



ANTRIM 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.

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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 Antrim 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:

Development along an inland lake shoreline impacts the lake as well as the surrounding terrestrial ecosystems. However, appropriate planning and management techniques can lessen these impacts. Techniques that benefit and protect inland lake 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 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.

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 can benefit lakes in the following ways: 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. 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

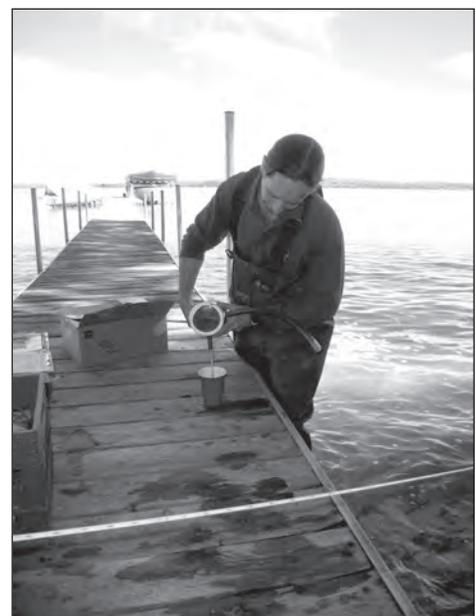
Sediment is a major pollutant in Michigan's surface waters. Soil erosion often results in increased sediment loads to lakes and rivers, which can adversely impact aquatic ecosystems in a number of ways. Increased turbidity from sedimentation decreases photosynthetic production (Berry, Rubinstein and 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 storm-water 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.



Photo by Kristy Beyer

Works Cited - Annotated

Antrim County Master Plan 2008 Chapter 1: What is a Master Plan? Retrieved from: <http://www.antrimcounty.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.

Ardizone 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\(xupi1mesibiknsmteqka5g55\)\)/mileg.aspx?page=GetObject&objectname=mcl-act-33-of-2008](http://www.legislature.mi.gov/(S(xupi1mesibiknsmteqka5g55))/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/rell/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.michiganin-brief.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., Ballesteros 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.sbtnj.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/natural_resources/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 Antrim 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 Antrim County. It begins with a chapter devoted to the county itself, and is followed by separate chapters devoted to each township or village in the county.

Section III: Analysis

Chapter 1 Antrim County

Introduction

This chapter summarizes results of the Local Ordinance Gaps Analysis project for Antrim County. The county is a partner in the Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes Subwatershed. Therefore, at appropriate points in the Analysis below, any connection to implementation tasks for the Watershed Management Plan is also highlighted.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 18, Adequate

Antrim County has a Master Plan in place that is scheduled for an update in 2011. This is good timing, in terms of this project, because some recommendations here might be appropriate to address during the update process.

In the current Antrim County Master Plan, watersheds are recognized and specifically identified throughout the county. Surface water, wetlands, and ground waters are inventoried. Chapter 3, the Natural Resources and Environment section, notes: “The purpose of this section is to describe the significant natural features that exist in Antrim County. This information will help the Antrim County Planning Commissioners recommend development into areas which are the least environmentally sensitive and minimize adverse impacts to these areas.” (Page 3-1)

Clear goal statements are presented to protect water resources. For example, Antrim County’s Guiding Principles #2, Protect the Water, includes: “These water areas provide scenic beauty, wildlife habitat, and recreation. They should be protected or they will not be able to continue these functions.” And: “Encourage intensive land uses that could impact water quality be placed at a distance from streams, rivers, wetlands, and creeks.” (Page 10-2) Open Space and Natural Area designations and protections are in place, and there is an expressed appreciation of the need to protect wildlife.

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Master Plan Components: RECOMMENDATIONS

The Master Plan does not address Road Stream Crossings, where proper construction and design techniques are critical to avoid excessive sedimentation in streams. Also, it does not address Wildlife Corridors, which are tracts of land that connect habitats that would otherwise be separated by human activity. These corridors can be planned when new development is proposed. For example, developers can create a pathway under a highway that allows animals to safely cross under the road.

Finally, the plan does not include Stormwater Management Low Impact Design approaches, or preventing an increase in Impervious Surfaces. Acknowledging these issues in the next Master Plan can help educate citizens about alternatives to traditional development that are, for the most part, cost-effective. When understood and included as part of construction proposals, up front, even more savings are possible. And, importantly, these approaches protect the quality of local water sources.

SUGGESTED ACTION: Include Road Stream Crossings, Wildlife Corridors, Stormwater Management and prevention of increased Impervious Surfaces when the Master Plan is updated (next update due 2011).

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 18, Weak

No zoning ordinance exists for the county. Other relevant county ordinances are in place though, and these also affect water resource protection. Therefore, a checklist was completed for Antrim County and included in this project.

The existing county ordinances are enforced and have fees in place (Ordinance # 0, 7-03, 2003).

The Antrim County Soil, Erosion, and Stormwater Ordinance coordinates with public agencies and local governments under Part 91 of the state's Natural Resources and Environmental Protection Act (NREPA), and other relevant laws (Sec. 4; Sec. 6, 6-500.1). This ordinance is strong and includes crucial steps that coordinate water protection efforts throughout the county.

Flexible site design criteria or incentives are not available to encourage developers to include open space or cluster design provisions in their proposals. However, the county does have an Open Space Development Rights Ordinance (No. 01-04, 2004), creating a farmland and open space protection program in cooperation with other local units of government. This is designed to protect farmland and open spaces by acquiring development rights voluntarily offered by landowners, creating agricultural conservation easements.

Finally, the county Ordinance includes sensitive area protections. Grass River Natural Area is addressed by Antrim Co. Ordinance No. 1 of 1988. The Jordan River protections are enhanced by Motorboats Prohibited (Ordinance No. 1-71), and Barnes Park is governed by Ordinance No. 1 of 2007.

Basic Zoning Components: RECOMMENDATIONS

As noted in the Literature Review, zoning ordinances are a very effective tool for protecting water resources. Zoning tools encourage sustainable development by using approaches that are flexible but protective. If done properly, this allows economic development of land to be done in environmentally sensitive ways. Zoning can help owners consider the unique features that present opportunities on a parcel of property, as well as avoid actions that present a challenge to water quality.

SUGGESTED ACTION: Antrim County has successfully adopted ordinances in the past, such as the Soil Erosion and Stormwater Ordinance. The benefits of county-wide protection efforts for water resources are numerous, and we believe County Zoning would improve those efforts. We suggest that the county consider adopting zoning. Short of that, we suggest a review of the items below for weakness and consider addressing those with ordinances, where deemed appropriate.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 0, Missing

Some townships and villages in Antrim County have taken shoreline protection steps, but there is no regulation of shoreline areas by the county government. Therefore, the local jurisdictions that do not have zoning also do not have shoreline setbacks. However, the Antrim County Master Plan does include this recommendation: “Encourage intensive land uses that could impact water quality be placed at a distance from streams, rivers, wetlands, and creeks.” (Page 10-2)

Shorelines: RECOMMENDATIONS

If no county-wide zoning is established, we recommend that an ordinance be adopted to at least address the critical points of setbacks from water bodies, per the Antrim County Master Plan. Also, 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.

SUGGESTED ACTION: Adopt a county-wide shoreline setback ordinance to help local governments and citizens minimize impacts in the critical shoreline zones of the county’s rivers, inland lakes, and the Great Lakes.

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

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 0, Missing

There are no county incentives in place to prevent unnecessary increases in impervious surfaces. Working closely with our colleagues at the Watershed Center Grand Traverse Bay, we have been emphasizing that the more a local government can do to reduce impervious surfaces, the better for water quality. To accomplish this, a community should increase the retention or restoration of native vegetation in riparian areas and in open spaces.

Ordinances can be crafted to guide the overall development design to benefit water quality, such as incentives to protect native vegetation throughout the development site. Lot design and general development provisions provide great opportunities to encourage alternatives to and reductions of impervious surfaces, such as shared driveways.

Impervious Surfaces: RECOMMENDATIONS

The Grand Traverse Bay Watershed Protection Plan includes the following task: Conduct impervious surface assessments in Elk River Chain of Lakes Watershed. The point of doing such assessments is to understand the current impact of development and trends for the region, so as to manage the addition of hard surfaces. Tools exist to help with future development pressures, such as road construction standards and allowances for parking lot construction.

SUGGESTED ACTION: Do an impervious surface assessment for the Elk River Chain of Lakes Watershed, which is the largest watershed in the county. Review and establish trends for the county to inform next steps.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

One important ordinance that is in place for Antrim County is the Soil, Erosion, and Stormwater Ordinance, and it is a good one. We have no further recommendations for this element.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the county Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 8, Weak

There is no county regulation for septic point of transfer inspections. However, work is currently being done by townships in the county to address the topic.

Sewer/Septic: RECOMMENDATIONS

Given the attention of local townships to this issue, we recommend that the county watch their work closely. In addition to protecting property owners, point of transfer inspection ordinances also reduce pollution to lakes 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: Enact a county point of transfer septic inspection ordinance, working in coordination with local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, Missing

There is no county regulation of Wetlands, but we know this was attempted in 2001-02. At that time, Tip of the Mitt Watershed Council helped with the passage of a strong ordinance. It is unfortunate that it was so short-lived. We believe that if it had been allowed to be fully implemented, both property rights and wetland protection could have co-existed in a positive way. How to move forward is now more important.

As time passes, we learn more and more about the significance of wetlands, and they are appreciated now even more than when the county ordinance was passed and subsequently rescinded. Citizens in Antrim 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 Antrim County's vast water resources, and they are difficult to restore once they are damaged or filled.

Wetlands: RECOMMENDATIONS

Federal and state protections do exist, but to fully protect Antrim County wetlands a county-wide 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: Eventually, enact a wetland protection ordinance for the county.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 1, Weak

There is no county regulation of ground water. Given the growth potential for Antrim County, however, ground water protection is paramount. This is a major source of drinking water for residents.

Ground Water and Wellhead Protection: RECOMMENDATIONS

According to the Master Plan, “some nitrate testing has been completed to determine the movement and possible sources for contamination. Additional monitoring and sampling should be completed to thoroughly comprehend the complexity of the groundwater resource. Protection of our wellheads should be addressed in all areas of the county to help maintain the integrity of our groundwater” (Antrim County Master Plan).

SUGGESTED ACTION: In keeping with the Master Plan, continue monitoring and sampling of ground water, as needed to protect from contamination.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water from current land uses.

SUGGESTED ACTION: Develop a wellhead protection plan, require that it be implemented, and require periodic updates.

SUGGESTED ACTION: Restrict high-risk land use activities in wellhead protection areas, or use an overlay district to add additional development standards for wellheads in those areas.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 0, Missing

It would be consistent with both the Watershed Management Plan and the Master Plan to address critical dunes, high risk erosion areas, and floodplains.

SUGGESTED ACTION: Review the inventory of assets in the county to identify these areas. If no local government protections are in place, work with the township or village to ensure these features are properly addressed.

Conclusion

Antrim County has a very strong Soil Erosion and Stormwater Ordinance, as noted above. The county has also taken steps in the past to protect wetlands, even though they were not ultimately successful. We applaud these efforts and hope recommendations from this project will help Antrim County to improve water resource protection efforts, moving forward. We thank you for your time and attention in reading this document. 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.

Results Worksheet

Antrim County

| Catagory | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 18 | Adequate |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 18 | Weak |
| III. Shoreline 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 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 8 | 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 | 1 | Weak |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 0 | Missing |

Section III: Analysis

Chapter 2 Banks Township

Introduction

This chapter presents results of the Local Ordinance Gaps Analysis project for Banks Township, which is located at the north end of Torch Lake in Antrim County. The chapter summarizes the evaluation scores, makes recommendations and includes suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 9, Weak

A Master Plan does exist for Banks Township, dated 1999. It is recommended that Master Plans be updated every 5 years, and as such, an update is long overdue. Per the Zoning Administrator, the review process was just beginning in 2010.

The Master Plan acknowledges that Banks Township is located within two different watersheds: Grand Traverse Bay and Elk River Chain of Lakes. It notes that the watershed divide is essentially US-31, and also includes an inventory of surface and ground water resources and wetlands, but again, this is very outdated. (Section II, B <http://www.bankstownship.net/mpsection2.html>)

The Master Plan does include a strong Water Resource Protection Goal Statement: “One of the most valuable natural resources of Banks Township is water. ... Banks Township is in the upper portion of the Elk River Chain of Lakes Watershed. This location means the actions of this community will impact the waters and communities downstream. ... It is extremely important that the quality of these surface waters be protected from the negative impacts of development, such as pollution and loss of scenic views to open water.” (Section II, B <http://www.bankstownship.net/mpsection2.html>)

Additionally, the Master Plan notes explicit goals for community conservation of Open Space to protect surface water, ground water, and wetlands. The Introduction includes the following purpose for the Master Plan: “Promote the preservation of features that contribute to Banks Township’s character and to the area’s tourism related economic base as characterized by low density of development, shorelines, woodlands, farmland, open space, and abundance of recreational amenities.” Section III also has a stated policy for the

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

community to preserve and protect open space. Finally, Section V calls for adoption of Open Space provisions. (Section I: <http://www.bankstownship.net/mpsection1.html>; Section III: <http://www.bankstownship.net/mpsection3.html>; Section V: <http://www.bankstownship.net/mpsection5.html>)

Master Plan Components: RECOMMENDATIONS

The Master Plan acknowledges that the threat of water pollution from point sources is not a significant issue in Banks Township, but non-point sources are a major concern. Unfortunately, it does not follow up that acknowledgment with goals, purposes, or action statements to address non-point pollution stemming from stormwater runoff and increased impervious surfaces. (Section II: <http://www.bankstownship.net/mpsection2.html>)

Additionally, the Master Plan does not address Road Stream Crossings, where proper construction and design techniques are critical to avoid excessive sedimentation in streams.

Finally, it also neglects the concept of Wildlife Corridors. It does attempt wildlife habitat protection in Section IV: “The Township encourages the establishment of conservation, parklands and open space, including wetlands and riverine habitats for scenic, recreation and wildlife protection especially as a part of any proposed residential uses. The tools include donations, acquisition, cooperative efforts with other units of government and land owners, conservation easements and zoning ordinance provisions that support the use of conservation easements and sound conservation developments.” (Section IV: <http://www.bankstownship.net/mpsection4.html>) However, there is also true benefit to establishing Wildlife Corridors, which are tracts of land that connect habitats that would otherwise be separated by human activity. These corridors can be planned when new development is proposed. For example, developers can create a pathway under a highway that allows animals to safely cross under the road.

Acknowledging these issues in the next Master Plan can help educate citizens about alternative approaches that are, for the most part, cost-effective. When understood and included as part of construction proposals, up front, even more savings are possible. And, importantly, these approaches protect the quality of local water sources.

SUGGESTED ACTION: Include Wildlife Corridors, Road Stream Crossings, Stormwater Management and Low Impact Development provisions when the Master Plan is updated (next update due 2011).

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 43, Strong

Basic components needed for water resource protection are present in the strong Banks Township Zoning Ordinance, starting with its stated Purpose: “...To facilitate adequate and efficient provision for transportation systems, sewage disposal, water, energy, education, recreation, and other public service and facility requirements.” [Art. I Sec. 1.02 (4)]

The ordinance includes Administrative Fees for payment of costs and services expended by the township to process applications, including special meetings called to review site plans. [Article VII Sec. 7.01 (5)]

This is important to ensure that proper funding exists to carry out the provisions of the ordinance. Additionally, the Zoning Administrator has the ability to enforce the ordinance, including the ability to revoke or cancel permits and issue stop work orders when work is in violation. [Article IX, 9.01; 9.02, (5)]

Another important point in the ordinance is the effort to coordinate with other regulations. We encourage this type of coordinated approach for several reasons. Local governments coordinating with county, state, and federal requirements improves the permitting process. When applicants understand what other agencies also require, the process is more efficient. Additionally, coordination protects applicants from unanticipated surprises that cost money. An applicant should know, up front, what is expected, and clearly understand any consequences of non-compliance. Finally, this coordination creates certainty about what is needed for homeowners and other investors in the local economy, allowing them to participate in water resource protection by using sustainable approaches. The ordinance states that it takes precedence, unless it is in conflict with another regulation, deed restriction, or private covenant that is more stringent. If that is the case, the more stringent regulations rule. (Art IX, 9.05.4)

Another tool for coordination is the use of pre-application meetings, intended to minimize confusion during the permit process. Banks Township requires a Pre-application meeting with the Zoning Administrator as part of the Planned Unit Development (PUD) process. This informal meeting may include requests or recommendations that the applicant also invite representatives from the township, county, or other agencies.

Pre-application meetings are beneficial for several reasons. First, the applicant can have questions addressed during one meeting, with all relevant agencies present. Additionally, prior to making substantial financial investments, such as the development of construction drawings or the purchase of real estate, an applicant can be informed of development fees that are needed to complete a project. An applicant should also get a sense of whether a proposed project can be approved as currently envisioned, or if changes are needed. [Art. IV Sec. 4.23, 3(a)]

The Banks Township ordinance includes Site Plan Review, which also requires advanced preparation. Plans must be submitted 30 days prior to the Planning Commission meeting at which the applicant wants the project to be considered. (Art VII, Sec. 7.01, 3) Site Plans are required to include the location of existing environmental features. [Art VII, Sec. 7.01, 2(f)]

Also, flexible site design criteria are available to encourage developers to include Open Space or cluster design provisions. The township's Open Space Preservation Option is intended to provide flexibility in the regulation of land development; encourage innovation in land use and variety in design, layout, and type of structures constructed; achieve economy and efficiency in the use of land, natural resources, energy, and preserve at least fifty percent of the parcel in a undeveloped state. Landscaping in Open Space is required to retain as much natural vegetation as practicable. [Art VIII Sec 8.03 (4)] It has long-term protection features, and at least 25 percent of the total land area in a PUD must also be designated as Open Space. [Art. IV, Sec. 4.23, 2a (4)]

Finally, uses that are subject to special approval, within the designated Zoning Districts, are covered in Art VIII. This includes the standard that a special use must be compatible with the natural environment and conserve natural resources and energy. [Art VIII Sec 8.02 (3f)]



Basic Zoning Components: RECOMMENDATIONS

Banks Township includes most of the basic elements necessary for water protection efforts, and we applaud their work. We have just a few recommendations to add:

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

SUGGESTED ACTION: Consider adopting a “Waterfront Residential” district as proposed in the Master Plan.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 20, Weak

Shoreline protection is particularly important for water quality. Shorelines are sensitive for both human and habitat concerns, especially in areas of the township considered to be high erosion risk areas.

