoning Ordinance where stormwater management planning and implementation is required as part of the zoning review process.

In the R2, Single Family Residential District: No subsoil footings drain system shall empty directly into any water body. Also: the applicant is required to ensure that new or altered structures will not be damaged by flooding or flood hazards and that excessive soil erosion, adverse changes in natural drainage, or unnecessary destruction of natural features will be avoided [Art VI Sec 6.0(f)(2-3), Sec 6.01(f)(2-3), Sec 6.04(f)(2-3)].

Additionally, as noted above, the PURD plan must comply with requirements and standards of the County Drain Commissioner and the County Soil Erosion Control Officer regarding grading, storm water management, and soil erosion control [Art XVI Sec 16.05(b)(4)(d)]. This is good, but it should apply to all development proposals in all zoning districts. The proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that the townships continue to cooperate with the county in the enforcement of county-wide standards.

As noted in Chapter 1, Charlevoix County officials are in the process of preparing a comprehensive, county-wide Storm Water Control Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in most approved Watershed Management Plans. To this end, we encourage the following actions.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the Storm Water Control (SWC) Ordinance and Intergovernmental Agreement, and present it to Peaine and St. James Townships for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, continue to utilize the county's expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams on Beaver Island.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 4, WEAK

By volume, sediment is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

As noted several times above, PURDs are required to comply with requirements and standards of the county, in relation to soil erosion control. Docks in the Marine Related District zone shall be constructed to insure that the structure does not in any way cause erosion [Art VI Sec 6.12 (f)(5)].

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA)—Michigan's Soil Erosion and Sedimentation Control statute. The Beaver Island Zoning Ordinance notes that the Planning Commission may require applicants to receive a Soil Erosion and Sedimentation Control permit from Charlevoix County [Art. XIV Sec 14.03(a)]. To further strengthen this cooperative working arrangement, we recommend the following:

SUGGESTED ACTION: Specifically require that all proposed earth change activities within 500 feet of a lake, stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Peaine or St. James Township.

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be maintained and monitored on a periodic basis until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 9, ADEQUATE

Chapter 6 of the Master Plan notes that properties on Beaver Island are served by well and septic systems. Article IV in the Zoning Ordinance notes the following: All buildings shall provide water supply and sewage disposal facilities. The written approval of such facilities by the Northwest Michigan Community Health Agency shall be filed with an application for a zoning permit (Art IV Sec 4.13).

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: Consider requiring that a septic system be located at least 100 feet from a wetland or open water feature, and specify a minimum isolation distance from all nearby wells.

SUGGESTED ACTION: Consider adopting a “point of transfer” septic inspection ordinance.



Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 2, WEAK

Michigan's wetland law specifically authorizes local governments to adopt wetland protection ordinances that provide an additional layer of protection to wetlands that fall under state jurisdiction and provide protection to wetlands not protected by the state statute. In addition to adopting and implementing a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

The site plan review process notes the Planning Commission may require the locations of wetlands to be included in the Development Plan Review [Art XIV Sec 14.04 e)]

Wetlands: RECOMMENDATIONS

There are a few steps that the Beaver Island townships could consider in order to better protect existing wetland resources.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Consider setting a wetland setback provision for all zoning classifications in the townships. This would protect wetlands and cost less to administer than adopting a local wetland ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

SUGGESTED ACTION: Specifically require applicants seeking zoning permits to secure applicable state or federal wetland permits before issuing a local zoning permit.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important.

As noted in the shoreline section above, there are requirements in place for storage of petroleum or chemical products in the Marine Related District (Art VI Sec 6.12). Additionally, for any developments "where hazardous substances are stored, used or generated; said developments shall be designed in such a manner to prevent spills and (unless permitted by state or federal statute) discharges to the air, surface or the ground, ground water, lakes, streams, rivers or wetlands." [Art XIV Sec 14.04(d)(1)]

Storage of hazardous materials is regulated by the state under Part 5 Rules issued for Part 31 Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Ground water is vital for not only drinking water, but also to feed tributaries, seeps, springs, and wetland resources with fresh water supplies to support those ecosystems, including important recreational fisheries.

SUGGESTED ACTION: Compile and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

SUGGESTED ACTION: Since many common activities can impact ground water quality, provide ground water education materials to township residents.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 35, STRONG

As already noted in the discussion above, Critical Dunes are regulated by the townships on Beaver Island: “Critical Dunes District - These lands include the entire critical dune area as designated by the Michigan Department of Natural Resources pursuant to Part 353 of the Natural Resources and Environmental Protection Act, being the Sand Dunes Protection and Management portion of Act 451 of the Public Acts of 1994, as amended, and to such other lands as locally designated and depicted thereon.” [Art VI Sec 6.14(a)] Development permits proposed in this area are subject to close coordination and approval by the state.

Setbacks are in place, in coordination with state law [Art VI Sec 6.14(C)]. “Lands that are within 250 feet of a critical dune area, that are determined by the Planning Commission to be essential to the hydrology, ecology, topography, or integrity of a critical dune area, shall also receive all the protection afforded to critical dunes in this zoning district, even if not so depicted on the zoning map.” [Art VI Sec 6.14(a)] Impervious surface limits are also in place [Art VI Sec 6.14 Critical Dunes (4)(e)]. We have no additional recommendations for this element.

Conclusion

We applaud the very good water protection measures that exist in the townships on Beaver Island. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Peaine & St. James Townships

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	16	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	44	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	42	Strong
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	5	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	14	Adequate
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	4	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	2	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	9	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	35	Strong

SECTION III: Analysis

Chapter 17 South Arm Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Charlevoix County's South Arm Township, located in both the Lake Charlevoix Watershed and the Elk River Chain of Lakes Subwatershed of Grand Traverse Bay. Prominent water features in South Arm Township include Lake Charlevoix, the Jordan River, Deer Creek and Patricia Lake, Six Mile Lake, and many small streams and riparian wetlands. This chapter includes evaluation scores, recommendations and suggested actions. It also relates suggested actions to the existing Lake Charlevoix Watershed Management Plan.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 25, STRONG

The updated Master Plan for South Arm Township is currently in draft form; the distribution draft is dated November 2010. Chapter 4 (Natural Resources) of the draft Master Plan does a nice job of inventorying water resources in the township, including specifically identifying watersheds, describing the extent of wetlands in the township, and discussing ground water (pp. 4-6 to 4-10). Figure 4-2 shows the major surface water resources and the major watersheds (p.4-8). The 2010 Existing Land Use Map shows all water features, including wetlands (p.5-2). The Natural Resources chapter of the Plan also acknowledges that in 1972, the Jordan River was the first river to be designated wild and scenic under the state's Natural Rivers Act, and indicates that the natural river zoning regulates activities within 400 feet of the river's edge.

The Community Goals and Objectives section of the Master Plan addresses water quality and aquatic habitat in several places. For example, one of the objectives listed under the residential goal addresses the potential problems related to keyhole development: "manage waterfront development, including restricting the use of waterfront lots as waterfront access sites for off water properties, in order to minimize the associated negative impacts on water quality." (p. 6-4)

The "Natural Environment" goal reads, "Protect and preserve the natural environment by protecting groundwater, surface water, highly erosive areas, woodlands, wetlands, open space, fish and wildlife." (p. 6-7) It contains many objectives that address the range of water quality issues, including:

- Encourage a land use pattern that is oriented to the natural features and water resources of the area by evaluating type and density of proposed developments based on soil suitability; slope

of land; potential for ground water and surface water degradation and contamination; compatibility with adjacent land uses; and impacts to sensitive natural areas like wetlands, greenways and wildlife corridors.

- Limit and control the density and type of residential and commercial development adjacent to lakes, ponds, streams, and wetlands.
- Maintain greenbelt areas adjacent to lakes, ponds, streams, and wetlands.
- Implement groundwater protection and stormwater management regulations in the Township's Zoning Ordinance, while encouraging the continued natural use of wetlands as groundwater recharge, stormwater filtering and stormwater holding areas.
- Limit high density development on steeply sloped areas. Require erosion control measures where construction is permitted. Require slope stabilization and re-vegetation on disturbed slopes or in extraction areas. (p.6-7)

Master Plan Components: RECOMMENDATIONS

The South Arm Township draft Master Plan does a wonderful job of highlighting the importance of water resources in the township and establishing goals and specific objectives for water resource protection. The following recommendations arise from both the Lake Charlevoix Watershed Plan and are offered to help strengthen the draft Master Plan before it is adopted:

SUGGESTED ACTION: In the discussion of the stormwater impacts and how to address them, mention the importance of minimizing impervious surfaces in new construction to reduce runoff and increase infiltration.

SUGGESTED ACTION: Acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

Basic Zoning Components

POSSIBLE SCORE: 54
TOTAL SCORE: 43, STRONG

The overall statement of purpose for the South Arm Township Zoning Ordinance contains three elements that address water resource protection:

- To promote the public health, safety, and general welfare.
- To encourage the use of lands in accordance with their character and adaptability, and to limit the improper use of land, and
- To conserve natural resources and energy. [Article I, Section 1.02 (A-C)]

In addition, goals for specific zoning districts, such as the Greenbelt Residential District and the Natural Rivers Zone District, also have statements of purpose regarding water resource protection. The statement of purpose for the Natural Rivers Zone District is so comprehensive, it could serve as a good model for statements of purpose addressing all water resource protection. It includes everything from promoting the health, safety and general welfare to preventing flood damage. [Article V, Section 5.09(A)(1-4)]

The South Arm Township Zoning Ordinance includes a fee system that helps to fund administration of the ordinance, and a provision whereby the township can require additional fees, set aside in an escrow account by the applicant, to cover the costs of additional professional review when necessary. As well, the ordinance authorizes the township to require financial guarantees of a sufficient sum to assure that the project is completed [Art X, Section 10.4(A-C)]. From an enforcement standpoint, the ordinance makes it clear that any person violating any provision of the ordinance is guilty of a misdemeanor, and that each day of violation is considered a separate offense. The Zoning Administrator is authorized to issue infraction citations directing alleged violators of this Ordinance to appear in court, and the township may initiate proceedings in the Circuit Court to address any other violations of this Ordinance [Article X, Section 10.5 (A-E)].

One important aspect of the local zoning permitting process is to ensure that the issuance of local permits is coordinated with county, state, and federal permits or approvals. The South Arm Township Zoning Ordinance addresses this in several locations. In the Site Plan Review Standards, the ordinance states that “site plans shall conform to all applicable requirements of State and Federal statutes and approval may be conditioned on the applicant receiving necessary State and Federal permits before final site plan approval or a zoning permit is granted.” [Article III, Section 3.14(D)(10)] The ordinance also authorizes the Zoning Administrator or Planning Commission to require an applicant to submit a copy of their site plan to various agencies for review and comment [Article III, Section 3.14(D)(11)]. In addition, the Single Family Greenbelt Residential District clearly states that no filling shall occur on lands in this district without a permit from the State of Michigan, the U.S. Army Corps of Engineers, and the Charlevoix County Soil Erosion Control Officer [Article V, Section 5.02(I)(5)].

The key to the implementation of any Zoning Ordinance is the review process. South Arm Township’s site plan review process is required on all projects except one and two family residential units. The effectiveness of the review process is determined by the quality of the information provided to the township by the applicant. The section of the ordinance that deals with site plan review (Section 3.14) includes two important requirements. First, it states that the applicant must provide an “impact statement addressing the demands the development will have on community services and any environmental impacts.” [Article III, Section 3.14(B)(13)] It also requires a drawing of the development plan that includes the location of “water courses and water bodies, including flood plains and wetlands, county drains, and manmade surface drainage ways” and “identification of any significant site amenities or unique natural features.” [Article III, Section 3.14(C)(5 and 21)] Describing and mapping water features helps to serve as the basis for a dialogue between the developer and the township about how to reduce potential impacts on those resources.

Open space provisions that allow for clustering development on one portion of a parcel, while protecting the remainder in its natural state, can help to protect water quality. South Arm Township encourages open space development by establishing open space minimums and providing density bonuses in the Multiple Family Residential (R-3) District and for Planned Unit Developments (PUDs). The minimum open space requirement for new developments in the R-3 district is 50% and density bonuses are awarded on the following schedule:

- 50% open space, 4 units/acre density;
- 55% open space, 6 units/acre density;
- 60% open space, 8 units/acre density;
- 70% open space, 10 units/acre density. [Article V, Section 5.03(C)(2-3)]

For PUDs, the minimum open space is 25% of the parcel (minus undevelopable portions such as lakes, wetlands, floodplains, etc.), and open space bonuses are awarded on the following schedule:

- For the first 25% of open space, a 15% increase in density.
- For each additional 5% open space a 5% increase in density.

The ordinance states, however, that all density bonuses are subject to Northwest Michigan Community Health Agency approval for water supply and sewage disposal [Article VIII, Section 8.06 (A and B)].

