FILLING THE GAPS:

Environmental Protection Options for Local Governments

2nd Edition

Michigan DNRE

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FILLING THE GAPS:
Environmental Protection Options for Local Governments

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FILLING THE GAPS: Environmental Protection Options For Local Governments

TABLE OF CONTENTS

PART I The Big Picture

INTRODUCTION I-1

THE WHAT AND WHY OF ENVIRONMENTAL PROTECTION I-3
- How Did We Get Here? I-3
- Where Are We Now? I-4
- Where Do We Go From Here? I-4
  - Natural Resources Management 101 ..... I-4
  - What Is An Ecosystem? I-5
  - Why Balance Is So Important I-5
  - What Is A Watershed? I-5
  - Why Do Coastal Ecosystems and Watersheds Warrant Extra Attention? I-6
  - What Are Natural Features? I-7
  - Unique Coastal Natural Features I-7
  - Why Do We Need To Protect Our Natural Resources? I-8

FEDERAL, STATE, & LOCAL ROLES IN ENVIRONMENTAL PROTECTION I-8
- What Is the Role Of Government In Resource Protection? I-8
  - Federal Role I-9
  - State Role I-9
  - Local Role I-13
- Guidebook Overview I-19

PART II The Law of the Land

WETLANDS II-1
- Why Protect Wetlands? II-1
- Michigan's Regulatory Framework II-4
- What is Regulated? II-4
- What is Not Regulated? II-4
- Local Role II-4
  - Nuts and Bolts of Local Wetland Ordinances II-5
  - Using Authority from NREPA vs. the Planning & Zoning Enabling Acts II-5
- Why Protect Wetlands Smaller Than 5 Acres? II-6
- Alternative Approaches to Local Wetland Protection II-7
- Case Study: Wetland Mitigation II-8

ENVIRONMENTAL AREAS II-9
- Why Protect Environmental Areas? II-9
- What is Regulated? II-11
- What is Not Regulated? II-11
- Local Role II-11
- Case Study: When Mistakes are Made, Our Environment Suffers II-14

SOIL EROSION & SEDIMENTATION CONTROL II-15
- Why Protect Water from Sediment? II-15
- What is Regulated? II-17
- What is Not Regulated? II-17
- Local Role II-18
  - Nuts and Bolts of Local Soil Erosion & Sedimentation Control Ordinances II-18
  - Relationship of Local Soil Erosion Regulations and Local Zoning II-19
- Case Study: Grand Traverse County II-20

INLAND LAKES & STREAMS II-22
Why Protect Inland Lakes and Streams? II-22
What is Regulated? II-22
What is Not Regulated? II-25
Keyhole Developments II-25
Local Role II-25
Procedures for Local Watercraft Control II-28

NATURAL RIVERS II-29
Why Protect Rivers? II-29
What is Regulated? II-31
What is Not Regulated? II-31
Local Role II-33
Alternative Approaches to River Protection II-34
Case Study: Not the Typical Urban Stream II-34

FLOODPLAINS II-36
Why Protect Floodplains? II-36
What is Regulated? II-36
What is Not Regulated? II-38
Local Role II-39
Case Study: Building a Prize-Winning Floodplain Program II-40

HIGH RISK EROSION AREAS II-41
Why Protect High Risk Erosion Areas? II-41
What is Regulated? II-43
What is Not Regulated? II-45
Local Role II-46
Case Study: Why Setbacks are Only Half the Battle II-47

SAND DUNES II-48
Why Protect Sand Dunes? II-48
What is Regulated? II-50
What is Not Regulated? II-50
Local Role II-50
Case Study: Port Sheldon Township II-52
Alternative Approaches to Sand Dune Protection II-52
Redevelopment II-54
Case Study: How Chocolay Township Started Protecting Their Dunes II-54

PART III Local Planning & Zoning

INTRODUCTION III-1

COORDINATED PLANS AND PLANNING III-1

LOCAL ZONING III-2

MAJOR LOCAL REGULATORY OPTIONS FOR BETTER NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION III-2
Option 1 – Adopted Model Ordinance Language Targeted at a Single Natural Resource III-3
Option 2 – Zoning Ordinance Provisions that Target a Wide Range of Environmental Protection Considerations III-4
Environmental Assessment Requirements III-4
Fees for Professional Reviews III-4
Sensitive Area Protections III-5
Shoreline Protection Provisions III-5
Planned Unit Developments and Cluster Developments III-5
Site Plan Review III-6
Groundwater Protection Standards III-7
Option 3 – Coordinated Permit Review and Approval Procedures III-7

OTHER ZONING CONSIDERATIONS III-8
Rezoning III-8
Special Land Uses III-8
Variances III-9

Nonconforming Uses III-9

LAND DIVISION III-10
Land Division and Subdivision Ordinances III-10
Problems That Can Be Prevented III-12
Proactive Measures III-14

PUBLIC SPENDING AND CAPITAL IMPROVEMENT PROGRAMS III-15

OTHER KEY SOURCES FOR MORE GUIDANCE III-15

****

LIST OF TABLES

Table 1.1 Federal Laws Relevant to Ecosystem Protection I-10
Table 1.2 State Laws Relevant to Ecosystem Protection I-15

LIST OF FIGURES

Figure 2.1 Wetlands II-3
Figure 2.2 Open Space Zoning II-7
Figure 2.3 Environmental Areas II-10
Figure 2.4 Soil Erosion and Sedimentation II-16
Figure 2.5 Inland Lakes and Streams II-24
Figure 2.6 Natural Rivers II-30
Figure 2.7 Floodplains II-37
Figure 2.8 High Risk Erosion Areas II-42
Figure 2.9 Critical Dunes II-49
Figure 3.1 Overlay Zone III-3
Figure 3.2 Planned Unit Developments III-6
Figure 3.3 Lot Splits III-10
Figure 3.4 Platted Subdivisions III-11
Figure 3.5 Long Narrow Waterfront Lots III-12
Figure 3.6 Short Narrow Waterfront Lots III-12
Figure 3.7 Unbuildable Lots in a Floodway III-13
Figure 3.8 Buildable Area on Lot in a Designated Critical Dune Area III-13
Figure 3.9 Division of Land With Wetlands Should Not Result in Creation of Unbuildable Lots III-14
Figure 3.10 Clustering Lots to Minimize Environmental Damage III-14

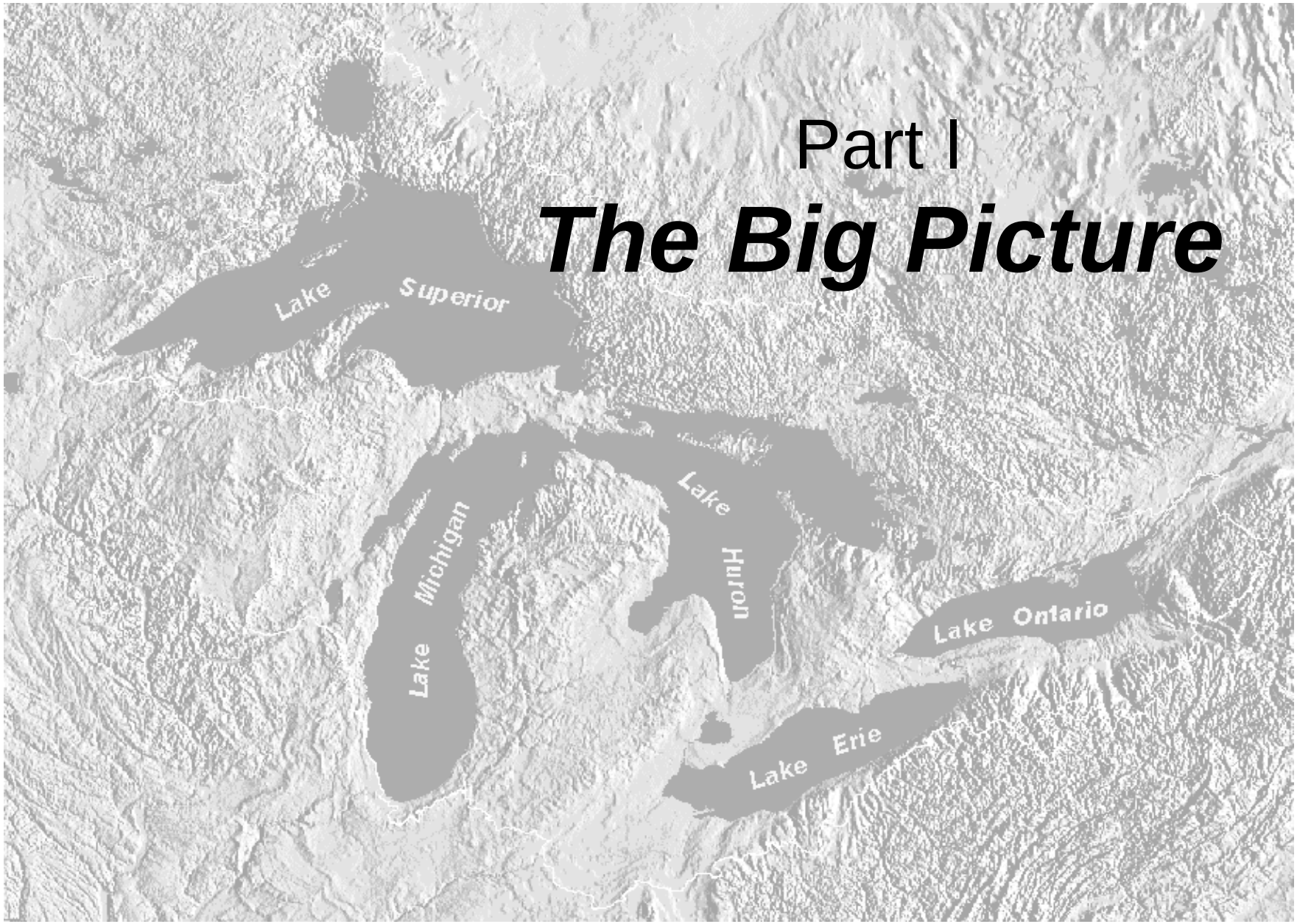
LIST OF MAPS

Map 2.1 Michigan Townships Containing Environmental Areas II-12
Map 2.2 Michigan's Natural Rivers II-32
Map 2.3 Michigan Townships Containing High Risk Erosion Areas II-44
Map 2.4 Michigan Townships Containing Critical Dune Areas II-51

APPENDICES

Appendix A Natural Features Inventory Information
Appendix B Michigan Environmental Protection Act
Appendix C "Wetlands Overview" and "Functions & Values of Wetlands"
Appendix D NREPA, PA 451 of 1994, as amended: §324.30307 (4)
Appendix E Sample Wetlands Ordinance

Appendix F Sample Planning & Zoning Enabling Acts
Wetland Ordinance
Appendix G Sample Soil Erosion and Sedimentation
Control Ordinance
Appendix H Sample Stormwater Ordinance
Appendix I Sample Keyhole Development Regulations
Appendix J Sample Natural Rivers ordinance
Appendix K Sample High Risk Erosion Areas Ordinance
Appendix L Sample Critical Dune Areas Ordinance
Appendix M Sample Sand Dune Preservation Overlay
Appendix N Example of Environmentally Sensitive
Future Land Use Plan
Appendix O Contact information for Department of
Environmental Quality and Department of
Natural Resources
Appendix P Environmental Assessment Requirements
Appendix Q Fee Collection Information
Appendix R Sensitive Areas Protection
Appendix S Shoreline Protection
Appendix T Cluster Development and Planned Unit
Development Examples
Appendix U Groundwater Protection
Appendix V Permit Coordination Checklist



Source: Michigan State University, Institute of Water Research.

"The time has come to protect the spectacular environment that beats with the heart of the Michigan spirit."
– Governor Jennifer M. Granholm

INTRODUCTION

We are proud of the strength and independence of our local governments in Michigan. Home rule is at the core of our political and regulatory framework. Yet when it comes to environmental protection and natural resources management, local governments share power with the state and federal governments. For example, environmental issues like industrial pollutant discharge, or natural resource issues such as wildlife and habitat management, have traditionally been the responsibility of the state and federal governments. In contrast, the conversion or protection of farm and forestlands, and a host of other land use decisions are made primarily by local governments. Power is shared because our environment stretches beyond jurisdiction borders, and its elements are completely interconnected. That is why it is important that decisions which affect the environment be coordinated and be based on a common regulatory approach.

How we use our land is the foundation of environmental quality because nearly every environmental problem has a land use origin. Additionally, most resource management decisions are tied to a series of existing or potential land use decisions. Without careful consideration, these land use decisions may unintentionally serve to undermine environmental protection objectives. Thus, governments at all levels must share common goals for a quality environment and equitable use and protection of dwindling natural resources, or all will suffer. The better local, state, and federal governments understand the shared responsibility for coordinated decisions affecting our common resources, the greater the likelihood each will do their part in protecting our environment.

However, the very nature of home rule makes consistent, effective environmental and natural resource protection difficult at best. Statewide there are more than 1850 units of local government with land use decision making authority. This fact alone makes it easy to see why protecting our land, air, and water in a consistent manner presents a monumental challenge. Under the status quo, the cumulative impacts of local land use decisions have the potential to negatively affect the overall quality of the environment and jeopardize the ecological health of our state.

Coastal areas in particular face some of the greatest ecological threats. With over 3,288 miles of Great Lakes

shoreline, fed by over 36,000 miles of rivers and streams and more than 11,000 inland lakes, the land abutting just the surface waters of this state is staggering. If the riparian lands are not wisely used, the quality of Michigan's water will worsen to the detriment of present and future generations.

Many local governments recognize the challenges of resource protection, and the limitations of state and federal regulations. They also appreciate the important ecological, aesthetic and economic benefits of wise resource management. Consequently, some have instituted strong local protection measures to maintain community character, grow sustainably, and safeguard environmental quality for future generations. Along the way, these local governments have sometimes asked for clarification about their roles in resource protection as well as information about how to address environmental issues locally.

Other local governments may not be aware of their options and the opportunity that exists when localities constructively partner with state and federal agencies, land conservancies, local conservation organizations, and others to protect Michigan's natural resources. This guidebook was written in response to those needs. It provides information about local options for environmental protection, the correlation between land use and ecological functions, and implementation tools. Although the guidebook focuses on coastal areas, the environmental management practices are applicable to shorelines throughout the state.

While it may be easy to point to inadequacies and gaps in the current environmental protection structure, by focusing on opportunities for improvement within the existing framework we are taking the first step towards improvement. We cannot afford to maintain an "us and them" mentality among state and local policy makers. The natural world does not recognize political boundaries. We know our jurisdictional confines and these should not be viewed as roadblocks. By knowing them, as well as knowing the responsibilities of others, and effectively utilizing the tools we have available within our scope of authority, we can make a positive difference now, and for future generations.

One does not have to be an environmentalist to appreciate a healthy environment. Having clean air, clean water, beautiful surroundings, and a healthy economy are subjects on which we all can agree, but they do not just happen on their own. Perhaps now more than ever before in our state's history we must work together to protect our shared resources, because it is clear that no level of government can achieve this alone. As the Michigan Environmental Protection Act states, it is the duty of officials at every level of government to help protect the air, water, and land from pollution, impairment or destruction.[1]

Local government is the first line of defense for our environment. By working cooperatively with state, and sometimes federal environmental protection officials, local officials can ensure that the right plans, regulations, and effective coordination mechanisms are in place to protect our environment.

The goal of this book is to equip you, the local official, with the right information to gather and examine when creating local land use plans, adopting new environmentally focused regulations, or reviewing proposed development to make decisions that are right for your community now and in years to come. By working in cooperation with other local governments and state agencies, we can assure the lasting value of Michigan's environment.

Page 1 photos: left: Katherine Ardizone, DEQ; center and right: David Kenyon, DNR.

THE WHAT AND WHY OF ENVIRONMENTAL PROTECTION

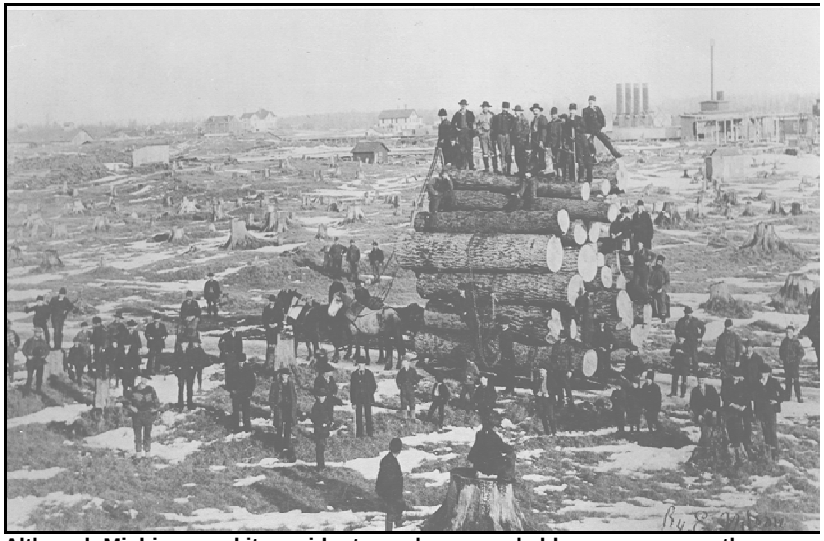
How did we get here?

In the not so distant past, Michigan was one of the nation's conservation leaders.[2] Among the earliest inhabitants of what is now the Great Lakes state there was a sense that the land and waters offered an inexhaustible abundance of natural resources. When the European settlers arrived they coveted the land for its wealth of natural capital to be exploited and cashed in.[3] Like most colonized areas, it was this fundamental perception of limitless resources that is the crux of environmental history. But settlers soon realized that the forests, fish and wildlife, and land they depended upon were not inexhaustible. By the end of the 1800's, after years of deforestation and resource exploitation, sportsman began calling attention to the need for state conservation measures.[4]

State policy followed, and by the beginning of the 1920's the state was on its' way to ecological recovery. So successful were the efforts of several generations over the next 50 years, that their professional and volunteer excellence won Michigan a national reputation for nonpolitical resource conservation and management.[5] The late 1960's and 1970's signaled the implementation of comprehensive federal environmental protection policy, and Michigan paralleled this action with statutes that often greatly exceeded the scope of federal law. State environmental protection laws adopted during this time include:

- Michigan Environmental Protection Act, 1970
- Michigan Natural Rivers Act, 1970
- Shoreland Protection and Management Act, 1970
- Inland Lakes & Streams Act, 1972
- Soil Erosion & Sedimentation Control Act, 1972
- Wetland Protection Act, 1979.

The early 1980's marked the end of an environmentally progressive era. It also marked Michigan's worst economic recession since the Great Depression.[6] Consequently, resource protection took a back seat in order for policy makers to focus on jumpstarting the economy.

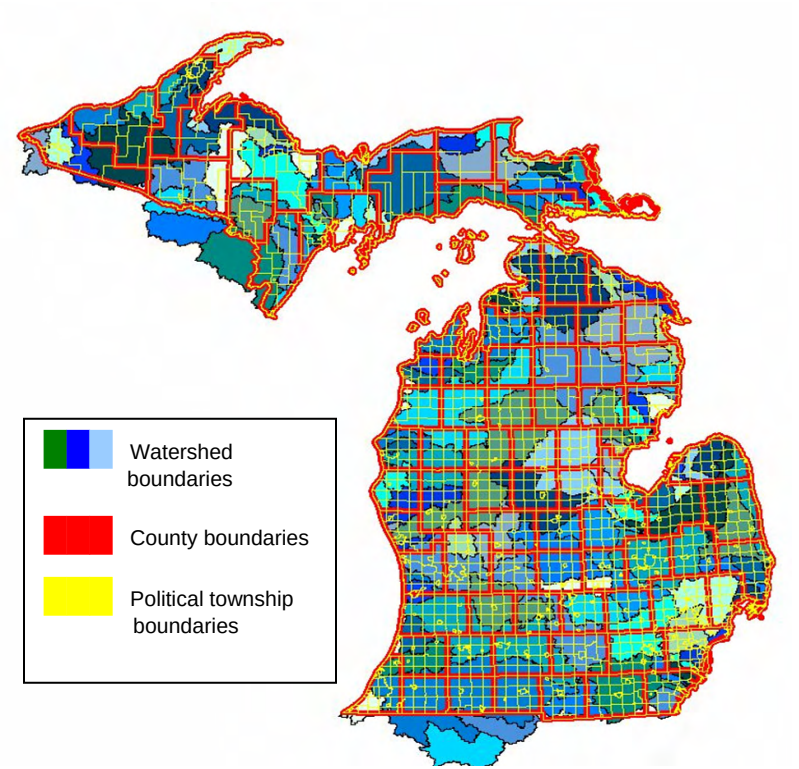


Although Michigan and its residents made a remarkable recovery over the unsustainable practices of their ancestors, it is important to put "recovery" in context. Forested land cover of the state has decreased from 95% to 50% since settlement.[7] *Photo courtesy of: Michigan State Archives*.

Most of Michigan's environmental statutes were written during different legislative sessions. In 1994, state lawmakers codified nearly all statutes pertaining to natural resources and environmental protection under the umbrella of the Michigan Natural Resources and Environmental Protection Act (NREPA). The provisions of the individual Parts of NREPA were left largely unchanged from the original statutes.

The political will of the 1990's marked a shift away from state environmental enforcement toward voluntary compliance and self regulation. The Department of Natural Resources (DNR) was divided into two agencies, and the Department of Environmental Quality (DEQ) was created to act as the enforcement arm of environmental protection. While the state was adjusting to these enormous agency and policy changes,

local governments were left—often without any guidance–-to do more on their own to protect resources. As a result, there was some confusion as to who is supposed to do what, when, and how in regards to protecting the state's resources. Additionally, consistent, multi-level governmental coordination has become more and more difficult. Now the DNR and DEQ have been reunited in the Michigan Department of Natural Resources and Environment (DNRE).



Why coordination is key to environmental protection: This map illustrates the jurisdictional complexities facing Michigan's natural resources. Notice that within any given watershed boundary there are numerous political boundaries (more than 1,800 statewide)—and therefore numerous land use authorities.
Source: DEQ.

Where are we now?

As conflicting demand for use and consumption of our natural resources has increased, so to has the need for regulatory intervention to preserve them. In keeping with Michigan's tradition of home rule, local governments are increasingly taking the reigns to fill in regulatory gaps on many natural resource and environmental protection issues.

There is a long-standing statutory basis for this authority. As early as the City and Village Zoning Act of 1921, local governments have had the authority to implement local regulations that will foster the health and well being of their communities. Language added to this statute in 1978 *requires* local officials to adopt zoning based on a plan which serves to "conserve natural resources and energy."[8] It also permits adoption of, "land development regulations and districts which apply only to land areas and activities which are involved in a special program to achieve land management objectives and avert or solve specific land use problems."[9]

It is clear that each level of government has an interest and legal responsibility to preserve Michigan's natural resources and protect its environment. However, it is equally clear, no single level of government can do it alone.

Where do we go from here?

Before describing specific ways in which local governments can improve the status quo, it is important to clarify why any level of government should expend efforts to protect resources and improve environmental quality. What is it exactly that we are trying to protect, and how do local governments fit in?

Natural Resources Management 101

An important point to keep in mind throughout this guidebook and throughout any land use deliberation is that our environment, our resources, are all interconnected. It is impossible to separate land use from water quality, or water quality from air quality, and so on. This is because they are all components of ecosystems that are interlinked and cyclical in

nature. A more detailed discussion of these relationships is provided later in this section. First, we need to define a few key terms that are essential to any discussion about resource management or environmental protection: *ecosystem, watershed,* and *natural features.*

What is an ecosystem?

An ecosystem is a fancy word for what we learned as children as "the web of life." The "eco" aspect of an ecosystem includes physical and chemical components, such as soils, water, and nutrients, as well as the organisms living there, such as bacteria, fish, and humans.[10] The "system" is the natural process, or way in which all of the components interact with one another; as food, as habitat, as flood control, etc.

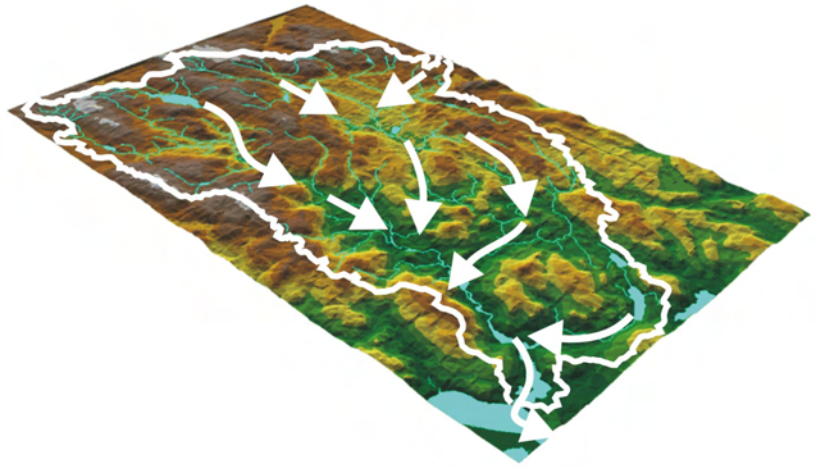
Ecosystems vary in scale. For example, the earth as a planet is an ecosystem in itself, but it is also comprised of many smaller levels of ecosystems such as the oceans, the Great Lakes, or a forest. Because all of the components in an ecosystem rely on the other components within the ecosystem to survive, disrupting the balance within the system can eventually lead to collapse—or an inability for it to sustain itself, such as the agricultural collapse of the 1930's known as the Dust Bowl, which was caused by poor agricultural practices and extreme weather conditions.

Why balance is so important.

Another example of ecosystem disruption leading to collapse that is closer to home is the "dead zone" appearing again in Lake Erie. In the 1960's and '70's a dead zone, or an area of a water body that does not contain enough oxygen to sustain life, appeared in Lake Erie. It was caused by an over abundance of nutrients. Excessive levels of phosphorus, a nutrient that used to be prevalent in household detergents, and nitrogen, a major component of lawn and crop fertilizers, contributed to an imbalance in the Lake's ecosystem. The imbalance lead to a collapse in the aquatic ecosystem, because oxygen levels became too low to support fish and vegetation. As a result, new policies to help reduce nutrient loading into the Great Lakes, such as a ban on phosphorus and sewage treatment upgrades, were adopted and Lake Erie began to recover. Today, a dead zone has reappeared in Erie, and scientists are trying to pinpoint the cause.[11]

What is a watershed?

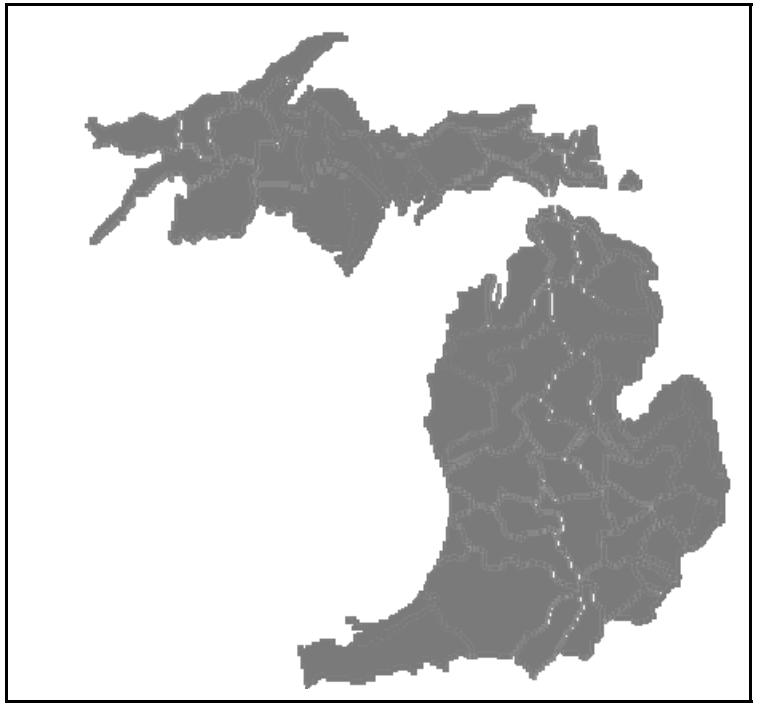
A watershed is an area of land in which all surface waters drain to a common outlet, similar to a household funnel. All of Michigan's watersheds drain into the Great Lakes surrounding the state. Watersheds vary in size, depending upon the scale from which you are working, similar to the concept of ecosystems. In other words: there are watersheds within watersheds.



A watershed is an area of land in which all surface waters drain to a common outlet. *Source: NEMO Project, University of Connecticut, 1993.*

Watershed planning and management has come into the spotlight in recent years as a way of paring down the sometimes overwhelming concept of large-scale ecosystems. Watershed management involves a more regional approach based on the movements of water and pollutants as defined by natural boundaries rather than political jurisdictions. Contrary to what it implies, watershed management focuses primarily on land use. This is because as water travels across the land

it picks up sediment and other pollutants. Preserving water quality thus requires careful land management.



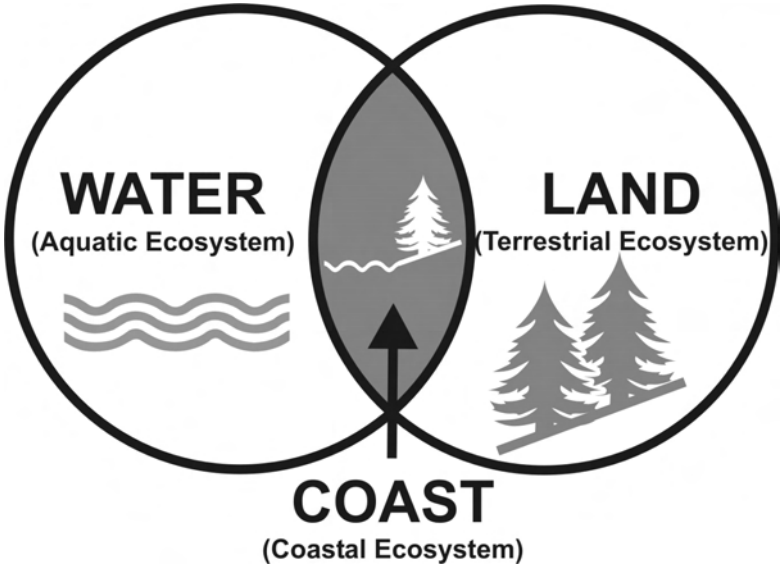
Michigan's major watershed boundaries. *Source: DEQ.*

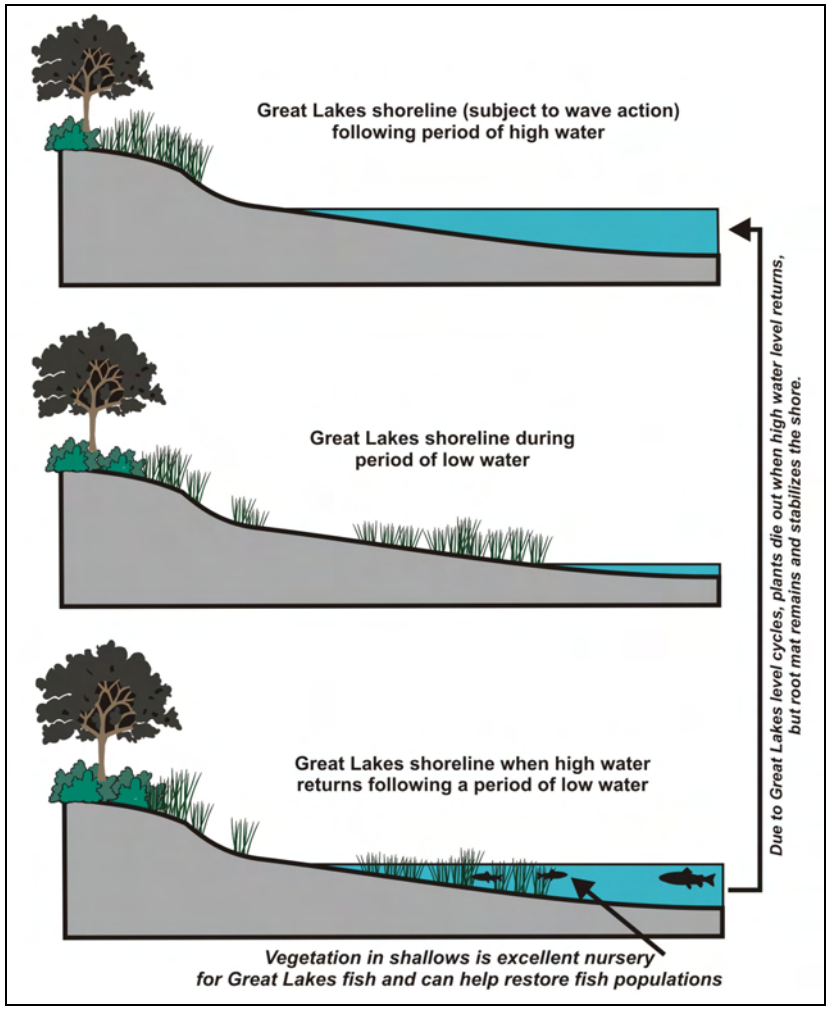
Why do coastal ecosystems and watersheds warrant extra attention?