The Banks Township Zoning Ordinance does require a minimum structure setback on the waterfront of 50 feet from the ordinary high on water mark lots that border a lake or a stream [Footnotes to Schedule of Regulations, Art VI, Sec. 6.09 (b)]. Also, a greenbelt must be established and maintained on all waterfront property. The greenbelt includes all the land use area located within 50 feet of the ordinary high water mark (Art. IV Sec. 4.11). Eight development or use restrictions apply within the greenbelt, including the provision that natural vegetation shall be maintained on at least 70 percent of the lake or stream frontage within the greenbelt [Art. IV Sec. 4.11(1-8)]. Fencing is also prohibited on a lot’s waterfront side within the required 50 feet of the greenbelt (Art. IV Sec. 4.13).

Fortunately, there are also provisions in place to prevent keyhole development on the shorelines of the township. Private waterfront access in the township has a minimum lot requirement per the Conservation/ Recreation (C/R) District. The site of the required minimum size can support a maximum use density of 5 non-waterfront properties. If the access property is designated for use by more than 5 non-waterfront property owners, an additional 20 feet of width and 4,000 square feet of land is required for each additional non-waterfront dwelling unit with designated use of the access site (Art. IV Sec. 4.22).

Banks Township also has a *Phragmites* Ordinance in place for the Great Lakes shoreline (Ordinance No. 4 of 2009).

Shorelines: RECOMMENDATIONS

The ordinance should reflect concerns for high risk erosion areas (HREAs), since Banks Twp is listed on the state’s map of HREAs: http://www.michigan.gov/documents/deq/lwm-highrisk-state-hrea-map_261579_7.pdf. For a Great Lakes Shoreline, the Zoning Ordinance should delineate a separate minimum setback and other protection measures, such as an overlay district for dunes and high risk erosion areas.

Other than the keyhole/funneling provisions noted above, the Zoning districts have lot regulations but nothing that is waterfront or shoreline-specific. The township presumably would regulate marinas by subjecting them to Special Approval but, they are not specified in that section. This should be clarified.

Also, the greenbelt provisions do not specify that invasive plants are prohibited from being used. Native vegetation in riparian areas helps prevent erosion and protect wildlife habitat. In addition, the soils on undisturbed sites remain capable of absorbing larger amounts of stormwater. Finally, the *Phragmites* control ordinance should also address inland lakes and streams.

SUGGESTED ACTION: Consider use of an overlay district on the Great Lakes coastline and include specific protections for HREAs.

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.

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 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 best management practices.

SUGGESTED ACTION: Specify that invasive plants are prohibited from being used in the greenbelt.

SUGGESTED ACTION: Expand the *Phragmites* control ordinance to cover inland lakes and streams.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 8, Weak

In general, the more a local government can do to reduce impervious surfaces, the better for water quality. To reduce impervious surfaces, a community should increase the retention or restoration of native vegetation in riparian areas and in open spaces. As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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.

The Banks Township zoning ordinance does little to address the increased impervious surfaces that come with growth and development. On a positive note, though, in off-street parking areas containing greater than 20 spaces, at least five percent of the total parking area is required to be used for interior landscaping [Art IV, Sec 4.19, 5(a)]. This is beneficial because landscaping, if done with best management practices (BMPs) for stormwater control, can help mitigate the effects of new impervious surfaces.

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay. The township ordinance sets the parking space size

of 9 feet by 18 feet, or 162 square feet, as the minimum stall size. It also includes specific standards for parking space ratios. It appears that reductions in parking requirements for shared parking are at the discretion of the planning commission.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider limiting paved private roads to 18-22 feet wide.

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

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

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).

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

Banks Township requires management of excess stormwater runoff on site and follows the Antrim County Soil Erosion and Stormwater Ordinance, administered by the Antrim Conservation District (Art IV, Sec. 4.15).

Stormwater Management: RECOMMENDATIONS

We have only one additional recommendation:

SUGGESTED ACTION: Consider adding review of stormwater best management practices and other water quality protections in the site plan review.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 8, Weak

In addition to protecting property owners, point of transfer inspection ordinances also reduce pollution to water sources by locating those systems in need of repair or replacement. This practice can help ensure septic systems do not contaminate precious lakes and streams. Setbacks from wetlands or open water features should also be taken into account, and close coordination with the Health Department is crucial.

Neither septic tanks nor septic system filtration fields may be located within a required greenbelt in Banks Township (Art IV Sec 4.11, 6). Also, water supply and sanitary sewage disposal systems are subject to District Health Department sanitary code requirements (Art IV Sec. 4.14).

Sewer/Septic: RECOMMENDATIONS

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, Missing

Federal and state protections for wetlands do exist, but to fully protect Banks Township wetlands in the absence of a county ordinance, local wetland protections should be enacted. 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.

Wetlands: RECOMMENDATIONS

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 local wetland protections, or support the creation of such an ordinance for Antrim County.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 12, Adequate

Per the Master Plan, Section II, B. Natural Resources, Water Resources: the entire township relies on ground water for drinking water.

There are protections in place for ground water. The use of hazardous substances in the township must meet all state and federal requirements, and they are not allowed to be discharged to ground water,

including both direct and indirect discharges, without required permits and approvals (Art. IV Sec. 4.17). Additionally, Sand and Gravel Extraction operations may not cause negative impact on ground water and potable water supply, whether as result of contamination or reduction in rate and volume of flow [Article VIII Sec12 (4)].

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 14, Weak

Banks Township participates in the National Floodplain Insurance Program (NFIP), but the ordinance does not include language to reflect this. Additionally, the township appears on the High Risk Erosion Area (HREA) map from DEQ: http://www.michigan.gov/documents/deq/lwm-highrisk-state-hrea-map_261579_7.pdf

Other Relevant Elements: RECOMMENDATIONS

SUGGESTED ACTION: Review the requirements of both the NFIP and the HREA programs and address any relevant items in the township ordinance.

Conclusion

The Banks Township zoning ordinance contains some strong protections for water resources, including greenbelt provisions; planned unit development, cluster/open space development options; and some important shoreline factors. We applaud the water protection measures that exist. 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.



Photo by Kristy Beyer

Results Worksheet

Banks Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 9 | Weak |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 43 | Strong |
| III. Shoreline 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 | 8 | Weak |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 8 | 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 | 12 | Adequate |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 14 | Weak |

Section III: Analysis

Chapter 3 Elk Rapids Township

Introduction

This section presents results of the Local Ordinance Gaps Analysis project for Elk Rapids Township, which is located between Elk Lake and Grand Traverse Bay in Antrim County. Some surface waters within Elk Rapids Township flow directly into the bay while others flow into the Elk River Chain of Lakes. The Elk Rapids Township Master Plan and zoning ordinance include some good protections for water resources, which are detailed below. This chapter summarizes the project evaluation scores, makes recommendations, and includes suggested actions. It also relates suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 23, Strong

The Elk Rapids Township Master Plan is strong, highlighting protection of water resources in the township. It is dated 2007 and states that this is an update of the 1997 plan. It also notes that it should be updated every 5 years, meaning that 2012 should be the next update (Section I, page 1). It does not mention the watersheds in which the township is located, or watershed management approaches.

The Master Plan has an inventory of lakes, rivers, and wetlands, with maps of their locations. Mapping includes a regional map, wetlands, facilities & resources, existing public sanitary sewers, and future land use; lakes and streams and open water is also identified on all maps; (Maps 1 through 5). It includes Scenic Corridors and Significant Natural Areas, but no ground water recharge areas are included.

The Plan does have a statement of intent to balance economic development needs with preservation of rural character and natural features (Section I, page 5). It also has the following specific goal statement: “Water features in and abutting Elk Rapids Township will be clean, healthy and will support a balance of native plant and wildlife communities and a sustainable level of human use.” (Section II, Chapter 1, page 10)

Open Space to protect surface water, ground water, and wetlands is also addressed with this goal: “Existing and future development in the Township will be integrated with natural and open areas in harmony with,

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

and connected to, permanently preserved natural features coordinated with plans for greater, contiguous greenways.” (Section II, Chapter 1, page 10)

Stormwater management is identified as an important community policy, stating: “Storm water will be effectively managed through advanced techniques that are sensitive to environmental impacts and offer aesthetic amenities to the community.” (Section II, Chapter 5, page 28) On a related note, Section II also recognizes the importance of minimizing impervious surfaces in new construction and redevelopment: “Develop and implement standards which recognize detention and retention facilities as an amenity; and encourage innovative and improved engineering, such as pond enhancement, landscaping, stream restoration and green roof systems, to mitigate the effects of impervious surface runoff.” (Section II, Chapter 5, page 28)

Wildlife corridors are also included: “The preservation of large tracts of interconnected woodlands and wildlife habitat corridors will be realized throughout the Township as any future development occurs.” (Section II, Chapter 1, Page 9) Finally: “Preservation of natural resources and agricultural activities are the preferred land use in the areas delineated as Significant Natural Areas and Agricultural on Map 5, Future Land Use.” (Section II, Chapter 1, Page 11) The importance of road stream crossings on water quality is not included.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: When the Master Plan is updated in 2012, include the watersheds in which the township is located, and acknowledge ways to implement watershed management approaches from the existing Grand Traverse Bay Watershed Plan.

SUGGESTED ACTION: The update should also ensure that ground water recharge areas are included in the maps and inventories of water resources.

SUGGESTED ACTION: The plan should note 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: 25, Adequate

Elk Rapids Township’s zoning ordinance includes several provisions that help protect water quality. It includes the following: “The fundamental purpose of the Ordinance is to promote the health, safety and welfare of the inhabitants of the Township by... Encouraging the use of land and resources in the Township in accordance with their suitability.” [Ch 1 Sec. 1.02 (B)] Basic elements, such as adequate fees, administration, and enforcement methods are included. Efforts are made to coordinate permitting, as noted in the Site Plan Review section: “Nor shall such activity proceed prior to obtaining necessary soil erosion and sedimentation control permits, wetlands permits, or flood plain permits.” (Ch. 17 Sec. 17.10)

Site Plan Review is required “...for buildings, structures, and/or uses that are expected to have a significant impact on natural resources. The site plan regulations intend to promote the conservation of natural amenities and resources.” [Ch. 17 Sec. 17.01 (C)] Also, each site plan must depict identification of any significant site amenities or unique natural features, but it is not clear what makes a feature “unique” [Ch. 17 Sec. 17.04 (B 22)]. Additionally, site plans must fully conform to the Antrim County Soil Erosion

and Sedimentation Control Ordinance [Ch. 17 Sec. 17.04 (B 27 h)]. The Planning Commission makes their decision on site plans by using the standard that as many natural features be retained as possible where they help control erosion from the discharge of storm waters [Ch. 17 Sec. 17.06 (C)] . Only minimal open space provisions are included in site plans.

There is no minimum open space threshold, or flexible site design criteria, or incentives to encourage developers to include open space or cluster design provisions. Open Space is only required for ½ of a lot in a residential development, and refers to “requirements” but none are in place. Lot creations will not be approved “...if the division would reduce any required open space... below the minimums required by this Ordinance...” [Ch. 2. Sec. 2.18 (D6)]. Importantly, the open space does not have to be managed in a natural condition and allowable uses in the open space are not restricted to low impact uses. Open space is also not required to be protected through a conservation easement or other similar mechanism.

The Environmental Zone is designed to protect water resources, high risk erosion areas and other environmentally sensitive sites. These “E Zone” regulations seek to balance protection of the ecosystem while enabling low-intensity development where appropriate. It is intended to ensure adequate setbacks; ensure building and structures are built on suitable and stable soils; prevent soil erosion in wetland areas; prevent sedimentation from entering creeks, rivers and lakes; and to preserve and enhance vegetation and wildlife habitat along the creek and river banks (Ch. 10).

Basic Zoning Components: RECOMMENDATIONS

Elk Rapids Township includes most of the basic components necessary for water protection efforts, and we applaud their work.

SUGGESTED ACTION: Clarify by example what makes a feature “unique” and thus required to be identified in the site plan review process.

SUGGESTED ACTION: Consider ways to encourage open spaces in developments, and retention of native vegetation in those open spaces, in all districts of the township.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 21, Adequate

In Elk Rapids Township, buildings and structures on lake shorelines must be setback from the water. Great Lakes shoreline areas have a 50 feet minimum setback from the high water mark for any building and/or structure [Ch. 1 Sec. 1.03 Definitions, “Yards” (1) Front Yards]. There is no overlay district, but restrictions are applicable to property abutting lakes [Ch. 2 Sec. 2.11 (A-C)]. The same 50 feet minimum setback is in place for inland lakes and streams to minimize harmful runoff and erosion.

The 25-foot buffer of natural vegetation along water bodies throughout the township helps prevent the flow of sediments and nutrients into our lakes and rivers. It begins at the edge of surface loam soil or a contiguous root system, whichever occurs nearest the shoreline [Ch. 2 Sec. 2.11 (C)]. No more than 30 percent of all living trees and shrubs in the buffer may be removed by cutting them to grade level. Trimming and pruning is allowed. This section specifies the use of “natural” vegetation in the riparian buffer zone, but that could be improved by requiring native plant species. It should also prohibit the use of invasive plants.

Minimal local protections are in place for the Great Lakes Shoreline to protect “high risk” erosion areas. Any construction within designated High Risk Erosion Areas (HREA) in the Environmental Zone

shall comply with the rules and regulations adopted under the state Shoreland Protection Act (Ch. 10 Sec. 10.04). A state permit is required for any construction within the HREA that has been identified and mapped by DNRE: http://www.michigan.gov/documents/deq/lwm-highrisk-elk-rapids-twp_259469_7.pdf

Importantly, the ordinance also includes keyhole prevention provisions. Private waterfront access in the township can support a maximum use density of 5 non-waterfront property dwelling units. An additional 20 feet of width and 4,000 square feet of land provided for each additional dwelling unit is required for more than 5 dwelling units (Ch. 2 Sec. 2.13).

There is no minimum frontage or size regulations for docks. However, man-made extensions from the shoreline into or over inland lakes, rivers and streams must have an open sub-structure construction to allow the free and unrestricted movement of the inland waters natural current [Ch. 2 Sec. 2.11 (B)]. Detached accessory structures on waterfront lots are regulated [Ch. 2 Sec. 2.06 (C 2)]. Presumably, the township would regulate marinas using "P-D" zone provisions, though this is not stated outright (Ch. 13).

Finally, we understand that the township passed a *Phragmites* control ordinance on July 14, 2009. A copy was not available on the website and we requested a copy from the township directly, but did not get it in time to review it for this project.

Shorelines: RECOMMENDATIONS

Elk Rapids Township has a good foundation in place to protect shoreline areas. Here are suggestions to improve current protections for these vital areas that are so essential for water quality.

SUGGESTED ACTION: Consider requiring native vegetation in the buffer zone and prohibit the use of invasive plants.

SUGGESTED ACTION: Consider requiring all development in an HREA to use site plan review requirements to supplement the state requirements.

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.

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 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 best management practices.

SUGGESTED ACTION: Make the *Phragmites* ordinance available on the website, if not already done. If the ordinance only applies to the Great Lakes shoreline, consider expanding it to include inland lakes and streams in the township.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 6, Weak

As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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.

Elk Rapids Township has a private road ordinance that requires management of stormwater runoff. “No runoff shall be discharged to lakes, streams, or wetlands without adequate best management practices.” [Ch. 2 Sec. 2.19 (A 7a-f)] It does not address the width of paved area.

The parking provisions require each parking space to be at least 10 feet wide and 200 square feet in area [Ch.14 Sec. 14.01 (C)]. The Planning Commission has discretion to waive parking requirements as long as an area is provided on the site plan for expansion of parking if needed in the future (Ch. 14 Sec. 14.07). The residential district includes an impervious cover limit of 30 percent of the lot [Ch. 7 Sec. 7.02 (l)].

To further limit impervious surfaces, ordinances can be crafted to address overall development design to benefit water quality, such as providing incentives to protect natural vegetation throughout a development site. In Elk Rapids Township, the Environmental Zone includes additional protections for wetlands with a 25-foot buffer of native vegetation [Ch. 10 Sec. 10.05 (B)]. Finally, the township’s grading provisions help retain natural drainage patterns (Ch. 2 Sec. 2.17).

Impervious Surfaces: RECOMMENDATIONS

In general, the more a local government can do to reduce impervious surfaces, the better for water quality. For example, if a community reduced parking spaces from 10 feet by 20 feet to 9 feet by 18 feet, it would result in a 20 percent savings in impervious surface, which is significant when taken across the region. Additionally, 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. Limiting paved surfaces helps waters stay clean.

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider regularly exercising the Planning Commission waiver provision and require spillover parking areas to be pervious surfaces or planted in grass.

SUGGESTED ACTION: Consider impervious cover limits for other zoning districts, in addition to the Environmental Zone.

SUGGESTED ACTION: Consider limiting the paved width of private roads to 18-22 feet.

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

On the topic of stormwater management, there is no stand alone ordinance but coordination with the excellent county ordinance is required. “Site Plans must fully conform to the Antrim County Soil Erosion and Sedimentation Control Ordinance.” [Ch. 17 Sec. 17.04 (B 27h)] Also: “Nor shall such activity proceed prior to obtaining necessary soil erosion and sedimentation control permits...” (Ch. 17 Sec. 17.10) Also, as mentioned earlier, the local grading provisions help retain natural drainage patterns (Ch. 2 Sec. 2.17).

Stormwater Management: RECOMMENDATIONS

We have only one additional recommendation:

SUGGESTED ACTION: Consider adding review of stormwater best management practices and other water quality protections in the site plan review.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 13, Adequate

Elk Rapids Township has a goal to work with the Village of Elk Rapids on extending public sewer to lakeshore and adjacent properties to help preserve groundwater and surface water resources (Master Plan Sec I page 5). We understand this will be done in a targeted section of the township, which we support.