Although these minimum open space requirements and density bonuses are useful tools to promote the integration of resource protection measures in development projects, it is important that the open spaces be maintained in their natural state and protected in perpetuity. The PUD standards say that open spaces “may” consist of natural areas and that the township Planning Commission “may require that the site be designed to preserve and protect, to the greatest extent feasible, existing natural or unique land features such as, but not limited to, mature trees, significant vegetation, waterways, steep slopes or scenic views.” [Article VIII, Section 8.08] Furthermore, there appears to be no requirements that the open space be protected in perpetuity with a conservation easement, deed restriction, or other permanent legal instrument.

Basic Zoning Components: RECOMMENDATIONS

The basic components of the South Arm Township Zoning Ordinance are very strong and create a sound framework for considering impacts to the township's water resources from development. The following is suggested to help strengthen the ordinance:

SUGGESTED ACTION: Use the statement of purpose in the Natural Rivers Zone District (Section 5.09) as a model for the statement of purpose in the Single Family Greenbelt Residential District (Section 5.02).

SUGGESTED ACTION: The Single Family Greenbelt Residential District clearly states that no filling shall occur on lands in this district without a permit from appropriate county, state, and federal agencies. We suggest that the same should apply in all zoning districts, and no zoning permit that might impact wetlands, lakes, or streams will be issued without county, state, or federal permits, anywhere in the township.

SUGGESTED ACTION: Require open space that is set aside as part of a R-3 development or PUD to be permanently protected through a conservation easement, deed restriction, or similar permanent legal instrument, and stipulate that open space is to be managed in a natural condition.

Shorelines

POSSIBLE SCORE: 60
TOTAL SCORE: 23, ADEQUATE

Two of the most effective ways that local governments can protect water quality through zoning is to require setbacks from the water's edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer zone. South Arm Township employs both of these measures.

The waterfront setback requirements in South Arm Township are wonderfully protective. Building setbacks in the Single Family Greenbelt Residential District (Section 5.02), Waterfront Commercial District (Section 5.06), and the Conservation Reserve District (Section 5.10) are all 100 feet from the ordinary high water mark of the lake or stream. In the Agricultural District (5.08), waterfront setbacks are 100 feet from a river or a lake and 50 feet from a stream. In the Natural Rivers Zone District (Section 5.09), the setback is 200 feet from the water's edge.

South Arm Township requires shoreline protection strips in only two districts: Single Family Greenbelt Residential and the Natural Rivers Zone. The Single Family Greenbelt Residential District requirements call for a 50 foot wide strip bordering the stream, river, or lake that is maintained in trees and shrubs. Trees & shrubs in a space not to exceed one-third (1/3) of the lot width may be removed, for a view of the water and installation of a dock [Article V, Section 5.02(H)]. The Natural Rivers Zone District calls for a strip 100 feet wide paralleling the mainstream of the Jordan River, and 25 feet on the tributaries. The strip is to be maintained in trees and shrubs (or in its natural state), except that dead, diseased, unsafe, or fallen trees may be removed [Article V, Section 5.09(G)].

In October 2001, South Arm Township amended their Zoning Ordinance to provide clarity with respect to dockage in the Single Family Greenbelt Residential District. This amendment stipulates that only one dock may be constructed per lake front lot or parcel, but that two or more adjacent nonconforming lots that are owned by the same person shall be allowed one dock. Furthermore, one additional dock may be allowed for each 100 foot of frontage in excess of the first 100 feet of frontage [Amendment #3, creating Article V, Section 5.02(L)]. The ordinance is silent on the allowable size of the dock or the number of boats per dock. Although not docks, per se, platforms and boardwalks along rivers and streams are restricted to 20 feet in length with a total of 80 square feet and shall not extend into the water [Article V, Section 5.02(C)(2)].

Currently, the South Arm Township ordinance does not have a provision that addresses marinas, specifically. Article III (Site Plan Review Standards) does require that applicants, such as marinas, provide information on the “location and specifications for any existing or proposed above or below ground storage facilities for any chemicals, salts, flammable materials, or hazardous materials as well as any containment structures or clear zones required by government authorities.” [Article III, Section 3.14 (C)(20)] Such provisions help to ensure a consciousness regarding spills that could impact water resources and ensure that applicants are aware of, and follow, state and federal permit processes.

Shorelines: RECOMMENDATIONS

The South Arm Township shoreline zoning provisions, especially the 100 foot building setback from the ordinary high water mark, help protect water resources of the township. To strengthen these provisions, we recommend the following:

SUGGESTED ACTION: Although South Arm Township does require shoreline protective strips on waterfront parcels, this section of the ordinance could be strengthened by restricting the use of pesticides or herbicides, and specifying the use of native plant species, or prohibiting the use of non-native or invasive plants.

SUGGESTED ACTION: Although the South Arm Township ordinance has regulations that state the number of dwellings per front foot, the township may want to consider adopting a provision that specifically addresses funnel or keyhole developments. Such a provision is called for in the draft Master Plan, but is not currently integrated into the Zoning Ordinance.

SUGGESTED ACTION: Consider regulating marinas to ensure that they do not contribute to water quality degradation, obstruct navigation or otherwise interfere with the rights of boaters, and that they take measures that prevent the spread of invasive species.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are invasive stands of *Phragmites*, treat those stands if they exist, and conduct a follow up inventory and treatment, if necessary. To do so, we suggest you coordinate your efforts with the Lake Charlevoix Association’s *Phragmites* eradication program.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, WEAK

Impervious surfaces stop rainwater and snowmelt from naturally percolating into soils, thus reducing the opportunity for contaminants to be removed from the resulting stormwater runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality.

South Arm Township limits impervious lot coverage in two zoning districts: Single Family Greenbelt Residential District (R-2) and Multiple Family Residential (R-3). In the R-2 district, “total dwellings, buildings, structures, hard surfaces, driveways and parking areas shall not exceed thirty percent (30%) of the total lot area.” [Article V, Section 5.02(C)(3)] In the R-3 zone, the limit is 50% of the total lot area. The R-3 district requires a

minimum of 50% open space, and conversely a maximum of 50% impervious lot coverage [Article V, Section 5.02(C)(3)]. Beyond these two instances, there appears to be no other measures in the South Arm Township Zoning Ordinance intended to reduce impervious surfaces.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities for local governments to reduce impervious surfaces through their Zoning Ordinance. Additionally, the Lake Charlevoix Watershed Plan calls for reduction of impervious surfaces to reduce the pollutant load from stormwater running into our water resources. We encourage South Arm Township to consider integrating the following provisions into their ordinance.

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts (especially residential districts) to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Add a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Amend 3.19 (Parking) and 3.20 (Loading) to allow reductions in the size of parking and loading areas when appropriate for water quality protection, or encourage use of grass parking areas or pervious pavers.

SUGGESTED ACTION: Instead of having a minimum roadway width (as defined in the Mobile Home Park or Manufactured Housing Development zone [Article V, Section 5.04 B(5)]), consider having a maximum road width (18-22 feet) to reduce mass clearing and grading.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 7, WEAK

Although South Arm Township does not regulate stormwater as a stand-alone ordinance, there are provisions in Article III (General Provisions) of the Zoning Ordinance where stormwater management planning and implementation is required as part of the zoning review process. For example, the section regarding grades unequivocally states that “no premises shall be filled or graded so as to discharge surface runoff on abutting premises in such a manner that will cause inconvenience or damage to adjacent properties. When property is developed adjacent to existing properties, previously developed existing grades shall have priority.” (Article III, Section 3.11)

A similar general statement is conveyed in Article III, Section 3.14(D)(3): “Special attention shall be given to proper site drainage so that removal of stormwater will not adversely affect neighboring properties.” Although there are no specific guidelines in the ordinance regarding design, installation, and maintenance of temporary or permanent stormwater control devices, the Zoning Administrator and/or the Planning Commission is authorized to require the applicant to submit a complete application and site plan to the Charlevoix County Soil Erosion Control Enforcing Agent for review and comment.

It is important to note that the proper administration of stormwater regulations often requires specialized expertise. For this reason, it is recommended that townships cooperate with counties in the enforcement of county-wide standards. Charlevoix County officials are in the process of preparing a comprehensive county-wide Storm Water Control (SWC) Ordinance that would be passed by individual townships and give the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating townships and cities would have to pass identical language and participate in an Intergovernmental Agreement.

Stormwater Management: RECOMMENDATIONS

There is great value in working with Charlevoix County on the adoption and implementation of a comprehensive county-wide stormwater ordinance. The measures taken to control stormwater that would be required by such an ordinance are consistent with recommendations in the watershed management plan for Lake Charlevoix. To this end, we encourage the following actions:

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the SWC Ordinance and Intergovernmental Agreement, and present it to South Arm Township for passage.

SUGGESTED ACTION: Between now and the adoption of the Charlevoix County Stormwater Ordinance, utilize the county's expertise in reviewing and commenting on stormwater plans presented in development proposals.

SUGGESTED ACTION: Require that all stormwater management systems are regularly evaluated and properly maintained to ensure that no discharge of polluted runoff enters lakes or streams in South Arm Township.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 1, WEAK

Sediment, by volume, is the single largest pollutant to waters of the United States. Any time earth is disturbed or graded, as typically happens during the construction process, there is a potential for soil to erode and sediment to be deposited into lakes, streams, and wetlands. Construction, or use of steep or unstable slopes, can also present an erosion and sedimentation hazard. Because local governments have the opportunity to review every single development project as part of zoning review, they are uniquely situated to ensure that soil erosion is controlled and sedimentation is minimized.

There is a brief mention in the section on extractive industries, which states that excavated areas shall be graded and seeded "to minimize soil erosion." [Article VII, Section 7.09(C)] The Site Plan Review Standards authorize the Zoning Administrator or the Planning Commission to require an applicant to submit an application to the County Soil Erosion Control Officer at their discretion. Other than these two examples, the South Arm Township Zoning Ordinance is silent on the issue of soil erosion. This is surprising, given the presence of such spectacular water resources as the Jordan River and Lake Charlevoix in the township.

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near streams, wetlands, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Soil erosion control is an essential component in watershed management efforts. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA), Michigan's Soil Erosion and Sedimentation Control statute. The simplest and most effective way to control erosion at the township level is to partner with the county enforcement agents. To that end, we recommend the following:

SUGGESTED ACTION: Require that all zoning applicants for any construction or earth change activity proposed within 500 feet of a stream, river, or lake, receive a soil erosion and sedimentation control permit prior to issuance of a South Arm Township Zoning Permit.

SUGGESTED ACTION: Require that soil erosion and sedimentation controls be maintained and monitored on a periodic basis until the site is completely stabilized and vegetated.

SUGGESTED ACTION: Require a pre-winter meeting to assess whether existing controls are in place to ensure that the site will not erode or cause sedimentation over winter or during spring runoff events.

Sewer/Septic

POSSIBLE SCORE: 24
TOTAL SCORE: 11, ADEQUATE

Although South Arm Township does not provide water or sanitary sewer services, a small number of township residences, and the Grandvue Medical Care Facility located near the East Jordan city limits, are served by East Jordan's system. Furthermore, East Jordan's two lagoon treatment systems are located in the south-eastern corner of the township. The current policy is that water and sewer services will only be extended if there is a 425 or standard annexation of the property into the City of East Jordan.

The majority of South Arm's residents and business owners must rely on on-site private wells for domestic drinking water needs, and private on-site septic systems for wastewater disposal. Two important determinants for siting a septic system are soil suitability, including slope and depth to groundwater, and depth to bedrock. Chapter 4 of the South Arm Township Master Plan discusses the geology and soils of the township. Figure 4-1, titled "Soils Constraints," shows a steeply sloped areas and areas with hydric soils that have septic system limitations. Article III, the General Provisions section, states that any building or facility that could possibly use or generate human waste "shall be provided with a safe and sanitary water supply system and with means for collecting and disposing of all human excreta...and other wastes that may adversely affect health conditions, subject to the written approval of the Northwest Michigan Community Health Agency." (Article III, Section 3.09)

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic system to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a "point of transfer" inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21
TOTAL SCORE: 1, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state's wetland protection program.

The South Arm Township Master Plan provides a good overview of the importance of wetlands. Wetland protection also features prominently in the goals and objectives, the "future vision" portion of the Master

Plan, and the future land use recommendations of the plan. That being said, wetlands are only mentioned in two places in the Zoning Ordinance. First, applicants are required to depict the location of wetlands on their site plan drawings [Article III, Section 3.14(C)(5)]. Second, wetlands and other water bodies are not to be considered part of the gross area of the property when calculating required open space for PUDs. Beyond these two instances, wetlands are not mentioned in the Zoning Ordinance.

Wetlands: RECOMMENDATIONS

Michigan's wetland statute specifically authorizes local governments to adopt wetland protection ordinances to regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Amend the township ordinance to make it clear that state and federal wetland permits are required prior to the issuance of any township zoning permit on a parcel where wetlands are present and may be impacted, regardless of the zoning district.