Areas where one ecosystem type meets another, such as the water and land interface of our coasts, tend to be particularly fragile environments. They also provide critical habitat for a number of fish, waterfowl, plants, and other wildlife. As you can see from the watershed map above, coastal areas are the last stop for surface pollutants from an entire watershed. Consequently, they serve as the final filtration opportunity before reaching the Lakes.

Coastal ecosystems depend on the interaction between land and water ecosystems, and in so doing create their own unique set of requirements for sustainability. Below are two overlapping circles, one symbolizing the land-based ecosystem, the other symbolizing the water-based ecosystem. Where they overlap is the coastal ecosystem, which must rely on the health of the water *and* land systems for sustainability.

Michigan's 3,288 miles of freshwater Great Lakes shoreline are unique in many ways. The vastly different types of coastal environments around the state make any one prescribed management plan at best impractical and at worst ineffective. But these various landscapes do share some commonalities. All are subject to ever-changing Lake water levels, all are susceptible to adverse impacts of development, and most are comprised of delicate soils prone to movement, and/or erosion.





Great Lakes water level fluctuations create vastly different coastal landscapes. Some scientists consider low-level years a time of ecosystem "recovery," as it creates unique habitat that many fish and wildlife species rely on for survival.
Image source: John Warbach, Planning & Zoning Center, Inc.

Inappropriate development of coastal and near shore areas disrupts the natural process of beach creation and replenishment, and may expedite or exacerbate erosion and other hazards.[12] The proximity to open water also makes shoreline development more likely to contribute pollutants directly to the Great Lakes from stormwater runoff, agricultural and residential lawn nutrient loading, limited septic fields, outdated wastewater treatment facilities, and soil erosion. Essentially, good land use decisions can protect coastal ecosystems; bad land use decisions can damage coastal ecosystems.

What are natural features?

For the purposes of this guidebook, *natural features* refer to the type of landscape characteristics identified for state or local regulation. For example, a wetland could be considered a *natural resource* because of the services it provides, but it is also a natural feature because of its physical and scientific attributes. A coastal bluff or sand dune are other examples of natural features. Wetlands and sand dunes are examples of natural features regulated by the state, and/or by local units of government. Other natural features include flood plains, inland lakes and streams, and unique plant and animal habitat. A more detailed description of natural features for the purpose of a *natural features inventory* is provided in the Appendices.

Unique coastal natural features

Coastal ecosystems in particular, are home to a variety of fragile natural features that can easily be destroyed or significantly altered by surrounding land use activities. Predominant among these features are wetlands and sand dunes.

Many types of wetlands are found along the coast. Marshes, *fringing* wetlands, and *emergent* wetlands reduce erosion, prevent flooding, filter contaminants, trap sediment, and serve as breeding grounds for many species of animals, including game fish and waterfowl. The cycle of rising and falling water levels makes Great Lakes marshes some of the most important freshwater wetlands in North America because of their unique ability to provide so many crucial services to wildlife and society.[13]

It may be easier to think of these wetlands as the vital transition zone between the land and water ecosystems. Without them, there would be a harsh contrast from one type of system directly into another very different type of system—similar to the shock of going from a hot, steamy shower directly into an igloo, with no time for drying off or getting dressed. Eliminating these buffer zones by dredging or development can have devastating and long lasting effects on both the land and water systems they connect, as it exposes the adjoining ecosystems to extreme conditions without the needed, gradual physical transition.

Sand dunes are another coastal feature that are easily impacted by development. Formed by wind and constantly in motion, their physical instability makes dunes extremely susceptible to permanent damage from off-road vehicles, exotic plants and animals, residential development, pedestrian recreational overuse, sand mining and other industrial development.[14]

Why do we need to protect our natural resources?

Michigan residents enjoy the outdoors immensely, and rely on them heavily. Regardless of personal attitudes about environmental regulation, the facts surrounding natural resource management present an indisputable case for both the ecological *and* economic need to use our land wisely. In 1991, the estimated economic value of the state's natural resources—not including products made from them—was a hearty $10.7 billion.[15] Nearly half that figure is generated by our hunting and fishing industry alone.

But one might say we are loving our resources to death. Michigan has one of the highest land consumption rates in the country, has more boats on the water than any other state, and ranks second in the nation in the number of second homes.[16] Land use projections for Michigan indicate that a state population increase of as little as 12% could result in as much as an 87% increase in new developed land by 2020 under the current policies.[17] Simply put, our wild, scenic, and agricultural landscapes are quickly disappearing because more people are moving to these areas, and taking up a lot of space once they get there.

It is not just loss of habitat and open space that are the consequences of poor land use choices. In 1992, results of the Relative Risk Analysis Project ranked the absence of land use planning that considers resources and the integrity of ecosystems as the greatest relative environmental risk in Michigan.[18]

FEDERAL, STATE, & LOCAL ROLES IN ENVIRONMENTAL PROTECTION

What is the role of government in resource protection?

While it is true that protecting our environment and using our resources wisely is up to all of us, the reality is that if everyone did so, we would not need government regulation to protect the environment. Unfortunately, this is not the case, so the responsibilities of federal, state, and local governments are clearly defined within environmental laws.

Many community leaders believe that the federal or state government is responsible for all environmental protection and natural resource management. While each have regulatory authority over some resources and some sources of pollution, the authority to regulate land use decisions rests primarily with local governments. Michigan's environmental laws specifically provide for local environmental regulation. As far back as 1926, the U.S. Supreme Court cited public health protection as one of the basic responsibilities of local governments, thus upholding their legal mandate to restrict or control land use decisions in a community.[19]

However, this multi-level governance scheme often leaves vast portions of an ecosystem inadequately protected. By

looking at the role and responsibility of each level of government, the limitations of long-term natural resource and environmental protection under the current framework become clear.

Federal Role

The federal government set the stage for contemporary national environmental standards with the adoption of the National Environmental Policy Act (NEPA) of 1969. The Act was the first federal legislation to identify an environmental protocol to follow. The Environmental Protection Agency (EPA) was created as the regulatory authority to oversee the provisions of the Act. The purposes of NEPA are to:

- declare a national policy which will encourage productive and enjoyable harmony between humans and the environment;
- promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humans;
- enrich the understanding of the ecological systems and natural resources important to the Nation.

The National Environmental Policy Act of 1969, as amended. (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)

Throughout the 1970's, more sweeping federal legislation was adopted that set standards for clean water, clean air, drinking water, industrial pollutants, and pesticide use. As a result, states were required to adopt language protecting air, water, and land resources that were at least as stringent as the federal standards.

Today, the federal government is linked to land use policy primarily through the development of quantifiable standards for protecting ecosystem health, such as water quality monitoring. Federal agencies also provide educational and technical assistance such as outreach programs and data sharing. Additionally, the federal government maintains grant programs, like those administered by the Michigan Coastal Management Program, which in turn provide funding opportunities for local initiatives. With the exception of management of federal lands and buildings, military bases and nuclear power plants, the federal government does not usually have jurisdiction over local land use planning, or zoning decisions. Table 1.1 "Federal Laws Relevant to Ecosystem Protection" provides a brief description of the most significant federal laws and opportunities for local action.

State Role

Prior to the National Environmental Protection Act of 1969, Michigan included environmental protection and natural resource management language in Article IV of the State Constitution. This provision serves as the basis for all of Michigan's subsequent environmental and natural resource management laws.

> **§ 52 Natural resources; conservation, pollution, impairment, destruction.**
> The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.
> Sec. 52. History: Const. 1963, Art. IV, § 52, Eff. Jan. 1, 1964 .

Michigan's primary environmental legislation is contained in the Michigan Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994, as amended. PA 451 addresses shared natural resources, like air and water, sets minimum standards for environmental protection, and details state responsibilities to protect the air, water, and land from pollution, impairment, or destruction. The Act also defines the role of local governments in resource management. For the most part, local roles are voluntary and opportunities are slightly different depending on the resource. The opportunities for local action will be discussed throughout the guidebook.

Table 1.1
Federal Laws Relevant to Ecosystem Protection

Statute	Description	Opportunities for Local Governments
Clean Water Act (CWA) Section 402	The CWA covers a number of regulatory, funding, and education programs aimed at protecting and restoring the nation's surface waters. These include a permitting system that limits the amount and type of pollution that facilities and other individual sources can discharge. Dischargers must obey national discharge guidelines, as implemented to achieve state water quality standards.	Usually, the Office of Water within the U.S. Environmental Protection Agency delegates this pro- gram to the states. Communities can ask the State department of environmental protection for a review of how well local industries are complying with pollution discharge limits. Also, the CWA has a number of funding programs to help municipalities build wastewater facilities and control polluted runoff from farms, storm sewers, and other sources.
Coastal Zone Management Act of 1972	This statute helps coastal states manage and protect coastal resources from threats such as development, erosion, and pollution. States must develop programs to control polluted runoff from farms, storm sewers, and other sources that affect coastal waters.	Administered by the National Oceanic and Atmospheric Administration within the U.S. Department of Commerce, this program provides technical assistance arid grants to states in developing coastal management plans. Communities can ask their state for an evaluation of whether development in coastal areas is consistent with their state's plan, and can seek state funding for projects in the community.
Coastal Barrier Resources Act	This statute provides federal funding for protection of barrier islands.	Administered by the National Oceanic and Atmospheric Administration within the U.S. Department of Commerce.
National Environmental Policy Act (NEPA)	All federally funded projects and activities as well as projects built on federal property (including highways, ports, dams, power plants, airports, drinking water plants and pipes, and sewage treatment plants and pipes) must comply with NEPA, which requires the submission of an Environmental Impact Statement (EIS) describing the project's effect on the local ecosystem as com pared to other alternatives.	This program is administered by the U.S. Environmental Protection Agency. The community can examine previous EISs to determine the effects of similar projects on its ecosystems and can participate in public hearings on proposed development projects.
National Flood Insurance Program	This statute provides federally subsidized flood insurance for those communities that have adopted floodplain management regulations (e.g., wetlands protection) that will minimize future flood damage. Generally, flood insurance is required before federally guaranteed mortgages or loans can be issued.	This program is administered by the Federal Emergency Management Agency (FEMA). By incorporating floodplain management regulations into local zoning ordinances and building codes, communities can become eligible for floodplain insurance.
Endangered Species Act (ESA)	This statute provides for the protection of endangered wild plants and animals.	The U.S. Fish and Wildlife Service administer the ESA. As part of the process of determining which plants and animals should be considered endangered, the FWS conducts hearings to obtain public input. Communities also can participate in the development of Habitat Conservation Plans, which developers must design if their proposed development affects an endangered or threatened species.

Statute	Description	Opportunities for Local Governments
National Wild and Scenic Rivers Act (NWSRA)	This statute protects extraordinary rivers from damming and other forms of development.	The National Park Service, which administers the NWSRA, manages all rivers that are protected. Through its Rivers and Trails Assistance Program, the Park Service also provides technical assistance to states and localities in developing conservation plans for rivers and river segments.
North American Waterfowl Management Plan Conservation	This program was started in 1986 to enhance waterfowl populations and habitats. The plan stipulates the use of subsidies, financial incentives, and tax adjustments favorable to landowners to promote conservation.	Management of the plan is delegated to state and regional levels, which work with the U.S. Fish and Wildlife Service as well as over 40 conservation organizations. Communities can get involved by asking authorities to assess whether local habitat is eligible for protection under the plan.
Reserve Program/Wetlands Reserve Program	The Conservation Reserve Program uses financial incentives to encourage farmers to leave sensitive lands, such as riparian zones and steep slopes, out of agricultural production. The Wetland Reserve Program is similar, focusing on wetlands.	The programs are administered by the Natural Resource Conservation Service within the U.S. Department of Agriculture. Local farmers can enroll in the grant program, which involves signing 10-year agreements with the government for the receipt of grant funds.
Clean Water Act (CWA) Section 404	This section of the CWA regulates the discharge of dredged material (silt excavated from the bottom of a waterway) and fill into U.S. waters, including wetlands, and establishes a permit program to ensure compliance with environmental requirements.	This program is administered by the U.S. Environmental Protection Agency Office of Water and the U.S. Army Corps of Engineers. As a part of the permitting process, the Corps holds hearings on proposed dredge or fill discharge permits. Communities can use these hearings as a forum for expressing concerns about potential projects.
Swamp buster Program	This statute discourages the conversion of wetlands into farmland by making persons who raise crops on wetlands ineligible for most federal farm benefits.	This program is administered by the U.S. Department of Agriculture.
Resource Conservation and Recovery Act (RCRA)	RCRA regulates the design, location, operation, and monitoring of new and old municipal landfills and facilities that manage hazardous waste (e.g., landfills, recyclers, and incinerators). It also regulates the generation and transport of hazardous waste, requires cleanup of contaminated hazardous waste facilities, and requires inspection and cleanup of underground storage tanks at gas stations and other sites.	This program is administered by the Office of Solid Waste and Emergency Response within the U.S. Environmental Protection Agency, in conjunction with state waste management agencies. Permitting of hazardous waste management facilities includes provisions for public participation; communities may wish to take part in these forums.
Clean Air Act (CAA)	CAA regulations include permits to businesses and industries to limit the amount of pollution they emit to the air. Development that would increase air pollution is limited in areas that do not meet federal air quality standards.	The CAA requires that states develop plans for maintaining air quality and reducing air pollution. Emissions permitting include provisions for public participation; communities may wish to take part.

Statute	Description	Opportunities for Local Governments
Congestion Mitigation and Air Quality Program under the Intermodel Surface Transportation and Efficiency Act (ISTEA)	ISTEA promotes mass transit, rails-to-trails programs, and regional transportation land use planning. The Congestion Mitigation and Air Quality Program provides grants for projects aimed at reducing transportation-induced congestion, safety hazards, and pollution,	This program is administered by the Federal Highway Administration and Federal Transit Administration under the Department of Transportation. Communities can apply for grants for projects that reduce traffic congestion and improve air quality.
Cooperative Forestry Assistance Act	This Act provides technical and financial assistance for both urban and rural forest management and community development activities that protect and restore ecosystems.	This program is administered by the USDA Forest Service in cooperation with the state forester in each of the 50 states.
Emergency Preparedness and Community Right-To-Know Act (EPCRA)	EPCRA requires facilities using hazardous chemicals to notify the community of chemical spills or leaks. It also requires facilities to publish lists of the hazardous chemicals used or stored on site and to develop spill response plans.	At the local level, EPCRA is administered by a Local Emergency Planning Committee (LEPC). Through the LEPC, communities can find out what hazardous chemicals are present in the area and can participate in developing spill response plans.
Federal Insecticide, Fungicide, and Rodenticide Act (FJFRA)	This statute regulates the application of pesticides and other pest control substances to crops.	Through a system of review and permitting, FWRA provisions can ban the application of substances that may harm sensitive ecosystems. Communities can take part in this permitting process.

*Federal statutes not discussed here include a number of laws that regulate federal lands managed by the U.S. Forest Service, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service.

Source: *Community-Based Environmental Protection: A Resource Book for Protecting Ecosystems and Communities, U.S. EPA (EPA 230-B-96-003), Washington, D.C. 1997*.

The Department of Natural Resources and Environment is the state agency that regulates wetland, sand dune, soil erosion, inland lake, and shoreland uses defined in PA 451. Each category, also referred to as "section" or "part" of the Act, has a different legislative history. As a result, each part is written a bit differently, with different intended goals, and identifies different roles for local governments.

PA 451 creates significant opportunities for localities to implement supplemental natural resource management techniques, but does not oversee land use planning at the local level. It is left to the discretion of each of Michigan's 1850+ local units of government to determine how they will protect the environment through land use planning and local regulations. Therefore, each local government is responsible for helping protect Michigan's environment.

"Good environmental laws at the state level are not enough; they tend to blunt but not stop degradation of the shore, and do not protect entire ecosystems, only resources found on particular parcels."
–Dave Dempsey, Michigan Environmental Council

Figure 1.1 illustrates most of the land and water related laws in Michigan. Notice that although specific features in the ecosystem require state oversight for land cover alteration, many of the areas connecting them do not. This level of land use oversight is left to the discretion of individual communities. Is state regulation enough to sustain the ecosystem with so many gaps between these natural features?

Table 1.2 outlines the state laws relevant to ecosystem protection. As with the federal laws, many seem to overlap, but huge gaps in resource protection still exist. Even with multiple statutes, the challenge remains to protect ecosystems in their entirety. Local governments have the opportunity to serve as the mortar of the regulatory foundation—they can help fill in the missing gaps.

Local Role

For local officials dealing with permit applicants, heated zoning debates, and a multitude of state and federal agency staff–life is not always a picnic. However, the different levels of government in the context of environmental protection policy interact similarly to an organized picnic where everyone is supposed to bring something. In this instance, the federal government brings the blanket, serving as the regulatory foundation for state and local governments. The state adds to that foundation by providing the necessary utensils. But a critical component, the food, is provided by localities. They complete the scenario by deciding what everyone will eat. As is true for environmental policy, local governments determine how much effort they put into the end result. They can invest in making something really delicious for everyone, or do the required minimum by bringing a bag of chips. Although it may be possible to compensate for deficiencies initially, without coordination or contributions among all the participants in either scenario, the success of the event–or environmental protection–is threatened.

MEPA

There have been about a dozen zoning or related police power court cases in which the Michigan Environmental Protection Act (MEPA), formerly PA 127 of 1970, now Part 17 of the Michigan Natural Resources and Environmental Protection Act, PA 451 of 1994, has been a factor in the case. Appellate courts have ruled that MEPA applies to local planning and zoning decisions that have or are likely to have the effect of polluting, impairing or destroying the environment, unless there is no feasible or prudent alternative. Courts have also noted language in the zoning enabling acts that communities must not ignore the obligation to consider the impact of proposed zoning decisions on the "conservation of natural resources" (see for example Committee for Sensible Land Use v Garfield Township, 124 Mich App 559, 1983). Unfortunately, most local government officials are not aware that they have an obligation under MEPA to make decisions that prevent pollution, impairment or destruction of the environment unless there is no feasible or prudent alternative. Facts must be presented to demonstrate this. A simple provision in the local zoning ordinance that states this obligation serves to inform local officials and the public. See Appendices.

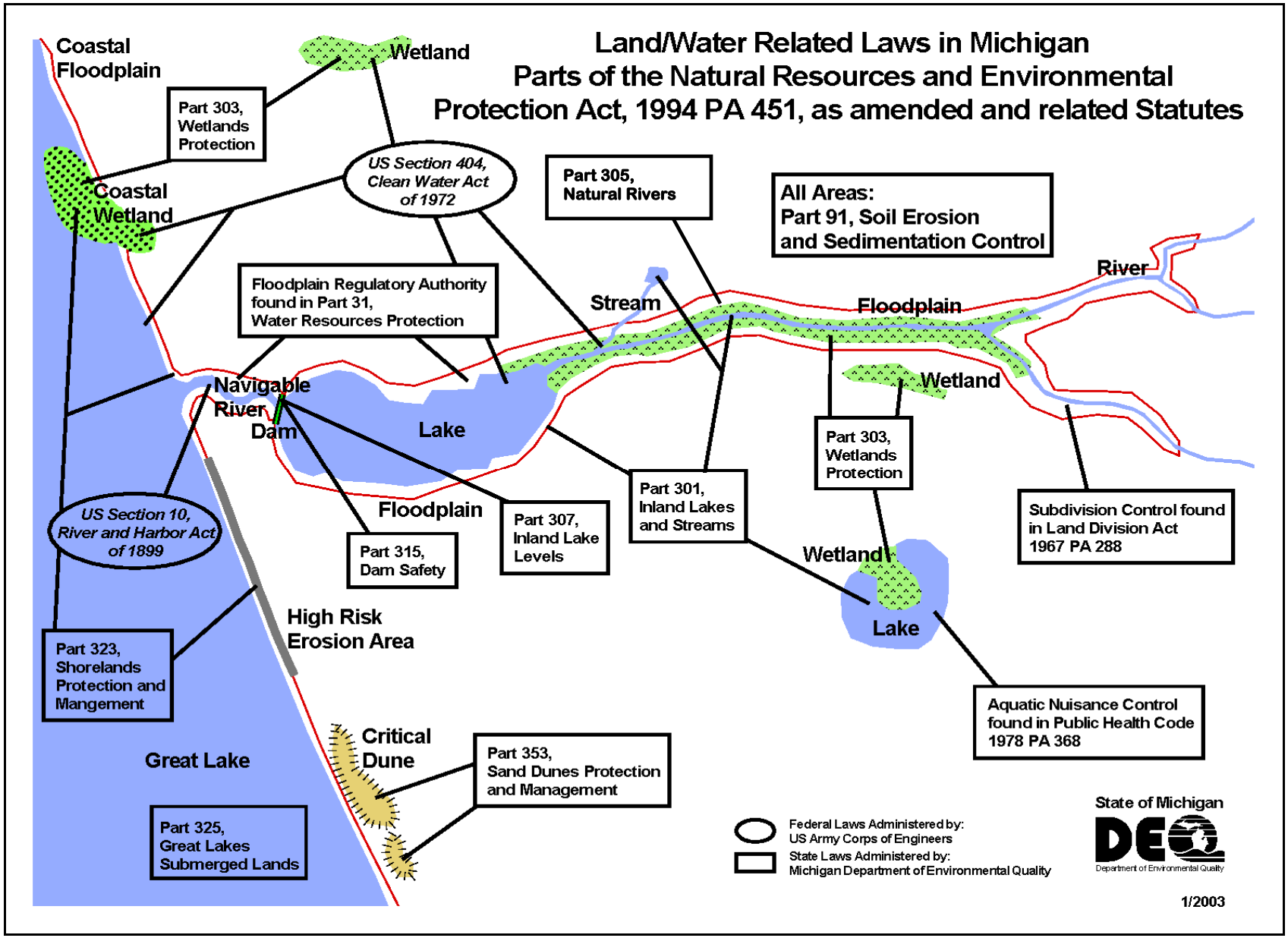

Land/Water Related Laws in Michigan
Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended and related Statutes
Coastal Floodplain
Wetland
Part 303, Wetlands Protection
US Section 404, Clean Water Act of 1972
Part 305, Natural Rivers
All Areas: Part 91, Soil Erosion and Sedimentation Control
Coastal Wetland
Floodplain Regulatory Authority found in Part 31, Water Resources Protection
Stream
Floodplain
River
Navigable River
Dam
Lake
Wetland
Part 303, Wetlands Protection
US Section 10, River and Harbor Act of 1899
Floodplain
Part 315, Dam Safety
Part 307, Inland Lake Levels
Part 301, Inland Lakes and Streams
Subdivision Control found in Land Division Act 1967 PA 288
Wetland
High Risk Erosion Area
Lake
Part 323, Shorelands Protection and Mangement
Aquatic Nuisance Control found in Public Health Code 1978 PA 368
Critical Dune
Part 353, Sand Dunes Protection and Management
Great Lake
Part 325, Great Lakes Submerged Lands
Federal Laws Administered by: US Army Corps of Engineers
State Laws Administered by: Michigan Department of Environmental Quality
State of Michigan
DEQ
Department of Environmental Quality
1/2003

Figure 1.1

Table 1.2
State Laws Relevant to Ecosystem Protection*

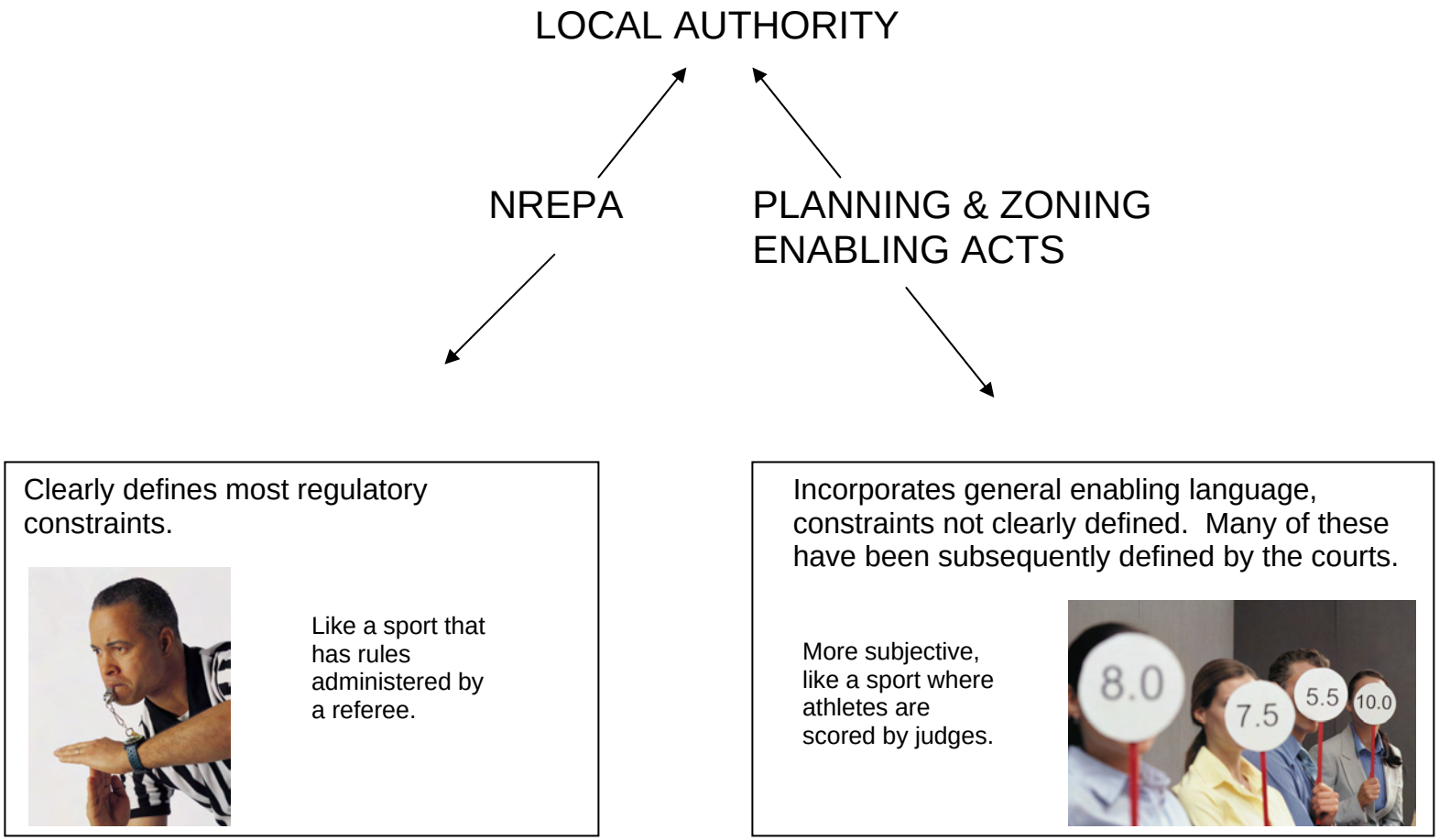
Statute or Constitutional Provision	Description	Opportunities for Local Action
1963 Const. Art 4, §52 (Constitutional Provision) Paramount Public Concern	§ 52 Natural resources; conservation, pollution, impairment, destruction. The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.	Constitutional responsibility for environmental protection which is applied by the legislature to laws directing both state and local action.
1963 Const. Art 9, §35 (Constitutional Provision) Natural Resources Trust Fund Part 19, PA 451 of 1994 Natural Resources Trust Fund	§ 35 Michigan natural resources trust fund. (Excerpt) The interest and earnings of the trust fund shall be expended for the acquisition of land or rights in land for recreational uses or protection of the land because of its environmental importance or its scenic beauty, for the development of public recreation facilities, and for the administration of the trust fund, which may include payments in lieu of taxes on state owned land purchased through the trust fund.	The trust fund provides grants to units of local government or public authorities to be used for the resource conservation purposes of the Trust Fund.
Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994	An act to protect the environment and natural resources of the state; to codify, revise, consolidate, and classify laws relating to the environment and natural resources of the state; to regulate the discharge of certain substances into the environment; to regulate the use of certain lands, waters, and other natural resources of the state; to prescribe the powers and duties of certain state and local agencies and officials;	Defines legal authority of state agencies and local governments for each Part of the Act to implement and/or administer sections contained in the Act.
Part 17, PA 451 of 1994 Michigan Environmental Protection Act	Creates legal action provisions and provides for equitable relief for any state agency, local government or Michigan citizen against any party that willfully causes pollution, impairment or destruction of land, air, or water resources.	Local governments may take legal action against any party that has polluted, impaired, or destroyed or is likely to pollute, impair, or destroy the air, water, or other natural resources or the public trust in these resources.
Part 31, PA 451 of 1994 Water Resources Protection	Part 31 establishes water quality standards, and prohibits the discharge of polluting materials or discharge without a permit. § 324.3103: The department shall protect and conserve the water resources of the state and shall have control of the pollution of surface or underground waters of the state and the Great Lakes, which are or may be affected by waste disposal of any person.	A local unit may regulate the land application of sewage sludge and adopt regulations to protect groundwater.
Part 31, PA 451 of 1994 Floodplain Protection	Purpose of floodplain protection under Part 31 is to assure the flow carrying capacity of a watercourse is not obstructed, and not used for residential construction. Requires that a permit be obtained prior to any alteration or occupation of the 100-year floodplain (a flood which has a 1% chance of occurring any given year) of a river, stream or drain.	Closely tied to National Flood Insurance Program. Communities can regulate construction in floodplains through building codes and/or local ordinances.

Statute or Constitutional Provision	Description	Opportunities for Local Action
Part 55, PA 451 of 1994 Air Pollution Control	This Part of PA 451 seeks to maintain a safe ambient air quality for the state by regulating emissions of incinerators, industrial air-borne output, and pollutants from other sources.	Local ordinances may be enacted so long as requirements are as stringent or more so than Part 55. The DNRE is obligated to counsel and advise local units of government on the administration of this part. The DNRE is required to cooperate in the enforcement of this part with local officials upon request.
Part 91, PA 451 of 1994 Soil Erosion and Sedimentation Control	Regulates earth change activities that disturb one or more acres or within 500 feet of a lake or stream.	Local governments are permitted to adopt soil erosion and sedimentation control ordinances, but they must be approved by the administering state agency (DNRE), and must be at least as stringent as state minimums.
Part 111, PA 451 of 1994 Hazardous Waste Management	Provides standards and guidelines for the generation, disposal, storage, treatment, or transport of hazardous waste. Creates the state's pollution prevention fund.	Part 111 does not allow municipalities to prohibit the transportation of hazardous waste through the municipality or county or prevent the ingress and egress into a licensed treatment, storage, or disposal facility. Local governments cannot prohibit the construction of a treatment, storage, or disposal facility, except as otherwise provided in section 11122.
Part 115, PA 451 of 1994 Solid Waste Management	Identifies and encourages methods for the disposal of solid waste that are environmentally sound, that maximize the utilization of valuable resources, and that encourage resource conservation including source reduction and source separation.	Cities, counties, or health department districts must obtain certification from the administering agency (DNRE) for solid waste management.
Part 201, PA 451of 1994 Environmental Remediation	Brownfield redevelopment and cleanup criteria. Part 201 also addresses liability claims and funding coordination between the state and federal government on brownfield redevelopment.	Under the Brownfield Redevelopment Financing Act, PA 381 of 1996, local governments can create brownfield redevelopment authorities to cleanup and reuse contaminated sites.
Part 301, PA 451 of 1994 Inland Lakes and Streams	Regulates activities on the bottomlands of inland lakes and streams, below the ordinary high water mark, such as dredging, filling, structures and construction of marinas.	Local governments are provided notice and given the opportunity to review and comment on proposed public notice projects prior to action. In addition, local governments are copied on permits and violations letters.
Part 303, PA 451 of 1994 Wetland Protection	Establishes minimum wetland protection controls for regulated wetlands. Requires a permit to conduct dredge, fill, or construction activities in regulated wetlands.	Gives local governments explicit authority to regulate wetlands smaller than 5 acres in size. Administering state agency (DNRE) must be notified of local ordinance.
Part 305, PA 451 of 1994 Natural Rivers	Created to preserve and enhance a river or a portion of a river for water conservation, fish, wildlife, scenic, ecological, historic, and recreational values.	Part 305 is implemented through zoning provisions. Local governments have first refusal of zoning administration. The DNRE will administer zoning regulations if local entity opts not to.