The Master Plan also notes this: In conjunction with Antrim County, establish a program of septic system and water well inspections (Sec. II, Ch. 5 page 27). In terms of septic construction, the township specifies that “Every building hereafter erected... shall be provided with a safe and sanitary water supply system... The written approval of such facilities by the District Health Department Number Three shall be filed with the application for a Zoning Permit as hereinafter provided.” (Ch. 2 Sec. 2.16)

Sewer/Septic: RECOMMENDATIONS

Septic systems should be located at least 100 feet from a wetland or open water feature, and have a minimum isolation distance from all nearby wells. In Elk

Rapids Township, the purpose of the Environmental Zone district is “to allow single-family homes while preserving and protecting significant natural features including wetlands, lakes, rivers, streams, watersheds and other sensitive environmental features within Elk Rapids Township. The regulations are designed to ensure adequate setbacks for buildings, structures and septic systems...” However, no setbacks are specified for septic systems and it is unclear that lot requirements will automatically default to a protective 100 foot setback.

SUGGESTED ACTION: Consider clarification of the setback requirements for septic systems.

SUGGESTED ACTION: As noted above, we support the targeted sewer extension in coordination with the Village of Elk Rapids. However, we urge caution on this point. The township should avoid sewer extensions that are not carefully planned and targeted in the future, because they can result in unintended sprawl.

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 or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 4, Weak

There is no local wetland ordinance for Elk Rapids Township. However, the township does provide coordination with the state in the “E” District, noting that an applicant planning to make improvements or changes to a regulated wetland must obtain a permit from the Michigan Department of Environmental Quality (DEQ) in accordance with Part 303 (Wetlands Protection) of NREPA [Chapter 10 Sec. 10.05 (A)].

Additionally, the township states: “A Buffer Area of at least twenty five (25) feet shall exist along the edge of all regulated wetlands on the lot or parcel. No ponds shall be constructed, earth moved, topsoil removed, or building within the Buffer Area.” [Ch. 10 Sec. 10.05 (B)]

Wetlands: RECOMMENDATIONS

Federal and state protections for wetlands do exist, but to fully protect Elk Rapids Township wetlands in the absence of a county ordinance, local wetland protections should be enacted to fill in gaps. 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 local wetland protections, or support the creation of such an ordinance for Antrim County.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 11, Adequate

The township requires Site Plan Review, which is helpful to ensure there are no unnecessary threats posed to ground water by new or redevelopment proposals. However, there are no additional requirements for site plan submittals in ground water recharge areas.

Ground Water and Wellhead Protection: RECOMMENDATIONS

The Zoning Ordinance should prohibit both direct and indirect discharge of hazardous substances to ground water without appropriate approvals or permits. In Elk Rapids Township, there are minimal protections in the Environmental Zone: “Construction of or provision of footpaths or narrow walkways - The cutting of vegetation is minimized for the purpose intended and no materials used in such construction shall contribute to the pollution/contamination of the ground water or adjoining lakes and rivers.” [Ch. 10 Sec. 10.02 (B)] Additional minimal protection is provided in the P-D Zone: “A zone which shall be established only upon application by the owner of the property for non-ordinary uses such as, extraction of natural resources.” (Ch. 13 Sec. 13.01) This does not specify ground water but does require special use review steps that should encompass ground water concerns.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

SUGGESTED ACTION: Specify protections to protect ground water from potential contamination.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 20, Adequate

Elk Rapids Township signed up for the National Flood Insurance Program (NFIP) years ago, according to staff. 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.²

According to NFIP online info, the township is considered a “Not Special Flood Hazard Area (NSFHA)”: The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X.” (Elk Rapids Township is Zone C)

However, there is ordinance language that regulates floodplain development: “No lot creations shall be approved which would preclude the feasible and efficient development, division or access for remaining or abutting lands affected by the proposed lot creation. No lot shall be created solely of sand dunes area, wetland area, drainage ways, lake or river bottom, lands within the 100 year flood plain or stream bed based on the Ordinary High Water (OHW) elevation, I.G.L.D. 1985 (International Great Lakes Datum).” [Ch 2, Sec 2.18, (D7)] Also: “No person shall undertake or carry out such activities...for which site plan approval is first required by this ordinance. Nor shall such activity proceed prior to obtaining ...flood plain permits.” (Ch 17 Sec 17.10)

Additionally, as noted in the Shoreline Section above, the township has High Risk Erosion Areas (HREA) as designated by DEQ, and there is ordinance language to coordinate protection efforts. We have no additional recommendations for this category, other than the Site Plan Review recommendation in the Shoreline Element above.

Conclusion

The Elk Rapids Township zoning ordinance includes some very good protections for water resources and we thank you for those efforts. We also thank you for your time and attention in reading this chapter, and we 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 Elk Rapids Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 23 | Strong |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 25 | Adequate |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 21 | Adequate |
| IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak | 33 | 6 | Weak |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 13 | Adequate |
| VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak | 21 | 4 | Weak |
| IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 11 | Adequate |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 20 | Adequate |

Section III: Analysis

Chapter 4 Forest Home Township

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for Forest Home Township, which is located between Torch Lake to the west and Intermediate Lake to the east, and north of Clam Lake in Antrim County. All of the surface waters within Forest Home Township flow into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

We would like to note that Forest Home Township scores in every element resulted in a ranking of either Strong or Adequate; nothing lower. This is excellent and we appreciate their efforts to keep water resources clean and protected.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 11, Adequate

Forest Home Township has a Master Plan. On the website, the copyright is dated 2003, but that is not explicit to the plan. The plan relies on surveys from 1995 and notes that the prior plan was done in 1973. It states that the plan will be reviewed every 5 years, but it is not clear from the website or the plan itself in what year the last update happened.

The Master Plan does not mention the watershed in which the township is located, or watershed management approaches. However, it does include an extensive inventory and mapping of natural resources, placed throughout the entire document. The plan is based on this Vision Statement: “To preserve, protect and enhance the land and water resources of the township. We want to encourage desirable development options and to ensure a rural way of life for the people who live and visit here.” (Part 1, page 1-1)

The plan also includes the following: “In order to preserve the rural character and protect the natural resources of Forest Home Township, environmentally sensitive areas will have to be protected. This may include wetlands, lands adjacent to wetlands, soils subject to leaching, steep slopes, shoreline areas, ground water recharge areas, and others designated by the Township Board.” (Part 1, page 1-18)

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

The plan addresses Open Space in several important ways. For example, it states: “Work with the Bellaire and Central Lake School Districts to ensure the lands under their stewardship are available as active and passive recreation areas to assist in meeting area needs for recreation lands and open space.” (Part 3, page 3-16) Stormwater management is not addressed, but there is a goal to minimize impervious surfaces by establishing maximum lot coverage (Part 3 page 3-2).

Additionally, the Master Plan does not identify and call for preservation of undisturbed Natural Areas. Wildlife corridors are not included, and wildlife is only minimally included, as follows: “...environmentally sensitive areas will have to be protected. Environmentally sensitive areas are sensitive to development due to...wildlife habitats...” (Part 1, page 1-18). Finally, it 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

The weaknesses in the Master Plan can be remedied, and it is noted below that some of these elements are addressed in the zoning ordinance, despite being missing from the plan. In those cases, the Master Plan needs to catch up to the zoning and eventually be the guiding document for these elements in the future.

SUGGESTED ACTION: Clarify the date of the last Master Plan, and update it every 5 years.

SUGGESTED ACTION: When the Master Plan is updated, include the watershed in which the township is located, and acknowledge ways to implement watershed management approaches from the existing Grand Traverse Bay Watershed Plan.

SUGGESTED ACTION: Include Stormwater Management, Wildlife Corridors, and Road Stream Crossings when the Master Plan is updated.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 44, Strong

A key goal for the Zoning Ordinance is stated this way: “To preserve and protect our township’s natural resources.” (Ch. 1 Art. I Sec. 1-301) The township is unique in that it requires an Environmental Impact Statement, which we encourage and strongly support, for the following purpose: To evaluate impact of project on environmental quality; ensure development will protect environmental quality (Ch. 2 Art. 4 Sec. 4-501).

The ordinance is also strong in that it includes key basic components necessary for water resource protection, including methods to administer and enforce the ordinance, and appropriate fees to cover the costs associated with the review of the application or appeal. It also requires coordination with other agencies during the permitting process (Ch. 5 Art. 27).

Another good feature of the ordinance is that it requires Pre-application conferences during the Site Plan Review process (Ch. 4 Art 20 Sec 20-400). Forest Home Township notes that the purpose of the Site Plan Review is to provide a process that assures that property within the township is used reasonably with a minimum adverse impact (Ch. 4 Art. 20 Sec. 20-101). There are also open space provisions in the Site Plan Review process: “Each set of site plan maps shall depict the following: Project description, including... open space... and related information as pertinent or otherwise required by this Ordinance; Proposed location, dimensions and details of common open spaces...” (Ch. 4 Art. 20 Sec 20-703).

The purpose of the Planned Residential (PRD) District is to allow for high density development and at the same time preserve rural character, providing open space and conserving the natural resources (Ch. 3 Art. 11 Sec. 11-101). The PRD also requires 60 percent open space (Ch. 2 Art. 6 Sec. 6-400). Additionally, in PRD a project perimeter setback area must be maintained as open space in lawns or be landscaped, or wooded areas, and exclude paved surfaces, parking areas, or buildings of any kind (Ch. 3 Art. 11 Sec. 11-403).

In the Agricultural and the Residential 3 Districts, the 60 percent open space requirement also exists, and must be designated using suitable deed restrictions, conservancy agreements, or other means acceptable to Forest Home Township (Ch. 3 Art. 7 Sec. 7-200; Ch. 3 Art. 10 Sec. 10-500).

The Basic Zoning Components we identified to protect water are included in this strong ordinance. We applaud this work and have no additional recommendations for this element.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 35, Adequate

Forest Home Township has a set of strong setback requirements for protection of the shoreline, including 30 feet for any well; 100 feet for any septic system; and 50 feet for any structure, parking area, agricultural cultivation or livestock assembly, roads, driveways, or recreational trails (Ch. 2 Art. 4 Sec. 4-718). The Planned Residential District also includes a 100-foot setback from natural water bodies on the borders of the project area (Ch. 3 Art. 11 Sec. 11-408).

A 30-foot vegetated buffer on all water bodies is required, with an emphasis on retaining existing native vegetation. "Native shrubbery, trees, or other vegetation shall be preserved as far as practicable. If they have been removed then they shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty." (Section 4-704) Also: "A mowed lawn is not a desirable vegetation strip adjacent to the shoreline. Native plants, shrubbery and trees should be planted when new vegetation is needed." (Section 4-705) The environmentally sensitive district, the wetland district, and the planned residential district also include provisions that encourage the protection of existing native vegetation.

Docks require a minimum of 100 feet of waterfront, unless they are a legal nonconforming lot (Ch. 1 Art. 3 Sec. 3-2703). A dock may not extend into a lake more than 100 feet or to a point where the water is at least 4 feet deep, whichever is the most reasonable, given the historical length of docks in the area. No part of a dock in a river may be more than 6 feet from shore [Ch. 1 Art. 3 Sec. 3-2701 (6-7)]. One raft is allowed per one 100 feet of lot width (Ch. 1 Art. 3 Sec. 3-2705), and one deck/structure may be constructed at least 30 feet from the edge of the wooded shoreline (Ch. 1 Art. 3 Sec.3-2601).

There are minimal keyhole prevention provisions in that no more than three motor powered craft can be moored per 100 feet of lot width (Ch. 1 Art. 3 Sec. 3-2704). It does not specify non-riparian access limits but the cap essentially provides the needed protections. Marinas are minimally regulated, as well. "The use of all lands and premises, and the erection and use of all buildings structures shall hereafter be limited to the following Primary Uses (Not Subject to Special Approval): 1. Boat slip rental; 2. Boat repair shop and sales; 3. Marina and boat storage." (Ch. 3 Art. 12 Sec. 12-201)

Shorelines: RECOMMENDATIONS

We have only a few additional suggestions for the shoreline protections efforts in Forest Home Township.

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 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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 12, Adequate

As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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.

Forest Home Township has limited private road width to 18 feet in environmentally sensitive areas. All private roads must have drainage plans (Ch. 2 Art 4 Sec 4-405). With respect to parking, the zoning ordinance requires 200 square feet for each parking space with a width of at least 10 feet. The ordinance also includes parking lot landscaping requirements. "All driveways and parking areas shall have surfaces consisting of gravel, asphalt, paver block, grasscrete or Portland cement binder and so graded and drained to dispose of all surface water accumulated within the area." (Ch. 1 Art. 3 Sec 3-2001)

Importantly, each zoning district has a limit on the amount of impermeable surface (Ch. 2 Art. 6 Sec. 6-506).

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The general provisions state that a site cannot be graded in Forest Home Township so as to increase volume or velocity of stormwater onto neighboring parcels. The site plan review provisions include stormwater volume and ground water protection standards, as well as encouraging retention of existing trees. The township requires management of stormwater runoff on site and follows the Antrim County Stormwater Ordinance administered by the Antrim Conservation District. We have no additional recommendations for this element.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 12, Adequate

The Forest Home Township Master Plan calls for developing agreements with the Village of Bellaire for the Township to participate in future expansion of the Bellaire Waste Water Disposal System into Forest Home Township. Higher density residential uses as well as commercial and industrial uses will require the provision of municipal sewer (Part 3, 3-8, 3-9). This should be done in a careful, targeted way to avoid sprawl.

The Master Plan also calls for on-site sanitary waste disposal systems to be inspected upon the sale or conveyance of the property from one party to another to assure the system is functioning properly (Part 3, 3-2). We applaud this effort, in particular.

Sewer/Septic: RECOMMENDATIONS

SUGGESTED ACTION: As noted above, we support targeted sewer extension in coordination with the Village of Bellaire. However, please keep in mind that if sewer extensions are not carefully planned and targeted, they can result in unintended sprawl.

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

SUGGESTED ACTION: Enact a point of transfer septic inspection ordinance, per the Master Plan, or support a county-wide point of transfer septic inspection ordinance in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 15, Strong

Forest Home Township regulates wetlands by using a Wetlands Overlay District (Ch. 2 Art 5 Sec. 5-100). This includes any area defined as a wetland by Part 303 of the Michigan Natural Resources & Environmental Protection Act, PA 451 of 1994, as amended; or by the US Fish & Wildlife Service or the US Army Corp of Engineers, or identified on the Antrim County Soils Inventory. It also includes those areas wholly or largely covered by marsh or swamp flora (Chapter 2, Art 4, Sec 4-202). The Overlay District also covers isolated wetlands under two acres in size (Ch. 2 Art 5 Sec. 5-800).

If wetland disturbance cannot be avoided, "Mitigation must be provided on-site, where practical and beneficial to the wetland resources. If mitigation on-site is not practical and beneficial, mitigation in the immediate vicinity of the permitted activity may be considered. In all cases, mitigation shall be provided within Forest Home Township." (Ch. 2 Art 5 Sec. 5-906) "To ensure that mitigation plans are carried out properly, the Planning Commission may, at its discretion, require an applicant to obtain a performance bond satisfactory to the Planning Commission." (Ch. 2 Art 5 Sec. 5-909) There are also other enforcement efforts in place.

Additionally, the township makes an effort to prevent the creation of unbuildable lot splits. No divisions of wetland are allowed unless each resulting parcel has an upland building site. Also, land divisions for the purpose of waterfront access shall have a minimum of 200' of frontage on the water body (Ch. 2 Art 5 Sec. 5-400).

We appreciate the strong regulations in place for the township and we have no additional recommendations.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

The township makes a strong effort to protect ground water resources.

"Groundwater Recharge Zones: Any land use covering more than the area specified in Article 6 - Chart of District Dimensional Requirements (for a lot or parcel of land with structures and/or parking and/or storage areas with impervious surfaces) shall be designed and constructed, so that all run-off water shall be collected, retained, filtered or purified." (Ch 2 Art 4 Sec 4-407)

The Site Plan Review process also includes ground water protections (Ch. 4 Art 20 Sec 20-1600). Ground water protection requirements for mining operations are also included in the zoning ordinance (Ch 1 Art 3 Sec 3-800).

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 33, Strong

The township has steep slopes, which are protected as Environmentally Sensitive Areas if they exceed 15 percent (Ch. 2 Art. 4 Sec. 4-206). It also requires close coordination with the Antrim County Drain Commission when proposing to develop on steep slopes [Ch. 2 Art. 4 Sec. 4-404 (1-2)]. We have no additional recommendations for this element.

Conclusion

Forest Home Township's zoning ordinance and policies include some excellent protections for water resources. The Master Plan references the importance of maintaining high water quality, properly maintaining septic systems, and preserving open spaces. The zoning ordinance includes provisions to address environmentally sensitive areas, a wetland district, vegetated buffers around water bodies, site plan review standards for natural features, and impermeable surface limits. We thank you for those efforts. 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.



Photo by Dan Myers

Results Worksheet

Forest Home Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 11 | Adequate |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 44 | Strong |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 35 | Adequate |
| IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak | 33 | 12 | Adequate |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| 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 | 15 | Strong |
| 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 | 33 | Strong |

Section III: Analysis

Chapter 5 Helena Township

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for Helena Township. This Township is bordered by Torch Lake on the west and Clam Lake on the north and sits in the southwest portion of Antrim County. All of the surface waters within the township flow into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 21 , Strong

Helena Township has a Master Plan that was first adopted in 1978. The date of the last update is not specified but from the text, it looks like the current version was approved in late 2002 (Part I, page 1). There is no mention of when the next update is scheduled, but Master Plans should be updated every five years. Therefore, it is overdue and an update should be scheduled soon. The plan is not available on the web.

The last update was begun in January 2001. At that time, the planning commission conducted a Natural Resource Inventory during spring and summer of 2001 and developed and reviewed Geographical Information Survey (GIS) Maps documenting township features (Part I, page 1). The maps include: Base Map, Existing Land Use, Public Owned Lands, Environmentally Sensitive Areas, Rural Characteristics, Zoning, Potential Conservation Areas, Development Zones, Road Designations (page 47).