SUGGESTED ACTION: Consider establishing a wetland setback similar to the shoreline setbacks in the Zoning Ordinance. Even a short setback from the wetland edge (e.g., 25 feet) is much better than constructing a use at the edge of the wetland. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 12, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents, and all but a few township residents get their drinking water from private wells. Protecting ground water resources from contamination is vitally important.

Site plan review standards in the South Arm Township Zoning Ordinance require applicants to identify the "location and specifications for any existing or proposed above or below ground storage facilities for any chemicals, salts, flammable materials, or hazardous materials as well as any containment structures or clear zones required by government authorities." [Article III, Section 3.14 (C)(20)] Although it can be assumed that state and federal authorization must be received before a local zoning permit is issued, this is not clearly stated in the ordinance. In addition, section of Article VII (Site Development Standards) addresses extractive industries, such as mining. It states that the Planning Commission, when making its decisions on extraction proposals, shall consider the "effect of such removal in causing a safety hazard, creating erosion problems, or altering the groundwater table." [Article VII, Section 7.09(E)(4)]

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous material is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Importantly, South Arm Township participated in the state Wellhead Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step to protect these precious drinking water sources. In addition, we encourage the Township to consider the following:

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48
TOTAL SCORE: 26, ADEQUATE

South Arm Township participates in the National Flood Insurance Program. In several locations, the Zoning Ordinance requires the applicant to provide information regarding the location of the flood zone. As well, preventing damage from floods is stated as a purpose Natural Rivers District [Article V, Section 5.09(A)(3)]. There are no high risk erosion or steep slopes restrictions, and there are no critical dunes in the township.

Conclusion

We applaud the water protection measures that exist in South Arm Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.



Results Worksheet

South Arm Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	25	Strong
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	43	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	23	Adequate
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	3	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	7	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	1	Weak
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	11	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	1	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	12	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	26	Adequate



SECTION III: Analysis

Chapter 18 Wilson Township

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Wilson Township, located in the south-central section of Charlevoix County. Wilson Township is wholly in the Lake Charlevoix Watershed, and its water resources include numerous streams and half of Deer Lake. This analysis includes evaluation scores, recommendations, and suggested actions to assist Wilson Township in protecting water resources. It also relates suggested actions to the existing Lake Charlevoix Watershed Management Plan.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30
TOTAL SCORE: 12, ADEQUATE

Wilson Township's Master Plan was updated in 2006. Although it doesn't specifically mention the main watersheds in which the township is located, nor any specific streams or lakes, Chapter 3 of the Master Plan describes Wilson Township's water resources (including groundwater), and Figure 3.8 shows the wetland and water resources of Wilson Township. It is recommended that Master Plans be updated every five years, so this plan is due to be evaluated.

Wilson Township's Master Plan has several community goals, one of which is to maintain and protect natural resources in the Township (Chapter 7). As you can see by the following objective and goals, water resource protection is an important element in the Master Plan:

Objective: Maintain the high quality of land, air, surface water and ground water resources.

Strategy 1: Adopt zoning ordinance regulations for green belts and buffer strips.

Strategy 2: Maintain adequate setback distances from lakes and streams.

Strategy 3: Maintain annual township clean-up program.

Strategy 4: Avoid the fractionalization of woodland resources.

Strategy 5: Protect environmentally sensitive areas such as surface waters, wetlands and steep slopes through planning, education and ordinances.

Master Plan Components: RECOMMENDATIONS

The Wilson Township Master Plan has strong goals with respect to water resources. When the township updates the Master Plan, we encourage including the components listed below in order to strengthen the role that the Master Plan can play in guiding community development measures and supporting the Zoning Ordinance.

SUGGESTED ACTION: Specifically name the water resources that occur in the township (named creeks, lakes, and ponds), as well as the main watersheds that drain the township.

SUGGESTED ACTION: Although it only addresses a small portion of Todd Creek within Wilson Township, specifically mention the Jordan River Natural River Zoning program as part of the management scheme in the township, and possibly use this program as model for management of other creeks and streams in the watershed.

SUGGESTED ACTION: Call for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration.

SUGGESTED ACTION: Acknowledge the importance of well-constructed and maintained road-stream crossings on the quality of stream and water resources.

SUGGESTED ACTION: Identify wildlife corridors and recommend use of conservation easements or other measures to permanently protect wildlife corridors that occur on private land.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 41, STRONG

The statement of purpose in Wilson Township's zoning ordinance includes the following: "to provide for the conservation of agricultural, forest, open space lands, wetlands, flood plains, flood ways and land areas containing natural or cultural resources or features necessary to the social and economic well-being of present and future generations." (Article I, Section 1.02) In addition, Article XV, which contains specific environmental conservation provisions, has the following purpose statement:

"The purpose of this Article is to promote in all Zoning Districts the conservation or wise use of important unrenovable natural resources and to protect the desirable qualities of the natural environment which may involve the saving of important vegetation, wildlife cover, watersheds, water recharge areas, areas which periodically flood, natural rivers and their natural environment, features controlling wind or water erosion, wetlands, and areas of topographical, archeological, geological, historical or agricultural significance for the purpose of preserving or conserving specific features and areas of these natural resources and environments for present and future generations of the Township." (Article XV, Section 15.01)

The Wilson Township ordinance includes a fee system that helps to fund administration of the ordinance, and a provision whereby the township can require additional fees, set aside in an escrow account by the applicant, to cover the costs of additional professional review when deemed necessary [Art XIX, Section 19.4(D)]. From an enforcement standpoint, the ordinance makes it clear that each day of violation is a separate offence, and that the Zoning Administrator is authorized to initiate civil citations and direct alleged violators to appear in court (Article XIX, Section 19.06).

One important aspect of the local zoning permitting process is to ensure that the issuance of local land use permits are coordinated with county, state, and federal permits or approvals. Wilson Township's Zoning Ordinance addresses this in several locations. First, Article XV, Section 15.04 (Lakes, Ponds, Rivers, Water Courses, and Drainage ways) states that no alterations to these water bodies shall take place except in conformance with applicable state laws. Section 15.06 (Wetlands) states that all wetlands in the township are subject to the provisions of Michigan's wetlands statutes. In addition, the township's permit application process states that "if applicable, the Township shall deliver one (1) copy of the application and site plan to the following agencies" and lists several local agencies and the Michigan Department of Environmental Quality [Art XVIII Sec 18.6 (A-B)]. The ordinance further states that the agencies have 15 days after delivery to review and comment on the applications. Furthermore, in Section 18.8 (Standards for Planning Commission Approval), the ordinance states that "all developments shall meet the requirements of the Charlevoix County Storm Water Ordinance." [Article XVIII, Section 18.8 (C)] These efforts to ensure coordination are laudable.

Many impacts to water resources from development projects can be avoided or minimized if the developer is able to understand the resources at risk and design the project around them. One way to do this is to require a pre-application meeting for development proposals. Art XVIII, Section 18.3 provides the opportunity for an applicant to request to be placed on the agenda of a regular meeting of the Planning Commission, in order to review and discuss a proposed preliminary site plan. Furthermore, Article XV, Section 15.02, authorizes the planning commission to require submittal of an environmental impact statement.

Wilson Township's ordinance has a comprehensive site plan review process (Article XVIII) that provides for a more rigorous review of proposed projects, other than farm dwellings, farm buildings, and single family homes located on a single lot or parcel (which only need to submit a site plan). Article X (Special Uses) contains an Open Space Preservation Option (Article 10.16) that provides developers with the opportunity to design a housing development around sensitive features in a way that protects natural resources and open space. In order to qualify, at least 50% of the parcel must be designated as permanent open space to remain in an undeveloped state and protected in perpetuity, using a conservation easement or other legal instrument.

Also noteworthy in Article X is the requirement for an inventory of endangered and/or threatened species with respect to commercial wind generation projects [Article X, Sec 10.21(6)]. Threatened and endangered species are an important part of our natural heritage, and requiring such an inventory for all development projects would be positive.

Basic Zoning Components: RECOMMENDATIONS

The basic zoning provisions in Wilson Township's ordinance are strong. We encourage the township to consider the following recommendation:

SUGGESTED ACTION: The provisions in the ordinance that work to coordinate with other agencies are laudable. However, the 15 day agency review and comment period called for in Article XVIII, Section 18.6 is too short a time frame (especially for state agencies), and puts responsibility of coordination on the township Zoning Administrator. We recommend that the township simply require developers to receive permits, or waivers that no permit is needed, from other agencies prior to issuing a local zoning permit. If the Zoning Administrator would like to consult other agencies for feedback, they need adequate time – at least 30 days – to do so.



Shorelines

POSSIBLE SCORE: 60
TOTAL SCORE: 12, WEAK

Two of the most effective ways to protect and maintain water quality through zoning are building setbacks and the establishment of vegetated buffers or shoreline protection strips. Although Wilson Township does not have a shoreline protection strip or vegetative buffer provision, they do have a waterfront setback of 50 feet for all zones (Article III, Section 3.21). Furthermore, it is important to note that the Zoning Ordinance requires all applicants to secure permits from other agencies before doing any work along the shoreline of lakes and streams.

Wilson Township does not regulate docks on inland lakes and streams. Such regulations can serve to protect the rights of waterfront owners and preserve the character of the natural shoreline. The township also does not regulate marinas or road ends terminating at the edge of navigable waters.

Shorelines: RECOMMENDATIONS

The township-wide 50 foot waterfront setback on all water bodies in all zoning districts, and the requirement for permits from other agencies are both very useful tools in helping to protect water resources. However, there are several provisions that could be added to the ordinance that would help strengthen Wilson Township's shoreline protection measures.

SUGGESTED ACTION: Establish a shoreline protection strip immediately adjacent to lakes, streams, and other water bodies. To be most effective, the shoreline protection strip should be 30 feet wide, maintained in native vegetation, no pesticide or herbicide use, with minimum cutting to afford a filtered view of the water.

SUGGESTED ACTION: Establish dockage regulations in order to protect the rights of all waterfront owners and maintain the character of the shoreline.

SUGGESTED ACTION: Explore the need to establish provisions to regulate use of road ends by the public, or potential marina operations on Deer Lake, to ensure that these activities don't harm water quality or impact the nature of the lake.

SUGGESTED ACTION: Although *Phragmites* is of concern mostly on Great Lakes shorelines, it has become established on some inland waters and road ditches. We encourage all local governments to initiate a program designed to ensure that the invasive strain of *Phragmites* does not become established in their jurisdiction. Such a project would involve an initial inventory to determine if there are invasive stands of *Phragmites*, treat those stands if they exist, and conduct a follow up inventory and treatment, if necessary.

Impervious Surfaces

POSSIBLE SCORE: 33
TOTAL SCORE: 2, WEAK

Impervious surfaces limit opportunities for rainwater and snowmelt to naturally percolate into the soils. This does not allow contaminants to be removed from stormwater runoff before it flows into lakes, rivers, and wetlands. The more a local unit of government can do to reduce impervious surfaces, the better for water quality. There do not appear to be any provisions in the Wilson Township ordinance that would help to encourage reduction of impervious surfaces. Additionally, the Lake Charlevoix Watershed Management Plan recommends reducing the pollutant load from stormwater runoff. Reducing impervious surfaces helps to accomplish this objective to protect township waters from sediment, nutrients, and toxic substances.

Impervious Surfaces: RECOMMENDATIONS

There are many opportunities to reduce impervious surfaces in local zoning ordinances. We encourage Wilson Township to consider the following provisions for their ordinance:

SUGGESTED ACTION: Establish impervious surface lot coverage limits in all zoning districts, especially residential districts, to limit impervious surfaces to 15% of the total lot.

SUGGESTED ACTION: Consider adding a provision that allows for flexibility in front yard setbacks or side yard setbacks to encourage shorter driveways or shared driveways between two lots.

SUGGESTED ACTION: Modify Article XVII, Section 18.12(A)(5) to allow reductions in the size of impervious surfaces of parking and loading areas, or encourage use of grass parking areas or pervious pavers.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 9, WEAK

Wilson Township does not have a stand-alone stormwater management provision. However, there are places in the ordinance where stormwater management is addressed. First, the Standards for Private Roads states that “all private roads constructed in Wilson Township shall be constructed so as to sufficiently control storm water runoff and permit effective storm water drainage and prevent soil erosion. Storm water retention basins shall be designed to store all storm water runoff from a two and one half (2.5) inch in a twenty-four (24) hour period rainfall event” Article XIV, Section 14.42(B).