Statute or Constitutional Provision	Description	Opportunities for Local Action
Part 323, PA 451 of 1994 Shorelands Protection and Management: Environmental Areas	Part 323 provides for the designation of environmental areas up to 1000 feet landward of the ordinary high water mark of a Great Lake or 1000 feet landward of the ordinary high water mark of lands adjacent to waters affected by levels of the Great Lakes.	Local governments are provided with specific authority under Part 323 to enact shoreland zoning based on environmental factors.
Part 323, PA 451 of 1994 Shorelands Protection and Management: High Risk Erosion Areas	Requires setbacks and size parameters for development in areas eroding at an average rate of one foot or more per year.	Local governments can assume administration of Part 323 with DNRE approval, and may require greater setback distances from the erosion hazard line. The DNRE will administer regulations if local government does not.
Part 325, PA 451 of 1994 Submerged Lands	Regulates construction activities on Great Lakes bottomlands and authorizes leasing and deeding bottonmlands for specific uses.	Local governments can provide input to both the permitting and bottomland conveyance parts of this authority.
Part 353, PA 451 of 1994 Sand Dune Protection and Management	Designates Critical Dune Areas throughout the state and regulates activity within designated areas.	Local governments can assume administration of Part 353 with DNRE approval. The DNRE will administer regulations if local government doesn't.

*This table is intended to provide general information regarding land use related state statutes and local opportunities for action. It is not comprehensive, and does not include statutes pertaining to endangered species and other conservation-based policy.

Beyond a constitutional obligation that extends to the legislature, local officials receive their ability to protect the environment and manage natural resources from two primary sources in state law. The first is NREPA. The second can be found in several statutes known collectively as the *Planning and Zoning Enabling Acts*. These acts give townships, cities, villages, and to a lesser extent counties, the authority to oversee land use decisions and protect the "natural environment and conserve natural resources and energy."[20] As natural feature protection options are discussed in the next section, each will incorporate information about how these different authorization sources translate into differences in implementation options for local governments.



Guidebook Overview

The following sections of this guidebook will discuss a variety of regulated natural features within our ecosystem. It will also describe planning tools available to assist local governments in implementing natural resource protection measures.

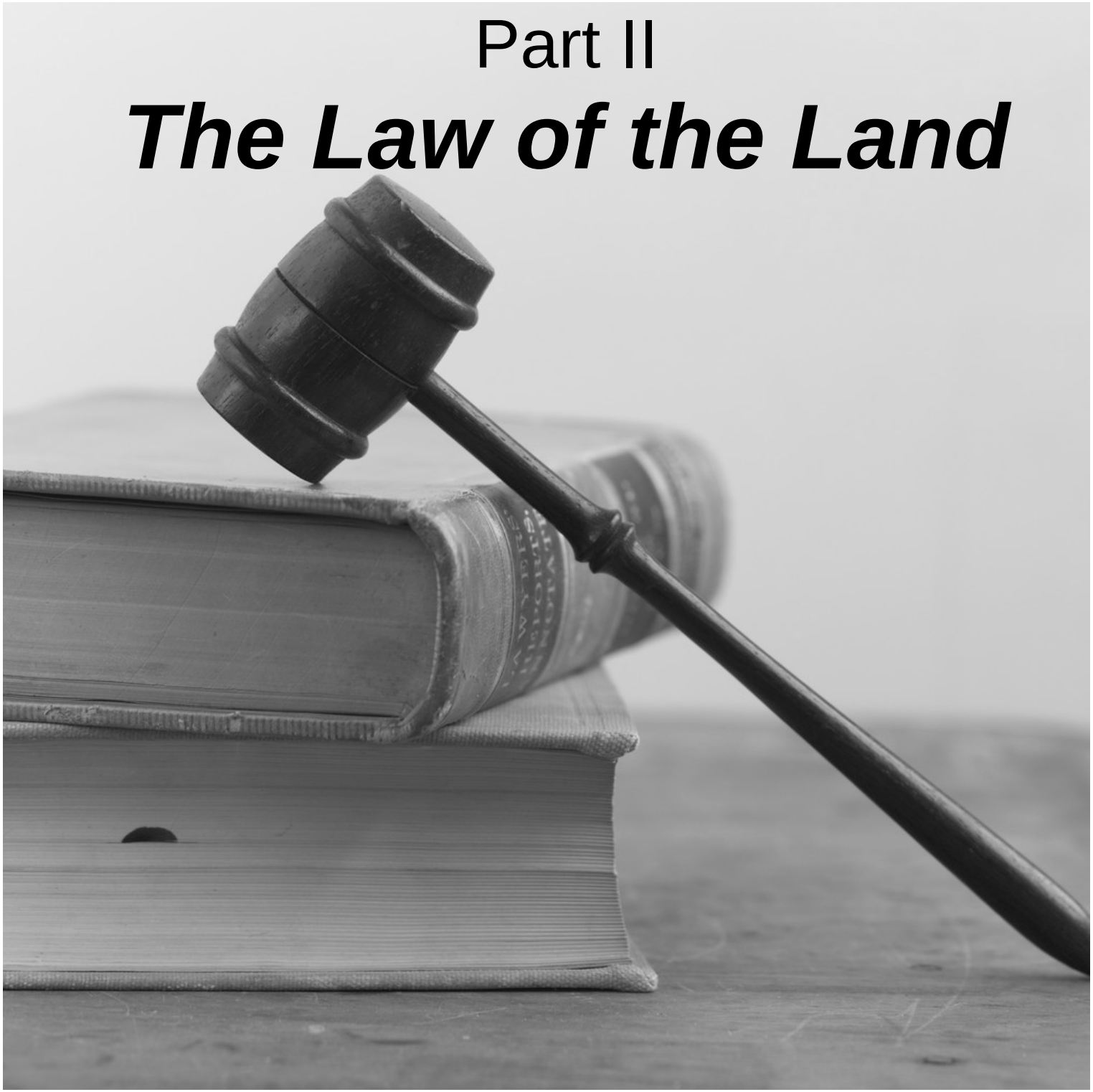
- Part II: Identifies gaps in existing natural resource and environmental protection policy and explains opportunities for local regulation.
- Part III: Provides information about planning and zoning tools available to local governments, and how each relates to natural resource management and environmental protection.
- Appendix: Contains example ordinances and related agency and organization contact information.

FOOTNOTES:

[1] Michigan Environmental Protection Act, 1970, now codified as Part 17 of NREPA, MCL 327.1702 et seq.
[2] Dempsey, Dave, *Ruin and Recovery: Michigan's rise as a conservation leader,* University of Michigan Press, Michigan Environmental Council, 2001, p.162.
[3] Ibid, p. 19.
[4] Ibid, p. 40.
[5] Ibid, p. 263.
[6] Ibid, p. 193.
[7] *Great Lakes Trends: Into the New Millennium,* Michigan Department of Environmental Quality, Office of the Great Lakes, May 2000.
[8] City and Village Zoning Act, Act 207, 1921.
[9] Section 3 of Township, City, and City-Village Zoning Enabling Acts. Public Acts 184, 285, and 207, as amended; repealed and replaced with the Michigan Zoning Enabling Act, PA 110 of 2006, MCL 125.3201(3).
[10] U.S. Environmental Protection Agency. "Functions and Values of Wetlands," Office of Water/Office of Wetlands, Oceans and Watersheds, (EPA843-f-01-002c), March 2002.
[11] Hrovatin, Paul, U.S. Environmental Protection Agency—Great Lakes National Program Office, personal interview, 25 November 2002.
[12] Great Lakes Commission (GLC) and Environment Canada, "Impacts of Changing Land Use," November 1996.
[13] Albert, Dennis. "Protecting Wetlands Along the Great Lakes Shoreline," Michigan Natural Features Inventory, Michigan State University Extension (Bulletin e-2751), April 2001.
[14] Albert, Dennis. "Borne of the Wind: An Introduction to the Ecology of Michigan Sand Dunes," Michigan Natural Features Inventory, 2000.
[15] "Why We Need the Natural River Program," Fact Sheet 1, Michigan Land Use Institute, *www.mlui.org,* Benzonia, MI.
[16] *Protecting Inland Lakes: A Watershed Management Guidebook,* Planning and Zoning Center, Inc., February, 1990.
[17] *Great Lakes Trends: Into the New Millennium,* Michigan Department of Environmental Quality, Office of the Great Lakes, May 2000.
[18] *Michigan's Environment and Relative Risk,* Michigan Department of Natural Resources, July, 1992. Funded by the U.S. EPA, the project based environmental "relative risk" levels on the risks posed to human health and the ecosystem. Absence of land use planning that considers resources and the integrity of ecosystems received the highest ranking of "high-high."
[19] Jackson, R. and C. Kochtitzky in *Planning and Zoning News,* January 2002: Village of Euclid v. Ambler Realty Co**.** 272 U.S. 365 (1926) (USSC)
[20] Michigan Zoning Enabling Act, PA 110 of 2006 and Michigan Planning Enabling Act, PA 33 of 2008.

Part II

The Law of the Land



WETLANDS

With so much talk about the importance of wetlands in recent years, local officials are often surprised to learn that many wetlands in their communities are not protected because they fall outside the scope of state or federal law. However, Michigan law specifically provides opportunities for communities to enact greater wetland protection mechanisms locally if they so choose. The key idea for local officials to keep in mind as they consider instituting local wetland policy is where the authorization to do so comes from: NREPA and the Planning and Zoning Enabling Acts.

WHY PROTECT WETLANDS?

In addition to providing habitat, food, and breeding areas to a variety of plant and animal species, wetlands provide a number of important services to society and are crucial for sustaining and improving water quality.

What is a wetland? Wetlands are areas of land that are usually inundated or saturated with water during the growing season. The presence of water results in the formation of *hydric,* moisture containing soils, and the dominance of *hydrophytic*, water loving plants, and animals. These areas are transitional between terrestrial and aquatic systems where the water table is at or near the surface.[1]

The aquatic systems connected to wetlands may be obvious, as is the case with coastal wetlands, or not so obvious, as is the case with inland wetlands connected to ground water. [See Figure 2.1] Wetlands may be covered by water for all or part of the year. Therefore, some wetlands may appear to be dry land at times.

What do wetlands do? Wetlands are critical for spawning/nesting, nursery, and refuge for many fish and wildlife species. Wetlands essentially function like natural sponges, storing water, filtering it, and then slowly releasing it. This process helps control erosion– especially in coastal areas– recharges groundwater, and reduces flood heights. In fact, one acre of wetland can store up to 1.5 million gallons of floodwater.[2] That is enough to fill 30 Olympic size swimming pools!

Most people are familiar with the cattail or lily pad wetland found in areas with standing water, but wetlands can also be grassy meadows, shrubby fields, or mature forests. Examples of different types of wetlands found in Michigan (left to right) coastal, forested, and shrub. To see where these types of wetlands are found in the landscape, refer to Figure 2.1. Note that although these wetlands may not appear to be connected to one and other on the surface, they play a complimentary role in the watershed and are connected to the same groundwater systems. *Photos (L): D. Kenyon, DNR; (C): K. Ardizone; (R): DEQ-GLMD.*

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Wetlands also remove pollutants and sediments from water. This naturally occurring filtration process is so effective that many communities are looking to wetland protection and mitigation as a means of meeting federal stormwater treatment requirements by allowing them to continue to function normally. *For more information about wetland functions, see "Wetlands Overview," and "Functions and Values of Wetlands" in Appendix C.*

Easier to protect than to replace: In an effort to strike a balance between new development and environmental protection, the state and many communities have negotiated with developers to *mitigate*, or lessen the effects of unavoidable wetland destruction by restoring a wetland or creating a wetland in an area elsewhere that was not one previously. Although artificially constructed wetlands can provide many of the aesthetic services of a naturally occurring wetland, and can be an option for treatment of stormwater, they take many years to establish and rarely provide the same groundwater recharge functions, or plant and animal habitat in an ecosystem as naturally occurring wetlands.

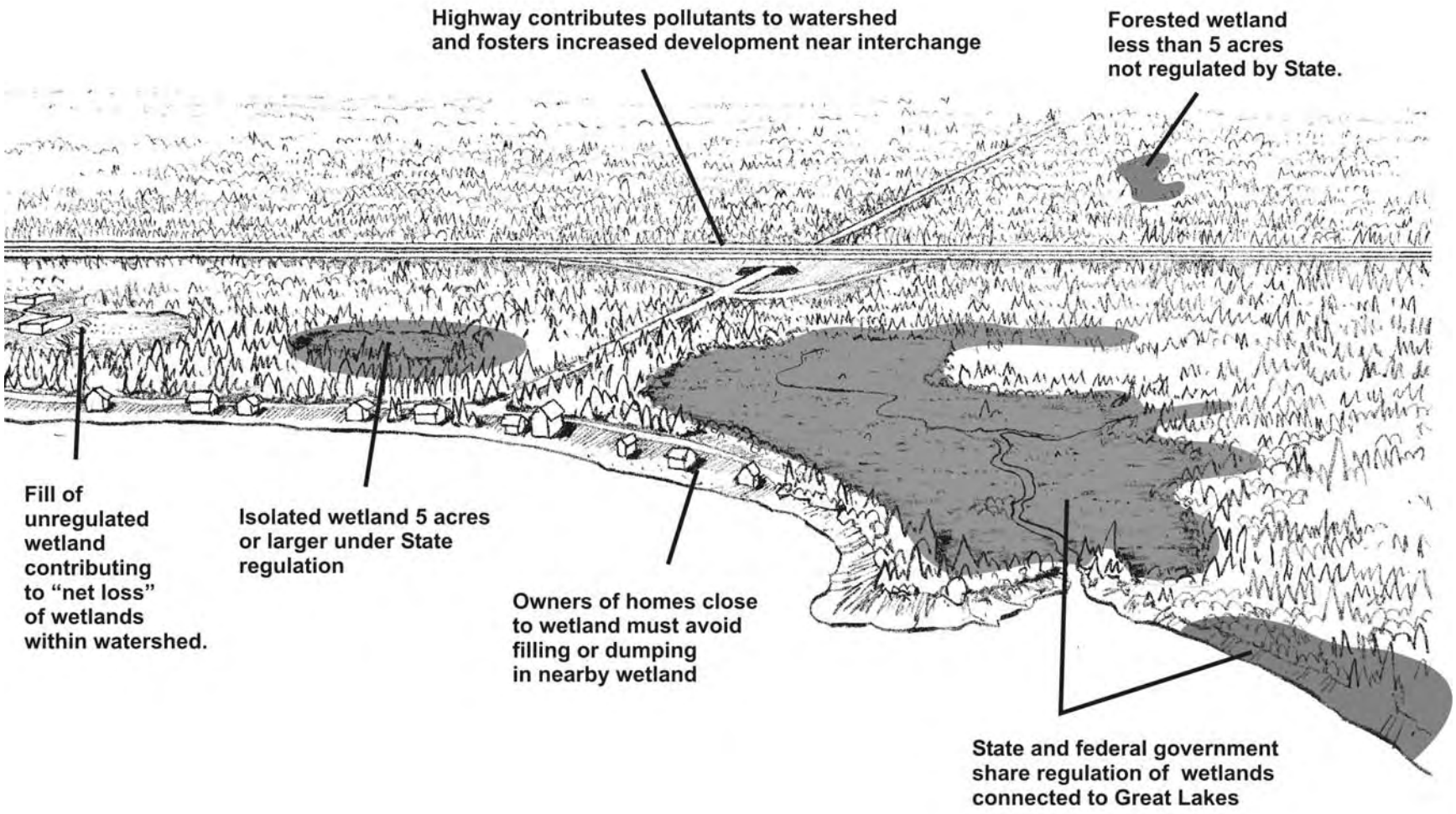
Enforcing mitigation agreements between development interests and state and local governments has also been problematic. [See Case Study in this section] Therefore, it is better economically and environmentally for communities to protect the wetlands they already have, or focus efforts into wetland restoration, rather than try to build costly and less effective artificial wetlands in the future.

Coastal erosion protection: As was discussed in the first part of the book, coastal wetlands warrant special attention. One reason is because they provide the best means of defense for a community to prevent and reduce coastal erosion. Coastal wetlands absorb the energy of waves, and break up the flow of stream and river currents.[3] Michigan's coastal wetlands grow and recede in conjunction with the fluctuation of Lake levels. Even during high-water years when

the plants are submerged, their dense root mats hold the soil, most of which is sandy and highly erodible. The ability of wetlands to control erosion is so valuable that some states are restoring wetlands in coastal areas to buffer storm surges and provide a more effective and permanent means of protection than shore armor.[4]

Top: Coastal wetland during high water levels.
Bottom: Coastal emergent wetland during low water levels.
Photos: Dennis Albert (Courtesy of MSU Extension)

Figure 2.1. Wetlands



Graphic by John Warbach

Coastal wetland restoration efforts are underway along parts of Michigan's coast through programs such as federally funded coastal restoration grant projects. As with inland wetlands, it is much less expensive for taxpayers to protect coastal wetlands in the first place than to suffer the consequences and costs of repair in the future.

MICHIGAN'S REGULATORY FRAMEWORK

Wetlands are regulated under a variety of state and federal legislation. Section 404 of the Clean Water Act (CWA) of 1972 is the primary piece of federal legislation that addresses wetlands. Under this section, the U.S. Army Corps of Engineers is granted principal permitting authority, although the U.S. Environmental Protection Agency (EPA) is authorized to veto permits issued by the Corps for filling of wetlands.

Michigan is one of two states that has authority to administer section 404 of the CWA, and shares jurisdiction with the Corps in some areas. State regulations that support the provisions of section 404 of the CWA are found in Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended. Before development within a regulated wetland takes place, a permit must be obtained from the DNRE. In order to obtain a permit, an applicant must show avoidance of wetland resources to the greatest extent possible and minimization of unavoidable wetland impacts. The DNRE considers any public comments that have been received prior to making a permit decision, and also encourages local governments to comment during this period.

WHAT IS REGULATED?

As defined by Michigan state statute, a wetland is, *"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."*

In accordance with Part 303, wetlands are regulated if they are any of the following:

- Connected to one of the Great Lakes or Lake St. Clair.
- Located within 1,000 feet of one of the Great Lakes or Lake St. Clair.
- Connected to an inland lake, pond, river, or stream.
- Located within 500 feet of an inland lake, pond, river or stream.
- Not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, but are more than 5 acres in size.
- Not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, and less than 5 acres in size, but the DNRE has determined that these wetlands are essential to the preservation of the state's natural resources and has so notified the property owner.

WHAT IS NOT REGULATED

As important to local governments as defining what wetlands are regulated is clarifying what is not regulated. NREPA leaves gaps in protecting this important resource that can be filled by local governments, such as protecting isolated, or *non-contiguous,* wetlands smaller than 5 acres.

LOCAL ROLE

A local unit of government has the authority to create wetland regulations that address wetlands not protected by the state. Part 303, section 324.30307 authorizes local units of government to adopt and administer their own wetland regulations, provided they are consistent with state regulations. The DNRE must be notified if a community adopts a wetland ordinance, but it has no review or approval authority. Complete text of §324.30307 (4) is provided in the Appendices. Ultimately, local control of wetlands can lead to better protection of the resource because it serves as an "added layer" of regulatory protection.

The state has completed the process of creating wetland inventories on a county by county basis. This data can be useful to communities wanting to adopt a local wetland ordinance, as an inventory is a required prior to implementation. To find the wetland inventory map for your county, check the DNRE web site *http://michigan.gov/deq/0,1607,7-135-3313_3687-11178--,00.html*.

Nuts and Bolts of Local Wetland Ordinances

When a community chooses to adopt its own wetland ordinance, it takes on the role of co-administrator of wetland regulation for its jurisdiction. If a community has a local wetland ordinance, a permit applicant must also request a permit from the DNRE. The local permit review process is concurrent with the state review process. Approval from both the DNRE and the local government are necessary in order to proceed with the project.

Permit fees are charged to applicants for both the state and local applications. The state fee is based on size and scale of project, the local fee is determined by the local wetland ordinance.

Using Authority from NREPA vs. the Planning & Zoning Enabling Acts

As was discussed in the first part of this book, local governments considering implementing environmental protection measures can do so either through the provisions of NREPA, or through the ability to "protect the natural environment" granted by the Planning & Zoning Enabling Acts, or both. Where local governments run into legal trouble with local wetland ordinances is when they have overstepped the bounds of what Part 303 of NREPA allows them to do.

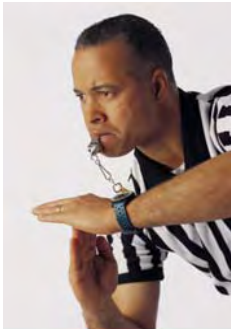
MICHIGAN COMMUNITIES WITH WETLAND ORDINANCES
Revised April 9, 2008

COUNTY	NAME
Allegan	Clyde Township
Antrim	Forest Home Township
Cass	Porter Township
Genesee	Argentine Township
Genesee	Fenton Township
Huron	Caseville Township/Village
Ingham	East Lansing, City of
Ingham	Meridian, Charter Township of
Ingham	Williamstown, Township of
Kent	Cannon, Township of
Kent	Grattan, Township of
Lapeer	Elba Township
Livingston	Brighton Township
Livingston	Pinckney, Village of
Livingston	Putnam Township
Monroe	LaSalle Township
Oakland	Addison Township
Oakland	Auburn Hills, City of
Oakland	Bloomfield Township
Oakland	Franklin, Village of
Oakland	Independence, Charter Township of
Oakland	Milford, Charter Township of
Oakland	Novi, City of
Oakland	Oakland, Charter Township of
Oakland	Orchard Lake Village
Oakland	Orion, Charter Township of
Oakland	Oxford, Charter Township of
Oakland	Rochester Hills, City of
Oakland	Southfield, City of
Oakland	Waterford, Charter Township of
Oakland	West Bloomfield, Charter Township of
Oakland	White Lake Township
Oakland	Wixom, City of
Ottawa	Spring Lake Township
St. Clair	Columbus, Township of
St. Joseph	Fabius, Township of
Washtenaw	Ann Arbor, City of
Washtenaw	Ann Arbor, Charter Township of
Washtenaw	Pittsfield Charter Township
Washtenaw	Salem Township
Washtenaw	Scio Township
Washtenaw	Superior, Charter Township of
Wayne	Grosse Ile, Township of

For example, adopting a local wetland ordinance that mandates 25 foot buffer zones around wetlands, or preservation of mature trees within 100 feet of a wetland may be overstepping the authority granted under NREPA because the Act does not give explicit authority to local governments to address such provisions. As a result, a local wetland ordinance adopted under NREPA runs the risk of being invalidated if legally challenged.

However, the mandate of the Planning & Zoning Enabling Acts to "protect natural resources" authorizes local governments to enact additional "natural environment" protection provisions, such as vegetated buffer zones and mature tree preservation guidelines provided they do not conflict with Part 303 of NREPA.

NREPA: Local governments can



- ✓ Regulate isolated wetlands smaller than 5 acres
- ✓ Must conduct a wetlands inventory
- ✓ Notify the DNRE of the local ordinance

Local governments can increase wetland protection under NREPA most readily by addressing the size of the wetland to be regulated. Whereas state regulation typically only addresses wetlands adjacent to another body of water or 5 or more acres in size, local governments can require permits for drainage, construction, dredge, or fill activities on isolated wetlands much smaller. Some communities currently implementing this increased level of protection for wetlands require a permit application for the above activities down to the .25 acre size. Sample local wetland protection ordinances are found in the Appendices and newer options may be available directly from the DNRE.

WHY PROTECT WETLANDS SMALLER THAN 5 ACRES?

The benefits of protecting small, natural, isolated wetlands are becoming increasingly clear as studies show how their unique soil characteristics reduce flooding, provide valuable habitat, treat stormwater, and recharge groundwater.[5] More communities are looking to wetland protection as a means of improving water quality, and wetland restoration to inexpensively and effectively meet stormwater treatment requirements.

Zoning Enabling Acts: Local governments can

- ✓ Protect mature trees and native vegetation in and around wetlands
- ✓ Require vegetated buffer strips around important natural features, such as wetlands
- ✓ Implement other tools that protect wetlands

Increasing wetland protection is not just beneficial to the environment. Beyond preserving aesthetics, the scenic vistas and open space they provide can positively affect property values in a community. Perhaps it is no accident that some of the highest property values in the state are found in communities that have adopted strong local wetland protection ordinances.

ALTERNATIVE APPROACHES TO LOCAL WETLAND PROTECTION

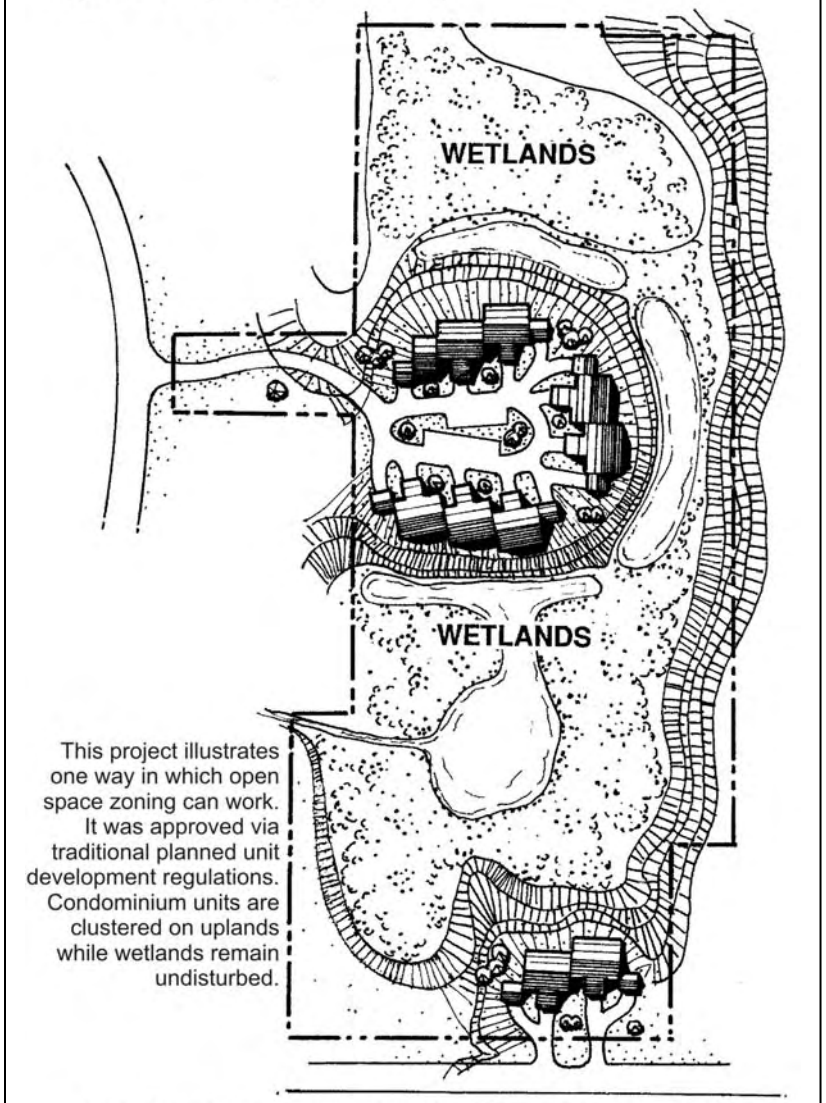
Implementing a local wetland ordinance is not the only option for communities desiring to protect wetlands. Zoning tools can also serve as a means of accomplishing conservation goals. In the case of wetlands, instituting site plan review of proposed development plans can go a long way towards protecting the resource.

Site plan review affords design oversight to local officials. Through this mechanism, a site plan (drawing) for a proposed development is reviewed to ensure it conforms to zoning requirements for maintenance of existing vegetation, provision of a natural vegetation strip around designated natural areas, planting of new vegetation in certain places, etc. Wetland protection can also be assured in new development plans. This is accomplished in large measure by requiring that state (and federal if relevant) wetland permits be obtained as a condition of local zoning approval.

While site plan review is an effective zoning tool, it is generally only applied to large development projects and therefore may not account for wetland impact from smaller-scale project sites (see also site plan review section in Part III). For this reason, and because a local wetland ordinance provides another enforcement mechanism, a local wetland ordinance is usually the best way to ensure all valuable wetland areas are protected.

However, adopting an ordinance can be challenging if there is not enough local support, or there is not adequate administrative staff to properly enforce the ordinance. If your community is considering a more immediate approach to wetland protection, instituting site plan review provisions in the zoning ordinance may be the way to go—at least until appropriate guidelines can be included within a specific wetland protection ordinance. Open space zoning (see Figure 2.2) may also achieve desired wetland protection goals for your community.

Figure 2.2 Open Space Zoning



Source: Planning & Zoning News, Vol. 10, No. 5, March 1992 Graphic by Coy Vaughn, Jr.

Case Study
Wetland Mitigation: Why Protection Pays

In 1997 the Michigan Department of Environmental Quality (DEQ) initiated a study to evaluate the state's wetland mitigation program. The study, funded by a grant from the U.S. Environmental Protection Agency (EPA), was conducted by DEQ staff who evaluated wetland permits issued between 1987 and 1998. Projects were included from all geographic regions of the state and involved the creation of at least one acre of replacement wetland, established for a minimum of two complete growing seasons.

What the study found, was that the vast majority of mitigated wetland sites did not provide the same ecological functions of the wetlands they were intended to replace. In fact, of the 159 mitigation sites that were evaluated for the study, 14% were never constructed at all. Additionally, the study concluded:

- 50% of mitigation sites contained the required wetland acreage
- 42% of mitigation sites had excessive open water
- 32 % of mitigation sites had insufficient water
- 41% of mitigation sites did not contain sufficient topsoil to facilitate plant growth
- 18% of permittees complied with all permit conditions
- 22% of the projects were determined to be successful overall

Location, location, location

Part of the reason for a high failure rate among wetland mitigation projects evaluated in the study is due in large part to the location of the mitigation site. When the state's wetland mitigation program was adopted in 1979, the concept of mitigation was in its infancy. Subsequent rules passed in 1988 required mitigation to be on site or in the immediate vicinity.[6] As a result, many wetland mitigation sites during this period were on land that was not suitable for wetland mitigation, as opposed to restoration of historic wetlands—which are much more likely to succeed. The study concluded that any wetland mitigation program should therefore require, whenever possible, the restoration of historic wetland sites instead of allowing the creation of wetlands in upland areas where they are likely to fail. These findings were incorporated in mitigation rules in 2000.[7]

A costly proposition

Because it is not always possible to protect existing natural wetlands, mitigation is an important tool in maintaining water quality and the overall health of a watershed. Done properly, mitigation can off-set the adverse impacts of some wetland alteration by compensating for it elsewhere in the same watershed. However, communities looking to implement wetland policies that emphasize mitigation over protection of existing natural wetlands should beware: even when successful, it is a costly proposition.

Although voluntary wetland restoration of historic wetland sites can be done for as little as $500 per acre, mitigated wetland restoration sites in Michigan that involve monitoring and other requirements have an average cost of $5,000 per acre.[8] This amount does not include the cost of the land itself. Created wetlands are even more expensive due to the increased amount of excavation and planting involved. The average cost of a created wetland in Michigan is a whopping $40,000 per acre, not including the cost of land.[9] Focusing on wetland protection by avoiding land alteration in and near existing wetlands is not only better for a community's environmental health, it is better for the budget as well.

ENVIRONMENTAL AREAS

Included in the many environmental protection policies adopted during the 1970's is a Michigan state statute that has been largely overlooked—especially by local governments. Environmental areas, or EAs, were originally part of the Shorelands Protection and Management Act of 1970, and are now incorporated under the Shorelands Protection and Management section of NREPA, Part 323, PA 451 of 1994 as amended.

WHY PROTECT ENVIRONMENTAL AREAS?

Parts of the shoreline designated as environmental areas may most easily be thought of as the "crown jewels" in an ecosystem for priority protection. The primary reason for instituting additional regulatory protection measures in these magnificent landscapes was to safeguard their existence for the sustainability of ours.