The master plan document is based on a lengthy Vision Statement approved Nov 1, 2001. It was designed to present policy, provide supporting documentation and to organize in one document general information regarding Helena Township's history, funding, resources and infrastructure (Part I, page 1). In terms of water resource protections, it states: "...growth must be thoughtfully managed to protect special residential and scenic character of the township and the quality of life associated with that character. Protection of natural resources, including the forests, open spaces and especially water resources, is of prime importance in growth management. This includes protection of the underground aquifers and wetlands, as well as surface water on lakes and streams." (Part II, page 2)

Open space preservation is also addressed (Part II, page 3), and stormwater management is included as an important community policy. “Require engineered onsite retention basins for storm water control for all new or redevelopment along the shoreline. Reduce nutrient enrichment of surface waters by: Eliminate sedimentation from construction, roads, storm water or open soils.” (Part II Policies, pages 24-25 and throughout 27, 33-37) It does not call for minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration.

The Master Plan acknowledges the importance of Wildlife corridors. “Farmlands provide wildlife habitat and act as wildlife corridors between other wildlife habitats. Planned Unit Developments that allow residential development with appropriate setbacks from wetlands are reasonable where possible to maintain wildlife corridors. Maps of these wetland wildlife corridors should be created and an Overlay Zone of the wetlands and their adjacent steep slopes with allowable uses should be addressed.” (Part II, B, pages 10-11, 13; C, pages 37-38) It also notes that development in natural areas should be limited to that which can take place without significantly changing the characteristics of the area (Page 26, 29, 35).

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: The Master Plan that exists is strong, but is also in need of an update. If this is not already scheduled, one should be scheduled soon.

SUGGESTED ACTION: When the Master Plan is updated, include the watershed in which the township is located, and acknowledge ways to implement watershed management approaches from the existing Grand Traverse Bay Watershed Plan.

SUGGESTED ACTION: When the next update happens, consider including policies that minimize impervious surfaces, and 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: 47 , Strong

Helena Township’s zoning ordinance includes some strong protections for water resources. “The fundamental purpose of this Ordinance is to promote the health, safety, and welfare of the inhabitants of the Township by promoting orderly development of the Township; encouraging use of land and resources in accordance with their suitability.” [Ch. I Sec. 1.02 (A-B)]

It includes key elements, such as adequate fees [Ch. XVII Sec. 17.06 (D), 17.08]; administration and enforcement (Ch. XVII Sec. 17.02); and the requirement to coordinate permitting with the receipt of other applicable County, State, and/or Federal permits [Ch. II Sec. 2.24 (H)].

The Site Plan Review process for Helena Township applies to many situations, including buildings within the 100-year floodplain. It prohibits land clearing on sites without appropriate permits, includes consideration of Open Space, drainage, and retention of trees and natural vegetation (Ch. II Sec. 2.24). It also notes that: “...a pre-application conference may be requested by the applicant prior to the submission of a complete application and site plan.” [Ch. II Sec. 2.24 (D-E)]

The Open Space Development design standards allow the township board to require preservation of significant plant and animal habitats. The intent of the Open Space Chapter is “...to provide for an alternative to traditional subdivisions through the use of planned unit development legislation.” (Ch. XIV

Sec. 14.01) The development must retain 50 percent of the net area in open space (Ch. XIV Sec. 14.06). The provisions also include incentives for adopting certain practices, such as dedicating wildlife corridors and reducing driveways (Ch. XIV Sec. 14.02, 14.06). And: “The dedicated open space shall be set aside by the developer through an irrevocable conveyance that is found acceptable to the Planning Commission... Ch. XIV Sec. 14.06 (C 4).

Finally, the ordinance establishes an Environmental Zoning District that allows limited development; intended to prohibit alteration of natural areas to ensure no substantial deleterious effect upon the natural environment (Ch. XI).

The site plan review standards, environmental district and the open space development provisions include important tools that the township can use to protect water quality. The Basic Zoning Components we identified to protect water are included in this strong ordinance. We applaud this work and have no additional recommendations for this element.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 27 , Adequate

In Helena Township, setbacks are specified in all zones, but none specify waterfront setbacks. In section called “Private Waterfront Access” it says: “All private accesses will conform to a minimum width of one hundred (100) feet at the front yard setback line and a minimum lot area of twenty thousand (20,000) square feet.” [Ch. II Sec. 2.14 (A)] This is not a waterfront setback line, but it does regulate dock lot minimum frontage: “All waterfront lots in R-1 District shall be limited to one dock and two motorized boats per 100 ft. of water frontage.” [Ch. VII Sec. 7.02 (H)]

Additionally, private waterfront accesses are limited to 1 dock and 2 motorboats [Ch. II Sec. 2.14 (D)]. Keyhole/funneling practices are also regulated: “All private waterfront accesses can support 2 non-waterfront dwelling units.” [Ch. II Sec. 2.14 (C)] Additional non-waterfront units may be added if four requirements are met, including an environmental impact study [Ch. II Sec. 2.14 (E 1-4)].

No permanent groin wall structure can be installed on waters within Helena Township, and a vegetated buffer of 25 feet is required on all lake, river and stream shorelines [Ch. II Sec. 2.12 (A, C)]. Also: “No more than thirty (30) percent of trees and shrubs shall be removed... No land alterations allowed within the native protection strip; eight (8) feet width pass may be constructed to the water’s edge.” [Ch. II Sec. 2.12 (A, C)] “A strip of natural vegetation shall be maintained... No land alterations including the removal of tree stumps shall be allowed within the native protection strip...” [Ch. II Sec. 2.12 (C)]. It does not prohibit the use of invasive plants.

All man-made extensions from the shoreline into or over inland lakes, rivers, and streams must have an open sub-structure construction so as to allow the free and unrestricted movement of the inland waters littoral current [Ch. II Sec. 2.12 (B)]. Marinas are not regulated.

Shorelines: RECOMMENDATIONS

We have only a few additional suggestions for the shoreline protections efforts in Helena Township.

SUGGESTED ACTION: Adopt a shoreline setback ordinance of at least 30 feet to minimize impacts in the critical shoreline zones of the Township.

SUGGESTED ACTION: Prohibit invasive plants from being used in shoreline buffers.

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 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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, Weak

Helena Township requires 200 square feet and a width of 10 feet for each parking space (Ch. XV Sec. 15.01). The Open Space provisions include incentives for property owners to use Open Space conservation design, which reduces the need for new impervious surfaces. This is an important provision, and one example is: 1 additional Dwelling Unit is allowed for each driveway eliminated [Ch XIV Sec 14.06 (F 2 a)].

Impervious Surfaces: RECOMMENDATIONS

As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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.

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider limiting paved private roads to 18-22 feet wide.

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

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The township requires management of stormwater runoff on site and follows the Antrim County Stormwater Ordinance administered by the Antrim Conservation District.

Stormwater Management: RECOMMENDATIONS

SUGGESTED ACTION: Consider adding stormwater management as a purpose for required greenbelts and landscaping, so that plantings in these areas are designed for water quality treatment.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 14, Adequate

The zoning ordinance requires an evaluation of the septic system by the county health department before a sale or transfer, which is excellent. “Any real property containing a well and septic system shall not be sold or transferred in any manner until the owner has received an evaluation of the well and septic system by a County (District # 3) Health Department officer.” [Ch. II Sec. 2.19 (1-3)] It is required to be in writing and furnished to prospective buyers; however, it is unclear in the ordinance how this requirement is enforced. For example it would be good to know how realtors are made aware of this requirement.

Sewer/Septic: RECOMMENDATIONS

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

SUGGESTED ACTION: Consider clarifying any agreement in place to enforce the existing point of transfer septic inspection requirement.

SUGGESTED ACTION: Consider supporting a county-wide septic point of transfer inspection ordinance, in coordination with other townships and the County Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 11, Adequate

There is no stand-alone wetland ordinance in Helena Township. However, some good protective steps have been taken to protect these vital resources. Site Plan Review is required for all developments in wetlands, including individual single family homes, for which a permit is required by the State of Michigan [Ch II Sec. 2.24 (B 7)].

Helena Township's zoning ordinance also includes an environmental district that is designed to protect natural features and historic areas. "Designation of Certain Swampy Wetlands: Any parcel or parcels of land bordering on a lake, river, or stream may be designated within the Environmental ("E") District if said parcel is generally swampy and satisfies minimum requirements." [Ch XI Sec. 11.04 (A-D)] There is flexibility within this designation, and the Planning Commission can work with applicants to grant Special Approval, but the intent is to protect the wetlands and limit disturbance (Ch XI Sec. 11.03).

Wetlands: RECOMMENDATIONS

It is unclear what setbacks apply to the "E" District, if any.

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

SUGGESTED ACTION: Consider requiring setbacks for "E" District features, generally, and wetlands, in particular.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, Adequate

Site plan review is in place to protect natural resources, in part, but nothing is ground water specific. Also: "In the "E" District, in constructing footpaths or narrow walkways, no materials used in such construction shall contribute to the pollution/contamination of ground water or adjoining lakes and rivers." [Ch. XI Sec. 11.02(B)]

Ground Water and Wellhead Protection: RECOMMENDATIONS

The Zoning Ordinance should prohibit both direct and indirect discharge of hazardous substances to ground water without appropriate approvals or permits.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township, as it continues to grow.

SUGGESTED ACTION: Specify protections to protect ground water from potential contamination.

Other Relevant Elements

POSSIBLE SCORE: 48
TOTAL SCORE: 30, Adequate

The Open Space section of the Helena Township ordinance refers to protecting steep slopes. The purpose includes: “Assuring the permanent preservation of open space, agricultural lands, and other natural resources such as steep slopes.” [Ch XIV Sec 14.01 (B); Sec 14.02 (C 3)] We have no additional recommendations for this element.

Conclusion

The Helena Township zoning ordinance includes some excellent protections for water resources. We thank you for those efforts. 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

Helena Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 21 | Strong |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 47 | Strong |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 27 | 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 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 14 | Adequate |
| VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak | 21 | 11 | Adequate |
| 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 6 Kearney Township

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for Kearney Township, which borders a section of the eastern shore of Lake Bellaire and the southeastern shoreline of Intermediate Lake. All of the surface waters within Kearney Township flow into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes steps for the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 1, Weak

We understand that a Master Plan exists for Kearney Township. However, despite numerous attempts to get a copy, we were unable to do so. It is not available on the web, or in hard copy. We expect that it should be updated soon, but are unable to verify that.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: Make the existing Master Plan available, and schedule an update if it is older than five years.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 25, Adequate

Kearney Township's zoning ordinance includes some important protections for water resources. However, at the time of this writing, the ordinance was not available on the web. We suggest making it available online, if this has not already been done.

The Purpose of the Kearney Township Ordinance is to promote health, safety, comfort, peace, morals, convenience and general welfare to inhabitants of the township; use lands and resources by directing

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

development towards areas suitable and provide guidelines for best development practices (Art. I Sec. 1.02). It includes important basic elements, such as a fee system (Art. VI Sec. 6.06) and administration and enforcement methods (Art. VI Sec. 6.02; Sec. 6.04). The Township Site Plan Review also requires coordination with other agencies during the permitting process (Art. V Sec. 5.02 C, 3, A).

The Purpose of the Kearny Township Site Plan Review: “To require approval for uses that can be expected to have impact on natural resources.” (Art. V Sec. 5.02 A) It does not include Open Space provisions.

The Township also has Planned Development District provisions (Art. IV Sec. 4.07 A-E). This district requires inclusion of a minimum open space threshold, as the Planning Commission deems necessary (Art. IV Sec. 4.07 B1A, 2C). The open space is not required to be managed in a natural condition.

Basic Zoning Components: RECOMMENDATIONS

SUGGESTED ACTION: Consider ways to encourage retention of native vegetation in dedicated open spaces of the Planned Development District.

SUGGESTED ACTION: Consider ways to encourage protection of open spaces and retention of native vegetation in all districts of the township. For example, use flexible site design criteria or incentives to encourage applicants to include open space or cluster design provisions in development proposals.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 22, Adequate

Kearney Township has shoreline setbacks in place. “No building or structure, except docks or launch ramps shall be erected closer than 50 ft. from the shoreline at normal high water level of any lake, stream or creek.” (Art. III Sec. 3.10)

It also includes a 25-foot buffer of trees and shrubs around water bodies. Clear cutting is prohibited in the buffer; a one-time cut of 30 percent of trees and shrubs is permitted in a filtered view along the entire length of the shoreline, not concentrated in one small area. It also specifies that the buffer is to remain in its natural state of trees and shrubs, but does not prohibit the use of invasive species in the buffer zone (Art. III Sec. 3.10).

The township also has a stand alone Road End ordinance in place that is not part of the Zoning Ordinance.

Shorelines: RECOMMENDATIONS

Kearney Township does not regulate docks, or have measures in place to prevent keyhole/funneling practices. It also does not regulate marinas.

SUGGESTED ACTION: Prohibit invasive plants from being used in shoreline buffers.

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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 0, Missing

As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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. Kearney Township has nothing in place to mitigate the impacts of increased impervious surfaces.

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider limiting paved private roads to 18-22 feet wide.

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

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The township requires management of stormwater runoff on site and follows the Antrim County Stormwater Ordinance administered by the Antrim Conservation District.

Stormwater Management: RECOMMENDATIONS

We have a few additional suggestions for Kearney Township on this element that will enhance the Impervious Surfaces element and help implement the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the site plan review ordinance.

SUGGESTED ACTION: Consider adding stormwater management as a purpose for required greenbelts and landscaping so that plantings in these areas are designed for water quality treatment.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 8, Weak

There are no regulations in place for septic; sewer is not applicable.

Sewer/Septic: RECOMMENDATIONS

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 or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 1, Weak

Kearney Township has a Potential Wetlands Identification Map. This requires the Zoning Administrator to notify each applicant for a zoning permit about property included in this map of the need to contact the

state or other agencies with jurisdiction over wetlands prior to construction or development of property (Art. VI Sec. 6.01A). This is a good provision that encourages coordination with other relevant statutes and agencies, which is always a good thing for applicants to help reduce confusion and minimize mistakes in the application process.

Wetlands: RECOMMENDATIONS

Federal and state protections for wetlands do exist, but to fully protect Kearney Township wetlands in the absence of a county ordinance, local wetland protections 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 local wetland protections, or support the creation of such an ordinance for Antrim County. Also, consider requiring a vegetated buffer around wetlands.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 6, Weak

The township requires Site Plan Review, which is helpful to ensure there are no unnecessary threats posed to ground water by new or redevelopment proposals. However, there are no additional requirements for site plan submittals in ground water recharge areas. The Zoning Ordinance should prohibit both direct and indirect discharge of hazardous substances to ground water without appropriate approvals or permits.

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

SUGGESTED ACTION: Specify protections to protect ground water from potential contamination.

Other

POSSIBLE SCORE: 48

TOTAL SCORE: 32, Adequate

The National Floodplain Insurance Program, High Risk Erosion Areas, and Critical Dunes are not applicable to Kearney Township. We have no further recommendations on this element.

Conclusion

Kearney Township has some important water resource protections in place that provide a good foundation upon which to build and strengthen. Thank you for your time and attention in reading this chapter, and we 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 Kearney Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 1 | Weak |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 25 | Adequate |
| III. Shoreline 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 | 0 | Missing |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 8 | Weak |
| 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 | 6 | Weak |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 32 | Adequate |

Section III: Analysis

Chapter 7 Milton Township

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for Milton Township. Located between Torch Lake and Grand Traverse Bay in Antrim County. Some surface waters within Milton Township flow directly into the bay while others flow into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 27, Strong

Milton Township has a Master Plan in place, updated in 2006. The General Goal Statements include: “Maintain a current Township Master Plan by reviewing it every five years, and updating it through amendment when appropriate.” Given that, the next update should begin in 2011 (Ch 8, page 8-2).

The Master Plan notes that Milton Township is located within the watersheds noted above (Ch 5 page 5-9). It includes an extensive inventory and mapping of resources, including surface and ground water, and wetlands (Ch 5, in full). It also includes a specific and focused goal or statement of intent to protect water resources: “Within Milton Township the long-term quality and conservation of natural resources, water quality protection, and the sustainability of the environment should be considered of significant importance when making land use decisions.” (Ch 8, page 8-2)

The Master Plan also noted that a majority of respondents to the survey conducted prior to the plan update felt that rural character or “open space” within the Township is comprised of views of farms and forests, and views of inland lakes and Lake Michigan (Ch 5, page 5-1). It notes the intent to “Secure open spaces by utilizing planning tools and techniques, including but not limited to: Working with conservancies and others to protect identified conservation and recreation areas...” 5 additional bullet points; (Ch 8 page 8-3, 8-4).

Stormwater management is also identified as an important community policy in the Master Plan. It notes that, “Due to topography and hydrology, Milton Township waters are especially susceptible to non-point pollution sources...” and lists seven potential management techniques (Ch 5, page 5-10). Also, noted in the

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Recommendations Section, 1-Environment: “Explore the adoption of a waterfront overlay district zoning ordinance (as it relates to innovative on-site storm water management techniques, ... percent of lot coverage, and percent of impermeable surface requirements, etc.) to protect water quality along the Great Lakes, inland lakeshores, stream, and creek banks.” (Ch 8, page 8-3)

The township also notes that “Surface waters and shorelines can be degraded by: ...increased storm water runoff from impervious or sealed surfaces, roof tops, driveways, parking areas, and/or manipulated landscapes.” (Ch 5, page 5-2)

The Master Plan also calls for the Township to seek to conserve open space and natural buffers, and recognize the need for interconnected tracts of land as wildlife corridors, during future reviews of development plans (Ch 8 page 8-4). Finally, as supported by a survey of Township residents, it recommends considering the purchase of unique parcels to protect sensitive natural resources (Ch 8 page 8-4).