In addition to this requirement, there are three places in the ordinance where Wilson Township requires a proposed development to meet the requirements of the Charlevoix County Stormwater Ordinance: Standards for Private Roads [Article XIV, Section 14.42(C)], General Requirements for Environmentally Sensitive Areas [Article XV, Section 15.07(B)], and Standards for Planning Commission Approval [Article XVIII, Sec 18.8(C)]. Although typically requiring the applicant to comply with a county stormwater ordinance is an effective way to regulate stormwater, Charlevoix County’s stormwater ordinance was rescinded in 2009, as noted in Chapter 1. It is currently being reworked, and full implementation of the new Charlevoix County Storm Water Control (SWC) Ordinance will require each township and local municipality to adopt it.

Stormwater Management: RECOMMENDATIONS

Stormwater runoff from buildings, driveways, parking lots, streets, and other impervious surfaces is a major source of pollutants to northern Michigan’s waterways. Local governments can do much to reduce stormwater runoff as part of their zoning ordinance. Wilson Township’s ordinance does address stormwater in several places, we recommend considering adding the following stormwater management practices, either as a separate item in general provisions, or as part of the site plan review.

SUGGESTED ACTION: Consider requiring review of development proposals by the County Drain Commissioner to ensure that stormwater management is properly addressed on all proposed development projects.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the SWC Ordinance and Intergovernmental Agreement, and present it to Wilson Township for passage.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 0, MISSING

Wilson Township does not have detailed standards in their ordinance to address soil erosion and sediment control. However, there are places in the township Zoning Ordinance where soil erosion and sediment control is mentioned, including: Standards for Private Roads [Article XIV, Section 14.42 (B) and (C)], Lakes, Ponds, Rivers, Streams, Water Courses and Drainage ways [Article XV, 15.04 (B)], and General Requirements for Environmentally Sensitive Areas [Article XV, Section 15.07(B)(1)]. In these instances, the ordinance states that plans shall conform to the provisions of either county or state regulations. However, there is no place where it clearly states that a soil erosion control permit from the local Soil Erosion Control enforcement agent is required before a Wilson Township permit will be issued. In addition, the Site Plan Review process allows for the Zoning Administrator to deliver a copy of an application and site plan to the Charlevoix County Soil Erosion Control officer for review and comment (Article XVII, Section 18.6).

Soil Erosion and Sediment Control: RECOMMENDATIONS

All properties that are located near lakes, streams, wetlands, ponds, or drainage ways have the potential to erode and cause sedimentation to nearby waters. Accordingly, it is recommended that local governments require all earth movement activities associated with development or construction projects to follow Best Management Practices (BMPs) to control erosion and ensure that any sediment-laden runoff does not enter waterways. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA). Coordination between the township and county is essential to ensure that soil erosion and sedimentation is controlled.

SUGGESTED ACTION: Specifically require that all proposed development project earth change activities within 500 feet of a lake, stream, wetland, or other waterway in all zoning districts receive a soil erosion and sedimentation control permit from Charlevoix County before they receive a permit from Wilson Township.

SUGGESTED ACTION: Amend Article XVII, Section 18.6 to lengthen the time frame for review and comment by the Charlevoix County Soil Erosion Control officer from 15 to at least 30 days.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 9, ADEQUATE

Sewer and septic management is critical to both human health and water quality. Wilson Township, as part of its Supplemental Regulations, states that wastewater disposal facilities "shall meet the requirements established by the Health Code of the County." (Article XIV, Sec 14.10)

Sewer/Septic: RECOMMENDATIONS

In addition to ensuring compliance with the local health code, local units of government can regulate the siting of septic fields to ensure protection of water resources. The main concern with septic systems and water quality is the potential for septic systems to contribute excess nutrients to water bodies. These nutrients can cause the growth of aquatic weeds and algae. The Lake Charlevoix Watershed Management Plan includes an Objective to educate citizens about the importance of septic system maintenance in order to reduce the amount of harmful nutrients in our waters.

SUGGESTED ACTION: Require that septic systems be located at least 100 feet from lakes, streams, wetlands, or other water bodies.

SUGGESTED ACTION: Consider establishing a “point of transfer” inspection requirement whereby septic systems must be inspected to ensure they are operating properly before ownership is transferred.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 3, WEAK

Wetlands are some of our most valuable water resources. They provide excellent wildlife habitat, help control flooding, and contribute to water quality protection. Although Michigan has a statewide wetland protection statute, not all wetlands are covered and not all activities that could impact wetlands are regulated. Local governments have the opportunity to supplement the state’s wetland protection program.

Wilson Township specifically mentions wetlands in the intent and purpose of the ordinance (Article I, Section 1.02), and in the purpose for the RDA (Resource Development-Agricultural) District (Section 4.01). From a specific provision standpoint, applicants are required to note the location of wetlands on their site plan application [Article XVII, Section 18.5(B)(4)]. Article 15 (Environmental Conservation Provisions) clearly states that, “All wetlands in the Township are hereby subject to the provisions of [Michigan’s wetlands act] to encourage the proper use and development of the wetlands.” (Article XV, Section 15.06)

Wetlands: RECOMMENDATIONS

Michigan’s wetland law specifically authorizes local governments to adopt wetland protection ordinances that regulate wetlands not protected by the state statute. In addition to a stand-alone wetland ordinance, local governments can support wetland protection through zoning and by requiring wetland permits from state and federal agencies prior to granting local zoning permits.

SUGGESTED ACTION: Given the important role that wetlands play in protecting water quality, providing wildlife habitat, and minimizing flooding, it is important to educate township citizens on the importance of protecting wetlands.

SUGGESTED ACTION: Continue working with applicants and the Department of Environmental Quality to ensure that all state and federal wetland statutes are followed and that wetland permits are received before zoning permits are issued.

SUGGESTED ACTION: Consider establishing a wetland setback similar to shoreline setbacks. This would protect wetlands and be simple to administer, in the short term. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 8, ADEQUATE

Ground water is the primary source of drinking water for nearly all Northern Michigan residents. Protecting ground water resources from contamination is vitally important. The Wilson Township ordinance requires that state and federal permits be provided for any facilities or uses where hazardous substances are stored, used or generated prior to local township approval for that use. Although there are many other activities that can impact ground water, such as individuals draining their oil onto the ground when changing the oil in their automobiles, requiring state and federal permits for proposed uses that involve hazardous materials is a good first step in protecting ground water in Wilson Township.

Discharges to ground water are regulated by the state under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA) 1994 PA 451, and Part 22 Rules. Any proposed discharges should be prohibited by the township until required state permits are received by the applicant. Storage of hazardous materials is also regulated under Part 5 Rules issued for Part 31. This includes Pollution Incident Prevention Plans, which can be efficiently coordinated with Local Emergency Planning Committee work.

Ground Water and Wellhead Protection: RECOMMENDATIONS

Importantly, Wilson Township participated in the state Wellhead Protection Plan process, getting its plan approved in 2002. This is a voluntary program, and we applaud the township for taking this critical step and protecting these precious drinking water sources.

SUGGESTED ACTION: Update and maintain a comprehensive inventory of potential threats to ground water. This will be particularly important as the township continues to grow and more and more people rely on ground water for drinking water supplies.

SUGGESTED ACTION: Since many common activities can impact ground water quality, provide ground water education materials to township residents.

SUGGESTED ACTION: If direct or indirect discharges to ground water are proposed, use site plan review or some other ordinance provision to prohibit this until appropriate approvals or permits are obtained from the state.

SUGGESTED ACTION: Protect ground water from potential contamination by requiring Pollution Incident Prevention Plans for storage of hazardous materials, in coordination with Local Emergency Planning Committee efforts.

Other

POSSIBLE SCORE: 48
TOTAL SCORE: 31, ADEQUATE

There are two elements of Wilson Township's Zoning Ordinance that add to the water quality protection framework. First, although only a small creek in the southwest corner of the Township is subject to Jordan River's Natural River Zoning, Wilson Township's ordinance clearly articulates that the state law is "hereby made a part of this Ordinance." [Article XV, Section 15.04(C)] Secondly, the ordinance limits uses in floodplains to agriculture and recreational uses, provided no buildings are constructed in the floodplain [Article XV, Section 15.05 (A-C)]. These provisions help to protect water resources in the township and ensure that those seeking a zoning permit are made aware of these state and federal water resource protection statutes.

Conclusion

We appreciate the water protection measures that exist in Wilson Township. We also thank you for your time and attention in reading this chapter, and hope that our recommendations are helpful. However, if anything is unclear, please be sure to let us know. If you have any questions related to this project, please contact Tip of the Mitt Watershed Council at 231.347.1181.

Results Worksheet

Wilson Township

Catagory	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak	30	12	Adequate
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak	54	41	Strong
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak	60	12	Weak
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak	33	2	Weak
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak	27	9	Weak
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	0	Missing
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak	24	9	Adequate
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak	21	3	Weak
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak	18	8	Adequate
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak	48	31	Adequate



SECTION III: Analysis

Chapter 19 Village of Boyne Falls

Introduction

The Village of Boyne Falls is located in Boyne Valley Township. According to the US Census Bureau, the village has a total area of 0.6 square miles (1.5 km²) and the 2000 population was recorded at 370. Even though the village is tiny, its water resources are important assets: the south branch of the Boyne River and the Boyne Falls Pond. The village is included in the Lake Charlevoix Watershed.

Evaluation Scores and Summary

Master Plan Components

Boyne Falls does not have a Master Plan or Zoning Ordinance. First and foremost, we encourage the Village of Boyne Falls to re-consider adopting local zoning, which should start with a sound Master Plan. However, even if Boyne Falls is not ready to do zoning, we encourage them to create a Future Land Use Plan for the village, which can help evaluate whether zoning is appropriate or not at this time, and pinpoint other ordinances that could be helpful.

Shorelines

Two of the most effective ways that local governments can protect water quality is to require setbacks from the water's edge, and require a shoreline protection strip of native vegetation between the water and the upland land use, also called a vegetative buffer.

There is no regulation of shoreline areas by the county government. Therefore, any local jurisdiction that does not have zoning also does not have shoreline setbacks or vegetative buffer protections in place. However, the Charlevoix County Future Land Use Plan supports providing model ordinances to local entities, including various efforts at shoreline protection such as setbacks and buffer strips (Charlevoix County Future Land Use Plan p.4.4).

SUGGESTED ACTION: Consider education efforts that would encourage permanent retention of native vegetation in areas immediately adjacent to water bodies throughout the Village of Boyne Falls. When appropriate for the community, consider a stand-alone ordinance to require setbacks and vegetative buffer strips along the water.

Impervious Surfaces/Stormwater/ Soil Erosion and Sediment Control

The more a local government can do to reduce impervious surfaces and manage stormwater, the better for water quality. The Lake Charlevoix Watershed Protection Plan includes the following task: Conduct and update impervious surface studies on the tributaries and shoreline areas for the watershed. The point of doing such assessments is to understand the current impact of development and trends for the municipality, so as to manage the addition of hard surfaces. Tools exist to help with future development pressures, such as allowances for parking lot construction and various Best Management Practices (BMPs).

As noted in Chapter 1, Charlevoix County officials are working on a new Storm Water Control (SWC) Ordinance that would need to be passed by individual municipalities, giving the county authority to administer and enforce the ordinance. To make this work effectively and efficiently, all participating municipalities would have to pass identical language and participate in an Intergovernmental Agreement.

Soil erosion control is an essential component in watershed management efforts. The Charlevoix County Department of Building Safety administers Part 91 of Michigan's Natural Resources and Environmental Protection Act (NREPA), Michigan's Soil Erosion and Sedimentation Control statute.

SUGGESTED ACTION: Do an impervious surface assessment for the Village of Boyne Falls. Review and establish trends to inform next steps.

SUGGESTED ACTION: Coordinate efforts with the County Drain Commissioner to enact local stormwater ordinances in the county, allowing the county to administer and enforce them for local jurisdictions. Ask the county to finish the SWC Ordinance and Intergovernmental Agreement, and present it to the Village of Boyne Falls for passage.

SUGGESTED ACTION: If not already in place, establish a process to ensure that any individual or business understands that they must receive a soil erosion and sedimentation control permit from the county, prior to construction or earth change activity within 500 feet of a river or pond.

Sewer/Septic

There is no county regulation of septic point of transfer inspections. In addition to protecting property owners, point of transfer inspection ordinances also reduce pollution to rivers and other water sources by locating those systems that need repair or replacement. This practice can help ensure septic systems do not contaminate precious water resources.

SUGGESTED ACTION: Educate residents about proper septic system management and encourage residents to maintain septic systems on a regular basis.

SUGGESTED ACTION: Consider adopting a "point of transfer" septic inspection ordinance.

Wetlands

As time passes, we learn more and more about the importance of wetlands. Citizens in Charlevoix County continue to be interested in wetland protections because of the public benefits they provide, such as fish and wildlife habitat, high water quality, and flood water storage. These benefits extend well beyond the bounds of wetlands themselves. Wetlands are critical to the health of Charlevoix County's vast water resources, and they are difficult to restore once they are damaged or filled.

Federal and state protections do exist, but to fully protect wetlands local ordinances should be enacted to fill in gaps of protection. Ensuring that existing wetlands are functioning, healthy, and able to provide ecosystem services improves overall water quality and provides a method to keep it protected.