What are environmental areas? Environmental areas are some of the most important and pristine fresh water habitat found in the state, and in the country. These shoreline places are vital for wildlife breeding and spawning. They are so crucial for the continued survival of most species of fish, water fowl, and migratory birds, that scientists and lawmakers agreed they deserve additional protection from destructive human activities. Environmental areas are defined by statute as, *"An area of the shoreland determined by the Department, on the basis of studies and surveys, to be necessary for the preservation and maintenance of fish and wildlife."*

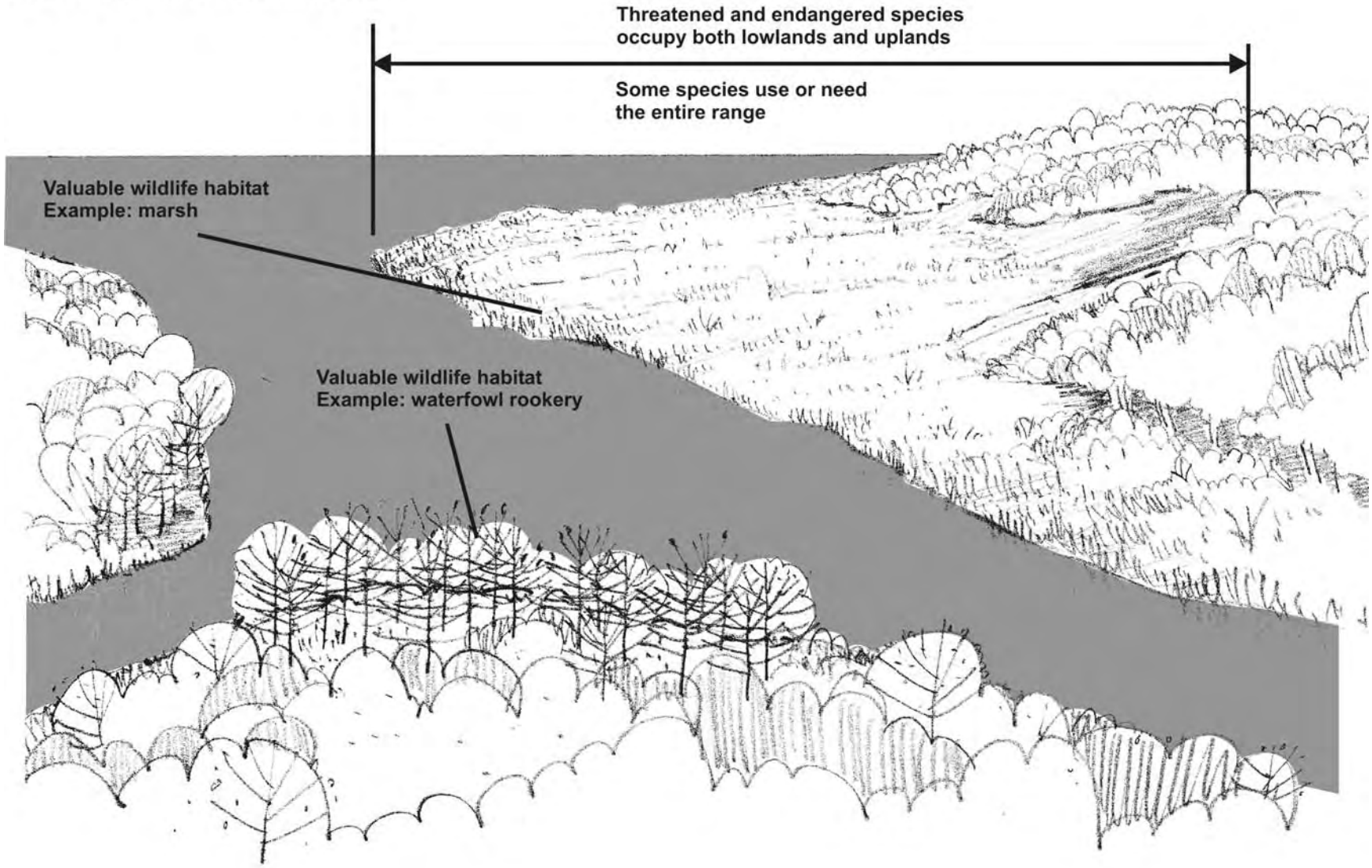
Figure 2.3 illustrates the landscape characteristics of many designated EAs. Notice that some species require the use of the entire range of an EA to survive. When environmental areas are destroyed, fish and wildlife dependent upon these areas, if not killed, are forced to crowd into habitats elsewhere—if they can find a place to go. The end result is a smaller number of species with unstable populations that are more susceptible to disease and catastrophe.[10]

Many threatened species, like this Yellow-throated Warbler, rely on environmental areas for their migratory routes. *Photo: David Kenyon, DNR.*

What do they do? Environmental areas provide habitat, migration stopovers, food, and nursery areas to a variety of fish and wildlife. Perhaps most importantly, they flourish in the absence of human activities. As the name implies, environmental areas are places where the shoreline is kept in its most natural state.

Although EAs may contain other regulated natural features, such as wetlands or sand dunes, it is their overall importance to the ecosystem that is the reason for protection. Consequently, EA designation is designed to serve as an added layer of environmental protection for this invaluable resource. EA protection is the most ecosystem-based environmental legislation currently on the books in Michigan, as it attempts to protect the landscape as it functions as a whole.

Figure 2.3. Environmental Areas



Graphic by John Warbach

An irreplaceable resource. Because EAs are designated based on their high-quality ecological characteristics, they are irreplaceable. Wildlife dependent on these areas cannot simply choose to go elsewhere for their breeding and habitat needs. They rely on the naturally occurring features of these areas. Therefore, there is little way to compensate for the loss of these wild places once they have been destroyed.

WHAT IS REGULATED?

Of Michigan's 3,288 miles of Great Lakes shoreline, approximately 275 linear miles are considered essential habitat. That is a mere 8.5% of the shoreline we must strive to keep devoid of human activities in order to protect the numerous fish and wildlife species that depend on it.

Currently, there are 118 designated environmental areas. They are located within the townships indicated on Map 2.1. State statute provides for the designation of environmental areas up to 1000 feet landward of the ordinary high water mark of a Great Lake or 1000 landward of the ordinary high water mark of lands adjacent to waters affected by levels of the Great Lakes. Many parcels containing environmental areas extending inland 1,000 feet are state and/or federally owned. However, if an EA encompasses an entire parcel that is privately owned, a 12,000 square foot structure zone is identified where construction can be permitted as long as it complies with local ordinances and does not adversely impact the EA or its inhabitants.

Private owners of designated environmental area lands are eligible to apply for enrollment in Part 361 of NREPA, Farmland and Open Space Preservation, PA 451 of 1994 (formerly know as PA 116 of 1974). This statute provides for property tax reduction and exemption from some types of assessments if the property owner enrolls under an open space easement.

How does an EA differ from a coastal wetland? As mentioned above, EAs usually contain natural features regulated under other statutes, such as a coastal wetland. However, wetland regulations do not regulate all methods of vegetation removal, or assert habitat protection conditions. In contrast, EAs are designed to protect the natural condition of the area, limit or prohibit human presence, and specifically do not allow the following activities without a permit from the DNRE:

- vegetation removal
- dredging, filling, or in any way altering the soil
- alteration of drainage
- timber harvest in a colonial bird nesting area
- placement of a permanent structure.

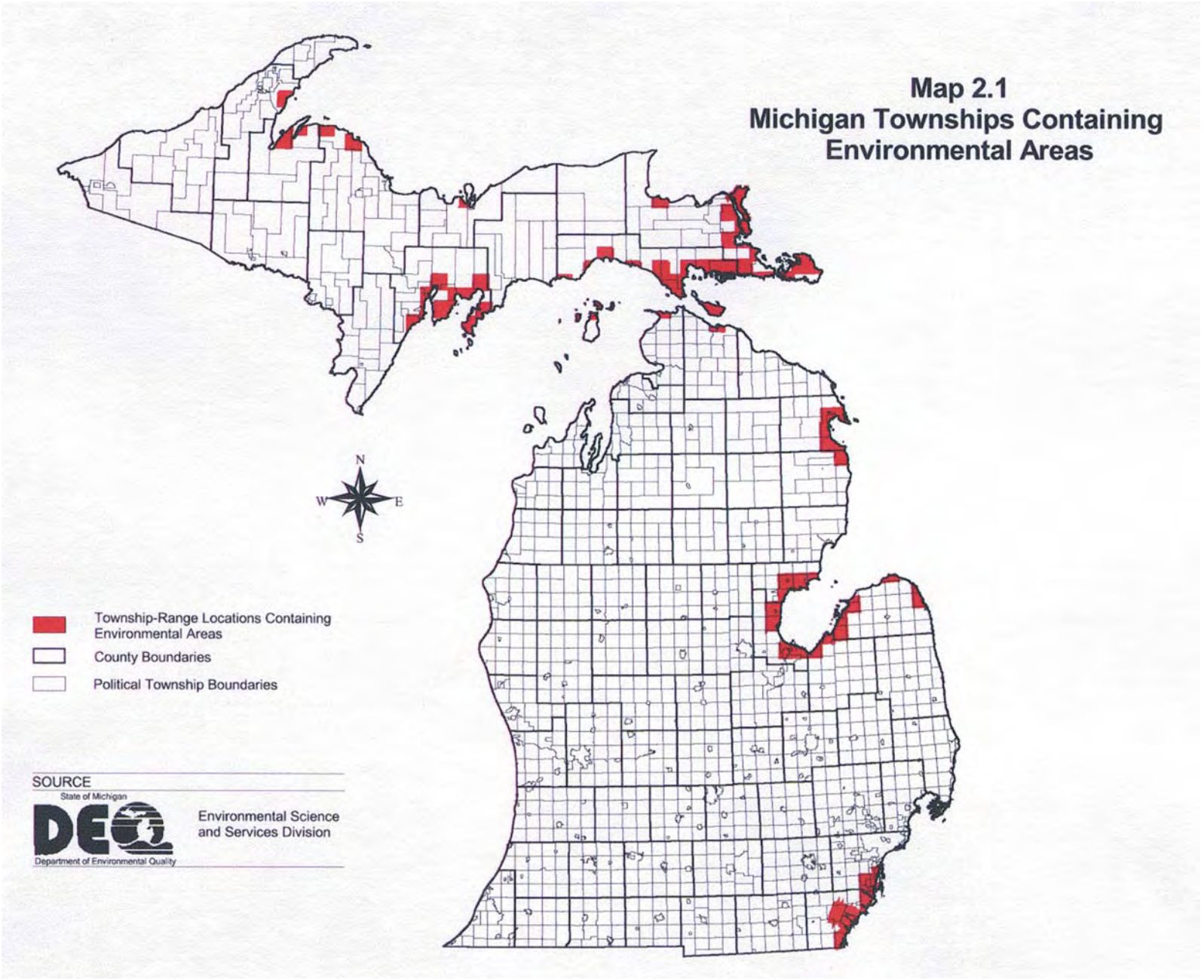
Contact the Department of Natural Resources and Environment for an example of a complete EA management plan.

WHAT IS NOT REGULATED?

Although EAs are designed to protect the resource as a whole, the statute does not address water quality within EAs, near-shore boating activities, or land use on properties adjacent to EAs. These are important considerations, the last of which can be regulated by local zoning. EA designation does not require a deed restriction to be placed on properties within the regulated areas. Local governments can inform property owners of EAs by flagging the designation on property records which can facilitate an up-front understanding of the ecological importance of the property if it changes ownership.

LOCAL ROLE

Through the environmental area provisions, NREPA provides a county, township, city, or village with specific authority to enact shoreland zoning based on environmental factors. Like other regulated natural features, local governments can use the authority under NREPA or under the Planning and Zoning Enabling Acts. In this instance, the EA provisions in NREPA


Map 2.1
Michigan Townships Containing
Environmental Areas
N
W
E
S
Township-Range Locations Containing
Environmental Areas
County Boundaries
Political Township Boundaries
SOURCE
State of Michigan
DEQ
Department of Environmental Quality
Environmental Science
and Services Division

NREPA: Local governments can

- ✓ Adopt local ordinance subject to DNRE approval prior to implementation

require approval of a local ordinance by the Department of Natural Resources and Environment prior to implementation.

Essentially, local governments are in a position to strengthen protection of the resource by adopting additional guidelines for use of environmentally sensitive areas within their jurisdiction and by effectively enforcing their zoning ordinances. An approved local zoning ordinance eliminates the need for a state site plan review procedure and may be enacted at any time.[11]

Local governments also have the ability to institute resource protective measures on the land surrounding EAs, and can essentially provide a large-scale buffer to these sensitive areas. To do that, local master plans must recognize the importance of EAs, and then subsequent EA zoning ordinances must be adopted. Buffer requirements can be incorporated in the ordinance.

Zoning Enabling Acts: Local governments can

- ✓ Zone for low intensity or density land uses around EAs
- ✓ Require vegetated buffer areas around designated areas
- ✓ Implement native vegetation landscaping requirements on properties adjacent to EAs

Local master plans can also design open space areas around EAs, as well as provide recreational opportunities for bird watching, canoeing, kayaking, and other non-intrusive recreational activities around the perimeter.

Case Study
When Mistakes are Made, Our Environment Suffers

In 1976, an Environmental Area was designated along the coast of Lake Huron. The adjacent property, beyond the 1,000 foot inland boundary of the EA was, and still is a drained wetland area used for agricultural purposes. In the early 1990's, the farmer who had owned the property designated as EA, sold over 80 acres of his property that contained both agricultural land and a significant portion of the EA. No deed restrictions stating the existence of the designated EA were placed on the property, and few follow-up visits or letters from the DEQ reminded him over the years that his property was a designated EA .

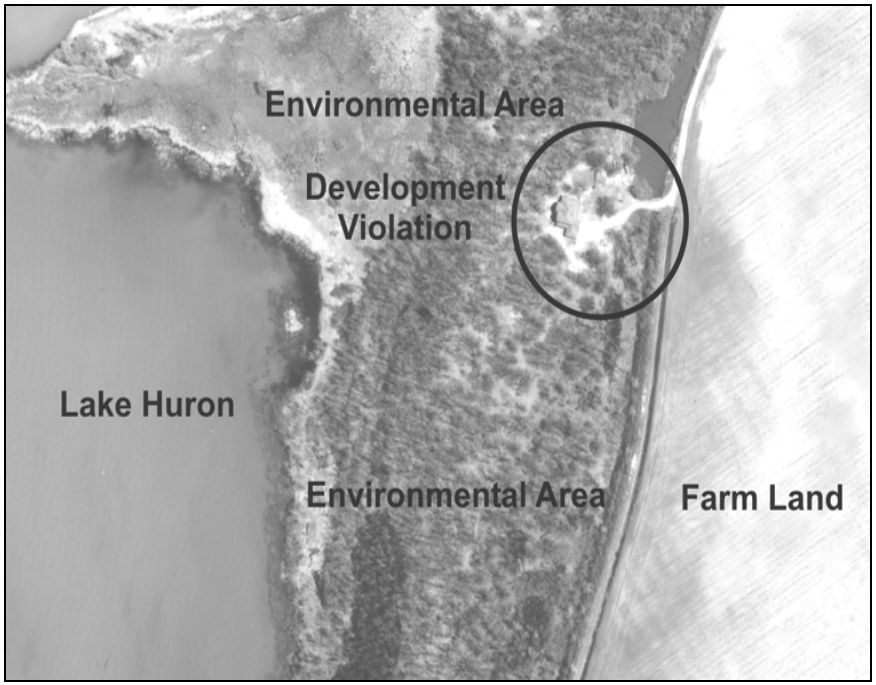
The new owner, pleased with his purchase and preparing to build his own home before building others to sell, sought to obtain building permits from the local government. The local government issued what they believed to be the necessary permits, and the property owner began construction on his new home. The DEQ was never contacted for permit review by the property owner or the local government.

Considered by the new owner as an ideal building site among his vast acreage because of the scenic views and wooded surroundings, he built his home right in the middle of the EA. This aerial photograph from the late 1990's shows where the house is in relation to the EA and surrounding agricultural land. The EA, is the wooded area on the left from the ditch line to the shoreline.

Although this one intrusion may not appear to be an environmental threat, it created a host of problems for the EA including: human disturbance to essential habitat by way of light, noise, pollution, utilities, and outdoor activity. The new resident also planted several non-native plant species—such as autumn olive trees—which are highly invasive and destructive to the native plant community. To make matters worse for this pristine habitat and coastal wetland area, neither the township nor the county had zoning ordinances, land division, or subdivision controls on the surrounding agricultural land. The lack of these land use tools essentially opens the door to destruction of the EA caused by unguided future development and infrastructure.

This situation not only created a dismal outlook from an environmental standpoint, and a lot of stress for the property owner, it also created the potential for numerous lawsuits; none of which presented an appealing scenario to any of the parties involved. Regardless of any legal action or outcomes, it is this vital piece of the ecosystem that ultimately pays the price.

Although not good news for the EA, this case exemplifies the importance of communication between the state and local governments, as well as with property owners. Coordination between the state and local government, deed restrictions, appropriate local zoning—or a combination of all of these actions could have prevented this situation in the first place. As none of these tools were employed in the beginning, the integrity of the resource has been compromised, and may be lost entirely for future generations to enjoy.



SOIL EROSION & SEDIMENTATION CONTROL

While it may be true that a little dirt never hurt anyone, the massive quantity entering our waterways each year is damaging and costly. Consequently, Michigan's Soil Erosion and Sedimentation Control Program (SESC) was implemented in an effort to limit the amount of sediment pollution entering the state's waters by improper construction site management practices. Special measures must be taken at all development sites where there will be a disruption in land cover.

"Cumulative research suggests that excessive sediment in our waterways is the planet's most prevalent contaminant. Sediment accounts for more than 2/3 of all pollutants entering U.S. waterways. Estimates indicate up to $13 billion per year are spent in the U.S. to directly mitigate the off-site impacts of erosion and sediment."

-- Marc Thiesen
Excerpt from Wetlands, Woodlands and Wildlife, the First Annual New England Natural Resources Conference Proceedings, *Land and Water*, 1996.

WHY PROTECT WATER FROM SEDIMENT?

Soil erosion in the context of ecological health is really about water quality. Figure 2.4 illustrates how sediment enters waterways because of soil disturbance. Notice also how isolated activities add up, causing problems for the watershed.

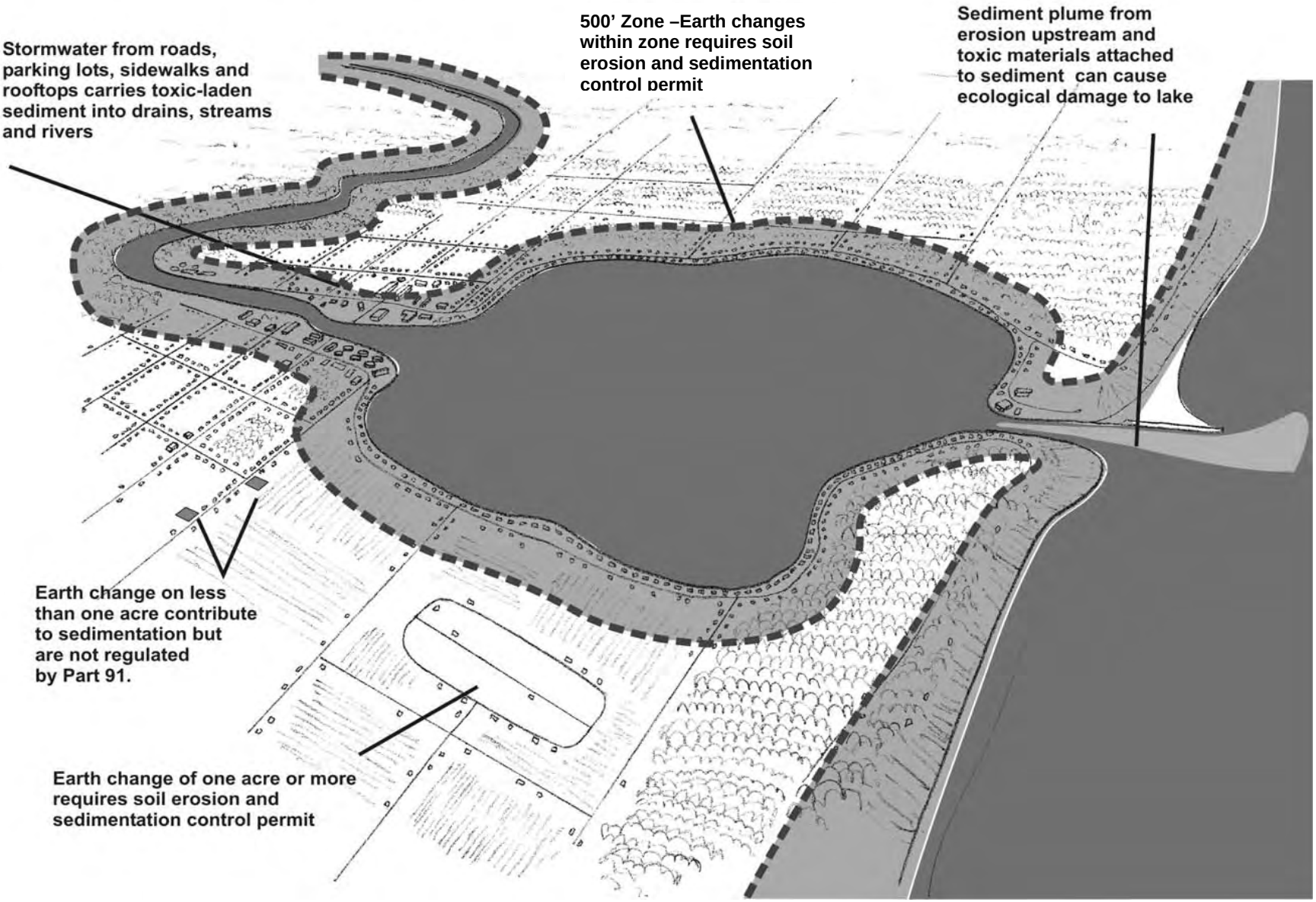
Construction is considered the most damaging phase of development projects for streams and other aquatic resources.[12] Trees, vegetation, and topsoil are usually all removed, and the exposed soil is more prone to erosion. Additionally, heavy equipment compacts underlying soils which limits the ground's natural ability to infiltrate rainfall.[13] All of these activities are detrimental to water quality, and cumulative impacts can be devastating to a watershed.

This stream has been severely degraded because of excessive soil erosion and sedimentation. How much sediment is reaching our waterways? "Four to five billion tons are being deposited in our country's streams each year." –Field & Engle, Purdue University. *Photo: NEMO Project, University of Connecticut.*

What is soil erosion and sedimentation? Soil erosion is a process that occurs when the actions of water, wind, and other factors displace surface soils.[14] In simple terms, it is the process where soil particles are dislodged or detached and put in motion. Sedimentation is the process whereby detached particles generated by erosion are deposited elsewhere. Exacerbated by construction and earth moving activities, eroded soil (sediment) and other large particulate debris that enters waterways after a storm event is problematic for many reasons.

Sedimentation decreases water clarity, degrades fish and wildlife habitat, and adversely impacts water quality. Particularly damaging to water resources are the excess nutrients and contaminants attached to eroded soil, such as fertilizers, and toxics picked up from paved areas. Sediment also decreases water depths in lakes, rivers, and streams.

Figure 2.4. Soil Erosion and Sedimentation



Graphic by John Warbach

Once surface soil is lost to erosion it is nearly impossible to replace—except at great expense.

Sediment is defined by NREPA as, *"solid particulate matter, including both mineral and organic matter, that is in suspension in water, is being transported, or has been removed from its site of origin by the actions of wind, water, or gravity and has been deposited elsewhere."*[15] Four to five billion tons of sediment are being deposited in our country's streams each year. That amount could fill 25,000 football fields, 100 feet high![16] While at least half of this amount is attributed to agricultural practices, the remainder comes from other soil disturbances, primarily from construction activities.[17]

Development projects leave soil prone to erosion. Notice the failing silt fence near the vegetation. *Photo: Ottawa County SESC Agency.*

WHAT IS REGULATED?

Part 91, Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended, regulates only earth change activities. Simply put, Part 91 deals primarily with construction projects. Under current rules, Part 91 requires a permit for, *"earth changes which disturbs 1 or more acres of land or which is within 500 feet of the water's edge of a lake or stream."*[18] Exempted activities include plowing and tilling for crop production, and some logging and mining activities. Most other sources of sediment are addressed separately in Part 31, Water Resources Protection of NREPA, PA 451 of 1994, as amended. For more information, contact the DNRE or the Michigan Department of Agriculture.

WHAT IS NOT REGULATED?

Like other parts of NREPA, Part 91 does not regulate all activities that local governments may want to address in order to protect aquatic resources. For example, earth change activities near wetlands or environmental areas may not require a permit under Part 91, but still need to be protected in order to effectively protect water quality. Part 91 also does not include provisions for other pollutants contained in stormwater runoff. See page 19 for list of common pollutants.

"Municipality," as defined by NREPA, does not include every community in Michigan, only cities, villages, charter townships, and general law townships in counties with a population of 200,000 or more.[19] This limitation may oblige a community not fitting the NREPA definition of municipality to adopt local soil erosion and sedimentation control policy via the enabling legislation rather than through the provision of Part 91.[20] If this is done, however, individuals in the community must still obtain a SESC permit from the county.

As is true for almost all of Michigan's regulated natural features, local governments need to clarify the source of their regulatory authority: NREPA or the Planning and Zoning Enabling Acts.

LOCAL ROLE

Soil erosion and sedimentation control programs are administered by various county agencies. Some cities and townships have their own SESC programs. Counties can administer Part 91 via a resolution or ordinances, whereas municipalities must adopt an ordinance to administer Part 91. To find out which local agencies are responsible for administering Part 91 in your community, visit DNRE's web site: *www.deq.state.mi.us/sesca/.*

The law states that local governments may adopt ordinances that are more stringent than NREPA. Therefore, counties and municipalities can adopt soil erosion and sedimentation control ordinances that require permits for earth change activities not regulated under Part 91 such as activities adjacent to wetlands, storm drains, and other sensitive environmental features, or earth change on less than 1 acre.

Nuts and Bolts of Local Soil Erosion & Sedimentation Control Ordinances

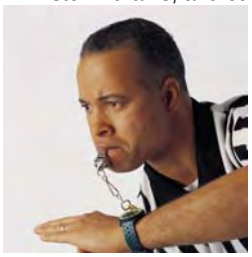
Unlike local wetland ordinances, local soil erosion and sedimentation control ordinances and programs must be approved by the DNRE prior to implementation. District DNRE field staff work with local soil erosion control program administrators throughout the ordinance development and approval process.

Although county and municipal programs can be more restrictive than Part 91, there are limits to what can be required under Part 91. Part 91 grants the state authority to approve *only* what is authorized in the statute, and the administrative rules. Guidance from the Attorney General's office clarifies, *"The DEQ possesses no authority under Part 91 to review and approve portions of a proposed ordinance that deals with issues other than those specifically addressed by Part 91 and the rules promulgated under Part 91."* In other words, the DNRE cannot approve sections of a soil erosion and sedimentation control ordinance that pertain to aspects of stormwater management other than soil erosion control because DNRE does not have the authority to approve any provision that is outside the specific scope of state law.

Amendments to Part 91 required the DNRE to review all soil erosion and sedimentation control programs by January 2004. Local programs not approved by that date were longer be able to administer and enforce Part 91.

NREPA: Local governments can

- ✓ Adopt local ordinance subject to DNRE approval prior to implementation
- ✓ Can require a permit for earth change activities adjacent to wetlands, storm drains, and other sensitive environmental features



Zoning Enabling Acts: Local governments can

- ✓ Adopt stormwater control ordinances that include requirements for on-site stormwater retention and treatment
- ✓ Institute impervious surface limitations within the jurisdiction
- ✓ Require street vacuum or sweep services on a regular basis

Relationship of Local Soil Erosion Regulations and Local Zoning

Sediment is one of many pollutants contained in stormwater runoff. Some communities have incorporated language into their soil erosion control ordinances that addresses all types of stormwater runoff, earth change activities on less than 1 acre, and/or requires a permit for earth change activities near man made watercourses as well as natural water bodies, such as a storm drain.

These progressive management practices are good from an environmental standpoint as they institute greater overall resource protection. However, making sure the ordinance is within the scope of a state law and meets all procedural requirements can be the difference between an "iron clad" policy, or one that may be defeated if legally challenged.

In light of the above technical but important distinction about what NREPA allows state and local officials to regulate, local governments wanting to implement stormwater best management practices and pollution control methods that are not addressed in Part 91 may want to consider other options — even where a county or municipal soil erosion and sedimentation control ordinance is already in place. Overall stormwater management goals can be implemented under a different ordinance, such as separate municipal stormwater ordinance, or stormwater provisions in the zoning codes.

As with other local policies that seek to "protect natural resources," the Planning and Zoning Enabling Acts give local governments the authority to do so. Within master plans, communities can recognize the relationship between stormwater management and water quality.

Pollutants in Polluted Runoff

The focus of water pollution problems has traditionally been on point sources of pollution— direct discharges from industrial facilities, sewage treatment plants and the like. Over the last 30 years, these point sources have been cleaned up considerably due to federal legislation such as the Clean Water Act and many additional state and local efforts. Yet pollution problems persist.

Today, "nonpoint source pollution" or polluted runoff, is the number one water quality problem in the U.S. (U.S. Environmental Protection Agency). Polluted runoff is created when water washes over the land, picks up all sorts of pollutants along the way, and carries them directly to lakes, rivers streams, and even groundwater.

Many officials know about sediment because there has been a lot of guidance and regulation regarding erosion control and sedimentation already. However, it's important to keep in mind that sediment is just one of several nonpoint pollutants that impairs water quality. What we do to control sediment and erosion does not necessarily control for other pollutants as well. Below is a list of some of the most damaging pollutants in runoff.

- Nutrients Ex: nitrogen, phosphorus.
  Sources include: pet waste, livestock waste, fertilizers, septic systems, auto emissions
- Pathogens Ex: harmful bacteria, viruses.
  Sources include: failing septic systems, animal waste, marine sanitation devices
- Sediment Ex: soil, sand.
  Sources include: road sand, construction sites, agricultural fields, disturbed surface areas
- Toxic Contaminants Ex: motor oil, solvents, paint, pesticides.
  Sources include: industrial, commercial, household and agricultural chemicals; auto emissions
- Debris Ex: trash, litter, abandoned objects.
  Sources include: illegal dumping, street litter, beach litter, boating waste, camping, hunting, and fishing waste
- Thermal Stress Ex: alteration in water temperature, increased sun exposure.
  Sources include: runoff from heat-absorbing impervious surfaces (roofs, roads, parking lots), removal of streamside vegetation, shallow water impoundments.

Source: NEMO, "Linking Land Use to Water Quality," University of Connecticut Cooperative Extension, 1993.

An Ounce of Prevention...

As a state certified stormwater inspector, Bob Knox knows the importance of soil erosion and sedimentation control. As the Project Superintendent for W.P.M., Inc. contractor, he knows the importance of doing a job right the first time.

That is why, he says, his crew uses silt sacks and other soil erosion control devices on every job. "At only $60.00 to $80.00 each, it is worth preventing a more costly clean-up after the fact." Preventative measures are not just better from an economic standpoint, they are the best way to protect and improve water quality.

Above: A W.P.M., Inc. employee displays a "silt sack" placed under storm drain grates on and around construction sites to trap sediment and debris. One of many ways to control soil erosion and sedimentation, "It's the first thing we do at a site," he says. On average, the reusable sacks need to be cleaned out once every 4-8 weeks. *Photo: K. Ardizone.*

Subsequent zoning ordinances can then be implemented that support maintaining and improving water quality through buffer strips, reduction in impervious surfaces, and other stormwater best management practices. Police power regulations may be another way to implement stormwater management. More information about police power regulations is found in Part III. Sample soil erosion and sedimentation control ordinances and sample stormwater management ordinances are found in the Appendices.

Case Study
Grand Traverse County

Former Grand Traverse County Drain Commissioner, Maureen Templeton, recognized the importance of maintaining the area's high level of water quality when she first began working for the county in 1985. Not surprisingly, the county's stormwater control program emphasizes pollution prevention.