Master Plan Components: RECOMMENDATIONS

The Milton Township Master Plan is strong, and we have only one additional recommendation:

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.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 40, Strong

The Milton Township zoning ordinance includes some strong protections for water resources. The Purpose of the Ordinance is to promote the health, safety and welfare of the inhabitants of the Township by: “... encouraging the use of land and resources in the Township in accordance with their suitability.” (Ch. I, 117.100, Sec. 1.02) It includes appropriate fees (Ch. XVIII, 117.1800, Sec. 18.09), and administration and enforcement methods (Ch. XVIII, 117.1800, Sec. 18.02). It also requires coordination with other agencies during the permitting process (Ch. XX 117. 2011Sec. 20.11).

Site Plan Review in Milton Township applies to all buildings except single family or two-family homes on individual lots as well as interior changes to existing buildings. One of the purposes of the ordinance is to preserve natural resources. It prohibits land clearing on sites without appropriate permits and site plan approval and includes consideration of drainage and retention of trees and natural vegetation (Ch. XX, 117.2000, Sec. 20.01-20.11).

The ordinance includes a Planned Unit Development Zone “PUD” (Ch. XV, 117.1500, Sec. 15.01-15.05). The development provisions can apply to parcels with challenging terrain. At any public meeting, the Planning Commission has the right to recommend open spaces as they deem necessary under the circumstances of the particular case to protect the health, safety and general welfare of the public [Ch XV 117.1502 Sec. 15.02 (B 3)].

The township’s zoning ordinance also includes an environmental district that is designed to protect natural resources and historic areas. The provisions of this Chapter “prohibit the alteration of these areas except where alterations can contribute to the overall use and enjoyment of the areas by the people... and where such alterations have no substantial deleterious effect upon the natural environment.” (Ch. XII, 117.1200, Sec. 12.01-12.05)

Basic Zoning Components: RECOMMENDATIONS

This element is strong, and we have only one suggestion. The open space provisions should be strengthened. The PUD retains the right of the Planning Commission to recommend open spaces, and Site Plan Review prohibits land clearing without proper permits. Both of these could be more specific and protective of Milton Township open spaces.

SUGGESTED ACTION: Consider ways to encourage protection of open spaces and retention of native vegetation in all districts of the township. For example, use flexible site design criteria or incentives to encourage applicants to include open space or cluster design provisions in development proposals.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 29, Adequate

Milton Township has shoreline setbacks in place. “No building or structure, except docks or launch ramps shall be erected closer than fifty (50) feet from the shoreline.” (Ch. II, 117.200, Sec. 2.16) Additionally, the township requires: “A strip of natural vegetation shall be maintained to a depth of twenty-five (25) feet from the high water mark of the inland lakes, rivers or streams abutting or traversing the property in question.” [Ch. II, 117.200, Sec. 2.12 (C)] No more than 30 percent of all living trees and shrubs can be removed in a buffer by cutting them to grade level (Ch. II, 117.200, Sec. 2.16).

This combination of setbacks and vegetative buffer zones on the shoreline provide essential water quality protections against the impacts of urbanization, growth and development. These regulations could be strengthened by specifying native vegetation, and prohibiting the use of invasive plants. [NOTE: We also understand that a *Phragmites* Control ordinance has also been passed, but have not been able to see a copy. We were unable to locate it by the time we completed this project, and it was not yet on the website.]

Another key protection is that no permanent groin wall structure, as defined by the state of Michigan, can be installed as a shoreland erosion control device on any of the inland lakes, rivers and streams within the Township (Ch II, 117.212, Sec. 2.12).

Docks are regulated in Milton Township. “Not more than two (2) spaces for each one hundred (100) feet of lake frontage may be provided for mooring or dockage of boats in any zoning district in the township.” [Ch II 117.212, Sec. 2.12 (D)] “All man-made extensions from the shoreline must also have an open sub-structure construction so as to allow the free and unrestricted movement of the inland waters littoral current.” [Ch. II, 117.200, Sec. 2.12 (B)] It does not regulate the number of motor crafts and rafts allowed per dock, using specific dimensions.

It also does not regulate the types of structures or dwelling units that are allowed per every 100 feet of waterfront access to inland lakes or streams or rivers. However, keyhole prevention provisions are in place. “All private waterfront accesses will conform as a minimum to the width and square footage requirements for a platted lot within the R-1 zone. A private access of the required minimum size can support a maximum use density of 5 non-waterfront property dwelling units. An additional 20 ft. of width and 4,000 sq. ft. of land provided for each additional dwelling unit over 5 dwelling units.” (Ch. II, 117.200, Sec. 2.14)

Marinas are also somewhat regulated. For a marine sewage pump-out facility: “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 service to a Health Department approved sewage disposal facility.” [Ch II 117.212, Sec. 2.12 (E)]

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Prohibit the use of invasive species in shoreline buffer strips.

SUGGESTED ACTION: If a *Phragmites* control ordinance is in effect, put it on the website for easy access.

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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, Weak

As noted by our colleagues at The Watershed Center Grand Traverse Bay, the 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. They can 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.

The Master Plan includes some strong, clear language about protecting water quality, managing storm-water and limiting impervious surfaces. The Zoning Ordinance requires that each parking space be at least 200 square feet and at least 10 feet wide. It also requires some portion of proposed parking lots to be planted with trees/vegetation within the parking lot paving, but it is minimal. “Intended for purposes of greenbelt for residential area: If the parking area adjoins a residential zone, a greenbelt shall be provided and maintained between the parking area and the adjoining residential area.” [Ch. XVI 117.1601 Sec. 16.01 (C)]

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider limiting paved private roads to 18-22 feet wide.

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

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

Milton Township follows the Antrim County Soil Erosion and Stormwater Ordinance, administered by the Antrim Conservation District.

Stormwater Management: RECOMMENDATIONS

We have a few additional suggestions for Milton Township regarding this element:

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the site plan review ordinance.

SUGGESTED ACTION: Consider adding stormwater management as a purpose for any required greenbelts and landscaping so that plantings in these areas are designed for water quality treatment.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 27

TOTAL SCORE: 8, Weak

We understand that various Antrim County townships are researching a point of transfer septic inspection ordinance, and we support those efforts.

Sewer/Septic: RECOMMENDATIONS

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 11, Adequate

Milton Township has no stand alone wetland ordinance. However, good protections are in place with the designation of certain swampy wetlands in the “E” Zone: “Any parcel or parcels of land bordering on a lake, river or stream or high water table area may be designated within the Environmental Zone if said parcel is generally swampy and satisfies any one of 4 minimum requirements.” [Ch. XII, 117.1200, Sec. 12.02 (A-D)] There is flexibility within this designation, and the Planning Commission can work with applicants to grant Special Approval, but the intent is to protect the wetlands and limit disturbance (Ch. 12 117.1203 Sec. 12.03).

Wetlands: RECOMMENDATIONS

It is unclear what setbacks apply to the “E” District, if any.

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

SUGGESTED ACTION: Consider requiring setbacks for “E” District features, generally, and wetlands, in particular.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 3, Weak

Designation of swampy wetlands in the “E” District implies protection of ground water for Milton Township. (Ch. XII, 117.1200, Sec. 12.02) However, ground water recharge protections are not specified.

The township requires Site Plan Review, which is helpful to ensure there are no unnecessary threats posed to ground water by new or redevelopment proposals. It calls for: “Location and specification 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.” [Ch XX, 117. 2004 Sec. 20.04 (b 21)]

Ground Water and Wellhead Protection: RECOMMENDATIONS

The Zoning Ordinance should prohibit both direct and indirect discharge of hazardous substances to ground water without appropriate approvals or permits.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

SUGGESTED ACTION: Specify protections to protect ground water from potential contamination.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 23, Adequate

Milton Township participates in the National Flood Insurance Program. It Requires Site Plan Review to include location of existing floodplains, but refers to state regulations that are out of date [Ch. XX, 117.2004 Sec. 20.04 (b 5)]. It also prohibits Land Clearing without an appropriate floodplain permit (Ch. XX, 117.2011, Sec. 20.11).

The township also has High Risk Erosion Areas, with ordinance language in place to protect these features. (Scenic Vistas: Ch. II, 117.200, Sec. 2.15) “Any construction within these designated areas which are included within the Environmental Zone shall comply with the rules and regulations adopted under the Shoreland Protection Act and the height, area and width requirements contained within the R-I Zone in which the use would otherwise be allowed will be applicable.” (Ch XII, 117.1205 Sec. 12.05)

Other: RECOMMENDATIONS

SUGGESTED ACTION: Update the reference to relevant state regulations.

Conclusion

The Milton Township Master Plan and zoning ordinance includes some strong protections for water resources and we thank you for those efforts. 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 Milton Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 27 | Strong |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 40 | Strong |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 29 | 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 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 8 | Weak |
| VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak | 21 | 11 | Adequate |
| IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 3 | Weak |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 23 | Adequate |

Section III: Analysis

Chapter 8 Torch Lake Township

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for Torch Lake Township, situated between Torch Lake to the east and Lake Michigan to the west in Antrim County. Some surface waters within the township flow directly into Grand Traverse Bay while others flow into the Elk River Chain of Lakes Subwatershed through Torch Lake. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 15, Adequate

The Torch Lake Township Master Plan emphasizes preserving and protecting water quality, as well as protecting open spaces. According to the website, the plan was last updated in 2007 but on the cover page it is still marked as a “draft”. We checked with the Township to get this clarified and that is an oversight; the plan on the website is actually the final draft.

The plan does not specifically identify the watersheds in which the community is located. However, it does have comprehensive inventory and mapping of resources, including surface and ground water and wetlands. It also has a specific and focused goal statement of intent to protect water resources: “GOAL 1: Preserve and protect clean air and water, scenic rural character, farmlands, forestlands, open spaces, wetlands, and wildlife habitats.” (Part I, pages 5-6) Additionally, open space is noted in other goal statements and throughout the document, especially in relation to maintaining the rural character of the township (Pages 5-6, 35, 48-49). Finally, the Master Plan partially addresses the identification and protection of Wildlife corridors. “New residential development should not exceed effective density equivalent of two (2) dwelling units per acre. ... These lands should be developed in a cluster fashion to allow the ability to retain significant natural features and wildlife corridors...” (Page 50)

The Torch Lake Township Master plan does not identify stormwater management as an important community policy, and it 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.

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: When the next Master Plan update happens (due in 2012), include the watershed in which the township is located, and acknowledge ways to implement watershed management approaches from the existing Grand Traverse Bay Watershed Plan.

SUGGESTED ACTION: Include Stormwater Management and policies to minimize Impervious Surfaces, and 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: 37, Strong

Torch Lake Township has a few different water-related ordinances in various places. First, there is the Torch Lake Township Farmland and Open Space Development Rights Ordinance: Ordinance No. 04-01, Effective September 3, 2004. It does just what it sounds like; it protects existing farm land, using a purchase of development rights program.

There is also the TORCH LAKE TOWNSHIP PUBLIC ACCESS and MOORING ORDINANCE Number 09-2007; Effective May 5, 2007, in addition to the PUBLIC PARKS, ACCESSES AND ROAD-END USE ORDINANCE, Ordinance Number 10-2007. These are essentially police power ordinances used to regulate the intensive quality of life and environmental impacts that come with high visitation rates over a short period of time. The Sand Bar in Torch Lake has been an area of very high traffic and intense use that created many problems for residents on the lake. The township took steps to remedy this.

Finally, there is also the Zoning Ordinance, which was recently amended in 2010 to revise the Planned Residential Development Zone (PRD) and Planned Unit Development Zone (PUD) sections. The “Fundamental purpose of the Ordinance is to promote health, safety and welfare of inhabitants by...Encouraging use of land and resources in the Township in accordance with their suitability...” (Ch. I Sec. 1.02 B) The ordinance is administered and enforced, and includes fees to help with administration (Ch. XXII Sec 22.01). It also includes Site Plan Review, which requires identification of any significant site amenities or unique natural features [Ch. XVIII Sec 18.04 (A 2 t)].

Importantly, the Zoning Ordinance proposal review process is coordinated with the receipt of other applicable County, State, and/or Federal permits. “RESTRICTIONS APPLICABLE TO PROPERTY ABUTTING LAKES, RIVERS, AND STREAMS: All regulations, restrictions and ordinances of Torch Lake Township, Antrim County, Michigan Department of Natural Resources and U.S. Army Corps of Engineers shall apply.” (Ch. II 2.11) Also: “Land Clearing: No person shall undertake or carry out any such activity or use for which site plan approval is required, nor proceed prior to obtaining necessary soil erosion and sedimentation control permit, wetland permits, floodplains permits, high risk erosion or sand dune permits.” (Ch. XVIII Sec. 18.14)

The Torch Lake Township Zoning Ordinance also includes a timber reserve district with a purpose to protect wet soils and historic areas. The timber reserve section of the ordinance was developed because of concerns about water quality in adjoining water bodies.

Basic Zoning Components: RECOMMENDATIONS

The Torch Lake Township water-related ordinances are strong, and we appreciate these efforts. We have one additional suggestion for this element.

SUGGESTED ACTION: Consider ways to encourage protection of open spaces with retention of native vegetation in all districts of the township.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 30, Adequate

Torch Lake Township has a Great Lakes Shoreline that it protects in various ways. Although it does not use an Overlay District, it does include the following for PRD: “Setbacks from natural water bodies that form one or more perimeter boundaries shall be a minimum of one hundred (100) feet.” [Ch. XIV Sec. 14.04 (E)] PUD proposals may also be subject to setbacks (Ch XV Sec. 15.04). Buildings in other residential areas must be setback 50 feet from water bodies. Additionally: “Front Lot Line Setback: lots that have fronts on an inland lake, stream or creek, where the water body is a property boundary line, the front lot line set back shall be measured from a line most parallel to the water’s edge that does not cross the surface of the water body. For lots fronting on Lake Michigan, a line parallel to the ordinary high water mark which does not cross the surface of Lake Michigan.” (Ch XXIII Section 23.01 – DEFINITIONS)

The Zoning Ordinance does not require riparian buffers along the shorelines of the Township. Site Plan Review does have flexibility, which could require shoreline greenbelts where appropriate: “For private recreational facilities or uses that have inland lake frontage, the following limitations shall be established: ...Plans for permanent residential dwelling recreational apparatus must be shown on the site plan; ...All uses shall be compatible with the adjacent property uses. Therefore, additional limitations may be imposed.” [Ch. XVIII Sec. 18.07 (D) 7-8] However, in our opinion, shoreline buffer zones should be required outright. 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.

Shoreline density, docks, and the prevention of keyhole/funneling are regulated in Torch Lake Township. “All lots shall have a minimum of one hundred (100) feet on the water body.” (Ch. II 2.11) Also: “These regulations are intended to control funneling activity – the granting or existence of a legal property right benefitting non-riparian or non-littoral land parcels, site condominiums, or condominium units which authorizes the use of a riparian or littoral land parcel, or a portion thereof, to gain access to a body of water, whether such waterfront access is gained by easement; a common element or a limited common element in a condominium development; a covenant running with the land; a lease; or another legally recognized property interest.” (Ch. II Sec. 2.13 A)

Torch Lake Township also regulates Road Ends terminating at the edge of navigable waters, to ensure the right of public access and limit public nuisance activities. It does not specify lounging, sunbathing or picnicking but does prohibit private docks, hoists, storage and camping, fires, glass containers, trash, and other related disturbances. (TORCH LAKE TOWNSHIP PUBLIC PARKS, ACCESSES AND ROAD-END USE ORDINANCE, Ordinance Number 10-2007) The township does not regulate marinas, per se, but we assume it would do so under special use provisions.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Consider ways to encourage shoreline buffer zones of

native vegetation in areas immediately adjacent to water bodies throughout the township.

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 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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, Weak

Torch Lake Township requires 200 square feet and a width of 10 feet for each parking space. The PRD provisions allow for alternatives to traditional subdivisions. One of the purposes is to preserve open spaces and natural resources, and it includes an impervious surface limit, with no more than 30 percent of the property allowed to be covered with impervious surfaces [Ch. XIV Sec. 14.03 (J)]. PRD also requires a 100-foot setback from water bodies. The only other relevant impervious surface protections are (underline added): “In R-1, minimum lot line setbacks for ... driveways, and parking areas shall be as required ... with the exception of the side and rear lot line setbacks which shall contain a minimum distance of one hundred (100) feet, a portion of which may be occupied by the green belt.” [Ch. VII, Sec. 7.02, (C) 2]

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

SUGGESTED ACTION: Consider limiting paved private roads to 18-22 feet wide.

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

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

In addition to the Antrim County Stormwater regulations, Torch Lake Township also has some stormwater controls in place. “No premises shall be filled or graded so as to increase amount or velocity of surface water run off onto adjoining parcels.” (Ch. II Sec. 2.18)

During the site plan review process, special attention is given to proper site drainage [Ch. XVIII Sec. 18.07 (A) 3]. In a PRD, “evidence shall be provided that the owner has met with and is coordinating the project with the Drain Commissioner... and other appropriate agencies as detailed in Section 18.06 (which includes Antrim County Soil & Water Conservation District)” [Ch. XIV, Sec. 14.04 (B)]

Stormwater Management: RECOMMENDATIONS

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the site plan review ordinance.

SUGGESTED ACTION: Consider adding stormwater management as a purpose for any required greenbelts and landscaping so that plantings in these areas are designed for water quality treatment (i.e. the greenbelt requirements between parking and residential uses).

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 8, Weak

Torch Lake Township has some minimal regulations in place related to septic systems, and they are closely coordinated with the Health Department. “Non-conforming structures being reconstructed for any reason must have the sewage disposal system and water supply evaluated by the District Health Department.” (Ch. II, Sec. 2.03) Also: “Every building hereafter erected ... shall be provided with a safe and sanitary water supply system ... The written approval of such facilities by the District Health Department Number Three shall be filed with the application for a Zoning Permit as hereinafter provided.” (Ch. II, Sec. 2.17)

Sewer/Septic: RECOMMENDATIONS

We support enacting point of transfer septic inspection ordinances in Antrim County, and have the following recommendations:

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 4, Weak

There is no Wetland Ordinance in Torch Lake Township. DESIGNATION OF CERTAIN SWAMPY WETLANDS is included: “any parcel or parcels of land within the Township may be so designated if said parcel is generally swampy and satisfies any one of four minimum requirements.”(Ch. II, Sec. 2.14) However, it does not specify what is required if such a designation is assigned. Does this require the township to include it in a certain zoning area and therefore, deny permission to disturb it? Does the township withhold permission to do anything until state permits are obtained? If the state does not regulate such a parcel, will the Township still protect it?