SUGGESTED ACTION: Given the crucial role that wetlands play in overall water health, broadly educate citizens about the benefits of wetland protections and support passage of a wetland protection ordinance for the county.

SUGGESTED ACTION: If zoning is adopted, consider establishing a wetland setback in the village. Even a short setback from a wetland edge (e.g., 25 feet) is much better than constructing a use at the edge of the wetland. This would protect wetlands and cost less to administer than a separate ordinance. Eventually, a local wetland ordinance should be enacted to fill in gaps of protection.

Conclusion

We thank you for your time and attention in reading this document, and sincerely hope that it has proven helpful to you. If you have any questions about the recommendations included, or anything else related to the project, please contact Tip of the Mitt Watershed Council at 231.347.1181.







DOCUMENT REVIEW CHECKLIST for LOCAL ORDINANCE GAPS ANALYSIS

CATEGORIES:

Master Plan
Basic Zoning
Shorelines
Impervious Surfaces
Stormwater
Soil Erosion and Sediment Control
Sewer/Septic
Wetlands
Groundwater and Wellhead Protection
Other Relevant Elements

SCORING:

For each "yes" answer, score 3 points.

If the answer is "yes, partially" score 2 points and explain in Comments section.

If the answer is "yes, minimally" score 1 point and explain in Comments section.

If the answer is "no" award 0 points.

Each section allows for Additional Remarks that support the scoring or the awarding of *+ bonus points*, or penalties taken using *- bonus points*. The Bonus Points system is included to enable relevant adjustments. This is to allow for unexpected circumstances, such as the suggested ordinance language does not apply, or is inappropriate for some reason. The intent is to recognize that every jurisdiction does not necessarily need every ordinance section included here, for a variety of reasons. It exists to ensure jurisdictions are not unfairly ranked or perceived in these kinds of circumstances.

If the Bonus Points system is used because that resource protection effort does not apply in the jurisdiction due to geography, only points from the "adequate" range can be used; there is no assumption of the value of imagined language, just an avoidance of penalizing the jurisdiction in this survey for something that does not apply. Using the Bonus Points system for anything else is flexible, since it is designed to allow for the unexpected; the only requirement is to use the existing scoring options and justify the addition or subtraction of points using the narrative space.

DISCLAIMER: *This research is not intended as legal advice. All local governments are encouraged to consult legal counsel before adopting any resolution or ordinance.*

Additionally, many jurisdictions have been reviewed here, but this is a snapshot in time using ordinances adopted as of May 2009. We caution you to be sure the current plans and ordinances have not changed since this review was completed.

V.7-30-11

Name of Jurisdiction: _____

Date Completed: _____

Name of Reviewer: _____

I. Master Plan		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria <i>NOTE: ANSWER EITHER QUESTION #1 OR #2, NOT BOTH.</i>	Citation and Comments note any comments and citation	Points
1. Does Master Plan exist? <i>(If yes, note when scheduled for review again in Comments section)</i> OR		
2. If no Master Plan, is one currently being drafted? <i>(If yes, note relevant deadlines in Comments section)</i>		
3. Does the Master Plan specifically identify the watershed(s) in which the community is located?		
4. Does the Master Plan have a complete inventory of lakes, rivers, and wetlands , with maps of their locations? Does it identify and map groundwater recharge areas?		
5. Does the jurisdiction's Master Plan have a specific and focused goal or statement of intent to protect water resources? If yes, note it in Comments section.		
6. Does the Master Plan include goals for community acquisition or conservation of Open Space to protect surface water, ground water, and wetlands ?		
7. Does the Master Plan identify stormwater management as an important community policy? ¹		
8. Does the Master Plan call for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration? ²		
9. Does the Master Plan include identification and protection of Wildlife corridors ?		
10. Does the Master Plan identify and call for preservation of undisturbed Natural Areas and/or Natural River designations for surface water and ground water?		
11. Does the plan acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources?		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION I		
(QUESTIONS 1 & 2 COUNT AS ONE - ANSWER IS ONE OR THE OTHER) TOTAL POINTS POSSIBLE		30
30-21=strong 20-11=adequate 10-0=weak		

II. Basic Zoning Elements		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Zoning Ordinance: Administrative		
1. Does Zoning Ordinance have a statement of purpose or intent that includes protection of water and/or natural resources?		
2. Does it include a fee system to cover costs to the community for review of proposal applications or appeals, including any professional reviews? ³		
3. Does Zoning Ordinance have methods in place for enforcement , including a clearly defined process for inspections and correction of violations? ⁴		
4. Is Zoning Ordinance proposal review process coordinated with the receipt of other applicable County, State, and/or Federal permits ?		
5. Does it require a pre-application or pre-construction meeting for new development or redevelopment proposals?		
6. Does the Zoning Ordinance include requirements for environmental assessment , at the expense of the applicant, for proposals that include a land area of five acres or more, or building over 50,000 sq ft? ⁵		
Zoning Ordinance: Site Plan Review		
7. Does the Zoning Ordinance require Site Plan Review?		
8. Is the Site Plan required to indicate all existing natural features ?		
9. Does the Site Plan Review process require a Soil Erosion and Sedimentation Control Plan , or coordination with County regulations?		
10. Does Site Plan Review process include open space provisions? ⁶		
11. Does the site plan review process require developers to consult with the Michigan Department of Environmental Quality about Threatened or Endangered Species on site? ⁷		
Zoning Ordinance: PUD		
12. Does ordinance include Planned Unit Development (PUD) provisions? ⁸		
13. Do PUDs require inclusion of a minimum open space threshold?		
Zoning Ordinance: Open Space		
14. Are flexible site design criteria or incentives available to encourage developers to include open space or cluster design provisions? ⁹		
15. Does the open space have to be managed in a natural condition ? ¹⁰		

16. Are allowable uses in the open space restricted to low impact uses ? ¹¹		
17. Is open space required to be protected through a conservation easement or other similar mechanism? ¹²		
Zoning Ordinance: Special Districts 18. Does Zoning Ordinance include sensitive area protections, such as Natural Rivers designations where appropriate? ¹³		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION II		
TOTAL POINTS POSSIBLE		54
54-37=strong; 36-19=adequate; 18-0=weak		

III. Shorelines 3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Shorelines: Setbacks <i>Great Lakes Shoreline</i> 1. If the community has a Great Lakes Shoreline, does it use an Overlay District , or other tools , to protect the shoreline with setbacks ? <i>SCORE: 3 points 100'; 2 points 75-99'; 1 point less than 75'</i>		
2. Does the Overlay District use a resource-based variable boundary approach , mapping all important shoreline resources, and establishing a boundary line of at least 200 feet? OR Does it use a fixed-distance boundary line approach , drawn parallel to the shoreline or ordinary high water mark, at a fixed-distance of 500 feet? ¹⁴		
3. For a Great Lakes Shoreline, does the Zoning Ordinance delineate a separate minimum setback and/or other protection measures for dunes and high risk erosion areas? ¹⁵		
4. If so, are key definitions included for: the Ordinary High Water Mark, foredune crests, steep bluffs, mature forested vegetation, and principle shoreline structures? ¹⁶		
<i>Inland Lakes and Streams</i> 5. Does the Zoning Ordinance require a minimum shoreline setback of 25' for inland lakes and streams , specifically to minimize harmful runoff and erosion? ¹⁷ <i>[NOTE: Establishing the width of a setback so it is effective depends on the type and sensitivity of the natural feature and the expected impacts of surrounding land uses. In general, the wider the setback, the more protection it provides.]¹⁸</i> <i>SCORE: 3 points 75'; 2 points 50-74'; 1 point 25-49'</i>		
Shorelines: Protection Strips 6. Does Zoning Ordinance require riparian buffers , a minimum of 30' deep, on Inland Lakes and Streams ? ¹⁹		
7. Does Zoning Ordinance specify the degree of vegetation which may be removed in the riparian buffer zone, to be more effective in curbing runoff pollution, providing for wildlife habitat, and preserving natural scenic beauty? ²⁰		
8. Does it specify the use of native plant species in the riparian buffer zone? ²¹		

9. Are invasive and exotic plants prohibited from being used? ²²		
10. Does the community provide for treatment to control and manage Phragmites on the Great Lakes shoreline, as well as where it appears on other riparian shorelines and community lands?		
Shorelines: Density 11. Does Zoning Ordinance regulate dock lot minimum frontage , including allowances for legal nonconforming structures? ^{23 24}		
12. Does Zoning Ordinance regulate the size of docks allowed on inland lakes or streams or rivers, so as not to interfere with the rights of other waterfront owners or negatively affect the character of the natural shoreline ? ²⁵		
13. Does it regulate the number of motor crafts and rafts allowed per dock, using specific dimensions? ²⁶		
14. Does Zoning Ordinance regulate the types of structures or dwelling units that are allowed per every 100' of waterfront access to inland lakes or streams or rivers?		
Shorelines: Keyhole/Funneling 15. Does the Zoning Ordinance include keyhole prevention provisions by placing restrictions on the size and type of multi-boat launch and docking sites? ²⁷		
Shorelines: Road Ends 16. Does the Zoning Ordinance regulate Road Ends terminating at the edge of navigable waters, to ensure the right of public access does not include : the ability to install private docks or boat hoists for the overnight mooring of boats, or the right to use public road ends for lounging, sunbathing or picnicking? ²⁸		
Shorelines: Marinas 17. Does the community regulate marinas using special land use provisions or other tools? ²⁹		
18. If yes, does it ensure marinas do not obstruct navigation or otherwise interfere with public rights in navigable waters? ³⁰		
19. Does it restrict boat repair and maintenance activities to clearly mark areas to prevent debris from falling into the water and prevent invasive species ? ³¹		
20. Does it require fueling stations to have spill containment equipment that is stored in a clearly marked location? Does it require a spill contingency plan, and posting emergency phone numbers in a prominent location? Are signs of leakage or spillage required to be investigated immediately, and undertake cleanup in accordance with applicable best management practices ? ³²		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) N/A ITEMS SHOULD BE ACCOUNTED FOR BY:		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION III		
TOTAL POINTS POSSIBLE		60
60-41=strong; 40-21=adequate; 20-0=weak		

IV. Impervious Surface Reduction		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Impervious Surface Reduction: Lot Coverage		
1. If rural, low density area, does Zoning Ordinance limit impervious lot coverage (15% maximum) includes all impervious surfaces not just the house)? ³³		
2. Are there limits on the extent of lawn area for residential lots in rural areas? ³⁴		
3. Does Zoning Ordinance allow flexible lot coverage standards to allow creative approaches that limit impervious surfaces (for both single lots and larger developments; rural or urban)? ³⁵		
4. Does Zoning Ordinance allow for relaxation of front yard setbacks to reduce driveway lengths (and overall site imperviousness)? ³⁶		
5. Does Zoning Ordinance allow location of bioretention, rain gardens, filter strips and swales in required setback areas and common areas ? ³⁷		
Impervious Surface Reduction: Parking Lots		
6. Does Zoning Ordinance allow flexibility to reduce the number of parking spaces constructed, if warranted by the proposed development? ³⁸		
7. Does Zoning Ordinance require some portion of proposed parking lots to be planted with trees/vegetation within the parking lot paving ? ³⁹		
Impervious Surface Reduction: Roads		
If community has jurisdiction over roads or allows private roads: ⁴⁰		
8. Are streets to be designed with the minimum required pavement width needed to support travel lanes, emergency, maintenance and service vehicles (18-22' for low traffic roads)?		
9. Are right-of-way widths minimized to avoid mass clearing and grading (less than 45')?		
10. CUL-DE-SACS: Do cul-de-sacs require the inclusion of a landscaped area? Are the minimum radii of cul-de-sacs no more than 35'? Are hammerheads allowed instead of cul-de-sacs, to encourage more creative solutions to drainage?		
11. CURB AND GUTTER: If curb and gutter is used, are perforated curbs (allows water to flow into swales) or invisible curbs (flush with road surface) required? Are the use of open swales allowed instead of curb and gutter?		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -)		
N/A ITEMS SHOULD BE ACCOUNTED FOR BY:		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION IV		
TOTAL POINTS POSSIBLE		33
33-23=strong; 22-12=adequate; 11-0=weak		