The county's soil erosion, sedimentation and stormwater control ordinance goes above and beyond state law by incorporating stormwater regulations and requiring permits for development in environmentally sensitive areas and on slopes greater than a 10% grade. Templeton pointed out that there are no major storm sewer systems outside of the city limits. Therefore, the ordinance also requires every commercial development to have on-site stormwater treatment, regardless of the size of development. "Soil disturbances less than one acre and the cumulative impacts of small scale impervious surfaces can be just as damaging to water quality as larger projects," she said.

Although situated along the coast, the majority of streams running through Grand Traverse County are fed by ground water. That is why Templeton's program tries to protect natural hydrology and emphasize infiltration processes as much as possible. Provisions within the ordinance discourage underground systems because they do not allow bio-filtration to occur. The ordinance also safeguards against toxics entering groundwater by requiring two-cell retention basins on projects over five acres in size.

When the county's ordinance was being developed in the late 1980's, there was a great deal of interest and support within the community. Prior to the adoption of the ordinance, developers were required to implement on-site erosion and sediment controls, but without the help of guidelines. The ordinance provided a more comprehensive approach to water quality protection as well as clearly defined guidelines, which were welcomed by developers.

The program is administered through site plan review and site inspection. Templeton found that the vast majority of people are willing to work with county officials to comply with the ordinance. But communities should implement enforcement mechanisms for the few who are not willing to comply with the ordinance. Templeton believed that being tough up front with those who choose not to comply would alleviate the potential for a lengthy legal battle later on. It would also institute greater incentive for those who "do the right thing" initially.

Contrary to "cut and dry" compliance issues related to building inspections or fire codes, soil erosion and sedimentation controls lend themselves to some degree of subjectivity. This is why, said Templeton, it would be a tremendous asset for communities updating or instituting SESC and/or stormwater management ordinances to ask their county attorney's office to outline provisions and consequences for enforcement from the beginning. "There is no 'cookbook' for soil erosion and sedimentation control," explained Templeton. "Clear communication from the county prosecutor about enforcement is essential."

The Grand Traverse County Drain Commission can be reached at: 231-995-6042.

Earth change activities on less than one acre, like the one above, are not generally regulated by the state, yet cumulatively they can be just as damaging to water resources as large-scale projects. Local control over small project sites can lead to tremendous water quality improvements in the watershed. *Photo: K. Ardizone*.

INLAND LAKES and STREAMS

Although Minnesota is known as the "land of 10,000 lakes," it is Michigan that is home of more than 11,000 lakes and ponds. Adding that figure to our 3,288 miles of Great Lakes coastline and 36,000 miles of rivers makes the amount of shoreline in the state staggering. Although the paths of inland lakes and streams waterways lead to the Great Lakes, they are regulated differently than Great Lakes. As a result, proper management of inland lake and stream water quality is tied to the overall ecological health of the watershed, and ultimately the Great Lakes themselves.[21]

WHY PROTECT INLAND LAKES and STREAMS?

Inland lakes and streams provide a host of recreational activities as well as valuable habitat and, in some instances, drinking water. Like most of the natural features discussed in this book, naturally occurring lakes and streams are continuously moving and have cyclical input and output processes. Water enters lakes from the runoff of rain and snowmelt, streams, rivers, and creeks, and from groundwater flow. Water leaves lakes through outlet streams and rivers, groundwater flow, and evaporation.

Inland lakes and streams are often the first indicators of water quality problems within a watershed, as they provide the path for water to move towards its ultimate outlet. The continuous flow of streams and groundwater brings water and the pollution it carries from the highland part of the watershed down to the lakes.[22]

Think of the water moving through a watershed as an empty freight train that picks up garbage at every stop, so that by the time it reaches its destination there is an enormous pile of trash to be deposited. By checking the box cars at the stops along the way, you can get a good indication of the size of the mess that awaits the end of the journey if nothing is done to clean it up before it gets there. Protecting, maintaining, and improving water quality of inland lakes and streams, essentially inspecting the "box cars," is beneficial both environmentally and economically—and is the best way to check up on the overall health of the watershed.

"Each of us is personally responsible for contributing some of the pollutants that run off our lawns, streets and parking lots. (Yet) we seldom take the trouble to measure the cumulative impact of our individual behaviors on the watershed."

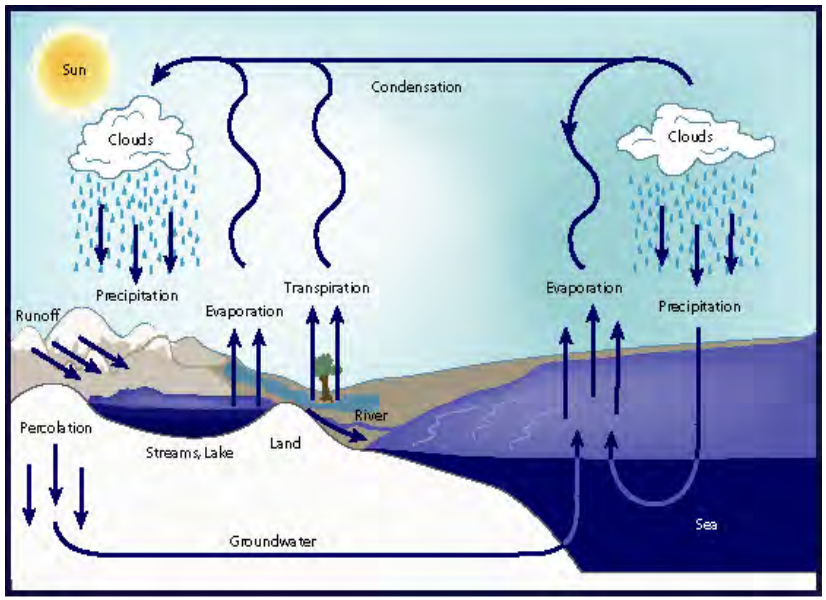
-Tom Scheuler, The Practice of Watershed Protection, Article 126, "Understanding Watershed Behavior," 2000.

Figure 2.5 illustrates the many surrounding land use inputs entering a lake and stream. Although high concentrations of runoff entering water bodies come from adjacent parcels, other parts of the watershed share some of the responsibility. Understanding this process makes it easy to see the link between land use and water quality. Water quality acts as the "report card" of the overall ecological health—and land use patterns–of the entire watershed. *More information about Michigan's water quality standards can be found in Part 31 of NREPA or from DNRE.*

WHAT IS REGULATED?

Inland lakes and streams are regulated under Part 301 and of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended. Critics argue that protection of inland bodies of water has fallen short at the state level. At least part of the reason for this is because state laws address primarily the activities on and in inland lakes and streams. The state rarely approves surrounding land uses, local governments do. Without the ability to protect inland lakes and streams from adverse uses of surrounding land, it is

difficult for the state to effectively protect water quality on its own.



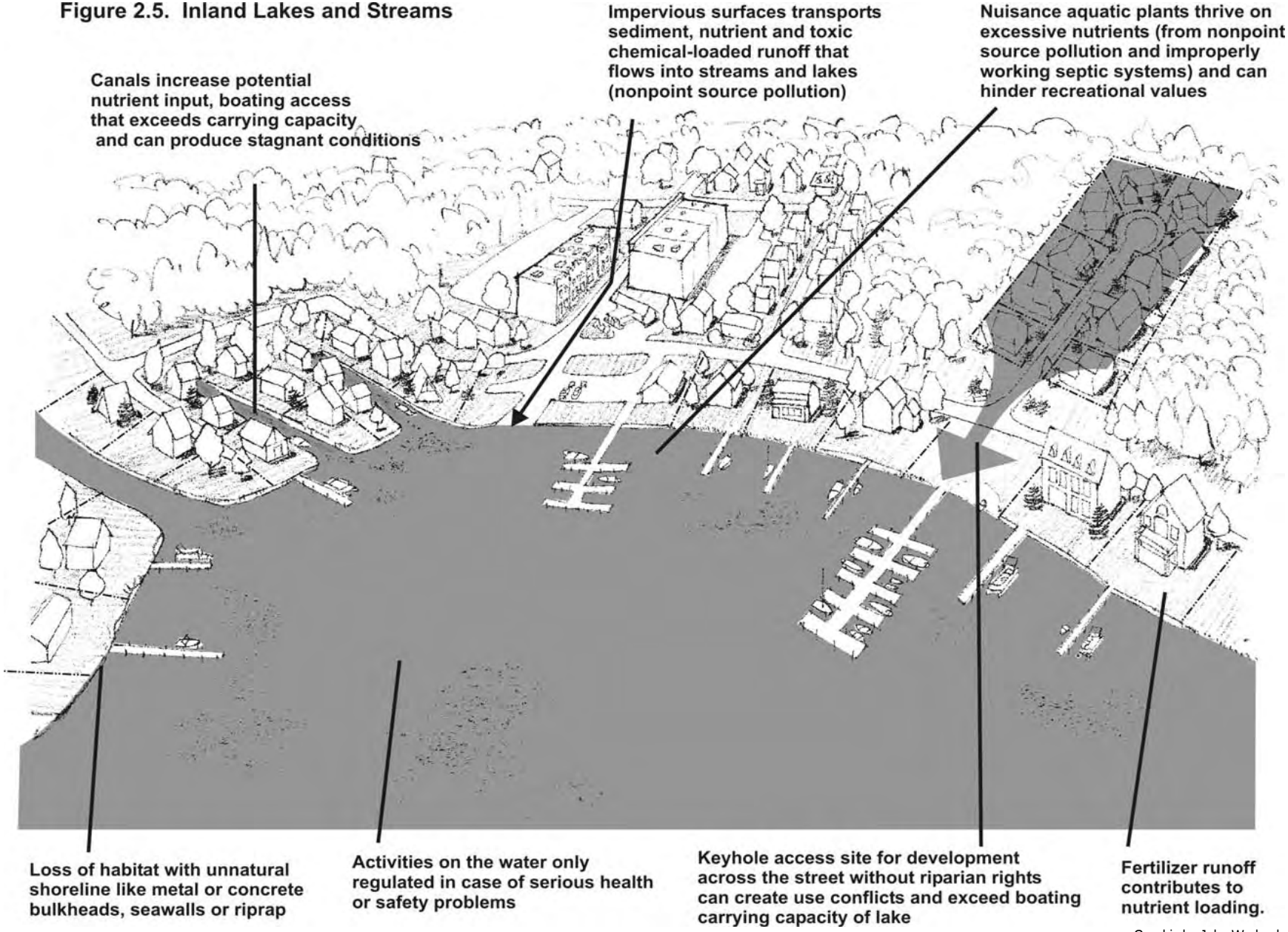
The Water Cycle. Notice how eventually all water moves over – and through – the land. *Source: Athens-Clarke County, GA, Stormwater Management Program.*

Permits are required from DNRE for activities such as construction of permanent docks, or placing fill in the water. In addition to commercial businesses that provide docking or mooring as part of their services, docking or mooring from riparian properties such as outlots, trailer parks, condominium and apartment developments, yacht clubs, and other commonly owned or controlled points of access may meet the definition of a marina under Part 301. More information about state marina regulation can be found on the DNRE's website at *www.mi.gov/marinas* under "Information on Marina Operating Permit Program." Included is information on amendments to Part 301 from PA 139 of 2009 and to Rule 9 of the Administrative Rules for Inland Lakes and Streams.

Although the Department of Natural Resources and Environment issues permits for marina construction and monitors water quality, the DNRE also steps in as regulator when human safety, critical habitat, or threatened and endangered species are at risk. The DNRE does not restrict the type or size of watercraft used on an inland lake or stream unless environmental regulations have been broken, or unless human health or protected species are in harms way as a result. The DNRE Director is permitted to authorize regulation of the number of boats and the size of engines at DNRE access sites if he/she chooses to do so. [See also the sidebar on local watercraft control ordinances at the end of this section.]

Regulating marinas has become increasingly complicated as boating demands rise and regulatory jurisdictions are sometimes unclear. *Photo: Great Lakes Marina.*

Figure 2.5. Inland Lakes and Streams



Graphic by John Warbach

WHAT IS NOT REGULATED?

As mentioned above, land uses surrounding inland lakes and streams are not regulated by the state. Water quality impairments caused by motorboats, stormwater runoff, and septic fields are usually regulated by county or local agencies rather than by the state.

KEYHOLE DEVELOPMENTS

Keyhole development, also called funnel development, is the development of a large parcel that has a relatively small, narrow frontage on a body of water. The small access point is intended for use by many more persons than is typical from a single family lot.[23] Keyholing occurs as a result of a "backlot" property owner purchasing a small, waterfront lot to accommodate access by owners/residents/guests.[24] Typical backlot developments include condominiums, campgrounds, or planned unit developments.

Keyhole developments can be problematic for many reasons. Chief among them is the increased water traffic from boating. Other conflicts include:

- Increase of safety hazards
- Increase in shoreline erosion from an increase in boating activity
- Decrease water quality through increased run-off from high density development
- Increase oil and gas pollution from motor craft engines
- Infringement on adjacent riparians
- Noise[25]

Local governments can alleviate some of the conflicts created by keyhole developments by establishing lot width requirements for access per dwelling unit. Local governments can also set limits on motorized to non-motorized watercraft ratios. More information about keyhole regulations is provided in the Appendices.

LOCAL ROLE

Part 301 states that it is, "The duty of the state to protect the air, water, and other natural resources of this state against pollution, impairment, or destruction." However, all levels of government have jurisdiction and responsibility to promote clean water, which is why protecting lake water quality requires a multifaceted and inter-jurisdictional approach.[26] Considering that the state has limited jurisdiction on

NREPA: Local governments can

- ✓ Conduct local studies related to inland lakes and streams.

Zoning Enabling Acts: Local governments can

- ✓ Regulate keyhole developments
- ✓ Require vegetated buffers around lakes and streams
- ✓ Limit the amount of impervious surfaces near lakes and streams
- ✓ Limit lot splits and control frontage requirements for docks
- ✓ Establish maximum dock lengths
- ✓ Regulate parking, and other facility considerations associated with marinas
- ✓ Adopt setbacks from lakes and streams regarding building, tree-cuting, and mowing to protect natural shorelines.

surrounding land uses, policies implemented by local governments can help–or hurt–inland lake and stream health tremendously.

Because the state does not regulate land use of the watersheds surrounding inland lakes and streams, which is a key factor in determining water quality, the responsibility lies primarily in the hands of local officials and in the personal choices of the state's residents. Stormwater and agricultural management techniques, in addition to lakefront property owner efforts and land use controls, are all essential to protect water quality of inland lakes.[27]

Although all residents in a watershed are responsible for the level of water quality within that watershed, the land use decisions of waterfront property owners are particularly important to inland lake and stream water quality due to their proximity to the water. Riparian owners also have greater control over the inland lakes they surround. Therefore, lake associations are a key player in any discussion about lake issues, and need to be involved in any management planning process.

On public lakes, lake boards can be established by a local unit of government on their own initiative, or by petition of 2/3 of the riparian property owners around the lake.[28] Whether on a public or private lake, lake boards can initiate and fund lake management planning and implementation projects. Watershed councils can also provide technical assistance for inland land and/or watershed management plans.[29]

Lakes provide numerous recreational activities for residents year round. *Photo: D. Kenyon, DNR.*

Fertilizers seep into lake; algae a problem

By Gene Schabath / **The Detroit News**
Sunday, 9/29/02

HARRISON TOWNSHIP – A blanket of mint-green algae that recently covered Campau Bay – south of the Clinton River in Lake St. Clair – is a graphic example of what happens from overuse of lawn and crop fertilizers, said biologist Carl Freeman at Wayne State University.

"The Macomb County Health Department conducts water tests in Campau Bay, and it always has nutrients in it. That's a sign of fertilizers," Freeman said.

The Clinton River also is affected.

"Fertilizers from our lawns and from farms gets washed into the Clinton River, and a lot of it ends up in the lake," said Doug Martz, head of the Macomb Water Quality Board.

Algae growth was so thick that it kept some boaters from the bay, Martz said.

That inconvenience pales in comparison to what happened to Lake Erie in the 1950s and '60s, Freeman said. The amount of phosphorous -- from fertilizers and laundry detergent -- draining into Lake Erie was so plentiful that it contributed to turning Erie into a "dead lake."

"It caused algae to grow horrifically," Freeman said. "When the algae died it used up the oxygen and that asphyxiated the fish. And the dead fish used up more oxygen. That's how Lake Erie died."

Elsewhere, nutrients are being blamed for "dead zones" in the Gulf of Mexico.

"Nutrients stimulate growth in the form of plankton blooms. And when those organisms die, they sink to the bottom and die," according to a report from Ducks Unlimited. "This decay process uses up available dissolved oxygen, causing mobile organisms like fish and shrimp to leave the area. Immobile animals like clams and oysters essentially suffocate."

Reprinted with permission of The Detroit News.

An abundance of algae is usually an indication of excessive nutrients in ponds, inland lakes, and the Great Lakes. Common sources of nutrients include: fertilizers, septic systems, livestock waste, and pet waste. Homeowners can help reduce nutrient loading by cleaning up after pets, properly maintaining septic systems, and reducing – if not eliminating – use of fertilizers in their yards.
Photo: Desotelle Consulting, MN NEMO Project.

PROCEDURES –
LOCAL WATERCRAFT CONTROL ORDINANCE

On certain bodies of water, high speed boaters, water skiers, swimmers, fishermen and others using the waters find that their varied recreational activities generate conflict situations and serious problems. Safety problems not specifically enforceable by the provisions of P.A. 451, 1994, Part 801, as amended are the only marine related issues that will be given consideration for establishing a local ordinance. Issues concerning trespass, disorderly conduct, or damage caused to private property by the wake of vessels are not valid safety considerations for establishing a local ordinance.

Local political subdivisions which believe that special local ordinances of the type authorized by this act are needed on waters in their jurisdiction shall inform the DNRE and request assistance. All such requests shall be in the form of an official resolution approved by a majority of the governing body of the concerned political subdivision. Upon receipt of such resolutions the DNRE shall proceed as required by sections 14 and 15 of Public Act 451, Part 801, Public Acts of 1994, as amended.

The DNRE may initiate investigations and inquiries into the need for special rules for the use of vessels, water skis, water sleds, aquaplanes, surfboards, or other similar contrivances on any of the waters of this state. If controls for such activities are considered necessary, or changes or amendments to or repeal of an existing local ordinance is required. The DNRE may consider a local ordinance at this time. Notice of a public hearing shall be made in a newspaper of general circulation in the area in which the local ordinance is to be considered, amended, or repealed, not less than 10 calendar days before the hearing. Interested persons shall be afforded an opportunity to present their views on the proposed local ordinance either orally or in writing.

A local ordinance proposed pursuant to section 14 shall be submitted to the governing body of the political subdivision in which the controlled waters lie. Within 60 calendar days the governing body shall inform the DNRE that it approves or disapproves of the proposed local ordinance. If the required information is not received within the time specified, the DNRE shall consider the proposed local ordinance disapproved by the governing body. If the governing body disapproves the proposed local ordinance, or if the 60-day period has elapsed without a reply having been received from the governing body, no further action shall be taken. If the governing body approves the proposed local ordinance, the local ordinance shall be enacted identical in all respects to the local ordinance proposed by the DNRE.

For more information contact DNRE Marine Safety Law Enforcement, in Lansing.

Photo: Andrew Shurtleff, ***The Herald News****, 1998.*

NATURAL RIVERS

More than 36,000 miles of rivers and streams wind through Michigan and eventually flow into the Great Lakes. The Natural Rivers Program was adopted in 1970 to preserve, protect, and enhance portions of these wild and wooded landscapes that are home to some of the state's most treasured natural features most valued natural resources.[30] Sixteen rivers have sections designated and managed as natural rivers. The state's Natural Rivers Program is separate from the federal Wild & Scenic River Act of 1968, which applies to a few Michigan rivers on federally owned land.

WHY PROTECT RIVERS?

As discussed in the "Inland Lakes & Streams" section, rivers function as the life-blood of a watershed. The level of water quality in rivers and streams is generally the first test of land use decisions within the watershed as a whole. This is because channelization, excess runoff, soil erosion, and vegetation removal caused by poor land use decisions ultimately degrades water quality.

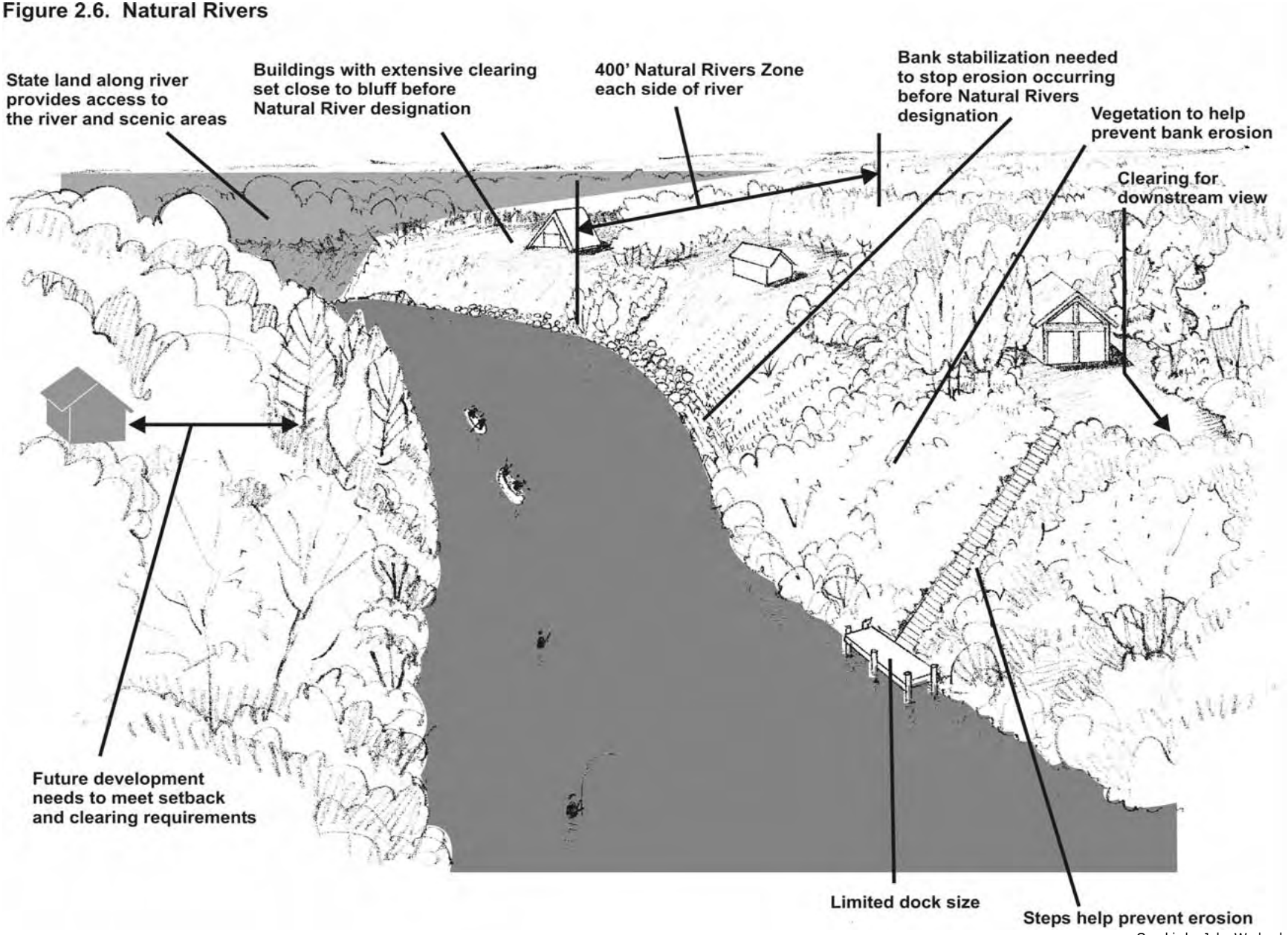
Maintaining our high quality river systems is a crucial component of maintaining the state's 1.5 billion dollar a year fishing industry.

Rivers and streams also serve as a significant source of water replenishment for the Great Lakes, and are critical habitat to numerous fish and wildlife species. Michigan is fortunate to have a number of clean, healthy rivers, and boasts an impressive 12,000 miles of cold water trout streams. But not all of the state's rivers and streams are in such good shape, which is why it is important to protect the condition of the rivers that are. The Natural Rivers Program is one way of ensuring high quality rivers and streams will continue to run through Michigan for future generations.

Beyond serving as a vital link in the water cycle and an important indicator of watershed health, properly managed rivers offer abutting property owners higher property values. Notice in Figure 2.6 how property owners are still able to maintain scenic views and have access to the river in designated areas. Studies conducted in the 1990's by Michigan State University conclude that people who live along the Boardman, Betsie, and other designated Natural Rivers overwhelmingly support the development guidelines because they ensure the quality of the river and raise property values.[31] Maintaining our high quality river systems is also a crucial component of maintaining the state's 1.5 billion dollar a year fishing industry.[32]

Channelization and improper development adjacent to rivers ultimately degrades water quality. *Photo: NEMO Project, University of Connecticut.*

Figure 2.6. Natural Rivers



Graphic by John Warbach

WHAT IS REGULATED?

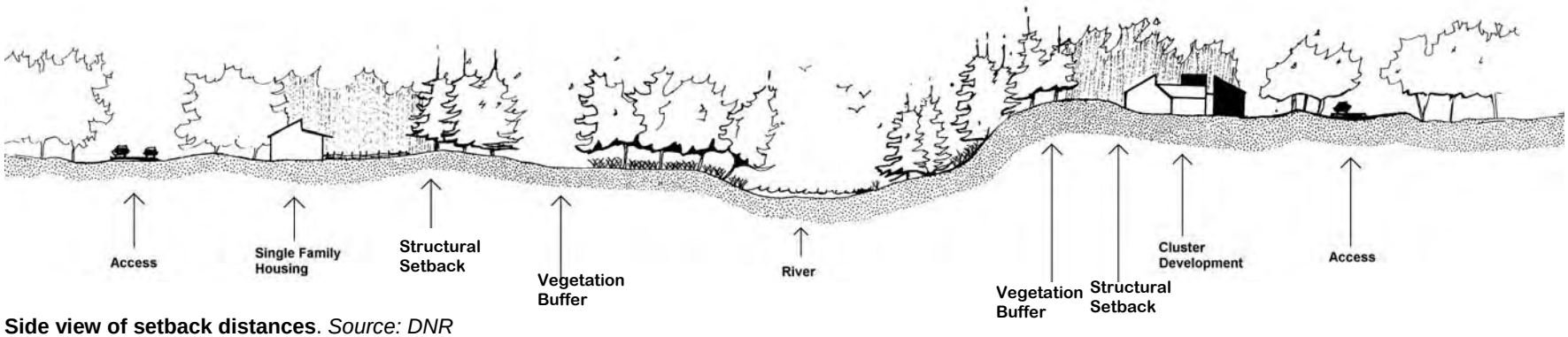
Part 305, Natural Rivers, of the Natural Resources and Environmental Protection Act, PA 451 of 1994, as amended was created, *"for the purpose of preserving and enhancing [a river or portion of a river's] values for water conservation, its free flowing condition, and its fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses."*[33] The primary mechanism employed by the statute to achieve this goal is local zoning.[34] The DNRE is the administering agency of the Natural Rivers Program. [See Map 2.2 illustrating designated Natural Rivers.] Detailed maps of each designated Natural River can be found on the DNRE's website: *http://www.michigan.gov/dnr/0,1607,7-153-30301_31431_31442---,00.html.* See sample ordinance in Appendices.

Through zoning provisions, development plans in designated Natural River areas are required to meet certain construction and septic setback distances from the water, and maintain a vegetated—typically forested—buffer strip of up to 100' wide along the water's edge. For new developments or newly created subdivisions and lot splits, there is generally a minimum lot size requirement of 200' of river frontage, and 1.5 acre lots. Existing properties that do not conform with provisions of Natural River ordinances are "grandparented" as a condition of the program, and therefore are allowed to remain within designated Natural River areas. Condemnation of a private property under Part 305 is specifically prohibited.[35] Ordinances are usually administered locally, but a local government may choose to allow the DNRE to serve as the Natural River ordinance administrator and enforcement entity.

Similar to other local assumption provisions in NREPA, if a local government administers Part 305 it becomes fully responsible for upholding the provisions of the statute and corresponding ordinance, including potential liability if legally challenged. However, Part 305 affords communities a bit more protection for potential legal challenges because the law states, *"Any conflict shall be resolved in favor… of the local unit or the department… in such a manner as to promote the orderly preservation or enhancement of the values of the rivers and related land resources…"*[36] The potential for a regulatory "takings" judgment is also very low, as the statute does not prohibit development in designated areas. A local river protection ordinance, therefore, should not preclude all development—and cannot if it adopts a ordinance under Part 305.

WHAT IS NOT REGULATED?

Although this nationally recognized program has been



Side view of setback distances. *Source: DNR*

Map 2.2

Michigan's Natural Rivers

heralded as a workable balance between development and resource protection through local control, only 2,091 miles are designated as state Natural Rivers—a mere 5.7% of Michigan's riverine system. In many areas with forested, healthy rivers, the need for implementing river protection controls locally may not be obvious. However, as Michigan's population increases, and shifts to rural areas, the threat of damaging this resource is increasingly imminent. Because the Natural Rivers program seeks to protect rivers that are presently in good or excellent condition, the goal of the program is to create development guidelines *before* development proposals are on the table. In other words, the program does not seek to restore degraded rivers. Rather, it establishes guidelines to protect the highest quality rivers and streams to help keep them that way.

The Upper Manistee was recently designated as a Natural River which will help maintain excellent water quality and healthy fish populations. *Photo: Department of Natural Resources.*

Part 305 of NREPA allows agricultural uses of land in designated areas. The rules also permit small businesses, such as home occupations, canoe liveries, rental cabins, and campgrounds in designated areas as long as the applicable local zoning permits are obtained. The program institutes river and streambank management practices in a way that protects water quality, minimizes erosion with mature vegetation root structure, and preserves the aesthetic values of the area.

"Tax Advantages of Natural River Lots"

Natural River zoning increases the value of riverfront property because it protects the natural assets that make the land desirable. Zoning does restrict land uses, such as the number of lots into which an owner can subdivide the land. The Part 305, therefore, instructs local tax assessors to take zoning limitations into account when valuing property. The Act also provides for tax relief, under open space preservation programs, to property owners with farmland or undeveloped land in Natural River zoning districts.

Source: "Natural River Property Values," Fact Sheet 2, Michigan Land Use Institute, www.mlui.org, Benzonia, MI.

LOCAL ROLE

If an area is designated by DNRE as a Natural River, local governments have, in essence "first refusal" to administer the statute. If the local government chooses not to administer the law through the adoption of corresponding zoning ordinances, then the DNRE administers zoning rules that govern activities in the designated area.

ALTERNATIVE APPROACHES TO RIVER PROTECTION

Designation of a Natural River can be a lengthy process if there is not consensus among adjoining townships, or within a region about the desire to pursue river protection through designation. But local governments can often avoid the static that may arise from a highly publicized designation process, or from conflicting views within a river corridor by simply incorporating the key setback and management guidelines in their own zoning ordinances.

There are some benefits to acting locally and avoiding DNRE involvement. One is a greater level of local control. Another is the speed in which policy to protect the resource can be implemented by acting autonomously. Also, what is wanted within one jurisdiction may not be welcomed in another. By implementing development standards locally, regional disputes can be avoided. The DNRE is available to assist communities choosing this route by providing technical assistance if it is requested.[37]

Although from an ecological standpoint it is more effective to protect water quality on a watershed, or regional basis—every little bit helps. Just as there are negative cumulative impacts associated with poor land management, there are positive cumulative impacts associated with resource protection. Starting small, with one jurisdiction, can also motivate surrounding jurisdictions to follow suit—especially when increasing property values and cleaner water are the payoffs. Regardless of acting alone, regionally, or with the state, ultimately the issue is one of protecting natural, free-flowing rivers for current and future generations to enjoy.

Not The Typical Urban Stream
It's clean, quiet, full of fish.

By Andrew Guy: Great Lakes Bulletin News Service 3/5/2002

Rockford, MI -- Anglers eager to hook some of the Great Lakes finest steelhead will travel in the coming weeks from around the Midwest to wade in Michigan's rushing Rogue River. Sport fishing enthusiasts know the clean, cold currents of the Rogue and its spring-fed tributaries sustain a robust brown trout population and attract an exceptional fall salmon run. But the spring migration of steelhead — the silvery-sided, lake roaming relative of the rainbow trout — makes the Rogue one of Michigan's more popular fishing streams.