Site Plan Review requires including the location of existing wetlands, and refers to state regulations that are not up to date. [Ch. VXIII, Sec. 18.04 (2) c]

The ordinance also specifies this protection for wetlands: “Sites where hazardous substances are stored ... shall be designed in such a manner to prevent spills and (unless permitted by state or federal statute) discharges to ... wetlands.” [Ch. VXIII, Sec. 18.07 (F) 1] Importantly, the minimum lot frontage of 100 feet on a water body helps to prevent the creation of unbuildable lot splits that consist of mostly wetlands (Ch. II 2.11).

Wetlands: RECOMMENDATIONS

Federal and state protections for wetlands do exist, but to fully protect Torch Lake Township wetlands in the absence of a county ordinance, local wetland protections 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: Specify what should happen if a parcel is designated to be a “swampy wetland”. Also, consider requiring setbacks or a vegetated buffer around wetlands.

SUGGESTED ACTION: Review and update references to state wetland protections.

SUGGESTED ACTION: Support the creation of a wetland protection ordinance for Antrim County.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 12, Adequate

In Torch Lake Township, the Site Plan Review process includes: “Sites that involve hazardous substances shall be designed to prevent spills and (unless permitted by state or federal statute) discharges to ...

ground water; no floor drain discharges unless permitted by the state.” [Ch. XVIII Sec. 18.07 (F) 1-3] Additionally, this Site Plan Review provision could be used to protect ground water at mining locations: “For all proposed natural resource extraction, mining, or relocation operations, the following requirements shall be established: Specific site reclamation requirements may vary depending on the location of the site in terms of its ... sensitivity to the natural environment and/or reuse potential. The Planning Commission shall state specific reasons.” [Ch. XVIII, Sec. 18.07 (C) 10] Finally, the Timber Reserve District allows harvesting of timber, “provided no materials or equipment used shall contribute to pollution or contamination of ground water.” [Ch. XI Sec. 11.02 (A)]

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 14, Weak

Torch Lake Township does participate in the National Floodplain Insurance Program. The Township ordinance requires Site Plan Review to include location of existing floodplains, but it refers to state regulations that need to be updated [Ch. VXIII, Sec. 18.04 (A 2 c)]. It also prohibits Land Clearing without appropriate floodplain permit (Ch. VXIII, Sec. 18.14).

As noted earlier, the township also has a Great Lakes shoreline, which includes High Risk Erosion Areas. The Zoning Ordinance notes: “SHORELAND PROTECTION ZONE. Certain lands in the Township abut Lake Michigan and have been designated as ‘high risk’ erosion areas; construction within any zone shall comply with the rules and regulations adopted under the Shorelands Protection Act and the height, area and width requirements contained within the zone in which the use would otherwise be allowed will be applicable.” (Ch. II Sec. 2.15)

Our research indicated the presence of critical dunes in the township, but there has not been local government assumption of Part 353, with the State of Michigan approval, to protect them.

Other: RECOMMENDATIONS

SUGGESTED ACTION: Do a review of the related state and federal protections referred to the Zoning Ordinance to ensure relevant references are up to date.

SUGGESTED ACTION: If critical dunes do exist in the Township, consider working with the State of Michigan to ensure local protections are in place to adequately protect them.

Conclusion

The Torch Lake Township Master Plan and zoning ordinance includes some strong protections for water resources and we thank you for those efforts. We also thank you for your time and attention in reading this chapter, and we 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

Torch Lake Township

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 15 | Adequate |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 37 | Strong |
| III. Shoreline 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 60 | 30 | 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 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 8 | Weak |
| VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak | 21 | 4 | 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 | 14 | Weak |

Section III: Analysis

Chapter 9 Village of Bellaire

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for the Village of Bellaire, located between Intermediate Lake and Lake Bellaire in Antrim in the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

The Village has remarkable water protections in place, achieving a very solid ranking from this project, with most elements scoring Strong and few scoring Adequate. The one exception is a low score for lacking provisions for Impervious Surfaces, but remedies can be implemented that are very cost-effective, and these are described below. Overall, we commend them for their work to protect the fresh water resources that help to define the community.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 21, Strong

The purpose of the Master Plan for the Village of Bellaire "...is to provide guidelines for economic growth ... while protecting the water resources ...of the Village and its downtown area." (Section 1.0, page 1-1) It notes that the Village is in the Elk River Chain of Lakes watershed (Section 3.0, page 3-5), and also has an inventory of and maps for soils, surface and ground water resources, and wetlands (Sections 3.0 and 4.0.). The plan is dated 2008, so it should be updated in 2013.

General Village Goals include (underlines added): "PRESERVE THE UNIQUE BEAUTY OF BELLAIRE - by protecting the waterfront setting... maintaining an overall clean, healthy and well maintained living environment." (Section 6.0, page 6-3) "Protect and preserve the natural resources. #4. Identify and protect desirable open space and scenic vistas." (Section 6.0, page 6-5) "Protect and preserve the natural resources. #6. Utilize BMPs to regulate and minimize direct stormwater discharge into lakes and rivers." (Section 6.0, page 6-5)

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Minimizing impervious surfaces in new construction and redevelopment projects to reduce stormwater runoff and improve infiltration is minimally addressed in this way: "...the combination of increasing impervious surfaces and filling wetlands will result in increased storm water runoff while reducing natural storm water retention areas. It is essential that future development consider characteristics of the natural environment to preserve the character of Bellaire and realize economic benefits of tourism/recreation industries." (Section 3.0, page 3-1) However, there are no specific goals to limit impervious surfaces.

Finally, the Village Master Plan includes a goal to "preserve, protect and maintain environmentally sensitive areas, open space and public parks for the enjoyment of residents, visitors and future generations. #1. Preserve and maintain our public parks, access sites and natural areas." (Section 6.0, page 6-7) It does not include identification and protection of wildlife corridors, where appropriate, or acknowledge the importance of road stream crossings.

Master Plan Components: RECOMMENDATIONS

We commend the Village on such a strong Master Plan, which lost points on only two questions in our evaluation process. One question was about wildlife corridors, which would take some serious coordination with neighboring jurisdictions, given the small size of the Village. The other loss of points comes from missing attention to road stream crossings.

Kearny Township and Forest Home Township are the Village's closest neighbors. We could not obtain Kearny Township's Master Plan to do an evaluation. However, we did evaluate Forest Home Township and made a similar recommendation to them. Collaboration with your neighbors on the subject of Wildlife Corridors could be very beneficial to habitat concerns that ultimately contribute to healthy waters. And, well-constructed and maintained road stream crossings should not be overlooked, in terms of their impact on the quality of stream and water resources.

SUGGESTED ACTION: When the next Master Plan update happens (due in 2013), consider addressing Wildlife Corridors and Road Stream Crossings.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 37, Strong

The Village of Bellaire zoning ordinance includes some good protections for water resources. For example, the zoning ordinance includes strong, supportive language about the importance of protecting water quality in the Village in the purpose statement. "It is the purpose and intent of the Sections of the Ordinance pertaining to the review of wetlands, steep slopes, stormwater and waterfront properties to preserve the water quality of Bellaire, vital to our quality of life and the economic development of the Village." (Art. I Sec. 1.0) A Zoning Administrator implements and enforces the Ordinance (Art XII Sec. 12.0), and it includes fees to cover costs associated with the review of an application or appeal (Art XII Sec. 12.5).

Importantly, the ordinance also requires coordination in the permitting process: "Proposed projects shall conform to all applicable requirements of county, state, and federal statutes and ordinances. Approval may be conditioned on the applicant receiving all other necessary permits." [Art. III Sec. 3.27 (M)] Also, a pre-application conference is available, "unless waived by the applicant, for the purpose of determining eligibility of a proposed PUD application and review procedures and standards." (Art. VII Sec. 7.3)

The planned unit development (PUD) provisions are designed to encourage retention of natural features, and call for 25 percent of the site to remain in open space [Art VII Sec. 7.1 (B)]. The Site Plan Review process allows for the consideration of natural features, stormwater drainage, open space, and natural vegetation (Art. X Sec. 10.0). Finally, sensitive area protections are in place using the Conservation Reserve district and its regulations, to preserve state and village park and recreation uses [Art. V Sec. 5.7 (A)].

Basic Zoning Components: RECOMMENDATIONS

We appreciate the strong components in the Village ordinance, and have only a few additional suggestions.

SUGGESTED ACTION: Consider adopting specific standards for buffer protection, native vegetation, and tree conservation in the Site Plan Review process.

SUGGESTED ACTION: Consider requiring native vegetation in dedicated open spaces of PUDs.

SUGGESTED ACTION: Consider a village-wide tree conservation ordinance.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 21, Adequate

The Village ordinance recognizes the potential erosive impacts of hardened shorelines. This is important, since nearly 6 miles of Village frontage is on inland lakes, ponds and rivers. The retention of vegetation on sites with slopes of more than 18 percent, as required in the general provisions, helps prevent erosion and flow of sediments into water bodies.

In the Central Business District, properties bordering the river must observe a 25 foot setback from the ordinary high water mark [Art. V Sec. 5.5 (D) 1]. Additionally, a 10 foot natural vegetation buffer along waterfronts helps address nutrient and sediment flows into surface waters, and there are 11 greenbelt and/or natural vegetation strip requirements in place [Art III Sec. 3.18 (A-H)]. “Exception: The Village of Bellaire may locate public boardwalks within the 25’ waterfront protection area in consultation with Planning Commission.” [Art. III Sec 3.1(E)] Invasive plants are not prohibited from being used in buffer zones.

The Village does include marinas in Special Use Permits, which “may authorize the Special Uses designated in Article IX in the “C” Commercial District in accordance with the procedures, provisions and standards of Article VII of this Ordinance.” [Art. V Sec. 5.4 (C)] 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 Best Management Practices. Finally, there are no dock regulations or keyhole/funneling provisions.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Consider requiring native vegetation in shoreline buffer strips, and prohibiting 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 best management practices.

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.

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

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 3, Weak

Several parts of the ordinance allow for the consideration of natural features, stormwater drainage, and natural vegetation. As noted by our colleagues in The Watershed Center Grand Traverse Bay, the zoning ordinance limits the size of parking stalls to 9 feet by 18 feet, which is a great step toward reducing impervious surfaces. The ordinance also includes recommended numbers for parking spaces, with final approval of the size by the planning commission. “A revised Special Use Permit is required when any of the following is proposed: ...2. Increase of impervious surface and/or parking requirements.” [Art. IX, Sec. 9.8 (A)]

General Development Standards include: “Areas of natural drainage such as swales, wetlands, ponds, or swamps shall be protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.” [Art. III Sec. 3.27 (E)]

Impervious Surfaces: RECOMMENDATIONS

The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay.

SUGGESTED ACTION: Consider limiting the paved width of private roads to 18-22 feet.

SUGGESTED ACTION: Consider impervious cover limits for all zoning districts.

SUGGESTED ACTION: Consider ways to encourage alternative driveway designs (i.e. shared driveways, use of porous materials for driveways, etc.).

SUGGESTED ACTION: Consider setting recommended parking space quantities as maximums, and reduce parking requirements for shared parking.

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The Village requires management of stormwater runoff on site and follows the Antrim County Stormwater Ordinance administered by the Antrim Conservation District.

Stormwater Management: RECOMMENDATIONS

We have one additional suggestion for stormwater:

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the Site Plan Review ordinance.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 21, Strong

The Village provides a drinking water and sewage system. The Sewer Service Area is well planned, and procedures for maintenance and replacement are addressed in the Master Plan (Section 5.0, page 5-1). The Sewer Service Area map is used in various sections of the zoning ordinance, as well, and undeveloped areas will be required to tie into sewer when developed. We have no additional recommendations for this element.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 15, Strong

Development in wetland areas of the Village of Bellaire requires an environmental assessment and review by the planning commission to ensure the proposal is in the public interest [Art. III Sec. 3.19 (A)]. Public walkways may be located within ten feet of the high water mark, and if any public walkways in a greenbelt area are considered a wetland, boardwalks must be raised (Art III Sec. 3.18). Additionally, any land division in a wetland will not be allowed, unless the proposed split lots include a conforming upland building site on each lot (Art. III Sec. 3.19).

Wetlands: RECOMMENDATIONS

The Village of Bellaire takes great pains to fully protect wetlands and we thank them for these strong protections. We have one additional suggestion:

SUGGESTED ACTION: Consider requiring setbacks or a vegetated buffer around wetlands.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 13, Strong

Commercial Site Plan Review includes provisions for protecting ground water with stormwater management [Art. X Sec. 10.2 (B, 17)]. Also, in the stormwater management section: “Protection must be in place to control oil and grease as not to release them into stormwater and groundwater.” (Art. III Sec. 3.16) Additionally, mining operations require Site Plan Review [Art. IX Sec. 9.5 (12)].

Per the Master Plan, a wellhead protection plan has been done. It requires periodic updates and restricts high-risk activities in wellhead protection areas (Master Plan Section 5.0, page 5-1). We could not find requirements to maintain a comprehensive inventory of potential threats to ground water.

Ground Water and Wellhead Protection: RECOMMENDATIONS

The Zoning Ordinance should prohibit both direct and indirect discharge of hazardous substances to ground water without appropriate approvals or permits.

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township, as it continues to grow.

SUGGESTED ACTION: Specify protections to protect ground water from potential contamination sources.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 32, Adequate

The National Floodplain Insurance Program, High Risk Erosion Areas, and Critical Dunes are not applicable to the Village of Bellaire. The checklist evaluation score for this section reflects this. We have no further recommendations.

Conclusion

As noted above, the Village of Bellaire Master Plan and zoning ordinance includes very strong protections for water resources and we thank you for those efforts. We also thank you for your time and attention in reading this chapter, and we 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
Village of Bellaire

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

Section III: Analysis

Chapter 10 Village of Central Lake

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for the Village of Central Lake. The Village website notes that the community is “Situated on the shores of Intermediate Lake and tucked into a glacial valley, we are surrounded by natural splendor four seasons a year.” (<http://www.centrallakemi.org/index.html>) The surface waters within the Village of Central Lake flow directly into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 20, Adequate

The Village does have a Master Plan, but it is difficult to access, which should be corrected in this day of easy communication, using the Internet. The Village already has a website with its Code and Zoning Ordinances posted. The Master Plan should also be posted. It was completed in 2004 and is overdue for an update, which should be done every five years.

The Master Plan specifically notes that the Village is “located within the Elk River Chain-O-Lakes watershed situated on the shore bisecting Hanley Lake and Intermediate Lake.” (Chapter 3 Natural Resources Fig 3.3) It also has an inventory of natural resources, and a goal statement to protect its fresh water resources: “It is extremely important to the village that the quality of these waters be protected from the negative impacts of development such as pollution and loss of scenic views to open water.” (Chapter 3 Natural Resources, Water Resources p.3-5; also Chapter 6 Table 6-1 Community Goals Assets to Preserve - Water Quality)

Chapter 3 of the plan, Natural Resources, notes: “Lakes, creeks and wetlands are important for surface drainage, groundwater recharge and wildlife habitat. Alteration to the water features can contribute to flooding, poor water quality, insufficient water supply and loss of wildlife habitat.” (p.3.7) It also identifies stormwater management as an important community policy. “Non point sources of pollution are a concern. Some methods to curb pollution include runoff control measures and proper maintenance of septic systems.” (p.3-7) The plan does not specify recommendations about minimizing new impervious surfaces, nor acknowledge the importance of well-maintained road stream crossings to protect water from unnecessary impacts.

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: Post the Master Plan on the Village website.

SUGGESTED ACTION: When the next Master Plan update happens (due now), include policies to minimize Impervious Surfaces, and 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 Village of Central Lake has a strong basic ordinance in place for water protection efforts. The Purpose of the Zoning Ordinance is noted as: “Promote the use of lands and natural resources of the Village in accordance with their character and adaptability and in turn, limit their improper use.” [Art. 1 Sec 1.01(3)] The Conservation/Recreation District is described this way: “The land uses in this district are intended to promote the proper use, enjoyment and conservation of water, land, topographic and forest resources of the Village particularly adapted to recreational uses.” (Art. 5 Sec 5.04.1)

The Ordinance has important basic elements, including reasonable fees to administer the ordinance and methods in place to enforce it. Importantly for water resources, it also requires that Zoning Permits will “not be issued until all other necessary permits required by statute have been obtained or waived with exception of those permits issued by the Antrim County Building Department.” [Art. 10 Sec 10.02(3) A]

Site Plan Review is required for all new uses and/or structures except one-family or two-family residential units and except associated accessory structures to one-family or two-family residential units [Art. 6 Sec 6.03(1) (A)]. The Site Plan is required to indicate all existing natural features and PUD projects include open space provisions no less than twenty-five percent of the entire project area [Art. 8 Sec 8.12(B) (4)]. Also, dedicated open space does not include parking lots, roads, and public rights-of-way, but may include flood plain areas and wetlands up to a maximum of twenty-five percent of the required open space [Art. 8 Sec 8.12(B) (4)].

Basic Zoning Components: RECOMMENDATIONS

We have only one suggestion to add to this strong element:

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

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 17, Weak

The Village Zoning Ordinance requires the following: “For lots which border a lake or a stream, the minimum structure setback on the waterfront side shall be fifty (50) feet from the ordinary high water mark. [Art. 5 Sec 5.05 Footnote (g) Schedule of Regulations] There are also minimal efforts to prevent keyhole/funneling: “Boat Docks: One (1) per existing waterfront lot of record or 100 feet of horizontal lot width (not shoreline distance), whichever is more lenient.” [Art. 8 Sec 8.01 (A)]

Shorelines: RECOMMENDATIONS

Shoreline setbacks are important for water resources and we are happy to see them in the Village ordinance. Additionally, 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.

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

SUGGESTED ACTION: Consider specific standards for protection of riparian areas, native vegetation and tree conservation in the site plan review process.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 1, Weak

The Village of Central Lake scored quite low on this point. We have a number of remedies to help improve efforts on this topic. The following suggested actions relate directly to the Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.