V. Stormwater Management^{41 42} 3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Stormwater: Construction and Redevelopment		
1. Does the community regulate stormwater , either as part of the Zoning Ordinance or separately?		
2. Does the stormwater ordinance require review by the county drain commissioner and county soil and sedimentation program? ⁴³		
3. Are stormwater management areas and facilities , whether on-site or off-site, required to be designed, constructed, and maintained to prevent flooding and protect surface and ground water quality ? ^{44 45}		
4. Is the design of any stormwater management system required to be based upon a 25-year frequency, 24-hour duration storm event? ⁴⁶		
5. Does the stormwater ordinance require runoff leaving the site to be controlled to a non-erosive velocity , both during and after construction? ⁴⁷		
6. Does it prohibit direct discharge of stormwater into natural watercourses, including lakes, ponds, rivers, streams and wetlands? ⁴⁸		
7. Does it prohibit stormwater from exiting the property after exposure to harmful sources ? ⁴⁹		
8. Does the Zoning Ordinance limit land disturbance and grading ? ⁵⁰		
9. Does ordinance require that all stormwater management systems be regularly evaluated and maintained ? ⁵¹		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION V		
TOTAL POINTS POSSIBLE		27
27-19=strong; 18-10=adequate; 9-0=weak		

VI. Soil Erosion and Sediment Control (SESC) ^{52 53}		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
1. Does the community regulate soil erosion and sediment control (SESC), and are those regulations at least as strict as the state's requirements (or as administered by the county)? Is there a clear method of enforcement ? ⁵⁴		
2. Does SESC ordinance require measures to be in place before granting zoning permits ? ⁵⁵		
3. Does the Zoning Ordinance require a permit or site plan approval prior to earth changing actions adjacent to water features, wetlands, or storm drains? ⁵⁶ Does it require that all SESC controls be installed prior to any clearing or grading ? ⁵⁷		
4. Does SESC ordinance require that controls be maintained and monitored on a periodic basis? ⁵⁸		
5. Does ordinance require methods to respond to public complaints regarding construction site erosion control? ⁵⁹		
6. Is a Pre-winter meeting required to assess whether the existing soil cover will provide adequate soil erosion and sedimentation control during winter months? ⁶⁰		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION VI		
TOTAL POINTS POSSIBLE		18
18-13=strong; 12-7=adequate; 6-0=weak		

VII. Sewer/Septic ⁶¹		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Sewer: Master Plan		
1. Is it appropriate for this community to have a delineated Sewer Service Area? ⁶²		
2. Has the Sewer Service Area been mapped, including sewers that currently exist, areas that will be sewered in the future, and areas that will not be sewered? ⁶³		
3. Is existing infrastructure inventoried for age and condition? Is a maintenance and replacement schedule provided in the Master Plan? ⁶⁴		
4. Does the Master Plan require the community to have a program to identify sanitary sewer or septic systems that are seeping into the storm water system, surface waters or groundwater? ⁶⁵		
Sewer: Ordinance		
5. Is the Sewer Service Area map used in zoning decisions? ⁶⁶		
Septic Systems		
6. Does the Zoning Ordinance require that a septic system be located at least 100' from a wetland or open water feature, and specify a minimum isolation distance from all nearby wells? ⁶⁷		
7. Does the Zoning Ordinance enforce periodic inspection of septic tanks by an authorized inspector? Is there a point of sale inspection requirement?		
8. Are regulations that pertain to septic systems coordinated with the County Health Department regulations?		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -)		
<i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION VII		
TOTAL POINTS POSSIBLE		24
24-17=strong; 16-9=adequate; 8-0=weak		

VIII. Wetlands ⁶⁸		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Wetlands Protection: Zoning/Local Ordinance		
1. Has the community adopted a local wetland ordinance that protects isolated wetlands less than five acres in size? Has DEQ been notified about this ordinance, as required by state law?		
2. Does the local wetland ordinance also cover isolated wetlands under two acres in size, and if so, does it include the special conditions required by state law?		
3. Does the Zoning Ordinance require a building setback requirement from wetland areas (at least 20-30')? ⁶⁹		
4. Does the Zoning Ordinance require a naturally vegetated buffer area adjacent to wetlands? ⁷⁰		
5. Does the local wetland ordinance require mitigation within the same watershed that replaces the functions and values lost by the wetlands lost by development? ⁷¹		
6. Are there sufficient penalties (minimum and maximum fine amounts) for violations of the wetlands ordinance, and are enforcement methods in place?		
7. In order to prevent the creation of unbuildable lot splits that consist of mostly wetlands, is the minimum shoreline lot frontage at least 65' for sewered lots, and at least 100' for unsewered lots? ⁷²		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION VIII		
TOTAL POINTS POSSIBLE		21
21-15=strong; 14-8=adequate; 7-0=weak		

IX. Groundwater ^{73 74} and Wellhead ⁷⁵ Protection		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
Groundwater Protection		
1. Is Site Plan Review required to ensure there are no unnecessary threats posed to groundwater by new or redevelopment proposals? Are there additional requirements for site plan submittals in groundwater recharge areas ? ⁷⁶		
2. Does the Zoning Ordinance prohibit both direct and indirect discharge of hazardous substances to groundwater without appropriate approvals/permits? ⁷⁷		
3. Are groundwater protection requirements for mining operations included in the Zoning Ordinance?		
Wellhead Protection		
If the community has municipal well fields , have they done the following:		
4. Developed a wellhead protection program or plan, required that it be implemented , and require periodic updates ?		
5. Restricted high-risk land use activities in wellhead protection areas, or use an overlay district to add additional development standards for wellheads in those areas?		
6. Completed and maintain a comprehensive inventory of potential threats to groundwater?		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -)		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION IX		
TOTAL POINTS POSSIBLE		18
18-13=strong; 12-7=adequate; 6-0=weak		

X. Other Relevant Elements		
3 = Yes; 2 = Yes, partially with Comments; 1 = Yes, minimally with comments; 0 = missing; N/A= not applicable		
Criteria	Citation and Comments note any comments and citation	Points
FLOODPLAINS		
1. Does the community participate in the National Flood Insurance Program?		
<i>[Communities participate in NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation is voluntary.⁷⁸]</i>		
2. If yes, does is there ordinance language that regulates floodplain development?		
3. Does the community coordinate their efforts to protect the floodplain with adjoining communities and the County?		
4. Do the community's floodplain regulations provide for assessing the impacts of flood management projects on water quality?		
5. Do the floodplain regulations provide for adding BMPs to existing projects?		
6. Is there a variable width, naturally vegetated buffer that encompasses the 100 year floodplain area?		
HIGH RISK EROSION AREAS, STEEP SLOPES⁷⁹		
7A. Does the community have high risk erosion areas and/or steep slopes, protected by a DEQ approved HREA, an overlay zone, or other ordinance?		
7B. If yes, are all structures required to be set back at least 75 feet from the top of the bluff or the erosion area?		
3 POINTS FOR 75'; 2 POINTS 74-50'; 1 POINT UNDER 50'		
8. Is the ordinance language to regulate high risk erosion areas based on structure setbacks from the bluffline? OR Is the ordinance language based on structure setbacks from the erosion hazard line? ⁸⁰		
9. Are the required and unique HREA definitions included in the ordinance, and sufficiently integrated to ensure that there is no conflict between them and other ordinance definitions?		
10. If no HREA overlay district or ordinance in place, does the zoning ordinance include performance standards designed to minimize soil and vegetative disruptions in HREA or steep slope areas?		
11. Is all HREA development subject to special use permits or site plan review?		

12

CRITICAL DUNES⁸¹ 12. Does the community have critical dunes? If so, has the local government assumed administration of Part 353, with DEQ approval, to protect them?		
13. If no assumption of Part 353, does the community require setbacks from the crest of the foredune?		
14. If no assumption of Part 353, does an overlay district exist on the Great Lakes coastal shoreline to add land use considerations to increase protection for critical dunes?		
15. If no assumption of Part 353, does the community have land division guidelines and/or subdivision control in place to protect the critical dunes?		
16. Does site plan review limit impervious surfaces, allow for raised structures, and prohibit vegetation removal in critical dune areas?		
ADDITIONAL REMARKS, INCLUDING BONUS POINTS (+ OR -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i>		
BONUS POINTS (+ OR -)		
TOTAL POINTS SECTION X		
TOTAL POINTS POSSIBLE		48
48-33=strong; 32-17=adequate; 16-0=weak		

Results Worksheet

Category	Possible Score	Total Score	Comments
I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak			
II. Basic Zoning Elements 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak			
III. Shorelines 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak			
IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak			
V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak			
VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak			
VII. Sewer/Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak			
VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak			
IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak			
X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak			

Notes

¹ SEMCOG, the Southeast Michigan Council of Governments, 2002. "Storm Water Management," 1. *Opportunities for Water Resource Protection in Local Plans, Ordinances, and Programs*

² SEMCOG, 2002. "Impervious Surface Reduction," 6.

³ Planning and Zoning Center Inc., 2003. "Appendix Q: Fee Collection Information". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁴ SEMCOG, 2002. "Development Review Process, Construction," 57.

⁵ Planning and Zoning Center Inc., 2003. "Appendix P: Environmental Assessment Requirements". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁶ Planning and Zoning Center Inc., 2003. "Appendix U: Groundwater Protection". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁷ Van Buren County, MI. *Document Review for Water Resource Protection*, 7. Retrieved from: http://www.vbco.org/downloads/mp_zo_review_checklist.pdf

⁸ Planning and Zoning Center Inc. (Benzie County, MI), 2003. "Appendix T: Cluster Development and Planned Unit Development Examples". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁹ Van Buren County, MI. *Document Review*, 5.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ Tip of the Mitt Watershed Council, 1997. "Appendix R: Sensitive Areas Protection". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

¹⁴ Michigan Land Use Institute, 2001. "Appendix S: Shoreline Protection". Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ County of Macomb, Michigan, 2008. "VI: Natural Feature Setback pp 6.4-6.9". *Model Environmental Ordinances*, 6.2. Retrieved from: http://www.macombcountymi.gov/planning/PDF_Files/Model%20Ord.%20Chapters/06-Setback%20Ordinance%201-14-04.pdf

¹⁸ Ibid.

¹⁹ Michigan State University Extension, Home*A*Syst chapter 6, "Managing Shoreline Property to Protect Water Quality." Retrieved 2009 from: <http://www.uwex.edu/farmasyst/states/mishore.html>

²⁰ University of Wisconsin Extension Lakes, University of Wisconsin Stevens Point (UWSP) College of Natural Resources. Lake Classification Fact Sheet Series, #5 "Shoreline Buffer Zones and Setbacks". Retrieved 2009 from http://www.uwsp.edu/cnr/uwexlakes/factsheets/fs_5.pdf

²¹ Van Buren County, MI. *Document Review*, 7.

²² Ibid.

²³ Whittier T.R., Paulsen S.G., Larsen D.P., Peterson S.A., Herlihy A.T., and Kauffman P.R. 2002. Indicators of ecological stress and their extent in the population of Northeastern lakes: a regional scale assessment. *Bioscience* 52(3): 235-247.

²⁴ Standing, B. H., Bernthal, T. W., and S. A. Jones. 1997. *Shoreland Zoning Resource Guide: An Annotated Model Shoreland Zoning Ordinance*. Wisconsin Department of Natural Resources.

²⁵ University of Wisconsin Extension Lakes, University of Wisconsin Stevens Point (UWSP) College of Natural Resources. Shoreland Management and Lake Classification Fact Sheet Series, #11 "Managing Piers and Wharves". Retrieved 2009 from: http://www.uwsp.edu/cnr/uwexlakes/factsheets/fs_11.pdf

²⁶ Standing, et al.

²⁷ Kohl, Secrest, Wardle, Lynch, Clark & Hampton, 1994. "Appendix I: Sample Keyhole Development Regulations". Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

²⁸ Stefan J. Scholl, Northern Michigan Real Estate Blog, 2006. "Public Road End Controversy." Retrieved 2009 from <http://buyersbroker.biz/blog/2006/04/public-road-end-controversy.html>

²⁹ Planning and Zoning Center Inc., 2003. Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*. Part III Local Planning and Zoning, Other Zoning Considerations: Special Land Uses, Part III-9. Accessed online: http://www.michigan.gov/documents/deq/lwm-czm-ftg-part3_266084_7.pdf

³⁰ University of Wisconsin Extension Lakes, Fact Sheet #11 "Managing Piers and Wharves"

³¹ Genesee/Finger Lakes Regional Planning Council, City of Canandaigua Blank Assessment Form, http://www.gflrpc.org/Publications/LocalLaws/Assessment/Blank_Assessment_Form.pdf

³² Ibid.

³³ Van Buren County, MI. *Document Review*, 3.

³⁴ Ibid.

³⁵ SEMCOG, 2002. "Impervious Surface Reduction," 8.

³⁶ Van Buren County, MI. *Document Review*, 3.

³⁷ Ibid.

³⁸ SEMCOG, 2002. "Impervious Surface Reduction," 7.

³⁹ Van Buren County, MI. *Document Review*, 2.

⁴⁰ Ibid., 2-3

⁴¹ SEMCOG, the Southeast Michigan Council of Governments, 2009. "Appendix H: Model Ordinances". *Michigan Low Impact Development Manual* pp. 477-497. Retrieved from: http://www.semcog.org/uploadedfiles/Programs_and_Projects/Water/Stormwater/LID/LID_Manual_appendixH.pdf

⁴² Tip of the Mitt Watershed Council, 1997. "Appendix H: Sample Stormwater Ordinance". Published in: Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁴³ Planning and Zoning Center Inc., 2003. Appendix U, 3.