What's even more spectacular about the Rogue, though, is its location. The stream is born in the wind-stirred forest of the Rogue River State Game Area. From there it stretches through residential neighborhoods, past industrial factories, and into sprawling Grand Rapids — Michigan's second largest city — all the way maintaining its exceptional water quality and lively fishery.

In almost every place in Michigan and across the nation such heavy real estate development pressure has damaged rivers and run out wildlife with erosion and pollution. But west Michigan residents had the foresight nearly 30 years ago to put Michigan's Natural River Act to the test and enacted permanent safeguards that protect the Rogue's scenic and recreational value. They adopted limitations on home building, brush cutting, and other uses of land throughout the river's corridor.

Today, even as Grand Rapids' metropolitan boundary reaches further into the countryside, the Rogue River is a testament to sound public policy and courageous political decisions. It remains a wild and wooded natural attraction for visitors and residents alike and enhances the region's economy and quality of life.

"People know the Rogue is a special river," says Bernice Oosternouse, the proprietor of a one-room riverside outfitter known as O's Bait and Tackle

Shop in Rockford. "Come March everyone will start calling for a fish report. They'll rush right out here as soon as they hear the steelhead are running."

Rockford and the entire region immediately north of Grand Rapids is an increasingly urban environment. "The Rogue is unique because it's close to an urban area, yet we're still able to maintain a quality trout fishery," says Amy Harrington, a fish biologist with the Michigan Department of Natural Resources.

Ms. Harrington says the DNR artificially stocks game fish in the Rogue and that fluctuating water temperature is a serious issue, as it is for any stream. Warm storm water runs off parking lots, roof tops, and other impervious surfaces and, on occasion, can force the Rogue's various trout species to hide out in the cooler waters of upstream tributaries. But for the most part icy springs and vegetated riverbanks keep the stream shaded, clean, and cool.

The typical urban riverbank — stripped of vegetation, crowded by homes and businesses, and covered by water resistant concrete surfaces — fails to slow erosion, filter pollution, or provide shelter for wildlife.

Another once rural Grand Rapids-area community learned this costly lesson in the mid 1990's. Alpine Township's York Creek once sported 29 species of game fish. But relatively unchecked development over the past two decades ultimately choked the stream with sand and pollution. Now only the mighty minnow survives, and the cost to attempt restoration of just one mile of York Creek approached $1 million.

In 1970 the state Legislature created the Michigan Natural Rivers Program to help communities avoid these problems. The law enables local communities to work with the state DNR and maintain pristine rivers and tributaries by setting reasonable restrictions on commercial and residential development.

Citizens throughout the Rogue River system immediately embraced the visionary program and in 1973 the Rogue became the third waterway to be designated a state Natural River. Local townships coordinated their zoning and land use regulations to ensure that, among other things, buildings and septic systems would be setback 150 feet from the river's edge. Today, 132 miles of Rogue River remains locally zoned with environmentally sensitive ordinances.

"Natural River designation is not stopping any development," Harrington says. "But it has helped guide development in a way that protects the river. Beyond that the program doesn't have a whole lot of authority."

Michigan's Natural Rivers Program protects 14 of the state's world class waterways, all of which, like the Rogue, offer a piece of the region's natural heritage. The Au Sable River, designated in 1987, is considered by many the best trout fishery in the Midwest. The Pere Marquette, designated in 1978, is a nationally known blue ribbon trout stream.

"The Natural Rivers Program is not a cure all," says Amy Harrington. *"But it helps. And every little bit helps."*

Article reprinted with permission from Andrew Guy, *Great Lakes Bulletin News*.

FLOODPLAINS

Nearly all Michigan communities face challenges when safeguarding their residents from the damage that can be caused by floods. Floodplain guidance comes from both the state and federal governments and focuses on protecting people and property rather than natural resources.

WHY PROTECT FLOODPLAINS?

As most easily buildable lands have already been developed in many communities, much of the new and future construction in some parts of Michigan is moving to land areas that are not as suitable for development. Floodplains are one of these areas. This shift in development location is doubly problematic for watersheds that have lost extensive amounts of wetlands. Loss of wetlands in and outside of floodplains exacerbates flood events because it decreases the ability of the watershed as a whole to hold water. As discussed earlier in the book, wetlands can hold up to 1.5 million gallons of floodwater per acre—so when they are destroyed, the water that would have been contained within them to prevent flooding is no longer able to be absorbed effectively.

What is a floodplain? A river, stream, lake, or drain may on occasion overflow onto the surrounding banks and inundate adjacent land areas with flood water. The land that is inundated by water as a result of a storm event is defined as a floodplain. The size of the floodplain area is that described by a storm event having a 1% chance of being equaled or exceeded in any given year (it is <u>not</u> a flood which occurs once every hundred years, but is often referred to as a 100 year flood).

WHAT IS REGULATED?

Development in floodplains is regulated under Part 31 Water Resources Protection of NREPA, PA 451, 1994 as amended.

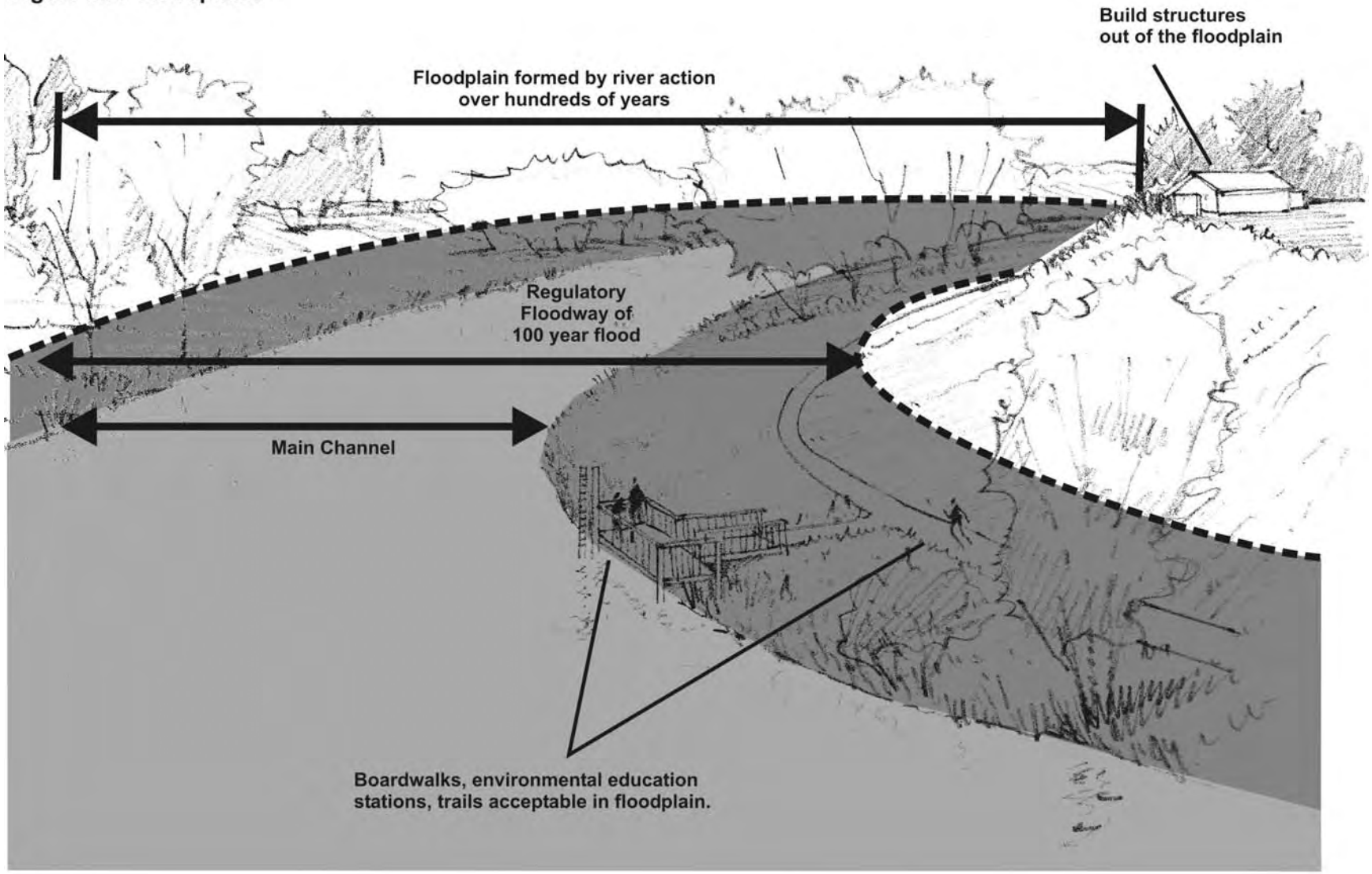
Many communities wisely choose to put parks or other low intensity land uses along floodplains so that property and financial damage is minimized. *Photo: Annette Nealey family archives.*

The purpose of Part 31 is to assure that the flow carrying capacity of a watercourse is not harmfully obstructed, and that the floodway portion of the floodplain is not used for residential construction. Flood Risk Areas, essentially coastal floodplains, are addressed in Part 323, Shorelands Protection and Management, of NREPA.

Floodplain development is also regulated in the State Construction Code (PA 230 of 1972) via the Michigan Residential Code and the Michigan Building Code. Floodplain construction code criteria are applicable to all floodplain areas identified on flood hazard area maps produced by the Federal Emergency Management Agency (FEMA) pursuant to the National Flood Insurance Program and adopted by a community or as regulated by the State's Floodplain Regulatory Authority of Part 31 of NREPA.

Floodplain development in Michigan is generally not prohibited accept in a floodway (see Figure 2.7). Structure elevation is a

Figure 2.7. Floodplains



Graphic by John Warbach

primary construction criteria designed to mitigate flood impacts to structures. The State Construction Code contains a minimum elevation standard for residential structures within floodplains. It requires the lowest floor, including basements, to be one foot or more above the design flood elevation (base flood elevation). For non-residential structures, the lowest floor elevation must be either one foot above the 1% chance flood event flood elevation, or the 0.2% chance flood event flood elevation depending on the type of structure, or such structures must meet established flood proofing requirements.

Although all floodplains are regulated, not all floodplain areas have been mapped in Michigan. Consequently, when an area is being considered for development, the first step is to identify whether or not the property is in a floodplain.

How can communities identify floodplains? One of the biggest concerns for local officials is the dilemma of identifying where floodplains exist within their jurisdictions. Currently, there is no state map showing all floodplain locations. The reason being, that most floodplain maps have been made on an "as needed" basis and are site specific. Available floodplain maps may be obtained on the DNRE's web site, *www.michigan.gov* under, "Floodplain Mapping," or refer to the *"Michigan Quick Guide,"* also available on DNRE's website.

Nearly all of Michigan's coastal communities and approximately 40% of inland communities participate in the National Flood Insurance Program administered by the federal government. To participate in the National Flood Insurance Program a community must first submit an enrollment application and required ordinance and resolutions to DNRE for review, acceptance and forwarding onto FEMA. *For more information about the National Flood Insurance Program, go to the "Floodplain Management" section of http://www.michigan.gov/deq/0,1607,7-135-3313_3684_3725-11268--,00.html.*

For communities that do not participate in the national program, there are essentially two ways to determine if an area is a floodplain. The first option, and the most accurate, is to contact a DNRE District Floodplain Engineer. That individual may make a site visit to assess the area in question. Typically, district engineers process requests from local governments as a priority over private property owners.

The second alternative for a community is to look at a soils map, generally available at low or no cost through the county planning office, on-line through the U.S. Geological Survey, or on the *www.michigan.gov* site. Soils maps identify where hydric soils are present, and can serve as a preliminary method of identifying potential floodplains.

WHAT IS NOT REGULATED?

Regulations pertaining to floodplains are property-based, not resource-based, in nature. Therefore, the goal of the statutes is to protect humans and their personal property from injury or destruction caused by floods. The statutes are not designed to protect the environment or natural resources, beyond maintaining the natural flow of flood waters as much as possible.

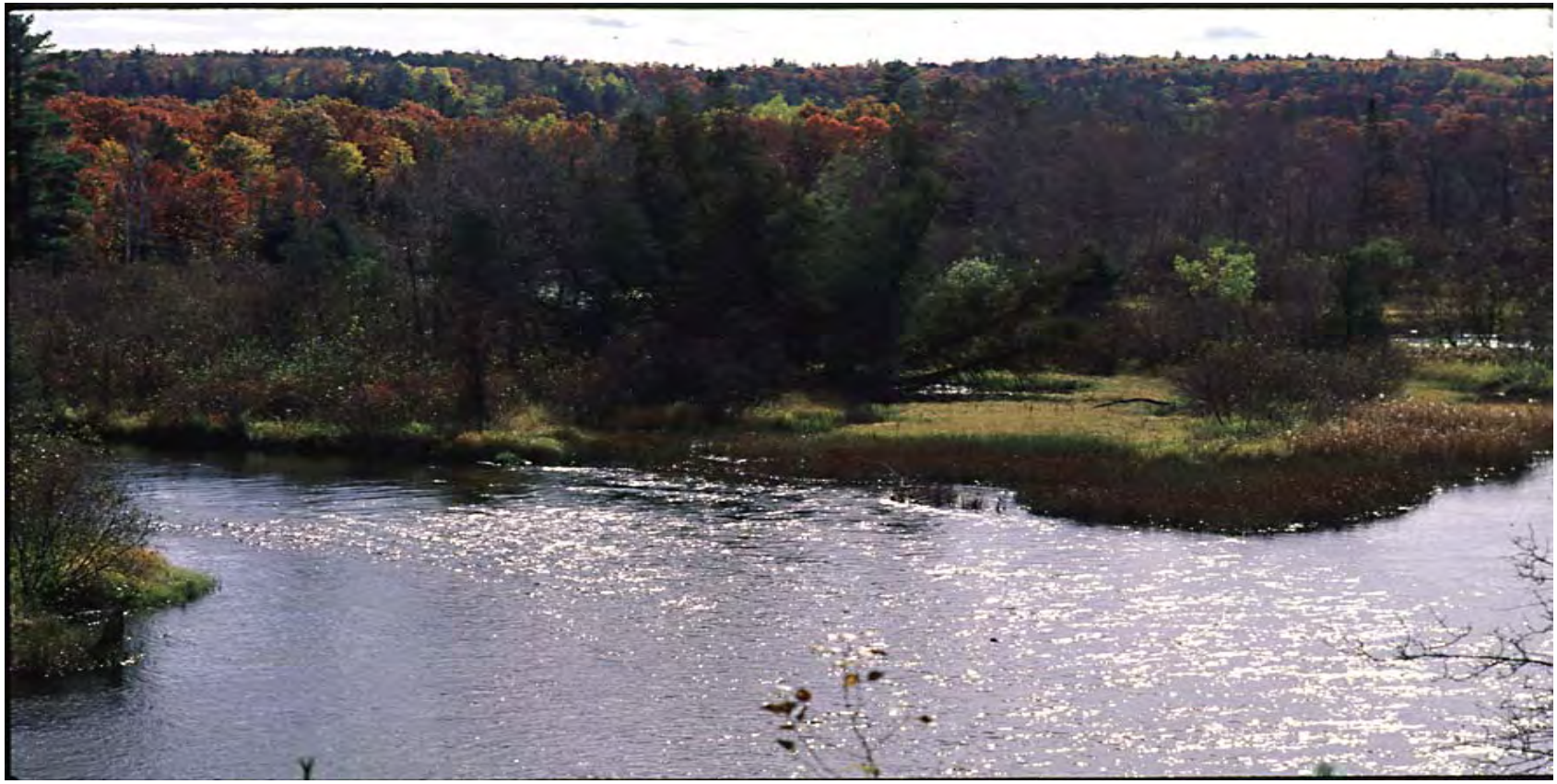
Under Part 31 of NREPA, filling, grading, or construction within the floodplain of a stream or drain with a drainage area of two square miles or more requires a permit from the DNRE regardless of whether a floodplain is mapped or not.

Impervious surfaces, such as pavement or compacted soils, are not regulated—yet they may affect the severity of flood impacts. Likewise, wetland protection and restoration is not specifically addressed in floodplain regulations—yet we know the benefits of wetlands in flood reduction. Therefore, communities are in a position to implement local regulatory and planning tools that alleviate many of the impacts of floods beyond building elevation requirements.

LOCAL ROLE

Many Michigan coastal communities have mapped designated flood risk areas and adopted regulations. These communities have approved zoning ordinances adopted under provisions of Part 323 of NREPA. The DNRE periodically monitors performance and provides technical assistance. As with other local ordinances adopted in accordance with NREPA, they are bound to the provisions of the statute. Communities choosing to include language in an ordinance that addresses impervious surfaces, or more stringent limitations on development plans can do so by adopting an environmentally sensitive area ordinance, site plan review for residential developments, and by enacting greater restrictions within their building codes.

As noted earlier, inland communities not bound by Part 323 of NREPA are still subject to state building codes that require the lowest floor of residential structures to be built at least one foot above the base flood elevation. For inland and coastal communities alike, local building officials are the primary enforcing agent for floodplain management.



Floodplains devoid of development can provide beautiful, scenic areas for a community to enjoy. *Photo: D. Kenyon, DNR.*

Case Study

Building a Prize-Winning Floodplain Program

By Bruce Menery, DEQ

The City of Vassar is located along the Cass River in Tuscola County in the "Thumb" area of Michigan's Lower Peninsula. Since 1904, the City experienced approximately 28 floods. In 1986, Vassar experienced flood levels which exceeded 1% (100-year) frequency estimates, resulting in portions of the City being inundated by up to eight feet of water.

Following the 1986 flood, the City decided against simply rebuilding again and waiting for the next flood. Instead, the City put forth strong efforts to relocate, acquire, and flood-proof buildings within the floodplain. Immediately following the 1986 flood, the City was able to use funds from the National Food Insurance Program (NFIP) and State of Michigan Community Development Block Grants (CDBG) to purchase and remove 16 residential structures from the floodway portion of the floodplain. During times of flooding the floodway will experience moving water and flood depths which make it a hazardous area to occupy.

Due to lack of funding, the flood mitigation effort was put on hold, until 1998, when, with funding from the Federal Emergency Management Agency (FEMA), the City was able to develop a Flood Mitigation Plan. The Plan, which was adopted by the City Council, and approved by the FEMA, included 32 actions that the City could take to reduce flood damages in Vassar. The plan also included an inventory that identified 130 structures within the City as being prone to flooding. By having a plan developed, the City now has guidance to help reduce future flood losses, while also opening a funding mechanism through the FEMA to continue to mitigate flood losses, including purchasing and flood-proofing structures.

In 2001, four flood-prone homes were elevated using FEMA mitigation funding. The funding amounted to 75% of the project cost being picked up by the FEMA, 12.5 % by the City, and the remaining 12.5% coming from the homeowners. As the success of these elevation projects are demonstrated, additional property owners are expected to take advantage of the program.

For their efforts in outstanding floodplain management the City was awarded the Association of State Floodplain Managers' Sheaffer Flood-proofing Award at the Association's 2002 annual meeting in Phoenix, Arizona.

Higher ground: An example of a house that was elevated in Vassar as part of their flood program. Top photo taken prior to elevation; bottom after elevation. *Photos: DEQ.*

HIGH RISK EROSION AREAS

Although some people enjoy life on the edge, development in highly erodible areas puts that kind of excitement in a whole different light. While many homes and other structures have been destroyed along the Great Lakes because of shore erosion processes, erosion is a natural process. The problems result when humans make unwise or uninformed land use decisions.

Source unknown.

WHY PROTECT HIGH RISK EROSION AREAS?

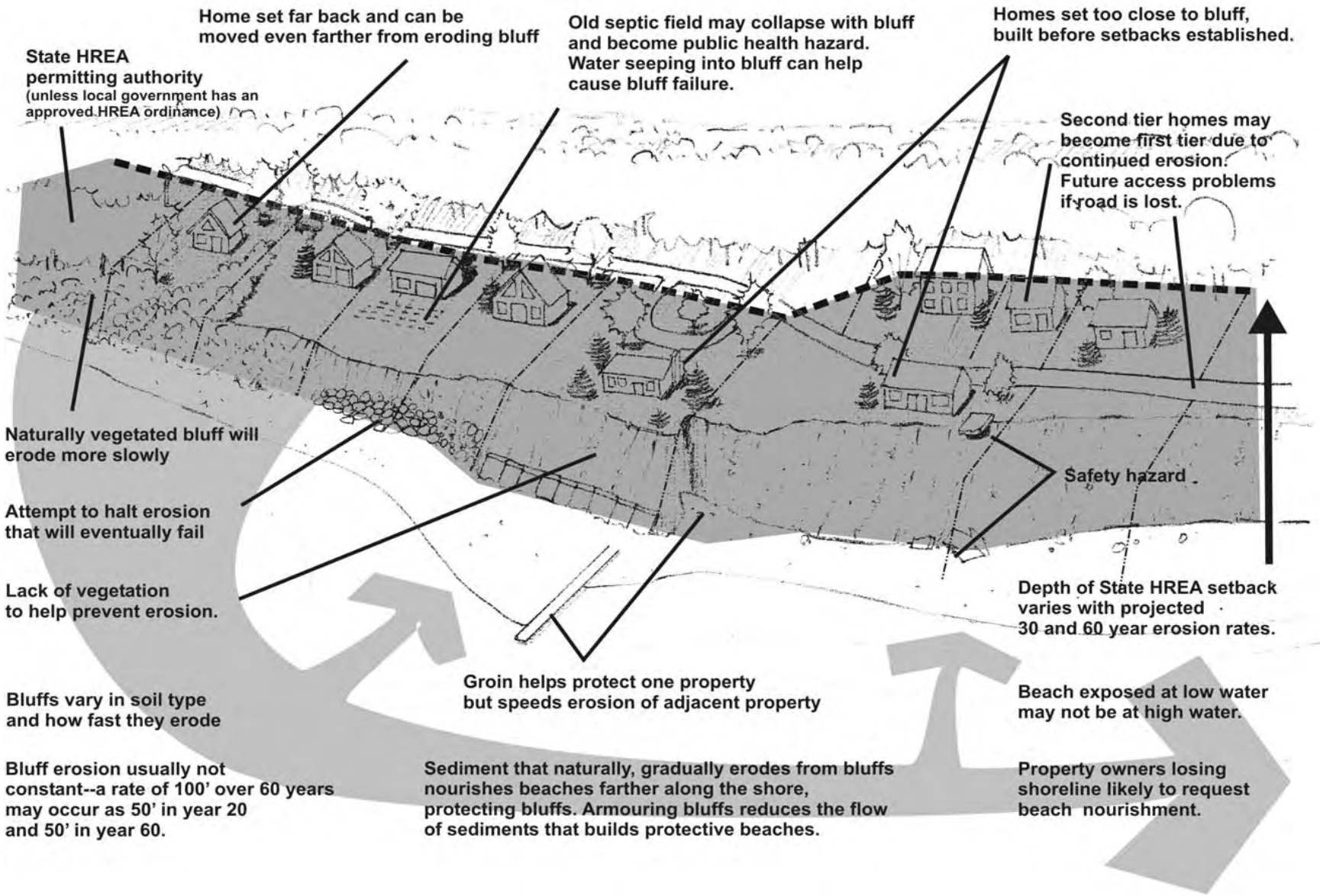
The impetus for regulating high risk erosion areas (HREA) is two-fold. First, state law is intended to reduce the amount of physical and economic damage caused by inappropriate development in these areas. Second, it serves to protect neighboring property owners' interests by curtailing development activities that will adversely affect their property. Notice in Figure 2.8 the many ways in which attempts to artificially control erosion ultimately damages the coastline. Similar to the seat belt law, HREA regulations set out to protect property owners from themselves. HREA regulation is intended to protect the greater good of the state by reducing the need for engineered shore protection structures, and preventing costly clean-up, mitigation, hazards to boats, and increased insurance rates and federal income tax casualty loss deductions for all property owners in the future.

An example of the destruction that can result from inappropriate construction in a HREA. *Photo: DEQ.*

Michigan's coastline and Great Lakes water quality have benefited as a result. Pollution caused by septic fields, and structure debris from homes and commercial development have been prevented from entering the Great Lakes. Development impacts on coastal ecosystems have been reduced as well.

What is a HREA? High risk erosion areas are those shorelands of the Great Lakes and connecting waters where erosion has been documented as occurring at a long-term average rate of one foot or more per year. The erosion can be caused from one or several factors. High water levels, storms, wind, ground water seepage, surface water runoff, and frost are important factors causing erosion. While many of these factors occur naturally, surface water runoff and irresponsible development that increase erosion rates can be lessened or prevented by implementing appropriate land siting standards.

Figure 2.8. High Risk Erosion Areas



Graphic by John Warbach

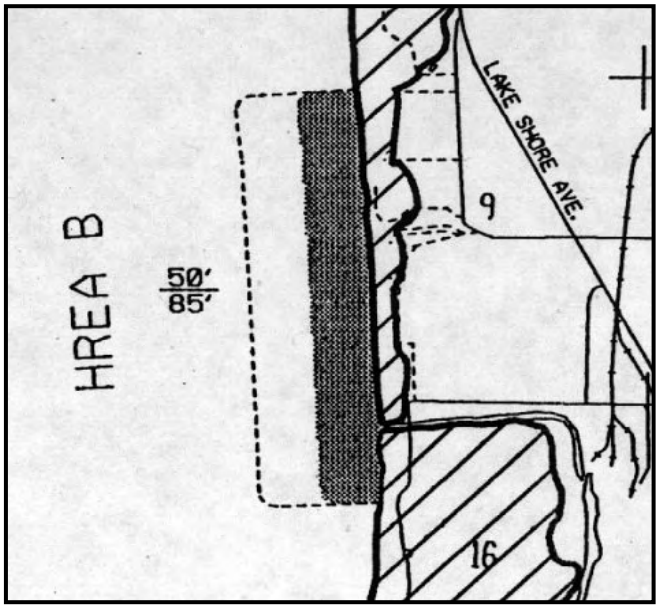
WHAT IS REGULATED?

Approximately 300 miles of Michigan Great Lakes shoreline are classified as high risk erosion areas. Regulations affecting these areas are established in Part 323, Shorelands Protection and Management, of the Natural Resources and Environmental Protection Act, PA 451, 1994 as amended and in associated Administrative Rules. The law and rules establish setbacks for construction projects that are a safe distance from the eroding shoreline in order to prolong the lifespan of the structure. Before discussing permit requirements, it is important to clarify exactly which coastal areas are affected. Map 2.3 shows which townships contain regulated HREAs. However, as update studies are conducted, these areas may change.

How are HREA identified? One of the questions most frequently asked by local officials and property owners is, "How does the DNRE identify HREA?" In a nutshell, the Department compares historic aerial photographs with recent aerial photographs, and then measures the amount of shoreline that has eroded based on the difference between the two. If the amount per year over a minimum 15 year period equals one foot or more, the shoreline meets the definition of a HREA. The standard practice is to use the longest time period available when researching the rate of erosion.

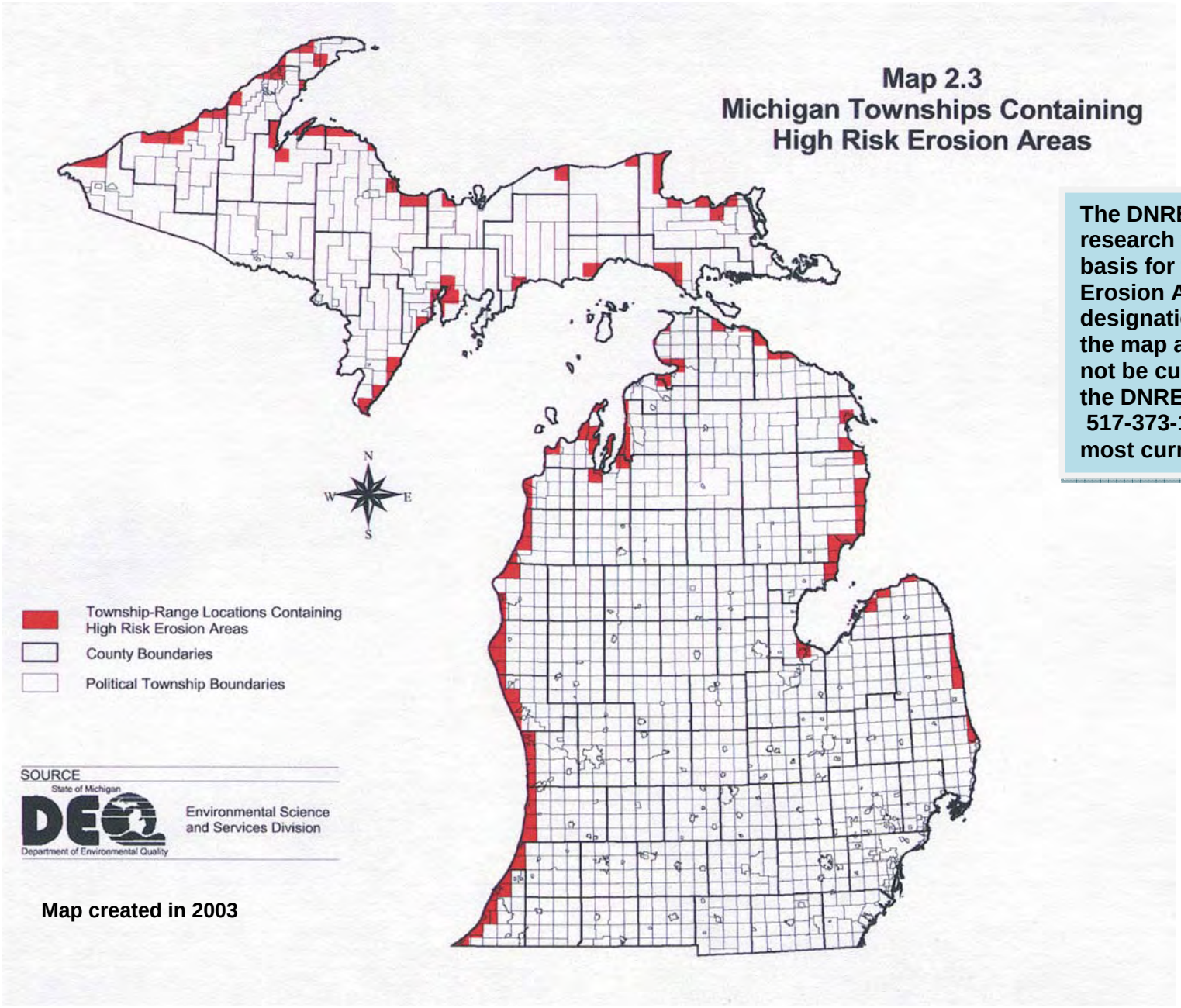
How are setback distances determined? Measurements are taken at transects (between points) every 150 feet along the shoreline. Updates of the recession rate studies are scheduled on a county by county basis to incorporate changing shoreline conditions. It is important to understand that shorelines not designated as HREAs are subject to erosion forces also. The difference is that the research found the average rate of recession was less on these properties.

Once erosion rates are determined, 30 and 60 year setback distances are calculated. Setback measurements are taken from the *erosion hazard line*, which is typically the line of stable vegetation *or the top of the lakeward facing slope,* depending on site conditions. Setback distances are <u>not</u> measured from the water's edge. Setback distances are not the same for all HREAs as they are based on the grouping calculations of transects within similar range.



Example of transect and setback distance delineation. *Source: DEQ.*

What structures are allowable for each setback distance is defined within the statute's administrative rules, and is commonly at the center of disputes that arise during HREA administration. New structures must be located landward of the required setback distance. Whether it is appropriate to use the 30-year or 60-year required setback distance depends on whether the building meets the criteria for a readily-moveable structure and whether there is access to relocate the structure if ever needed. If a building is considered to be "readily moveable," only the 30-year setback distance is required. If not, the 60-year setback distance is required. It is important to keep in mind that the 30 and 60 year setback distances are



The DNRE updates the research which is the basis for the High Risk Erosion Area designations. Therefore, the map as shown may not be current. Contact the DNRE at 517-373-1170 for the most current information.

the *minimum* distance a building must be away from the erosion hazard line. Additional local or even property owner imposed setbacks can help extend the life of the structure.

"What is a Readily Moveable Structure?"

Below are the criteria for a readily moveable structure according to Part 323 of NREPA:

- **First-floor foundation must be less than or equal to 3500 square feet, including an attached garage if there is one.**
- **Foundation must be either crawl space, basement, or pilings.**
- **Above-foundation walls must be stud frame or whole log.**
- **Garage itself, cannot exceed 676 square feet.**
- **Sufficient access for relocation.**
- **Exterior siding may not be solid stone or brick.**

A permit is also required for additions or substantial improvements to existing readily moveable and non-readily moveable structures. For specific considerations, contact the DNRE HREA program.