Impervious Surfaces: RECOMMENDATIONS

SUGGESTED ACTION: Consider flexible lot coverage standards to allow creative approaches that limit impervious surfaces for both single lots and larger developments.

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

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

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

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The Village regulates stormwater in coordination with the County: “All site plans shall comply with the terms of the Antrim County Soil Erosion Sedimentation and Storm water Runoff Control Ordinance. It shall be the applicant’s responsibility to provide documentation of compliance of this County Ordinance.” [Art. 6 Sec 6.03(3)(N) Site Plan Data Requirements]

Stormwater Management: RECOMMENDATIONS

The Antrim County Soil Erosion and Stormwater Ordinance is very good, and we have just one additional recommendation on this point:

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the site plan review ordinance.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 12, Adequate

The Village of Central Lake Master Plan notes: “The Village... has an updated municipal water system which serves the entire village consisting of 4 municipal wells. There is a sewer system serving a portion of the village but majority of residents use private on-site septic systems. Fig 3.5 shows septic limitations due to geology.” (Chapter 5 Community Services, Water and Sewage disposal systems, p.5-1) There was no evidence of the Sewer Service Area being mapped in the Master Plan, Village Code, or Zoning Ordinance. The Master Plan does note upgrades being needed (Chapter 6 Table 6-2 Issues to be Addressed).

The Master Plan also notes: “Non point sources of pollution are a concern. Some methods to curb pollution include runoff control measures and proper maintenance of septic systems.” (Chapter 3 Natural Resources, Water Resources, p.3-7) Additionally: “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 District Health Department sanitary code requirements. Plans must be submitted to and approved by the responsible agencies. The written approval of such facilities by District Health Department shall be filed with the application for a Zoning Permit.” (Art. 3 Sec 3.10)

Sewer/Septic: RECOMMENDATIONS

Some jurisdictions in Antrim County are considering point of transfer septic inspection ordinances, which we support.

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 0, Missing

Federal and state protections for wetlands do exist, but there are gaps in these efforts. To fully protect Village wetlands in the absence of a county ordinance, local wetland protections should be enacted. 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.

Wetlands: RECOMMENDATIONS

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 local wetland protections, or support the creation of such an ordinance for Antrim County. Also, consider requiring setbacks or a vegetated buffer around wetlands.

Ground water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, Adequate

In the Village Code (not the Zoning Ordinance) there is protection in place to protect citizens from using potentially contaminated ground water from wastewater treatment for drinking water purposes. (Chapter 2 Utilities, Sec 2.4)

There are also protections in the Zoning Ordinance for ground water from mining: “Groundwater Impact: 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 volume of flow.” [Art. 8 Sec 8.14(D)(4)]

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the Village, and specify protections.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 32, Adequate

The National Floodplain Insurance Program, High Risk Erosion Areas, and Critical Dunes are not applicable to the Village of Central Lake. The checklist evaluation score for this section reflects this. We have no further recommendations.

Conclusion

The Village of Central Lake Master Plan and ordinances include some good protections for water resources and we thank you for those efforts. 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

Village of Central Lake

| Catagory | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 20 | Adequate |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 40 | Strong |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 17 | Weak |
| IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak | 33 | 1 | Weak |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| 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 | 0 | Missing |
| 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 | 32 | Adequate |

Section III: Analysis

Chapter 11 Village of Elk Rapids

Introduction

This section summarizes results of this project for the Village of Elk Rapids, whose location straddles the point at which Elk Lake meets Lake Michigan in Antrim County. Some surface waters within the village flow into the Elk River Chain of Lakes Subwatershed and some flow directly into Lake Michigan. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

The Village has very good protections in place, overall, with most elements scoring Strong. The only Weak scores were related to prevention of Impervious Surfaces and protections for Wetlands, and available remedies are explained below.

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 20, Adequate

The Master Plan for the Village of Elk Rapids was completed in 2007; it should therefore be updated again in 2012 (<http://village.elkrapids.org/ER-MAIN-PLANNING/ERV-MASTERPLAN/2007-ERV-MasterPlan.pdf>). The plan notes that the Village is located within the Grand Traverse Bay watershed and the Elk River Chain of Lakes watershed (FIGURE 6-3 and FIGURE 6-4. Chapter 6, 6-8) It also contains an Inventory and mapping of surface and ground water and wetlands (Chapter 6).

The purpose of plan is “to provide guidelines for future development, while protecting the water resources, other natural resources...” (Chapter 1, 1-1). Open Space is addressed: PARKS, PUBLIC LANDS AND BEAUTIFICATION Goal: 3. Protect our most prized features, such as the public library grounds, public parks, beaches, gardens, natural areas, tree lined streets, and open spaces.” (Chapter 2, page 2-8; also 2-5, 2-7) Stormwater management is identified as an important community policy concern (Chapter 8, pages 8-7 to 8-9), and the plan mentions that development brings new impervious surfaces. The Master Plan does not include identification and protection of Wildlife Corridors, nor does it acknowledge the importance of well-constructed and maintained road stream crossings on the quality of stream and water resources.

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: When the next Master Plan update happens (due in 2012), improve goals to prevent increased impervious surfaces, and consider addressing Wildlife Corridors and Road Stream Crossings.

Basic Zoning Components

POSSIBLE SCORE: 54

TOTAL SCORE: 42, Strong

The Village of Elk Rapids zoning ordinance includes the following purpose: “(10) Facilitates adequate and efficient provisions for transportation systems, sewage disposal, water, energy, education, recreation, and other public services and facilities.” (Ch. 150 Sec. 150.03) Other basic components include reasonable fees to cover the costs of application processing (Ch. 150 Sec. 150.08), and methods in place for enforcement (Chapter 166).

The Zoning Ordinance proposal review process is also coordinated with the receipt of other applicable permits: “GENERAL REQUIREMENTS (B) Before approving a special use permit application, the Planning Commission shall find adequate evidence that each proposed use on the property will: (8) Meet the standards of other governmental agencies, where applicable.” (Chapter 153, Sec. 153.040) We consider this to be an important point; when local governments coordinate with county, state, and federal requirements the permitting process is improved. When applicants understand what other agencies also require, the process is much more efficient.

Special Use Permits and PUDs are required to do Impact Assessments to protect natural resources, the provision of drinking water and wastewater management, stormwater management, and erosion (Chapter 153, Sec. 153.039). The Site Plan Review allows for consideration of natural features, stormwater drainage, and natural vegetation (Ch. 153 Sec. 153.150-158). The open space development provisions seek to preserve natural resources and call for 30 percent of the site to remain in open space. PUDs require inclusion of a minimum open space threshold (Ch. 153 Sec. 153.060). This includes common land for recreation or conservation, or preserved in an undeveloped state [Ch. 153 Sec. 153.060 (2)].

Basic Zoning Components: RECOMMENDATIONS

We have only a few additional suggestions to enhance this strong ordinance:

SUGGESTED ACTION: Consider adding specific review of stormwater best management practices that address water quality in the site plan review process.

SUGGESTED ACTION: Consider requiring retention of native vegetation in dedicated open spaces of PUDs and open space developments.

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 41, Strong

The Village of Elk Rapids ordinance recognizes the potential erosive impacts of hardened shorelines. All buildings and parking lots must be setback 50 feet from water bodies (Ch. 158 Sec. 158.17), and removal of trees within 35 feet of the shoreline is limited. Regulations exist to address shoreline cover [Ch. 164 Sec. 164.09 (B) 1-7], including: “(4) Natural shrubbery, trees, or other vegetation shall be preserved as far as practicable, and where removed it shall be replaced with other vegetation that is equally effective in

retarding runoff, preventing erosion, and preserving natural beauty.” [Ch. 164 Sec. 164.09(4)] It does not require native species or prohibit invasive species in the protective shoreline buffer zone.

The Village uses an Overlay District to protect the Great Lakes shoreline with setbacks, with the establishment of the South Bayshore Drive Environmentally Sensitive Area Overlay District: “(B) The limits of this district are generally within the boundaries of the South Bayshore Area Drainage Improvements Study done in 1990 by Gosling Czubak Associates, and further defined by the Village of Elk Rapids Master Plan delineated Conservation Residential District within the study boundaries.” (Ch. 168, Sec. 168.09) Also: “No shoreline retaining wall shall be erected without the issuance of a land use permit.” (Ch. 164 Sec. 164.08)

Keyhole prevention efforts state that no more than one single-family dwelling unit may have use of the lake frontage per 50 feet, as measured along the water’s edge [Ch. 158 Sec. 158.19 (B)]. Not more than one boat dockage is allowed for each 50 feet of lake frontage, as measured along the water mark [Ch. 158 Sec. 158.19 (A)].

The Village of Elk Rapids also regulates marinas. “Exceptions to the 50-foot setback may be granted by the Planning Commission for marina related uses and improvements which, due to safety or physical requirements, must be located closer to the water’s edge, such as boat ramps, attendant shacks, gas docks and pumps, and loading and unloading zones.” [Ch. 161, Sec. 161.05(E)] Also, the Village Code of Ordinances includes this important point: “Sec. 18-32. Polluting waters. The waters of the marina shall not be fouled in any way. Toilet facilities emptying into the marina waters shall not be used while the boat is in the marina. No garbage, oil, sludge, refuse matter, sewage or waste materials of any kind shall be thrown, deposited or permitted to fall in the water or upon the piers, docks or shore areas of the marina.” (Code 1985, ch. 3040, § 20.108)

Shorelines: RECOMMENDATIONS

Again, the Village of Elk Rapids comes up strong with the element of shoreline protection efforts. We have two additional recommendations for your consideration:

SUGGESTED ACTION: Prohibit invasive plants from being used in shoreline buffers.

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: 11, Weak

The village zoning ordinance limits the size of parking stalls. It also allows for small parking lots near natural features to use an alternative surface to improve infiltration capabilities and prevent untreated stormwater runoff. The landscaping requirements mention drainage, and larger lots require interior landscaping. “Every parking lot or parking area shall be so constructed that no surface water shall discharge directly into the body of water unless the surface water is first treated by the use of silt traps or filtered across turf areas or through other devices to remove matter which would deteriorate the water quality of the water body.” (Ch. 158 Sec. 158.17)

Impervious Surfaces: RECOMMENDATIONS

This is one area where the Village of Elk Rapids could improve, and we offer the following recommendations for doing so:

SUGGESTED ACTION: Consider impervious cover limits for all zoning districts.

SUGGESTED ACTION: Consider setting recommended parking space quantities as maximums. Also, consider reducing parking requirements for shared parking.

SUGGESTED ACTION: Consider requiring parking lot landscaping to be designed to help address pollutant removal from stormwater runoff (i.e. providing curb cuts to allow flow of stormwater into landscaped areas), especially since larger parking lots must provide for snow storage.

SUGGESTED ACTION: Consider allowing or requiring spillover parking areas to be pervious surface or planted in grass.

SUGGESTED ACTION: Consider ways to encourage alternative driveway designs (i.e. shared driveways, use of porous materials for driveways, etc.).

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The Village requires management of stormwater runoff on site and follows the Antrim County Stormwater Ordinance administered by the Antrim Conservation District. It also has Stormwater Detention regulations Ch. 164 Sec. 164.10 (A-B) and addresses subdivision storm drainage systems [Ch. 165 Sec. 165.16 (E)]. We have no additional recommendations for this element.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed in the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 18, Strong

The Village of Elk Rapids has a delineated Sewer Service Area. However: “Where it is determined in the judgment of the Planning Commission and the County Health Department, that a subdivision cannot be economically connected with an existing public sewer system, or that a public sewer system cannot be provided for the subdivision itself, then septic tanks and disposal fields which comply with the requirements of the County Health Department may be approved.” [Ch. 165, Sec. 165.16 (C)] The Water System Improvement Plan proposes to extend water lines to service existing and future development along the present roads in the Village. Currently, the areas not served by the municipal water system must rely on individual private wells (Master Plan Ch. 8).

Sewer/Septic: RECOMMENDATIONS

Some jurisdictions in Antrim County are considering point of transfer septic inspection ordinances, which we support.

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.

Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 5, Weak

Minimal supplemental wetland regulations are in place for the Village of Elk Rapids (Ch. 164). All development in a wetland must comply with: “(C) Setbacks shall maintain natural vegetation for the purpose of soil retention and filtration.” (Ch. 164, Sec. 164.03)

Wetlands: RECOMMENDATIONS

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 local wetland protections, or support the creation of such an ordinance for Antrim County.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

Each Site Plan is required to conform to all the standards for drainage, ground water and wellhead protection [Ch. 153 Sec. 153.153 (B) (1) a-c]. There are also regulations regarding hazardous substances management and ground water [Ch. 153 Sec. 153.153 (B) (6) a, c, d]. The community has municipal well fields, with protections in place (Master Plan, Chapter 8).

Ground Water and Wellhead Protection: RECOMMENDATIONS

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the township.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 32, Adequate

Supplemental Regulations for the Village of Elk Rapids include: Conditions apply to all development in a wetland or flood plain areas (Ch. 164 Sec. 164.01-10). We have no additional recommendations for this element.

Conclusion

The Village of Elk Rapids Master Plan and zoning ordinance includes some very strong protections for water resources and we thank you for those efforts. 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
Village of Elk Rapids

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 20 | Adequate |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 42 | Strong |
| III. Shoreline 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 | 11 | Weak |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | 18 | Strong |
| 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 | 15 | Strong |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 32 | Adequate |

Section III: Analysis

Chapter 12 Village of Ellsworth

Introduction

This section summarizes results of the Local Ordinance Gaps Analysis project for the Village of Ellsworth. The Village is located at the northern end of the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay. The Village website notes recreation opportunities at The Wooden Shoe Campground, overlooking Ellsworth Lake. The surface waters within the Village of Central Lake also include St. Clair Lake, and they flow directly into the Elk River Chain of Lakes. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Evaluation Scores and Summary

Master Plan Components

POSSIBLE SCORE: 30

TOTAL SCORE: 23, Strong

The Master Plan is dated 2007 and the previous plan date is not given. Master Plans should be updated every five years, so the Village of Ellsworth will be due for an update in 2012. The plan notes that the Village is located within the Elk River Chain of Lakes watershed (Chapter 3 Natural Resources, Water Resources). The Plan also includes this goal: “Protect the water quality of Ellsworth Lake, its shoreline and sensitive watershed within the Village and Protect groundwater and surface water resources.” (CHAPTER 6 GOALS: WATER QUALITY)

The Master Plan includes goals for community conservation of Open Space to protect surface water, ground water, and wetlands: “Not all areas (especially environmentally sensitive areas) are suitable for development, adopt strong protective measures for such areas. Severely restrict development in the resource sensitive areas, ie. slopes, wetlands, septic limitations. Identify these areas on the Future Land Use Map.” (CHAPTER 6 GOALS RESOURCE POLICIES)

Wildlife Corridors are not specified, but good habitat protection is highlighted in the plan: “Habitat for populations of songbirds, muskrat, mink and raccoon are provided by the wetlands within the Village. Predominant mammal species found in the Village of Ellsworth are fox, squirrel, grouse, rabbit and deer.” (Chapter 3) Stormwater is addressed in: “CHAPTER 6 GOALS: WATER QUALITY - Pursue the installation of a municipal storm sewer system to protect the water quality of lakes and streams.”

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

The plan does not specify recommendations about minimizing new impervious surfaces, nor acknowledge the importance of road stream crossing maintenance to protect water from unnecessary impacts.

Master Plan Components: RECOMMENDATIONS

SUGGESTED ACTION: When the next Master Plan update happens (due 2012), include policies to minimize Impervious Surfaces, and 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: 27, Adequate

The Village of Ellsworth Zoning Ordinance has a statement of purpose: “To protect property values, natural resources and ensure the compatibility of adjacent uses.” (Art. I Sec 1.2 Purpose) A Zoning Administrator is in place, as are fees to cover the costs of administrating and enforcing the ordinance.

Importantly for water resources, the Village also coordinates PUD proposal review with other entities, using a Pre-Application meeting process: “The Zoning Administrator may request or recommend the applicant request representatives from Village, Township or County agencies (department of public works, fire department, county sheriff and other agencies) to attend such informal conferences.” [Art. VI Sec 6.7.3(A) Pre-Application Meeting]

Site Plan Review is required for “All new uses except one-family or two-family residential units.” [Art VII Sec 7.1(A)(1)] Site plans must also indicate the “location of existing environmental features, such as streams, wetlands, shorelands, mature specimen trees, wooded areas or any other unusual environmental features.” [Art VII Sec 7.1(5) Site Plan Data]

Basic Zoning Components: RECOMMENDATIONS

We have some additional actions for the Village of Ellsworth to enhance this element:

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

SUGGESTED ACTION: Consider ways to encourage protection of open spaces and retention of native vegetation in all districts of the township. For example, use flexible site design criteria or incentives to encourage applicants to include open space or cluster design provisions in development proposals.

SUGGESTED ACTION: Consider adoption of a tree conservation ordinance and other approaches to preservation of native vegetation on all new development sites.

SUGGESTED ACTION: Consider adding stormwater management as a purpose for any required greenbelts and landscaping so that plantings in these areas are designed for water quality treatment (i.e. the greenbelt requirements between parking and residential uses).

Shorelines

POSSIBLE SCORE: 60

TOTAL SCORE: 19, Weak

In the Village of Ellsworth, “For lots which border a lake or a stream, the minimum structure setback on the waterfront side shall be fifty (50) feet from the ordinary high water mark.” (Art VI Sec 6.9 Schedule of Regulations Footnote) Additionally, shoreline protection strips are included: “To preserve natural resources, water quality and community scenic and recreational values, a greenbelt shall be established and maintained on all waterfront property. ... G. Natural vegetation cover, including trees, shrubs or herbaceous plants shall be maintained on a least sixty percent (60%) of the lake or stream frontage within the greenbelt. Beach sand, gravel, cobblestone or rock may be substituted for vegetated areas where these materials are existing.” (Art IV Sec 4.9 Greenbelt)

The use of native plant species in the riparian buffer zone is not specified, nor is the use of invasive plants prohibited in the greenbelt. Marinas are not specified but presumed to be regulated as Special Uses.