⁴⁴ Tip of the Mitt Watershed Council, 1997. Appendix H, 2.

⁴⁵ Planning and Zoning Center Inc., 2003. Appendix U, 5.

⁴⁶ Tip of the Mitt Watershed Council, 1997. Appendix H, 2.

⁴⁷ Ibid.

⁴⁸ Tip of the Mitt Watershed Council, 1997. Appendix H, 4.

⁴⁹ Planning and Zoning Center Inc., 2003. Appendix U, 5-6.

⁵⁰ SEMCOG, 2002. "Storm Water Management Standards," 2.

⁵¹ Ibid.

⁵² Environmental Protection Agency, 2007. "Erosion and Sediment Control: Model Ordinance Language". *Model Ordinances to Protect Local Resources*. Retrieved from: <http://www.epa.gov/owow/nps/ordinance/mol2.htm#ml2>

⁵³ Michigan Department of Environmental Quality, 2003. "Appendix G: Sample Soil Erosion and Sedimentation Control Ordinance". Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁵⁴ SEMCOG, 2002. "Soil Erosion and Sedimentation Control (ESC)," 16.

⁵⁵ Ibid.

⁵⁶ Michigan Department of Environmental Quality, 2003. Appendix G.

⁵⁷ SEMCOG, 2002. "Soil Erosion and Sedimentation Control (ESC)," 16.

⁵⁸ SEMCOG, 2002. "Soil Erosion and Sedimentation Control (ESC)," 16.

⁵⁹ Ibid, 17.

⁶⁰ Van Buren County, MI. *Document Review*, 4.

⁶¹ Environmental Health Regulations for Benzie County Health Department Authority, Jurisdiction, Purpose and General Definition. Chapter 2; Articles I-IX. <http://www.bldhd.org/publications/benziecode.pdf>

⁶² SEMCOG, 2002. "Sanitary Sewer Planning and Infrastructure," 20.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Van Buren County, MI. *Document Review*, 12.

⁶⁶ SEMCOG, 2002. "Sanitary Sewer Planning and Infrastructure," 20.

⁶⁷ Van Buren County, MI. *Document Review*, 21.

⁶⁸ Michigan Department of Environmental Quality and Huron River Watershed Initiative, 2003. "Appendix E: Sample DEQ Wetland Ordinance". Published in: Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁶⁹ Van Buren County, MI. *Document Review*, 6.

⁷⁰ Ibid.

⁷¹ SEMCOG, 2002. "Wetland Preservation," 34.

⁷² University of Wisconsin Extension Lakes, University of Wisconsin Stevens Point (UWSP) College of Natural Resources. Shoreland Management and Lake Classification Fact Sheet Series, #13, "Guiding Lake shore Development Through Lot Size and Side Yard Standards." Retrieved 2009 from: http://www.uwsp.edu/cnr/uwexlakes/factsheets/fs_13.pdf

⁷³ Planning and Zoning Center Inc., 2003. Appendix U.

⁷⁴ EPA, 2006. *Model Ordinances to Protect Local Resources: Groundwater Protection Overlay District Example Ordinance*. Retrieved from: <http://www.epa.gov/owow/nps/ordinance/mol7.htm>

⁷⁵ The National Flood Insurance Program (NFIP) <http://fema.gov/plan/prevent/floodplain/index.shtm>

⁷⁶ Planning and Zoning Center Inc., 2003. Appendix U, 5.

⁷⁷ Ibid.

⁷⁸ Federal Emergency Management Agency (FEMA) website, "The National Flood Insurance Program accessed 2.3.2010 <http://www.fema.gov/about/programs/nfip/index.shtm>

⁷⁹ High Risk erosion areas (HREA) are shorelands of the Great Lakes and connecting waters where erosion has been occurring at a long-term average rate of one foot or more per year. Planning and Zoning Center Inc., 2003. Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*, Part II-41.

⁸⁰ Planning and Zoning Center Inc., 2003. "Appendix K: Sample High Risk Erosion Areas Ordinance." Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

⁸¹ Michigan has 270 linear miles of sand dunes created by sand, wind, and Great Lake water level fluctuations. They are prone to movement and erosion more than other geographic areas because sand is not a stable soil type, and various types of development can disturb dunes. Precautionary measures (elevated boardwalks, adequate setbacks) help minimize dune destruction. Planning and Zoning Center Inc., 2003. Ardizzone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*, Part II-48 to 53.

Additional Resources

Master Planning & Basic Zoning

Planning and Zoning Center (PZC) at MSU, Online listing Michigan local governments with a master plan and/or zoning ordinance:

www.pzcenter.msu.edu

Link under “Resources”: over 200 plans and 200 zoning ordinances are listed including links to similar online lists in other states. The PZC also maintains online information resources, develops decision support systems and serves as an information/data clearinghouse to enhance city, village, township, county, regional and state planning efforts.

Michigan Planning Guidebook: for Citizens and Local Officials, MSU Planning & Zoning Center, 2008, by Wyckoff, Mark.

The guidebook describes the roles and responsibilities of the planning commission and legislative body under the new Michigan Planning Enabling Act, PA 33 of 2008, with clear direction on procedures and standards to guide decisions.

Michigan Zoning Guidebook: for Citizens and Local Officials, MSU Planning & Zoning Center, 2nd edition, 2008, by Wyckoff, Mark.

The guidebook describes the roles and responsibilities of all bodies under the Michigan Zoning Enabling Act, PA 110 of 2006, as amended by PA 12 of 2008, with clear direction on procedures and standards to guide decisions.

Checklist 1F: What Should be in a Master Plan?

Michigan State University Extension, Land Use Series, May 2008, by Solomon, Dean. 17 pages.

Can be found on the web at:

<http://web5.msue.msu.edu/lu/pamphlet/Bclsam/pamphlet1F%20PlanContents.pdf>

Sample Approach to Update a Zoning Ordinance to Comply With Michigan Zoning Enabling Act of 2006. Michigan State University Extension, Land Use Series, May 2008, by

Schindler, Kurt H. 16 pages.

Can be found on the web at:

<http://web5.msue.msu.edu/lu/pamphlet/Bclsam/pamphlet9SampleZoneAmdMiZoneEnabAct.pdf>

Sample Ordinances from within the Grand Traverse Bay Watershed

Sample Vegetated Riparian Buffer Ordinances

East Bay Township Zoning Ordinance: Article 4BR: Boardman River District Ordinance 406 Link: http://www.eastbaytwp.org/downloads/article_4br.pdf Title: ARTICLE IV - DISTRICT STANDARDS - SECTION 406 BOARDMAN RIVER DISTRICT, BR (Similar language found in several other zoning ordinances within the area of the Boardman River designated as a Natural River)

East Bay Township Zoning Ordinance: Article 2: General Provisions; Mitchell and Baker Creeks Area Ordinance 219 Link: http://www.eastbaytwp.org/downloads/article_2.pdf Title: ARTICLE V - DIMENSIONAL REQUIREMENTS

Garfield Township Zoning Ordinance: Article 7: Section 7.5.7 Setback from Designated Wetlands Link: http://garfield-twp.com/downloads/sec7_5_5setbklakesrivers_streams.pdf (The section appears on this page of the zoning ordinance) http://garfield-twp.com/downloads/sec7_5suppshorelandregs.pdf

Sample Open Space/Cluster Development Ordinances

East Bay Township Zoning Ordinance: Article 2: General Provisions, Open Space Preservation Section 225 Link: http://www.eastbaytwp.org/downloads/article_2.pdf

East Bay Township Zoning Ordinance: Article 2: General Provisions, Residential Cluster Subdivisions Section 226 Link: http://www.eastbaytwp.org/downloads/article_2.pdf

Whitewater Township Zoning Ordinance: Article 31: Planned Unit Development See also: http://www.whitewatertownship.org/downloads/article_xxxi.pdf (Purpose is to preserve open space; minimum open space requirement of 50 percent of development)

Sample Ground Water Protection and Septic System Maintenance Ordinances

East Bay Township Zoning Ordinance: Article 2: General Provisions, Ground Water Protection

Standards Section 220 Link: http://www.eastbay-twp.org/downloads/article_2.pdf (Similar language found in several other local zoning ordinances)

Long Lake Township: Septic System Time of Transfer Ordinance
Link: <http://www.longlaketownship.com/planning/tot-septic-ord-final-10-31-08.pdf>
Title: Long Lake Township - Grand Traverse County Michigan - Ordinance 107 - INSPECTION OF ON-SITE SEWAGE DISPOSAL SYSTEMS AT THE TIME OF PROPERTY TRANSFER ORDINANCE

Sample Private Roads Ordinance

Whitewater Township Private Road Ordinance No. 32 Link: http://www.whitewatertownship.org/downloads/private_road_ord.pdf

Whitewater Township Road Plan
See also: <http://www.eastbaytwp.org/downloads/whitewaterroadplan.pdf>

Sample Off-Street Parking Ordinance

Whitewater Township Zoning Ordinance: Article 34, Section 34.30, Parking Lot and Loading Area Requirements and Article 33, section 33.40, Off-Street Parking Areas Link: www.whitewatertownship.org/downloads/article_xxxiv.pdf and www.whitewatertownship.org/downloads/article_xxxiii.pdf (For stormwater management and landscaping requirements)

Sample Tree Planting Ordinance

Blair Township Zoning Ordinance: Article 16, Section 16.05.3b, General Site Landscaping Link: www.blairtownship.org/Planning_Zoning/Working_Zoning_Ordinance.pdf (See page 67 of the ordinance)

Sample Site Plan Review Ordinance

Whitewater Township Zoning Ordinance: Article 25: Site Plan Review
Link: http://www.whitewatertownship.org/downloads/article_xxv_amend_55.pdf
Filename: ARTICLEXXVAmend 55-whitewater-twp-site-plan-review.pdf (Includes language about stormwater management and preservation of natural vegetation)

Sample Wetland Ordinance

Forest Home Township Zoning Ordinance: Article 5: Wetlands Overlay District
Link: www.foresthometwp.com/zoning/Articles_04_through_06.htm

Sample Supporting Documents

Long Lake Township Community Forestry Plan
Link: <http://www.longlaketownship.com/forestry/longlaketwn.html> Link to Table of Contents: <http://www.longlaketownship.com/forestry/contents.html> Files in folder: LongLakeTwp-Community ForestryPlan (all are in HTML format) Long Lake Township Natural Features Inventory
Link: <http://www.longlaketownship.com/planning/long-lake-nfi-final-report.pdf>

Whitewater Township Road Plan
See also: <http://www.eastbaytwp.org/downloads/whitewaterroadplan.pdf> (Supporting information for township road ordinance)

Other Model Ordinance Resources

Tip of the Mitt Watershed Council

The Watershed Council has numerous Model Ordinances available for your use on a variety of topics. These ordinances are featured by the Michigan DEQ in a variety of places, including the widely used book, Filling the Gaps: Environmental Protection Options for Local Governments. If you need help with a Model Ordinance, please contact us and we can send them to you electronically: (231) 347-1181

Michigan DEQ – Local Wetland Ordinance webpage

Link: http://www.michigan.gov/deq/0,1607,7-135-3313_3687-24312--,00.html

Macomb County Model Environmental Ordinances

http://www.macombcountymi.gov/planning/Model_Envir_Ordinances.htm

Michigan Township Association, Open Space Preservation Provisions

Link: <http://michigantownships.org/zoning.asp>

Land Information Access Association, Model Zoning Policies and Ordinances

Includes floodplain standards, private road ordinance, resource protection overlay, steep slope development standards, stormwater management, tree preservation standards, and wetlands/natural features setbacks Link: <http://www.parternershipsforchange.cc/planningeduc0124.asp>

Oakland County Planning & Economic Development Services, Environmental Stewardship Services, Planning Tools for Natural Resource Protection

Includes sample and model ordinances for natural area protection; wetland, floodplain, and water-course protection; natural features setback/ buffer; woodland protection; native vegetation; stormwater protection; groundwater protection; surface water protection; erosion & sediment control; reduction of impervious surfaces; and reduction of phosphorous/fertilizers. Link: http://www.oakgov.com/peds/program_service/es_prgm/com_mo.html

Low Impact Development and Best Management Practice Resources

A Natural Solution: An Introduction to Low Impact Development for Commercial and Residential Applications in the Grand Traverse Region
Link: http://www.gtbay.org/downloads/low_impact_development_guidebook_small_3.pdf
Filename: low_impact_development_guidebook_small_3.pdf

Better Site Design: A Handbook for Changing Development Rules in Your Community

Link to Part 1: http://www.cwp.org/Resource_Library/Center_Docs/BSD/ELC_BSDpart1.pdf
Filename: ELC_BSDpart1.pdf Link to Part 2: http://www.cwp.org/Resource_Library/Center_Docs/BSD/ELC_BSDpart2.pdf Filename: ELC_BSDpart2.pdf

Michigan DEQ Best Management Practices Design Manuals webpage

Link: http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3714-118554--,00.html

Guidebook of Best Management Practices for Michigan Watersheds (Introduction) Link: http://www.michigan.gov/documents/deq/deq-wb-nps-Intro_250601_7.pdf

Guidebook of Best Management Practices for Michigan Watersheds (Entire)

Link: http://www.michigan.gov/documents/deq/deq-wb-nps-WholeGuidebook_250602_7.pdf

State of Michigan Environmental Protection Resources:

Michigan Department of Natural Resources and Environment (DNRE) website home page

<http://www.michigan.gov/deq>

Filling the Gaps: Environmental Protection Options for Local Governments

Written by Katherine Ardizzone, NOAA Coastal Management Fellow for DEQ (2001-2003), and Mark Wyckoff, FAICP and President of Planning & Zoning Center, Inc. This book was created to equip local officials with important information to consider when making local land use plans, adopting new environmentally focused regulations, or reviewing proposed development. As of January 2011, it is in the process of being updated. It is in electronic form and can be downloaded at this website: http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3696-73358--,00.html

Michigan DNRE Forest, Land and Water Management website

<http://www.michigan.gov/dnr/0,1607,7-153-30301---,00.html>

Michigan's Waters website

<http://www.michigan.gov/dnre> - Click the link on the left that says "Water": "DNRE Water Programs establish water quality standards, assess water quality, provide regulatory oversight for all public water supplies, issue permits to regulate the discharge of industrial and municipal wastewaters, monitor State Water resources for water quality, the quantity and quality of aquatic habitat, the health of aquatic communities, and compliance with state laws."