WHAT IS NOT REGULATED?

So what does it mean for a community or property owner if an area is determined to be a HREA? It may be better to first clarify what it does not mean. It does not mean that existing buildings will have to be moved. It also does not mean that new structures cannot be built on the property except in rare instances.

A permit is required from the DNRE prior to construction or movement of a permanent structure. This includes building a new home or business as well as installation of a septic system, construction of additions to an existing structure, and substantial improvements to existing structures. It is possible to construct some structures under 225 square feet, such as storage sheds, and gazebos without first obtaining a permit. Additionally, swimming pools that are not enclosed do not require a permit. DNRE staff are available to work with property owners to determine the permit requirements for specific parcels.

Shore protection structures: not a long term solution. As depicted in Figure 2.8 and in the case study in this section, attempts to control or alter nature often leads to greater erosion problems in the long run—especially when "hard," shore protection structures (also called shore armor) are used.

Attempts to stop erosion eventually lead to bigger problems for property owners and the environment. *Photo: DEQ*.

Attempts to prevent coastal erosion do not work for the long-term. In fact, many attempts to protect beachfront properties actually accelerate severe erosion problems on adjacent properties. Sea walls, revetments, boulders, and even junk (such as old cars or tires) have been used to alter the natural coastal changes. All attempts eventually lead to greater erosion and ecological damage.[38]

Because erosion is a natural part of the coastal process, the best way to work with the natural system is to place houses and other buildings in a safe location that allows some of the natural erosion processes to occur. Doing so promotes beach formation which will be able to absorb much of the energy brought to the beach by waves, thereby reducing the rate of erosion. [See case study in this section.]

LOCAL ROLE

Under Part 323 of NREPA, local units of government may adopt a zoning ordinance assuming permit authority over high risk erosion areas. If a local government chooses to do so, the ordinance must be at least as restrictive as the state regulations, and the local ordinance must be approved by the DNRE prior to implementation. Once approved and implemented, a local ordinance replaces the need for a state high risk erosion area permit. Rather, the DNRE monitors the performance of the community and provides technical assistance as needed. A copy of the sample HREA ordinance is provided in the Appendices.

Adopting a zoning ordinance is the local tool identified by NREPA for local HREA regulation, but there are additional techniques that local governments can implement to protect these critically fragile and hazardous areas. Additional measures that can be built into local zoning ordinances under the authority provided to local governments by the Zoning Enabling Acts include enacting provisions for:

- Performance standards that are designed to minimize soil and vegetative disruptions in HREA.
- Cluster development that allows structures to be sited in less vulnerable coastal areas, away from HREA.
- Subjecting all development in HREA to special use permits and site plan review requirements.
- More stringent and uniform setback requirements than those required by the DNRE.[39]

NREPA: Local governments can

- ✓ Adopt a DNRE approved local high risk erosion ordinance
- ✓ Increase setback distances

Zoning Enabling Acts: Local governments can

- ✓ Enact soil and vegetation performance standards
- ✓ Cluster development
- ✓ Institute site plan review for all development in HREA
- ✓ Implement land division controls (through Land Division Control Act)

Case Study:

Why Setbacks are Only Half the Battle

Like many stretches of coastline throughout Michigan, Berrien County contains high risk erosion areas along its Lake Michigan frontage. This photograph, taken in 2000 during low water levels, is a good illustration of why setbacks required by Part 323 of NREPA alone are the bare minimums needed to protect property owners and coastal resources.

Notice the land division patterns and their effect on the shoreline. In the bottom half of the picture, dense development has increased the amount of imperviousness near the water, and eliminated the possibility for houses to be placed further from the shore. Consequently, shore armor and revetments–which ultimately lead to greater erosion problems–have been installed in an attempt to protect these properties. Contrast that area with the lots on the top half of the picture that allow for necessary setbacks and also enjoy a beach.

Local governments, not the state, can guide development by implementing land division controls, site plan review, and adopting protective overlay zone ordinances. Local governments can also discourage tree and other mature vegetation removal through site plan review and overlay zones, which will serve to further protect the communities' coastline. Working together, state and local governments can more effectively protect the shore for future generations through a combination of state HREA setback regulations *and* other local zoning considerations. More information about local regulatory tools can be found in Part III.

Photo: MI Department of Environmental Quality.

SAND DUNES

Michigan's majestic sand dunes along the coasts of Lakes Michigan and Superior are one of the state's most defining natural features. Coveted for their beauty, recreational, and industrial benefits, dunes also serve as a crucial transition zone from Great Lakes to inland areas. Many people believe that because Michigan's dunes are such an awesome natural feature, they are protected from destruction. In fact, only one state law attempts to protect the dunes along our coast and it does not provide protection from destruction for all sand dunes.

Michigan's magnificent sand dunes are one of the state's most defining natural features. *Photo: D. Kenyon, DNR.*

WHY PROTECT SAND DUNES?

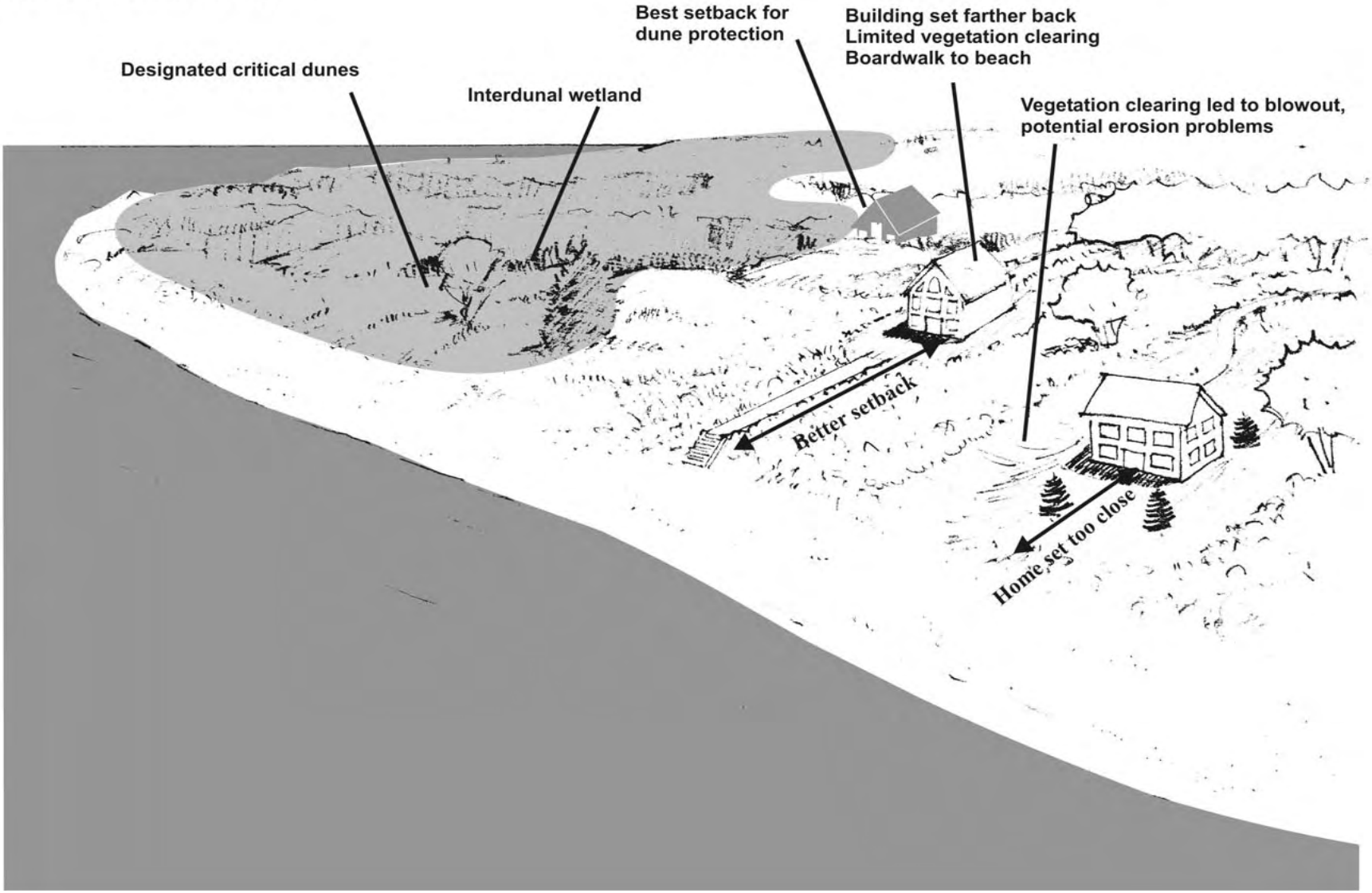
Great Lakes dunes comprise the most extensive freshwater dunes in the world.[40] While it is true that their functions, such as acting as a buffer from storm surges, are a good reason to protect dunes from destruction, it is their ecological and aesthetic uniqueness that lies at the heart of protection efforts. Similar to the rainforest protection campaigns, or save the whale sentiment, most Michigan residents want to protect dunes because of the strong emotional ties associated with them. Simply put, dunes are magnificent to look at, to walk through, to play in. They are home to federally threatened and endangered plant, bird, and insect species. They evoke deep sentiments from most people who believe we should protect them from destruction.

Dunes are continuously moving and changing natural features—not ideal for construction of permanent dwellings. But their beauty and proximity to the shore also make them highly desirable as locations for residential and resort developments. Like all coastal areas in recent years, coastal communities that have sand dunes have experienced tremendous development pressures. As these pressures for development and redevelopment continue to mount, dunes face a greater risk of destruction.

What are sand dunes? Michigan's 270 linear miles of sand dunes were created by three primary factors: sand, wind, and Great Lake water level fluctuations.[41] Dunes are prone to movement and erosion more than other geographic areas because of their formulating factors, and because sand is not a particularly stable soil type. Figure 2.9 illustrates how various types of development disturb sand dunes. Precautionary measures, such as elevated boardwalks and adequate setbacks, help minimize dune destruction.

There are different types of dunes, yet they all have distinct zones. For example, the characteristic zones of the type of dunes found along the west side of the state are the: beach, foredune, interdunal wetland (or trough), and the backdune.[42] Beach and foredune zones, as their names imply, are closest to the water. They are also the most ever-changing zones. Consequently, development in these areas is particularly damaging to coastal ecosystem processes and most at risk from damage by storms.[43]

Figure 2.9. Critical Dunes



Graphic by John Warbach

WHAT IS REGULATED?

There is no federal law pertaining to Great Lake sand dunes, so only state law and optional local regulations can protect these rare and magnificent geologic formations. The Sand Dune Management Act was initially adopted by the state in 1976 to regulate sand mining activities. In 1989, the Act was amended to address dune destruction caused by development. Sand Dune Protection and Management is now contained in Part 353 of NREPA, PA 451 of 1994, as amended. The statute calls for sand dune protection and management in areas that are designated as "Critical Dune Areas" (CDA). Any dunes not designated as CDA may or may not be protected by regulations depending on the presence or absence of local zoning provisions.

Critical dune areas represent some of the most spectacular dune formations in the state, such as Sleeping Bear Dunes. They also represent forested dunes, and other dune formations that do not have the same "high-profile" perception as do towering, shoreline bluffs. Of the nearly 250,000 acres of dunes along Michigan's coast, approximately 70,000 acres are designated as CDA. The remaining 70% of dunes are not regulated unless local governments have implemented protection measures of their own.

The Sand Dune Protection and Management provisions of NREPA require a permit in areas identified as critical dunes for activities including; development, silviculture, and recreational activities. Essentially, anything that causes contour changes or significantly alters the physical characteristic of the dunes in a CDA requires a permit.

Where are critical dunes? Perhaps the most pressing concern for local governments which have sand dunes within their jurisdiction is clarification of what areas are or are not regulated. Map 2.4 illustrates townships that have CDA designations in their boundaries. It is important to note that not necessarily all of the shoreline within a highlighted township is regulated under Part 353. CDA boundaries are shown on maps within the *Atlas of CDAs*. The CDA boundary maps were adopted by the Legislature as part of passage of the Act.

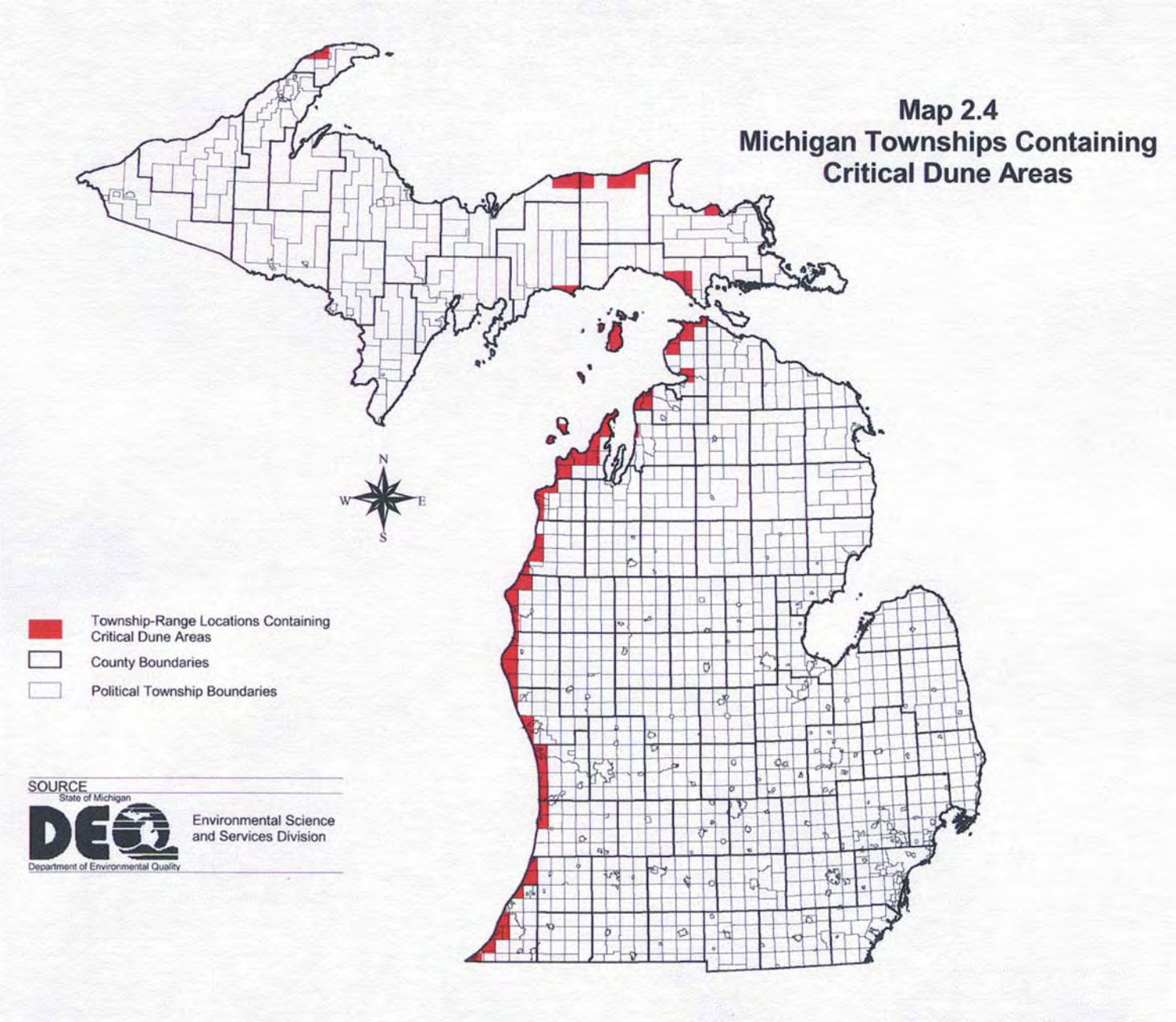
WHAT IS NOT REGULATED?

Any dune that is not designated as CDA, and is not within the jurisdiction of a local shoreline protection ordinance is not protected from the adverse impacts of poor land use plans and development. Additionally, areas that are designated CDA lack oversight of adverse cumulative impacts to a dune system in its entirety. In other words, even within regulated areas that are strictly enforced, dune destruction still occurs because Part 353 regulates dune activities on an individual parcel basis—it does not protect the landscape as a whole.

For example, if there is a mile-long stretch of CDA in which every parcel measures 25-50 feet wide by 150 feet deep, and each is developed with a single family home, the dune system as a whole is still prone to severe damage by the extreme fragmentation of the resource, and the physical impacts of each of those homes and their driveways.

LOCAL ROLE

After the Sand Dune Management Act was amended in 1989, local governments were encouraged to administer the statute. However, there was, and still is, little local incentive to do this. The largest concern facing local administration of Part 353 is that it means local liability if legally challenged. This situation became a reality for Port Sheldon Township, one of the original communities to adopt local administration after the law was originally passed (see case study). A sample CDA ordinance is provided in the Appendices.


Map 2.4
Michigan Townships Containing
Critical Dune Areas
N
W
E
S
Township-Range Locations Containing
Critical Dune Areas
County Boundaries
Political Township Boundaries
SOURCE
State of Michigan
DEQ
Department of Environmental Quality
Environmental Science
and Services Division

CASE STUDY
Port Sheldon Township Example

For years, southwest Michigan's Port Sheldon Township was one of the few local governments to administer Part 353 of NREPA. But in June 2001 township officials repealed the CDA ordinance in response to a takings lawsuit. This unfortunate situation forced the community to explore alternative dune protection options that would help preserve the resource and reduce the chances of the repeating their litigation ordeal. Some communities may have viewed a lawsuit as a dead-end for the program, but Port Sheldon chose to try another route rather than forgo local sand dune protection. The new zoning was adopted unanimously in January 2003.

New zoning classification moves forward

By John Charles Ribbons, *Holland Sentinel* Staff Writer
Web posted Thursday December 5, 2002

Port Sheldon Township's new zoning classification designed to protect the sensitive Lake Michigan shore area is one step from completion.

At a meeting Wednesday, the township planning commission unanimously recommended a map showing the exact locations for the new zoning. A large map is on its way to the township board for final approval. The text of the new zoning, called Lakeshore Residential (LSR), was adopted by the board earlier this year.

Larry Nix, township planning consultant, said the actions on the new zoning illustrate how the public hearing process is alive and well in the township. "We listened to what the public wanted," he said.

The original plan was to rezone the entire Lake Michigan shore area, and east to Lakeshore Drive. Some property owners with tiny lakefront lots objected and asked to have their land removed from the proposed zone. And that's just what Nix and the commission did, removing about 30 percent of the parcels from the targeted area.

The commission also chose not to rezone those areas to avoid creating a bunch of new non-conforming lots, Nix said. Officials feel the move is necessary to protect the special sand dune area, and prevent the shore from getting chopped up into small half-acre lots.

The new zoning is a replacement for Critical Dune rules the township repealed in June 2001 in reaction to litigation. The Lakeshore Residential zone has a minimum lot size of 40,000 square feet, just shy of one acre -- 43,560 square feet. "It lays out nice," said Chairman Ken Souter. Wayne Oosterink, zoning administrator, agreed. "It protects the vital, beautiful areas," he said.

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Regulatory Takings and Sand Dune Protection.
The provisions of Part 353 require a permit for new construction, additions to existing structures, sand removal, driveways and parking areas, contour changes, vegetation removal, and industrial and commercial projects. In most instances, projects can be designed to conform to dune protection requirements. In some cases, these requirements cannot be met. Coastal properties in particular tend to be divided by frontage measured in feet, as opposed to acreage. A number of older platted subdivisions contain lots that measure no more than 25' by 50'. Consequently, some lots may be too small to accommodate placement of a structure or the entire lot may be lakeward of the crest. When these situations arise, the potential for a "regulatory takings" exists.

ALTERNATIVE APPROACHES TO SAND DUNE PROTECTION

Avoiding a nasty lawsuit and still protecting Michigan's dunes for future generations may be a goal that is easier for local governments to attain utilizing alternative approaches. As with all other natural features regulated under NREPA, there is

always the option to protect resources under the Planning and Zoning Enabling Acts. Sand dune protection under Part 353 may not be the most appealing path to take for a local government. Not only because of the threat of a takings lawsuit, but because Part 353 does not address all dunes.

There are a number of tools that can be implemented locally that potentially provide greater resource protection, do not preclude development, and greatly reduce, if not eliminate threat of legal liability to communities that exists under provisions of Part 353. One such mechanism is land division oversight.

As mentioned above, parcelization and land division is very damaging to dune systems because it fragments the ecosystem. Local governments receive authority and are required to review any land division request on parcels less than 40 acres under the Land Division Act, PA 288, 1967. Therefore, local governments can protect dune resources through land division controls. *For more information about implementing land division controls, refer to the land division section in Part III.*

Another mechanism for protecting dunes locally is to implement special overlay zones in coastal areas. Overlays add an extra layer of land use considerations in areas that are of special environmental, historical, or cultural concern. An overlay to protect sand dunes would include:

A. Prohibition of off-road vehicles.
B. Requiring special use permits and associated site plan review for development or redevelopment.
C. Requiring specified setbacks.
D. Use of planned unit or cluster development sited in well-protected, vegetated areas behind the foredune. PUD's and clustering also reduce costs and impacts of development through shared driveways, parking spaces, and more compact utilities.
E. Impervious surface restrictions.
F. Design standards that allow for raised structures, which reduces problems associated with unstable sand.
G. Requirements for use of native vegetation.[44]

NREPA: Local governments can

✓ Assume administration of Part 353 locally, following DNRE approval

Planning & Zoning Enabling Acts: Local governments can

✓ Adopt overlay zoning ordinances
✓ Implement land division and subdivision control guidelines
✓ Require setbacks
✓ Institute site plan review for all development in near shore areas

Redevelopment

Most coastal areas with dunes have been developed, or else are protected as state or federal park properties. Consequently, many development issues pertain to redevelopment. Local governments have it within their power to fit, or retrofit as the case may be, various tools to help alleviate the ecological damage caused by multiple driveways, landscaping practices, and infrastructure demands associated with each parcel. This basically involves approving those projects which have the least negative impacts on the dunes and/or prohibiting those projects or parts of projects that would negatively impact the dunes. This requires great care through ordinance standards and the site plan review process that are sensitive to the natural characteristics of dunes. Sample ordinance language for each of these techniques is found in the Appendices.

Dune protection measures on a parcel-by-parcel basis generally do not protect the integrity of the resource as a whole. Local governments can help address this dilemma with appropriate planning and zoning.
Photo: MI Department of Environment Quality.

Case Study
How Chocolay Township Started Protecting Their Dunes

Prompted by some environmentally destructive development projects along their 6 mile stretch of coastline, the Upper Peninsula's Chocolay Charter Township adopted the "Lake Superior Shoreline/Dune Protection Overlay District" in the summer of 2001. A year later, Township Planning and Research Director Doug Riley said, "It's working extremely well."

When the planning commission began considering the idea in early 2000 they were leery of property owners' response to new coastal regulation. Once the Township board and the planning commission agreed upon the goals of the ordinance, they immediately solicited property owner input. "The property owners literally applauded the planning commission and thanked (the P.C.) for getting their input," Riley said.

The township set out to create local regulations through authority found in the Zoning Enabling Acts—not under Part 353 of NREPA. Implementing policy through this mechanism allowed the township to address local problems, and eliminates the potential for a "takings" judgment against the community.

Riley said that what he and other township residents found most surprising was that the dunes were not regulated. "People with (construction) project plans would ask us if they needed a permit, and were shocked when we, or the DEQ, said 'No.'"

During the initial meeting, in which all 350 property owners were personally invited and approximately 75 attended, Department of Environmental Quality field staff and representatives of the Conservation District helped guide education efforts about the dunes, and dispelled myths about what is regulated and what is not. According to Riley, once people realized the dunes were not protected, they agreed that something should be done. The common concern was over how what one neighbor did could adversely impact the neighboring property and that there should be some type of review prior to significant changes being made to the dune.

Township officials listened to property owners' concerns before drafting final ordinance language. Their goal was to keep the ordinance and the application process as simple as possible to avoid the perception of "too much bureaucracy." Working with property owners helped the township identify the most important features to include in the ordinance so the integrity of the dunes could be protected. The result: a one page ordinance with language that protects mature trees and stabilizing vegetation, implements buffer strips, requires planting dune grass plugs in affected areas, and provides assistance to property owners with development plans.

The key provision of the ordinance is the "Conditional Uses" section. Not only does this section provide clear guidance to applicants, it also requires the township to notify all property owners within 300 feet of the proposed project area and allows those owners to comment on the proposal. With parcels in Chocolay ranging in area from 800 sq. ft. to 20+ acres, Riley has been particularly pleased by how well their overlay ordinance works in the highly developed areas along the coast.

Once the formal language of the ordinance was ready for consideration, a public hearing was held to maintain the community participation that had been essential during the planning process. In total, the ordinance took about a year and a half from the first public meeting to implementation. But Chocolay's efforts have not stopped there. The township recently produced a brochure for property owners that contains information about the ordinance, environmental educational material, and additional resources.

A copy of the overlay district language can be found in the Appendices.

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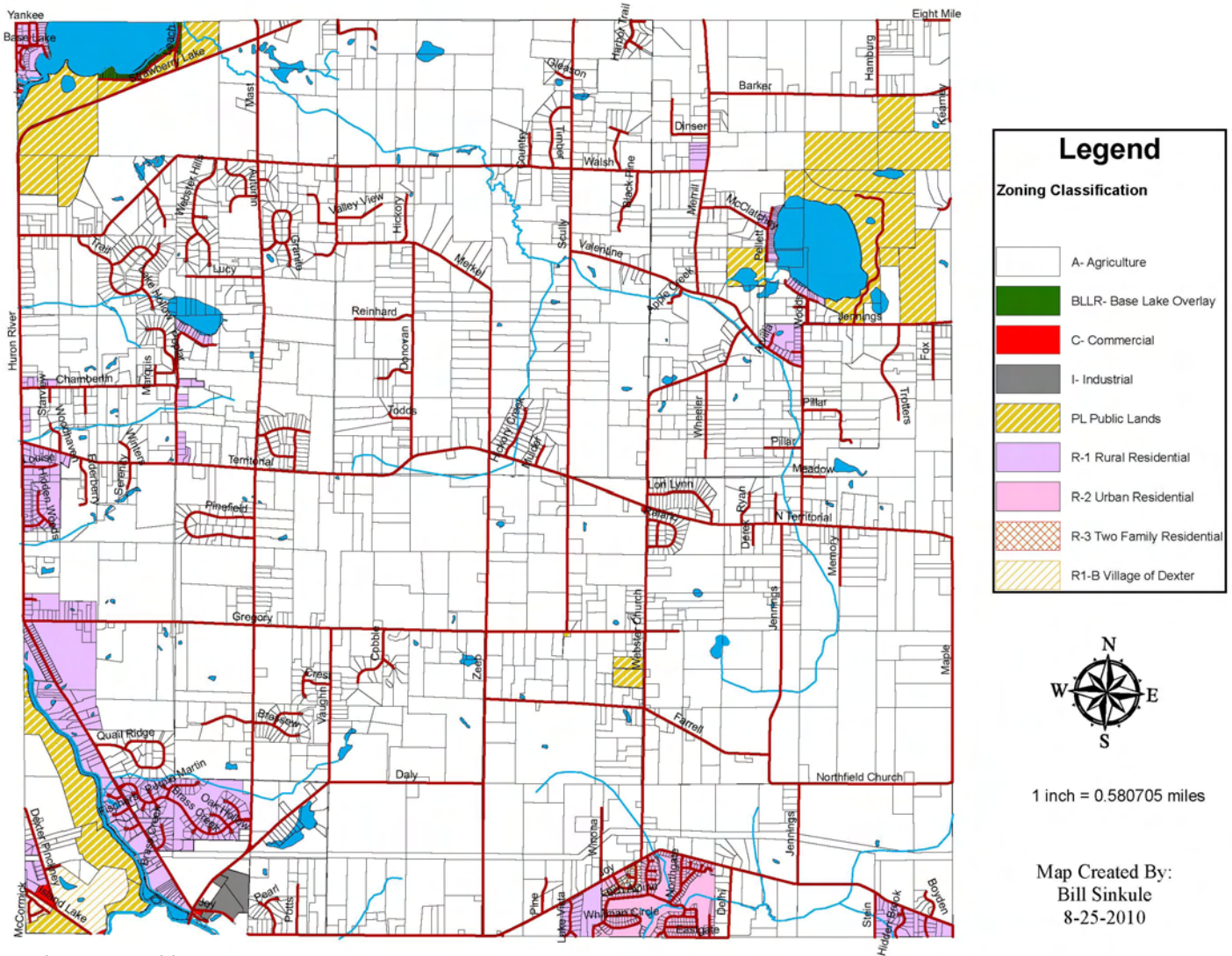
Part III

Local Planning & Zoning

Webster Township Zoning Map



Source: Webster Township

INTRODUCTION

Part I and Part II of this Guidebook described the opportunity that exists for local governments to take affirmative actions to protect specific elements of Michigan's unparalleled natural resources. This Part presents and explains a range of local environmental protection planning and regulatory options available to local government officials. It also presents other simple techniques that can be used to minimize negative impacts of land use decisions on sensitive natural resources.

These techniques can be used separately or in most cases together, to establish the amount of local natural resources protection effort a community is comfortable with. This effort can range from attempting total ecosystem or watershed protection to merely targeting the reduction of stormwater runoff into waterbodies. Every little bit can help, and as explained in Part I, all local government officials have a statutory responsibility to help prevent pollution, impairment or destruction of Michigan's natural resources. Whatever techniques are selected for use need to be crafted with professional planning and legal assistance to fit both the community and its natural resources. Additional reference materials are found in the Appendices.

COORDINATED PLANS AND PLANNING

The first step a local government can take to protect Michigan's natural resources is to prepare a future land use plan in cooperation with neighboring jurisdictions. Future land use plans (also known as master plans) should be based on a comprehensive inventory of natural resources and environmental features. The environment knows no jurisdiction boundaries, and like trying to put a square peg in a round hole, it is not amenable to being "forced" into an artificial box. If one community along a river approves development in a floodplain, downstream communities are likely to be flooded. If one community on a lake adopts keyhole development regulations, but other communities abutting the same lake do not, then achieving the objective of preventing overuse of the surface of the lake is not likely to be achieved. If one community establishes a buffer zone around sensitive environmental areas, but abutting jurisdictions do not, then the benefits of the buffer zone will be limited. These examples demonstrate the importance of communities working cooperatively in the development of plans and implementation programs to protect our natural resources. See the appendices for specific information that needs to be gathered and evaluated as the basis for an environmentally sensitive master plan. The interconnectedness of natural resources and ecosystems with local land use planning and zoning becomes much more apparent with this type of approach.

A master plan sets forth the desired pattern of land uses in the community for the next 20-30 years. It shows where agricultural and forest land should be retained, where new residences, commercial and industrial areas should be constructed. It creates the basis for planning for new roads, sewer and water infrastructure to meet the needs of the land uses displayed on the map. Future land use can work with nature, or against it. Communities can plan to keep development out of floodplains and densities low along waterbodies. They can plan to preserve greenbelts for wildlife and vegetation along waterbodies to help filter stormwater runoff and provide space for trees to shade streams, keeping them cold enough for sportfish like trout. By planning with nature, they can preserve the characteristics of nature that immeasurably add to our quality of life.

Following is a list of key strategies that communities can follow in the development of local master plans to help

protect the environment and natural resources for use and enjoyment by both present and future generations:

- Prepare local master plans based on a comprehensive inventory of natural resources
- Coordinate planning with adjoining jurisdictions
- Keep density and intensity of land use low near and along watercourses
- Avoid developing in sensitive areas like floodplains, wetlands, environmental areas, sand dunes and high risk erosion areas
- Plan for greenbelts and buffers along watercourses
- Provide for links between natural areas so wildlife have safe corridors to move within
- Protect renewable natural resources like farm and forest land in large blocks
- Set forth the specific zoning and other land use regulations that should be adopted to promote wise natural resource management and environmental protection.

The master plan provides the legal foundation for local land use regulations. If the community wishes to protect natural resources and the environment through local land use regulations, then it must have a basis for these regulations in the master plan and then adopt zoning and related regulations consistent with the plan.