Shorelines: RECOMMENDATIONS

SUGGESTED ACTION: Require native vegetation and prohibit invasive species from being used in the buffer strip.

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.

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 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 best management practices.

Impervious Surfaces

POSSIBLE SCORE: 33

TOTAL SCORE: 0, Missing

The Village of Ellsworth is missing this element, but we have a number of suggestions to help. The following actions relate directly to the Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes Subwatershed.

Impervious Surfaces: RECOMMENDATIONS

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

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

SUGGESTED ACTION: Consider allowing some parking to be provided in alternative surface (i.e. a grassed area, if the use will need more parking occasionally in the summer months). Also, consider requiring parking lot landscaping to 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 impervious cover limits for all zoning districts.

Stormwater Management

POSSIBLE SCORE: 27

TOTAL SCORE: 27, Strong

The Village regulates stormwater in coordination with the County, using the Antrim County Soil Erosion and Stormwater Ordinance, which is very good. We have no additional recommendations on this point.

Soil Erosion and Sediment Control

POSSIBLE SCORE: 18

TOTAL SCORE: 15, Strong

This topic is also very well addressed by the Antrim County Soil Erosion and Stormwater Ordinance, noted above. We have no additional recommendations for this element.

Sewer/Septic

POSSIBLE SCORE: 24

TOTAL SCORE: 10, Adequate

The Village of Ellsworth Master Plan includes: “CHAPTER 5 FACILITES Water and Sewage Disposal Systems - There is no public sewage disposal systems in the Village. The local residents rely on private, on-site septic systems, which are regulated by the Antrim County Health Department. Also- Antrim County Soil Erosion Sedimentation and Storm water Runoff Control Ordinance.”

Sewer/Septic: RECOMMENDATIONS

Some jurisdictions in Antrim County are considering point of transfer septic inspection ordinances, which we support.

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, or support such a county-wide ordinance, working in coordination with other local townships and the Health Department.



Wetlands

POSSIBLE SCORE: 21

TOTAL SCORE: 1, Weak

Wetlands: RECOMMENDATIONS

Federal and state protections for wetlands do exist, but there are gaps in these efforts. To fully protect Village wetlands in the absence of a county ordinance, local wetland protections should be enacted. 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 local wetland protections, or support the creation of such an ordinance for Antrim County. Also, consider requiring setbacks or a vegetated buffer around wetlands.

Ground Water and Wellhead Protection

POSSIBLE SCORE: 18

TOTAL SCORE: 9, Adequate

In the Village of Ellsworth, Site Plan Review is required to ensure there are no unnecessary threats posed to ground water: "All business or industries which store, use or generate hazardous substances as defined in this Ordinance, in quantities greater than 25 gallons or 220 pounds per month 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." (Art IV Sec 4.18 & 4.19 Groundwater) Also, the same section prohibits discharge to ground water, including direct and indirect discharges, without required permits and approvals.

A Wellhead Protection Program is in place (WELLHEAD PROTECTION DELINEATION REPORT FOR THE VILLAGE OF ELLSWORTH Wells #1, #2, and #3 September 2003 Sec 1 Wellhead Protection Program).

Ground Water and Wellhead Protection: **RECOMMENDATIONS**

SUGGESTED ACTION: Complete and maintain a comprehensive inventory of potential threats to ground water in the Village, and specify protections.

Other Relevant Elements

POSSIBLE SCORE: 48

TOTAL SCORE: 32, Adequate

The National Floodplain Insurance Program, High Risk Erosion Areas, and Critical Dunes are not applicable to the Village of Ellsworth. The checklist evaluation score for this section reflects this. We have no further recommendations.

Conclusion

The Village of Ellsworth Master Plan and ordinances include some strong protections for water resources and we thank you for those efforts. We also thank you for your time and attention in reading this chapter, and, 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
Village of Ellsworth

| Category | Possible Score | Total Score | Comments |
|--|----------------|-------------|----------|
| I. Master Plan 30 - 21 = Strong 20 - 11 = Adequate 10 - 0 = Weak | 30 | 23 | Strong |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | 27 | Adequate |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | 19 | 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 | 27 | Strong |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | 15 | Strong |
| 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 | 9 | Adequate |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | 32 | Adequate |

Section III: Analysis

Chapter 13 Antrim County Townships - Not Zoned

Introduction

This chapter is devoted to the townships in Antrim County that are not zoned. Because they are not zoned, and have no water-related ordinances at all, we did not do a checklist for these Townships. However, below we have noted their locations in the county, and their key water resources. You will see that most of them impact the Elk River Chain of Lakes Watershed, but some also have resources in other watersheds. Where appropriate, recommendations below also relate suggested actions to the existing Watershed Management Plan for Grand Traverse Bay, which includes the Elk River Chain of Lakes.¹

Central Lake Township is situated in northwest Antrim County, south of Banks Township and to the east of Torch Lake Township. Numerous water bodies are found within the township borders, including the northeastern most portion of Torch Lake, the northern end of Intermediate Lake, Hanley Lake, Ben-way Lake, the southern tip of Wilson Lake, the interconnecting Green River, Grass Creek, Wilkinson Creek, Vonstraten Creek, Ben-way Creek, Ogletree Creek, and Kitty Ann Creek. **Custer Township** sits on the Antrim-Kalkaska county line between Helena and Mancelona Townships, touching upon the southeastern shore of Lake Bellaire, but also including Bates Lake, Boat Lake, Browning Lake, Finn Lake, Grass Lake, Green Lake, Henry Lake, Lake Arthur, Lake of the Woods, Mayville Lake, Mud Lake, and Smith Lake. In addition, at least portions of the Cedar River, Grass River, Cold Creek, Crow Creek, Finch Creek, Saloon Creek, Shanty Creek, and Spencer Creek lie within Custer Township. Surface waters within these Townships flow into the Elk River Chain of Lakes Subwatershed of the Grand Traverse Bay Watershed.

Echo Township is located on the Antrim-Charlevoix County line, between Central Lake and Jordan Townships, and includes water bodies from both the Elk River Chain of Lakes and Lake Charlevoix Watersheds. Prominent lakes and streams found in Echo Township include Beals Lake, Mud Lake, Scotts Lake, the southern end of Six Mile Lake, Bartholomew Creek, Beal Creek, Ben-way Creek, Bennet, Cokirs, Dingman River, Fish Creek, Hitchcock Creek, Intermediate River, Jordan River, Lilak Creek, Openo Creek, Seamon Creek, Smith Creek, Spence Creek, Taylor Creek, and Vance Creek. **Mancelona Township** is located in the southeast corner of Antrim County, bordering Kalkaska County to the south and Otsego County to the east. It includes Five Lake, Hawk Lake, Johnson Pond, Lake Harold, Nelson Lake, Peckham Lake, Sand Lake, Tar Lake, Tillie Lake, Wetzell Lake, and headwaters of the Manistee River. **Star Township** lies on the Otsego County line in between Warner and Mancelona Townships. It includes Deer and Harold Lakes in the southern end and the headwaters of the Jordan River in the northwest corner. The majority of surface waters in these townships drain into the Elk River Chain of Lakes Watershed, though some of the lakes and streams fall within the Lake Charlevoix and Manistee River Watersheds.

¹ In collaboration with Ellen Kohler, The Watershed Center Grand Traverse Bay, <http://gtbay.org/>

Jordan Township is located on the Antrim-Charlevoix county line, between Echo and Warner Townships. There are no lakes in Jordan Township, but it does have multiple streams in the Lake Charlevoix Watershed, including the Jordan River, Balsters Creek, Brown Creek, Cokirs Creek, Lilak Creek, Marvon Creek, Nemecheck Creek, Scott Creek, Severance Creek, Sutton Creek, and Webster Creek. **Chestonia Township** is located due south of Jordan Township and east of Kearny. It contains a few small lakes, Five Lake and Slattery Lake, and many streams: Cascade Creek, the Cedar River, the Green River, Intermediate River, Jordan River, Landslide Creek, and Stevens Creek. **Warner Township** constitutes the northeast corner of Antrim County, bordering Charlevoix and Otsego Counties. It includes Long and Losey Lakes to the southeast, and portions of the Jordan River, the Boyne River's South Branch, and Warner Creek. These surface waters in these three townships primarily drain into the Lake Charlevoix Watershed, though areas within each are part of the Elk River Chain of Lakes Watershed.

Regardless of which watershed(s) these jurisdictions are located, they all include activities that ultimately impact water. We offer the following information to all of them, with the understanding that not all recommendations are appropriate for all locations. However, for the items that are appropriate, we hope their officials will consider taking actions that are relevant to their specific location.

Master Planning and Basic Zoning Components

First and foremost, we encourage these Townships to re-consider adopting local zoning, which should start with a sound Master Plan. However, even if the township is not ready to do zoning, we encourage them to create a Future Land Use Plan, which can help evaluate whether zoning is appropriate or not at this time, and pinpoint other ordinances that could be helpful.

Shorelines

Some townships and villages in Antrim County have taken shoreline protection steps, but there is no regulation of shoreline areas by the county government. Therefore, the local jurisdictions that do not have zoning also do not have shoreline setbacks. However, the Antrim County Master Plan does include this recommendation: "Encourage intensive land uses that could impact water quality be placed at a distance from streams, rivers, wetlands, and creeks." (Antrim County Master Plan Page 10-2)

SUGGESTED ACTION: Support the adoption of a county-wide shoreline setback ordinance to help local governments and citizens minimize impacts in the critical shoreline zones of the county's rivers, inland lakes, and the Great Lakes.

SUGGESTED ACTION: Consider education efforts that would encourage permanent retention of native vegetation in areas immediately adjacent to water bodies and open spaces throughout the township.

Impervious Surfaces/Stormwater/ Soil Erosion and Sediment Control

One important ordinance that is in place for Antrim County is the Soil Erosion and Stormwater Ordinance, and it is a good one. However, there are no county incentives in place to prevent unnecessary increases in impervious surfaces. In general, the more a local government can do to reduce impervious surfaces and manage stormwater, the better for water quality. The Grand Traverse Bay Watershed Protection Plan includes the following task: Conduct impervious surface assessments in Elk River Chain of Lakes Watershed. The point of doing such assessments is to understand the current impact of development and trends for the region, so as to manage the addition of hard surfaces. Tools exist to help with future development pressures, such as road construction standards and allowances for parking lot construction.

SUGGESTED ACTION: Do an impervious surface assessment for the township. Review and establish trends to inform next steps.

Sewer/Septic

There is no county regulation of septic point of transfer inspections. However, work is currently being done by various townships in the county to address the topic. In addition to protecting property owners, point of transfer inspection ordinances also reduce pollution to lakes and other water sources by locating those systems which 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 or supporting a county point of transfer septic inspection ordinance.

Wetlands

As time passes, we learn more and more about the importance of wetlands. Citizens in Antrim County continue to be interested in wetlands 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 Antrim 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.

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.



Section IV: Appendix

Appendix A: Document Review Checklist for
Local Ordinance Gaps Analysis

Appendix B: Additional Resources

Appendix C: Antrim County Map



**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.

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? ¹ | | |
| 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? ⁴ | | |
| 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 <small>note any comments and citation</small> | 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 ? | | |
| 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.]</i> ¹⁸ | | |
| 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 -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i> | | |
| BONUS POINTS (+ OR -) | | |
| TOTAL POINTS SECTION III | | |
| TOTAL POINTS POSSIBLE | | 60 |
| 60-41=strong; 40-21=adequate; 20-0=weak | | |

Appendix A

| 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 -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i> | | |
| 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 sewerred in the future, and areas that will not be sewerred? 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. Wetlands⁶⁸ | | |
|---|---|-----------|
| 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 Wellhead⁷⁵ 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 -) <i>N/A ITEMS SHOULD BE ACCOUNTED FOR BY:</i> | | |
| 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 | | |
| 7. Does the community have high risk erosion areas and/or steep slopes? If yes, is there a DEQ approved overlay zone or other ordinance in place to protect these features? | | |
| 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? | | |

| | | |
|---|--|-----------|
| CRITICAL DUNES⁶¹ | | |
| 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 | 30 | | |
| II. Basic Zoning 54 - 37 = Strong 36 - 19 = Adequate 18 - 0 = Weak | 54 | | |
| III. Shoreline 60 - 41 = Strong 40 - 21 = Adequate 20 - 0 = Weak | 60 | | |
| IV. Impervious Surface Reduction 33 - 23 = Strong 22 - 12 = Adequate 11 - 0 = Weak | 33 | | |
| V. Stormwater Management 27 - 19 = Strong 18 - 10 = Adequate 9 - 0 = Weak | 27 | | |
| VI. Soil Erosion and Sediment Control 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | | |
| VII. Sewer / Septic 24 - 17 = Strong 16 - 9 = Adequate 8 - 0 = Weak | 24 | | |
| VIII. Wetlands 21 - 15 = Strong 14 - 8 = Adequate 7 - 0 = Weak | 21 | | |
| IX. Ground Water and Wellhead Protection 18 - 13 = Strong 12 - 7 = Adequate 6 - 0 = Weak | 18 | | |
| X. Other Relevant Elements 48 - 33 = Strong 32 - 17 = Adequate 16 - 0 = Weak | 48 | | |

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*, 7.
- 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/uwexplakes/factsheets/fs_5.pdf
- ²¹ Van Buren County, MI. *Document Review*, 7.
- ²² Ibid.
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- 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.
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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.blhd.org/publications/benziecode.pdf>

⁶² SEMCOG, 2002. "Sanitary Sewer Planning and Infrastructure," 20.

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⁶⁶ SEMCOG, 2002. "Sanitary Sewer Planning and Infrastructure," 20.

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⁶⁸ Michigan Department of Environmental Quality and Huron River Watershed Initiative, 2003. "Appendix E: Sample DEQ Wetland Ordinance". Published in: Ardizone, Katherine A. and Wyckoff, Mark A. 2003. *Filling the Gaps: Environmental Protection Options for Local Governments*.

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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.shtml>

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.shtml>

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. Ardizone, 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." Ardizone, 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. Ardizone, 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_5setbkakesrivers_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.whitwatertownship.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-CommunityForestryPlan (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.parternerhipsforchange.cc/plannededuc0124.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; storm-water 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_prgrm/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 Ardizone, 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

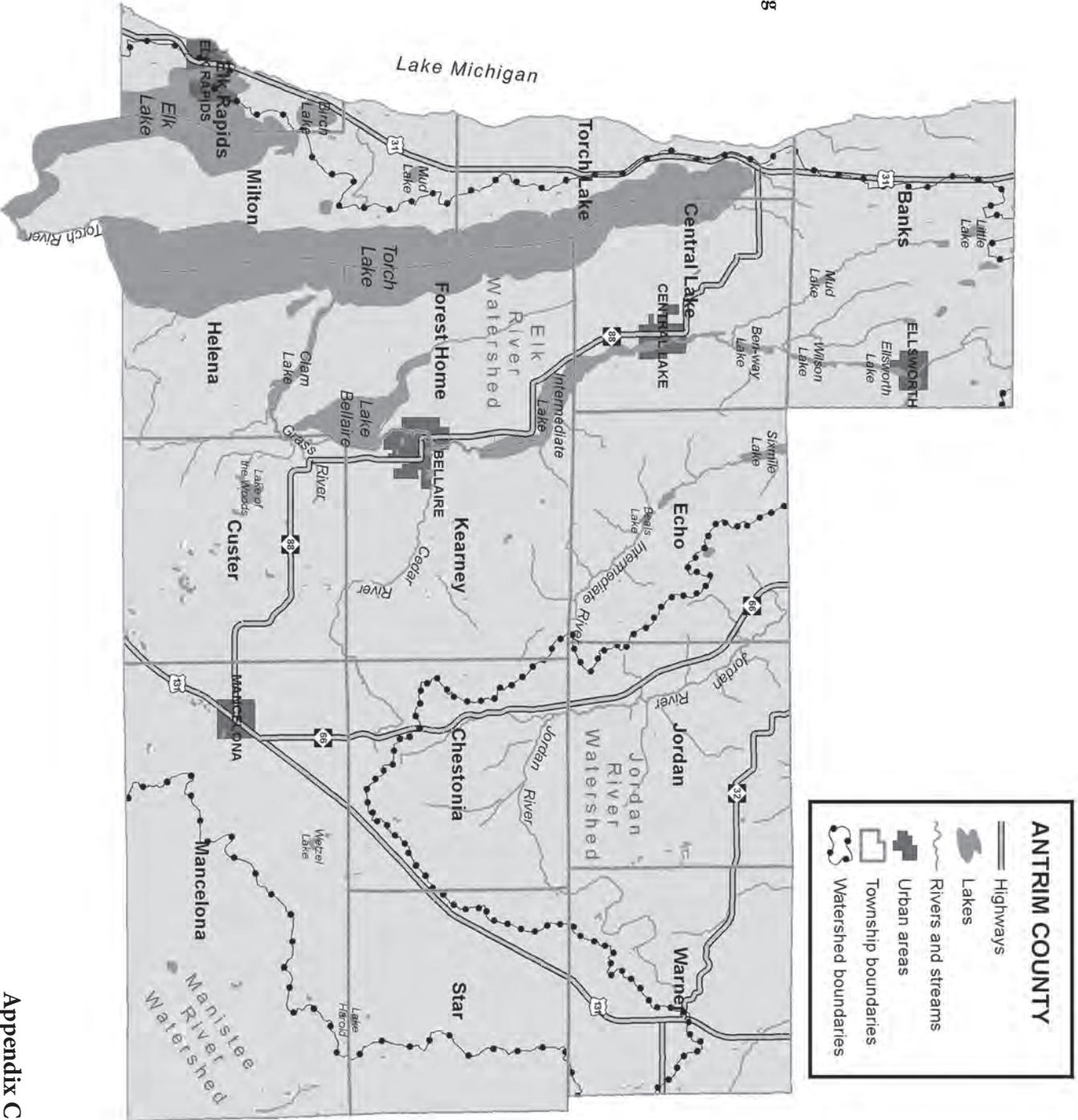
http://www.michigan.gov/dnr/0,1607,7-153-30301_31431_31442---,00.html

“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 Antrim County are available online at www.watershedcouncil.org



Appendix C

**Financial support for this project
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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

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