Inland Lakes and Streams website

www.mi.gov/dnreinlandlakes
"The Inland Lakes and Streams Program is responsible for the protection of the natural resources and the public trust waters of the inland lakes and streams of the state. The program oversees activities including dredging, filling, constructing or placement of a structure on bottomlands, constructing or operating a marina, interfering with natural flow of water or connecting a ditch or canal to an inland lake or stream."

Surface Water website

http://www.michigan.gov/deq/0,1607,7-135-3313_3682---,00.html "DNRE is committed to protecting and preserving Michigan's water resources. There are several programs in place which support this goal. These include non-point source pollution, septage, storm water, and sanitary and combined sewer overflow."

Nonpoint Source Pollution website

http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3714---,00.html

“Michigan’s Nonpoint Source Program assists local units of government, non-profit entities, and numerous other state, federal, and local partners to reduce nonpoint source pollution statewide. The basis of our program is watershed management and our program works with stakeholders to develop and implement plans to protect the watersheds of the state. We look forward to working with you to protect and improve Michigan’s water resources.”

Water Management website

http://www.michigan.gov/deq/0,1607,7-135-3313_3684---,00.html

“Water Management Activities that may have potential impacts to the public trust, riparian rights, or may impair or destroy the waters or other natural resources of the state, including inland lakes and streams, the Great Lakes, wetlands, and groundwater, are regulated by DNRE. Information on the DNRE permit processes and water resource related databases and digital maps is provided.”

Aquatic Invasive Species website

http://www.michigan.gov/deq/0,1607,7-135-3313_3677_8314---,00.html

Coastal Management Program website

http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3696---,00.html

“Michigan’s Coastal Management Program was developed under the federal Coastal Zone Management Act and approved in 1978. Since then, the Program has assisted organizations in protecting and enhancing their coastal areas, funded studies related to coastal management and helped to increase recreational opportunities in Michigan’s Great Lakes coastal area.”

Drinking Water website

http://www.michigan.gov/deq/0,1607,7-135-3313_3675---,00.html

“DNRE has primary enforcement authority in Michigan for the Federal Safe Drinking Water Act under the legislative authority of the Michigan Safe Drinking Water Act. As such, the division has regulatory oversight for all public water supplies, including approximately 1,500 community water supplies and 11,000 non-community water supplies. In addition the program regulates

drinking water well drilling. Michigan has more households served by private wells than any other state, with approximately 25,000 domestic wells drilled per year. DNRE also investigates drinking water well contamination, and oversees remedial activities at sites of groundwater contamination affecting drinking water wells.”

Water Quality Monitoring website

http://www.michigan.gov/deq/0,1607,7-135-3313_3686---,00.html

“DNRE has several water quality monitoring programs that assist in keeping all of Michigan’s water clean.” These include beach water and inland lakes monitoring.

Wetlands Protection website

http://www.michigan.gov/deq/0,1607,7-135-3313_3687---,00.html

“Michigan’s wetland statute, Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, defines a wetland as “land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh.” The definition applies to public and private lands regardless of zoning or ownership.”

Soil Erosion and Sedimentation Control Program website

http://www.michigan.gov/deq/0,1607,7-135-3311_4113---,00.html

“Soil Erosion and Sedimentation Control Program was implemented to regulate the pollution of Michigan waters by improper construction site management practices. Special provisions for all development sites where there will be a disruption in the site land cover is required.”

Clean Water Fund website

http://www.michigan.gov/deq/0,1607,7-135-3307_3515-93611--,00.html

“The purpose of the Clean Water Fund is to implement DNRE’s surface water quality monitoring plan and to implement water pollution controls.”

Surface Water Quality Monitoring Projects

“The legislation for the Clean Water Fund stated that the highest priority for the Fund would be the monitoring strategy; therefore, \$45 million of the \$90 million was set aside to implement the

monitoring strategy. Implementation of the monitoring strategy is being done using both grants and direct contracts to vendors.”

Water Pollution Control Projects

“The other half of the Clean Water Fund is intended to implement water pollution control activities, which, under the Clean Water Fund administrative rules, were identified as the following:

- Providing state match to establish and implement the conservation reserve enhancement program (CREP) in Michigan. The administrative rules established a \$5 million limit on the CREP and that obligation has been met.
- Implementing water quality protection or improvement activities in approved watershed management plans that are required under a NPDES voluntary storm water permit.
- Implementing water quality protection or improvement recommendations in approved watershed plans that place a strong emphasis on protecting high quality waters.

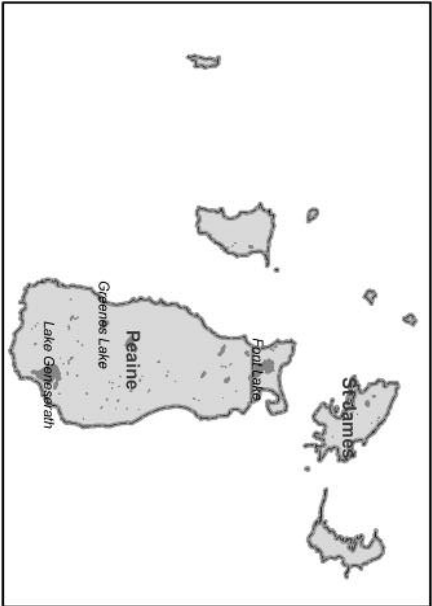
- Implementing water quality recommendations in RAPs and LaMPs, other than those involving contaminated sediments.
- Implementing programs to identify and require the correction of illicit connections to storm sewer systems.
- Identifying failing on-site septic systems.
- Implementing corrective measures to correct failing on-site septic systems.
- Locating and plugging abandoned wells.”

Natural Rivers Program website

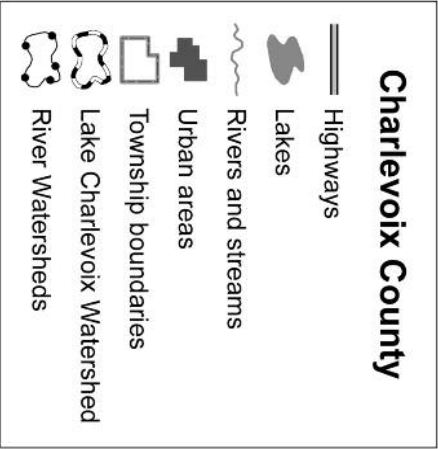
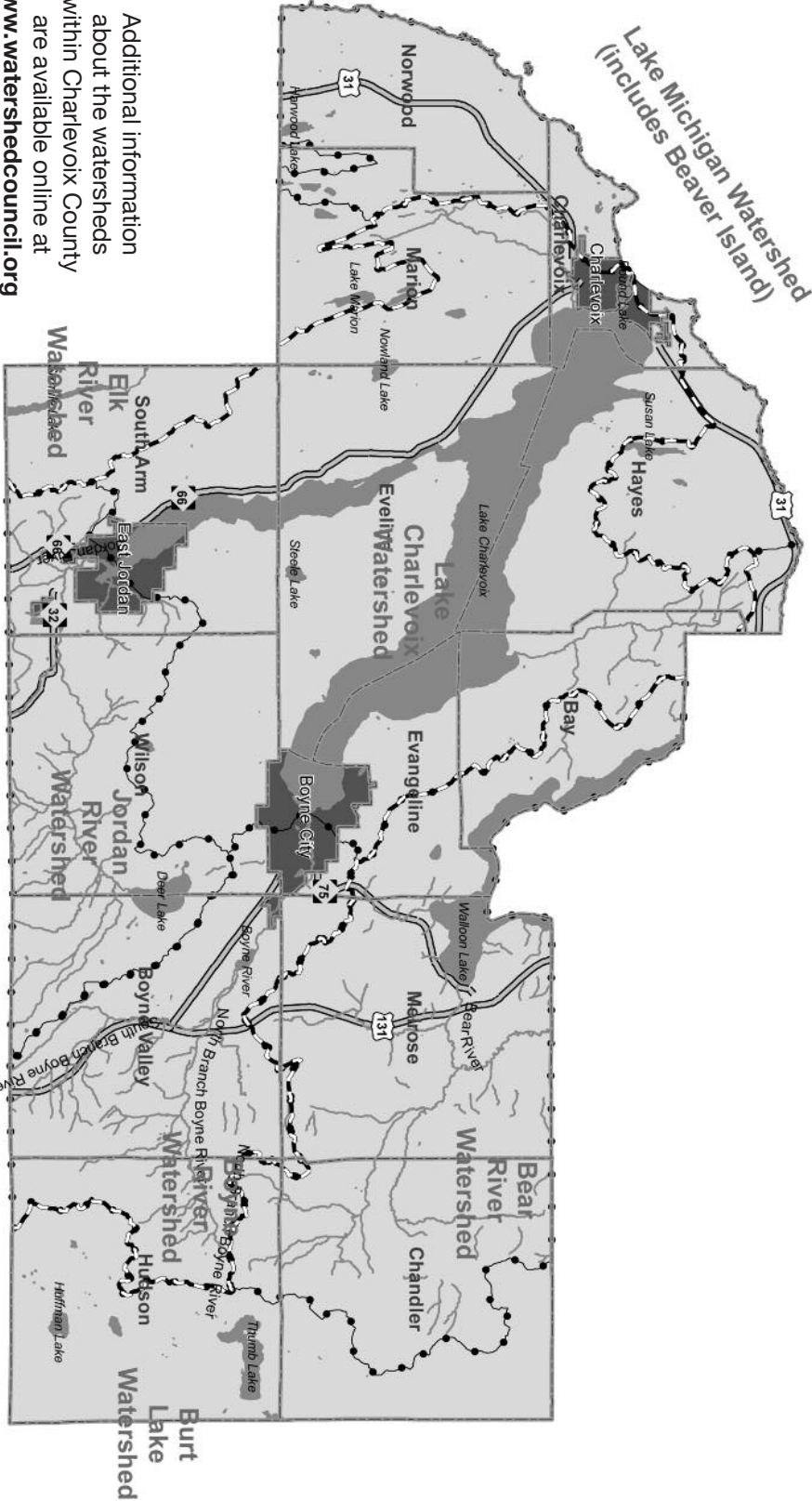
http://www.michigan.gov/dnr/0,1607,7-153-30301_31431_31442---,00.html

“Michigan citizens are fortunate to be surrounded by more than 36,500 miles of rivers and streams, 12,500 miles of which are classified as cold water trout streams. We are also fortunate that Michigan has many programs focused on the protection and enhancement of those river resources”.





Additional information about the watersheds within Charlevoix County are available online at www.watershedcouncil.org



Blank Page

**Financial support for this project
was generously provided by:**

US Environmental Protection Agency

Michigan Department of Environmental Quality

Joyce Foundation

Charlevoix County Community Foundation

Dole Family Foundation

Herrington-Fitch Family Foundation

The Watershed Center Grand Traverse Bay

Burt Lake Preservation Association

Elk-Skegemog Lakes Association

Lake Charlevoix Association

Pickereel-Crooked Lakes Association

Three Lakes Association

Michigan Environmental Council



www.watershedcouncil.org

ISBN 978-1-889313-05X