LOCAL ZONING

Zoning classifies land uses into zones or districts generally on the basis of land use intensity ranging from “high” (e.g. industrial) to “low” (e.g. nature preserve) intensity. The range of intensity is based largely on environmental impacts and infrastructure needs of the land use.

A zoning map illustrates the location of various zones or districts within a given jurisdiction. Within each zone a range of land uses are permitted by right, or after some special review and approval process. The zoning ordinance establishes development standards for each mapped district. This includes the uses permitted, building height, bulk, lot size, setback, minimum yard and related standards. Zoning is the principal local tool for guiding land use change in a community. If the zoning ordinance has appropriate standards to protect natural resources and minimize harm to the environment as new development occurs, then not only the present generation, but also future generations will benefit.

The next section describes the major regulatory options that communities can choose among to implement environmental and natural resource protection objectives of a local master plan.

MAJOR LOCAL REGULATORY OPTIONS FOR BETTER NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

Following are three regulatory options available to communities to better protect the part of Michigan’s 37 million acres they call home. These options are not mutually exclusive; communities could adopt some or all of the measures in the first option as well as some or all of the second or third options as well, or vice versa. Because of this flexibility and the potential complexity, it is important that properly trained planners and attorneys be involved in adapting sample ordinance language to a community's planning and regulatory structure.

- The first option is model ordinance language that specifically addresses the eight natural resources

discussed in Part II. These models could be adopted as overlay zones in the zoning ordinance, or as a separate ordinance that applies to development in particular locations, in addition to zoning.

- The second option is a series of brief ordinance provisions that address common natural resource and environmental protection concerns. These provisions are commonly found in zoning ordinances across the state.
- The third option focuses on coordinating land use permit review and approval procedures between state Department of Natural Resources and Environment and local zoning authorities. This approach is based on refining the local site plan review procedure (as are some of the techniques in the second option).

Each of these options are described in more detail in the following text.

OPTION 1 – ADOPT MODEL ORDINANCE LANGUAGE TARGETED AT A SINGLE NATURAL RESOURCE

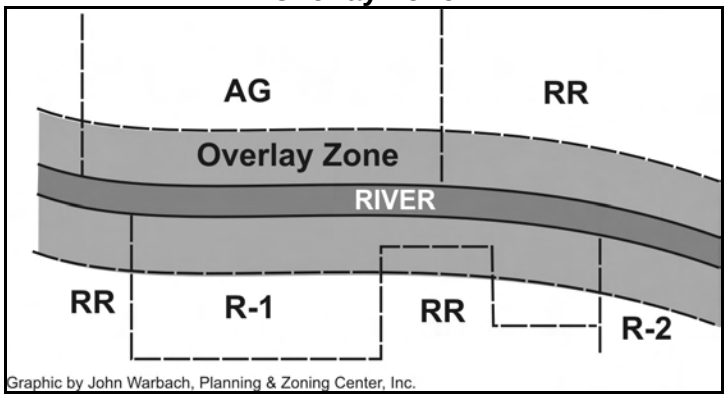
Part II explained the separate statutory authority that exists for local units of government to adopt local regulations to protect the following natural resources:

- Wetlands
- Environmental areas
- Soil erosion and sedimentation control
- Inland lakes and streams
- Natural rivers
- Floodplains
- High risk erosion areas
- Sand dunes.

The Department of Natural Resources, prior to its split into the DNR and Department of Environmental Quality (DEQ) in 1996 (they were recombined into a single entity again in 2009), prepared model ordinance language to guide local governments in the preparation of ordinance language applicable to each of these natural resources–except for environmental areas. These ordinances are included in the Appendices. There are many variations of some of these models. Some model ordinances have been updated since these samples were assembled (notably the sample wetlands ordinance). Check the DNRE website or contact the DNRE for the most current model ordinances.

All but the soil erosion and sedimentation model ordinance language in the Appendix is structured as an overlay zone. An example of an overlay zone is illustrated in Figure 3.1. In an overlay zone the special environmental provisions only apply in a limited area which is usually depicted on a map. For example, the floodplain regulations only apply to the area defined as a floodplain. This is usually an area that may be inundated by a flood with a frequency of occurrence of once each 100 years. The text in Part II explains where to find the mapped area for each of these eight special environments.

Figure 3.1
Overlay Zone



This model ordinance language can be incorporated into a separate section or article of the local zoning ordinance or adopted as an independent police power ordinance. The police power is the power of government to adopt laws that protect the public health, safety and general welfare. A zoning ordinance is a police power regulation, as is a dog license, or noise ordinance. Cities, villages, townships, and to a lesser extent counties in Michigan have authority to adopt police power regulations. The public purpose of the regulation must be stated in the ordinance and must advance one or more aspects of the public health, safety and general welfare. Some communities adopt environmental regulations as separate ordinances outside of the local zoning ordinance in order to "shelter" the zoning ordinance from any legal attacks that may be directed at the ordinance. Should a judge find that the community had adopted or was administering the ordinance improperly, the judge could invalidate all or part of the ordinance without in any way affecting or undermining the integrity of the local zoning ordinance. This is an important consideration in some communities. Another reason that some communities choose to adopt separate police power ordinances is because they do not have to protect nonconforming uses (unless the statute they are operating under specifically requires protecting them). A nonconforming use is one that pre-existed the zoning ordinance or an amendment to the zoning ordinance. Such a use is considered "grandparented" and is allowed to continue in the future in the same manner and to the same extent as it did when it became nonconforming. When nonconforming uses are not protected, then even without a proposed change to the property it could be required to be brought into conformance with the new regulations.

OPTION 2 – ZONING ORDINANCE PROVISIONS THAT TARGET A WIDE RANGE OF ENVIRONMENTAL PROTECTION CONSIDERATIONS

Many local units of government are unwilling to take on the significant administrative responsibilities and potential liability associated with implementation of some or all of the model ordinance language described in the first option above. Nevertheless they cherish protection of Michigan's environment and natural resources as much as the next community and want to do their part in ensuring it is protected. What follows are short, relatively simple approaches to environmental and/or natural resources protection that may be useful in your community. Each is briefly described here and sample ordinance language to implement each approach is included in the Appendices.

Environmental Assessment Requirements

When large projects are proposed or when small projects are proposed in or adjacent to sensitive natural resources, some communities require applicants to submit an environmental assessment which details the impact of the proposed development on natural resources. Communities that have plans and zoning regulations based on a solid environmental inventory are able to set the threshold for future environmental assessments at a defensible level. Without such a basis, an environmental assessment may be considered arbitrary as there is little context for the requirement. An environmental assessment can be a valuable source of information, and in some cases an important tool for ensuring that new development is designed in such a way that unavoidable environmental impacts are properly mitigated. Environmental assessments can also be viewed as an affirmative tool for helping a local government meet its responsibility for preventing pollution, impairment or destruction of the environment. See Appendices.

Fees for Professional Reviews

Small towns and rural townships rarely have the kind of professional staff available to perform a thorough technical review of all the complex elements of many contemporary

development proposals. Everything from issues associated with stormwater retention, sewage disposal or water supply, or the impacts on wetland species from partially filling a wetland for an access road, may be beyond the scope of local zoning staff. In these cases, a community needs to hire outside professionals to perform reviews of development applications to ensure conformance with ordinance requirements. Communities are often unwilling to hire outside experts because they do not want the cost to be borne by existing taxpayers. A recent appellate court decision has demonstrated that a community can collect fees in escrow to pay the cost of professional reviews, provided the community has a provision enabling such fees in its zoning ordinance, and it returns to the applicant any unused fees (see Cornerstone Investments v. Cannon Township, 459 Mich 908 (1998); after remand, 239 Mich App98, 1999). This ruling means no community need go without the professional expertise necessary to ensure a project meets ordinance requirements. See Appendices.

Sensitive Area Protections

Instead of targeting specific natural resources for protection by means of a single regulatory approach (as in Option One above), many communities have folded basic separation distances (setback provisions) into sensitive area or natural features provisions. These regulations list a set of sensitive areas or natural features that exist in the community and then require that all new structures or intensive use areas of the proposed development be set back at least a certain specified distance from the identified natural feature. Such provisions have been applied to shoreline, waterfront, floodplain, wetland, woodland, sand dune, and high risk erosion areas. Because of an Attorney General opinion (No. 6892, March 5, 1996) that says setbacks from wetlands may not be required under a wetland ordinance, but may be required if properly crafted as part of a zoning ordinance regulating natural features, it is important for communities to be very careful about how natural features are defined and how such regulations are crafted. In some ordinances these provisions are called buffer strip or greenbelt provisions. See Appendices.

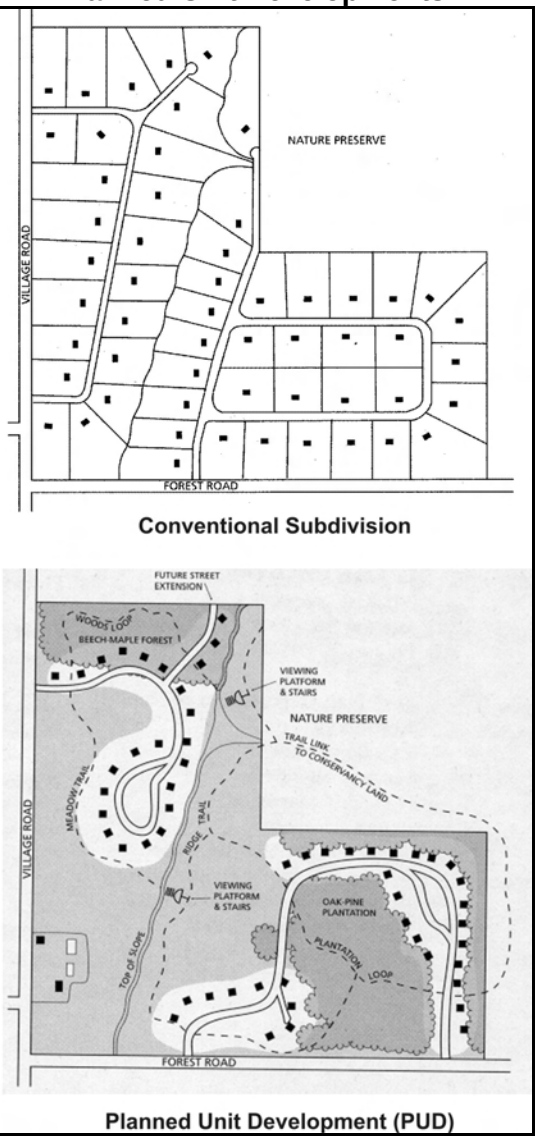
Shoreline Protection Provisions

More refined shoreline provisions may address a host of other environmental protection issues such as the application of fertilizers or weed killers in near shore areas, the trimming of shoreline vegetation for views, prohibitions on removal or replacement of natural shoreline vegetation with grass or ornamental landscaping, or requiring restoration of damaged natural vegetation in near shore areas and the like. These regulations tend to vary dramatically across the state, but for the most part, provide some measure of protection from overuse or removal of natural vegetation near the shore. These may also be called buffer strip or greenbelt provisions. See Appendices.

Planned Unit Developments and Cluster Developments

Planned unit developments (PUDs) and cluster developments are forms of land design that usually focus on integration of the natural features of a site with the new development to be constructed on the site. See Figure 3.2. Most PUDs are largely residential, although increasingly they are mixed use–usually with some commercial uses mixed with residential. The combination of a golf course with a residential subdivision or site condominium is the most common form of PUD in Michigan. Commercial, office and industrial PUDs are also becoming common, especially in urban and suburban locations along freeways. In suburban and rural Michigan, PUDs are increasingly designed around a sensitive natural feature like a small pond or wetland. Good design with a large natural vegetation buffer area around the sensitive resource can result in its protection as an asset to the PUD.

Figure 3.2
Planned Unit Developments



Cluster development is a form of PUD that is usually exclusively residential and surrounded by large amounts of open space. Michigan's Zoning Enabling Act requires many communities to adopt cluster development provisions that permit projects with at least 50% open space in townships and counties and 20% open space in cities and villages by "right". This means without any special review and approval process. Communities can define what constitutes permissible open space, but it cannot include land in a golf course. See MCL 125.3506 in the Michigan Zoning Enabling Act.

PUDs and cluster development can be a very effective way for communities to permit some development in areas with sensitive natural resources without seriously undermining the integrity of the natural features. Notice in Figure 3.2 the difference in land consumption patterns and conserved areas between the conventional subdivision and the PUD. This takes careful design, attention to mitigation, good site plan review standards and experienced professionals reviewing the proposed site plans to get the best result. There are many different sample PUD and cluster development ordinances in use throughout Michigan. One example of each type is found in the Appendices.

Site Plan Review

Next to placing land into various zoning districts, site plan review is the most powerful planning and natural resource protection tool. Easily enforced, site plan review is a way for communities to ensure what is approved on a site plan is what will be built.

A site plan is a plan, drawn to scale, showing the layout of proposed uses and structures. Site plans include lot lines, streets, building sites, existing structures, reserved open space, utilities, and any other required information. Communities can require landscaping information, use of native plant species, on-site stormwater treatment,

percentage of allowable impervious coverage, and a host of other environmental design considerations through the use of site plan review.

The information provided from a natural features inventory comes into play again with the use of site plan review. To effectively address environmental considerations, planning officials must have information on topography, soils, drainage, wetlands, relationship to surrounding land uses and habitat, and a variety of other factors to evaluate a site plan. Thus, maps of environmental features, as well as of public facilities, and land use that is gathered as part of the preparation of the future land use map are critical for implementing site plan review requirements.

Most ordinances automatically call for site plan review of industrial, office, commercial, and multi-family uses. But communities can require that other uses, even uses allowed by right, go through site plan review.

For example, proposed single family home construction in areas where wetlands, critical habitat, sand dunes, or other unique natural features exist, can be regulated to protect these features through the site plan review process. Communities can also adopt provisions addressing preservation of mature trees, preventing light pollution, and other design mechanisms which in turn protect community character.

For environmental as well as aesthetic concerns in a community, site plan review is one of the best overall zoning tools that can be implemented by local governments. Site plan review is a good way of eliminating any development “surprises” and also serves as a mechanism for working with a community’s natural features.
Standards specific to each of the environmental features addressed in Part II and in Option One above, could be included in the local zoning ordinance. In most cases, this would be through buffer zone and greenbelt provisions and implemented through site plan review as described above.

Groundwater Protection Standards

The Michigan Departments of Community Health and Natural Resources and Environment have widely collaborated with hundreds of Michigan communities to develop and implement groundwater protection standards as a part of the local site plan review process. In most cases, communities adopting sample ordinance language also included standards to ensure protection of surface waters from land uses that had the potential to pollute, impair or destroy soil and water resources. These standards have many parallels to the objectives of this publication and the cooperative effort between the state and local governments on this issue has piloted the way for continuing this approach on a wider scale. Groundwater protection standards are fundamental public health and safety measures that should be adopted by local governments throughout the state. See example in Appendices.

OPTION 3 – COORDINATED PERMIT REVIEW AND APPROVAL PROCEDURES

A very effective way to combine the strength of local zoning with the weight of state environmental permitting and enforcement is for local governments to coordinate zoning decisions with the DNRE when sensitive natural features are involved. When local governments have appropriate, but limited environmental protection standards in the zoning ordinance, they can condition final development approval on receipt of necessary permits from the DNRE. This type of coordinated review and approval process helps ensure key environmental and natural resources are protected as new development occurs. Many communities have informally been working with the DNRE this way for years. In some cases, more formal coordinated review procedures

are desirable and can be beneficial to all involved parties. One form for such an agreement is a memorandum of understanding that spells out state and local responsibilities.

This approach is possible because the Michigan Zoning Enabling Act permits local governments to condition approval of zoning permits generally and site plan review specifically, on approvals under statutes administered by other governmental agencies (see MCL 125.3501 (4) and (5).

This approach is especially desirable because local governments can be additional "eyes and ears" for natural resource protection, while leaving the environmental permit and enforcement decisions to the state agencies that have the technical wherewithal, the statutory responsibility and the ability to absorb any liability for the decisions made. For small and rural communities especially, these are huge considerations. In the end, development proposals that do not meet both state environmental standards, and local zoning standards are not approved. Projects whose site plans do meet the standards of both local zoning ordinance and state regulations must be approved.

OTHER ZONING CONSIDERATIONS

Following is a brief description of four other common zoning techniques that have significance as regards to certain decisions affecting natural resource protection and environmental protection.

REZONING

The process of changing from one zoning district classification to another is called rezoning. The most fundamental question which must be asked regarding a rezoning request, is whether the area proposed to be rezoned is an appropriate area for the permitted uses in the proposed zone. Typically, rezoning requests are made for the purpose of increasing the intensity of the use of a parcel. In coastal areas, where there are significant, fragile natural features such as critical habitats, wetlands, and sand dunes, rezoning from a low-intensity use classification to a high-intensity use classification can have devastating ecological impacts.

This is particularly important in areas with access to Blue Star Highway, Red Arrow Highway, and other roadways that parallel the coastline and are vulnerable to high-intensity use development, such as commercial, industrial, and multi-family developments.

SPECIAL LAND USES

Special land uses are uses of land that are allowable within a particular zone only when the proposed activity meets a defined set of standards that are particular to that use and are included in the zoning ordinance. Also called conditional uses, special uses, or special exception uses, site-specific issues can be addressed as opposed to more general considerations in a zone or district.

The dominant land use in a district is usually a use "by right", such as farmland in an agricultural district. Special use provisions can provide communities with the opportunity to control certain activities not allowed "by right", but commonly associated with "by right" uses. Typical special land uses include communication towers, churches, junkyards, private airfields, etc.

Marinas are another type of activity that can be controlled through special land use permits. A community can establish provisions for dock length, number of allowable slips, types of boats, setbacks, and a number of other environmental considerations. By defining special use standards for such activities, local governments can

determine what type of marina will be allowed in their community prior to development.

Special land uses often prompt concerns from the public regarding potential effects on surrounding property values, traffic, noise, litter, and neighborhood character. It is very important for planning officials to consider if a special land use is consistent with the character of the area and is consist with the future land use element of the master plan before permitting them.

VARIANCES

A variance is a legal license to violate the zoning ordinance. If a community grants a variance, it permits one property owner to do something that is otherwise not permitted in the zoning ordinance. As a result, the zoning enabling acts, most zoning ordinances and court cases have a very narrow set of circumstances that must exist before a variance can be lawfully granted. In most cases if a property owner can use the land for the desired use, or place a structure or addition elsewhere on the land without a variance, then the variance is not appropriate. As you can easily see, the improper grant of variances can quickly undermine the integrity of the zoning ordinance. This is even more consequential when the variance has the effect of undermining the integrity of natural resources. For that reason, all of the model ordinances in the Appendices addressing the eight natural resources in Part II, have very restrictive conditions for the grant of variances.

In general, if communities adopt zoning measures to protect natural resources and prevent pollution, impairment or destruction of the environment, they should consider variance requests very carefully and only grant them when not doing so would preclude the land owner from otherwise exercising a lawful property right. Even then, the community should first consult with an array of environmental professionals in the DNRE and with municipal attorneys familiar with zoning and environmental law to ensure the best decision is made.

NONCONFORMING USES

Uses of land that pre-date the zoning ordinance or an ordinance amendment that no longer comply with zoning regulations are called nonconforming uses. Essentially, these uses are protected from changes created by new zoning regulations. Local governments are permitted to restrict or prohibit expansion or structure additions of nonconforming land uses or structures, with the long-term goal of eventually phasing them out.

In coastal areas, even in areas regulated by the state as “critical dune areas” or “high risk erosion areas”, local planning officials have an opportunity to address the rapidly changing dynamic of their shoreline through the manner in which nonconforming uses are regulated. For example, if a nonconforming structure exists on a property and is demolished, a new structure cannot replace it without conforming to the current zoning or other applicable regulations. This situation has become increasingly common in recent years as small coastal cottages are torn down and replaced by much larger single family or multifamily dwellings. This presents an opportunity to gain conformance with ordinance requirements, which should be sensitive to natural resource protection considerations.

LAND DIVISION

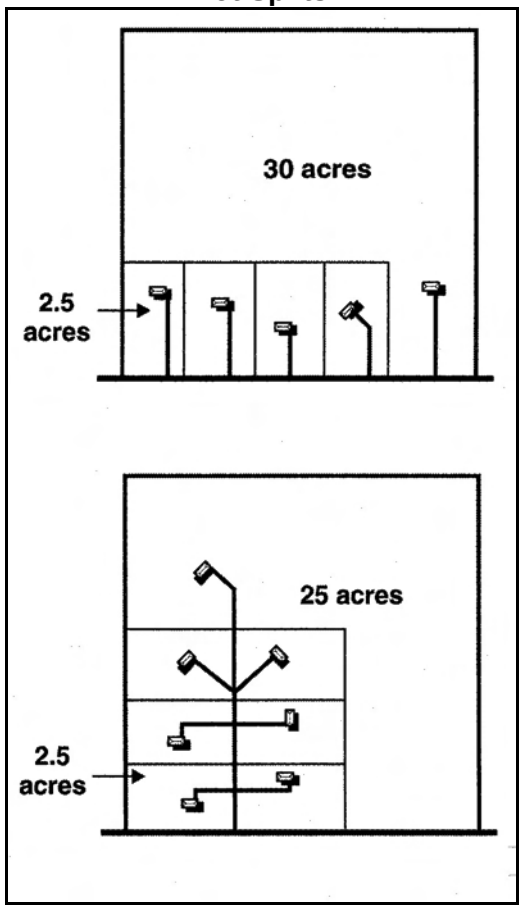
LAND DIVISION AND SUBDIVISION ORDINANCES

Two of the local regulatory tools with the greatest potential to minimize harm in sensitive environmental areas are regulations that apply to land divisions and subdivisions. These are usually two separate ordinances that are linked to the zoning ordinance, but because the authority for them derives from a statute different from the zoning enabling acts, they are adopted as separate ordinances. The first is usually known as a land division ordinance. The second is usually called a subdivision or plat ordinance.

A land division ordinance may be adopted by a local unit of government pursuant to Section 109 of the Land Division Act, Public Act 288 of 1967, as amended (MCL 560.109). A land division ordinance regulates the creation of metes and bounds splits of a parcel of land. See Figure 3.3. A statutory formula in Section 108 specifies the maximum number of splits that are permitted from a "parent parcel" without platting. Bonus lots are permitted for shared access and preservation of open space. Minimum standards for lot size, width-to-depth ratio and relationship to access are provided by statute. All parcel splits smaller than 40 acres in size are required to be reviewed and approved locally before they can be recorded with the county register of deeds. Land divisions being created must also conform with local zoning regulations, provided those regulations are not in conflict with the land division provisions of the Land Division Act.

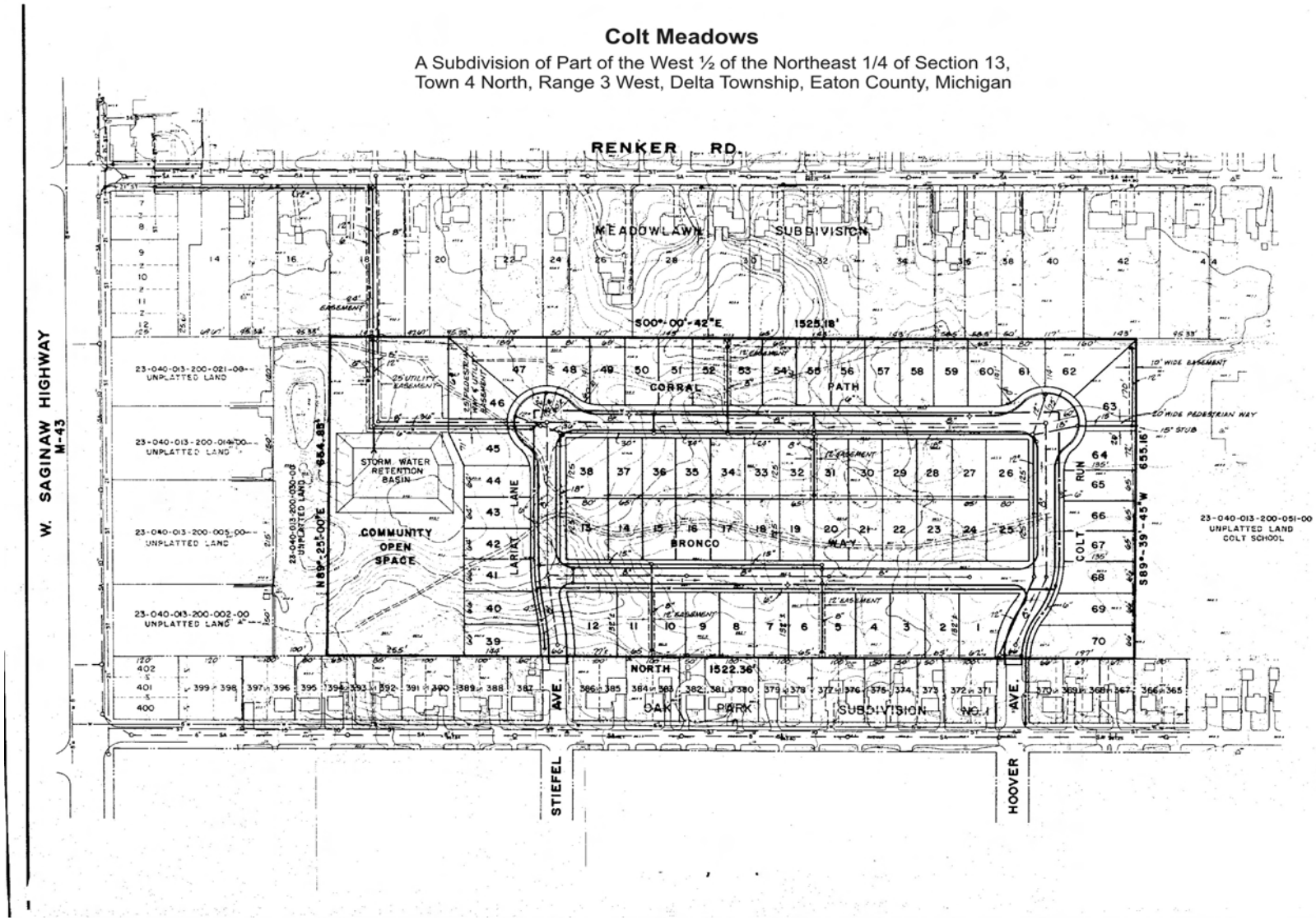
A subdivision ordinance is adopted by a local unit of government to regulate the creation of more splits than are permitted under the land division provisions of the Land Division Act. See Figure 3.4. Section 105 of P.A. 288 of 1967, as amended, provides authority for the adoption of local subdivision ordinances. Developers of platted subdivisions are required to put in public infrastructure such as paved streets, curb, gutter, stormwater, sewer and water pipe, unless exempted by local ordinance. Lots being created must also conform with local zoning regulations, provided those regulations are not in conflict with the platting provisions of the Land Division Act.

Figure 3.3
Lot Splits



Graphic by John Warbach, Planning & Zoning Center, Inc.

Figure 3.4
Platted Subdivision



Graphic courtesy of Delta Township Planning Department.

PROBLEMS THAT CAN BE PREVENTED

The primary environmental issues associated with land divisions and plats relate to lot width, depth, area, access and "buildability" of the lots. Proper review and approval of land divisions and plats can dramatically reduce future problems associated with use of the lots. The process is similar to site plan review described earlier, except that in the case of plats, there are many statutorily required reviews by different entities, including the local government, the county road commission, drain commissioner, State Department of Transportation, and Department of Natural Resources and Environment, depending on the location and characteristics of the parcel being platted.

For example, deep narrow frontage lots along shorelines will often result in long driveways and many structures close to the water. This often translates into considerable impervious surface and water runoff which can carry pollutants, nutrients and warm water into the lake, river, stream or pond. See Figure 3.5.

Shallow lots also often have considerable impervious surface and leave little room to site a structure farther from the shoreline. This may be critical in the case of a high risk erosion area, sand dune, or floodplain. See Figure 3.6.

A parcel size between the two types illustrated in Figures 3.5 and 3.6 is more desirable, especially if each lot is wider along the lake. This will result in less impervious surface and adequate room to locate a structure outside of a floodplain or away from a bluff at high risk of erosion.

Figure 3.5
Long Narrow Waterfront Lots

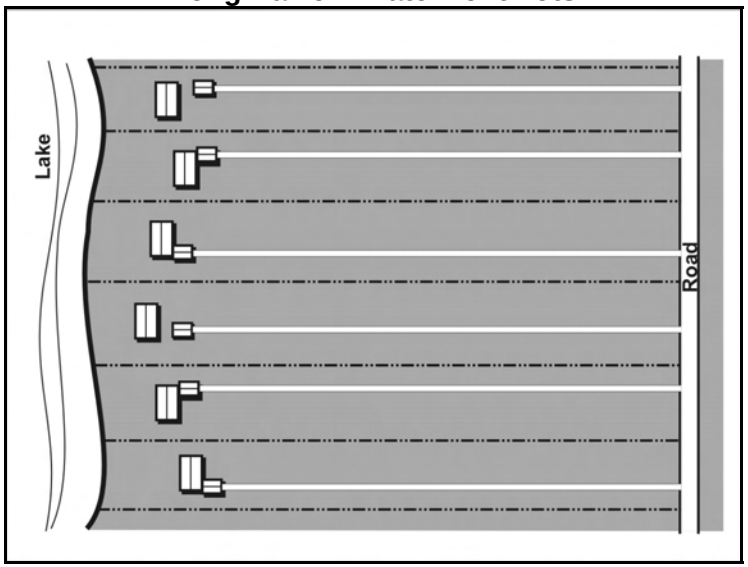
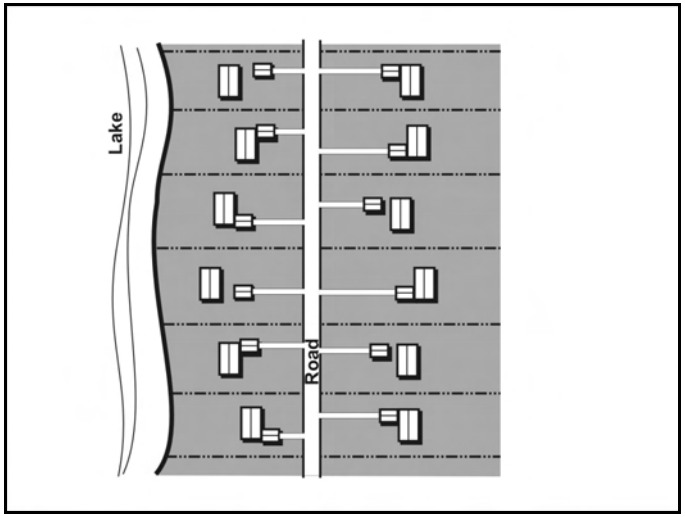


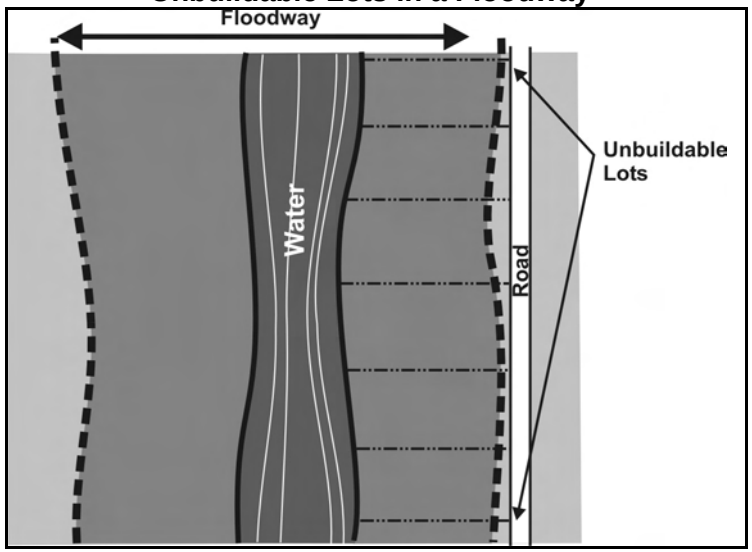
Figure 3.6
Short Narrow Waterfront Lots



Graphics 3.5 and 3.6 by John Warbach, Planning & Zoning Center, Inc.

Total area is a function of lot width and depth, so if one or both are short, then the total area of the parcel will often be small, leaving few options to mitigate potential environmental impacts, such as trying to avoid siting structures in a floodplain. See Figure 3.7.

Figure 3.7
Unbuildable Lots in a Floodway

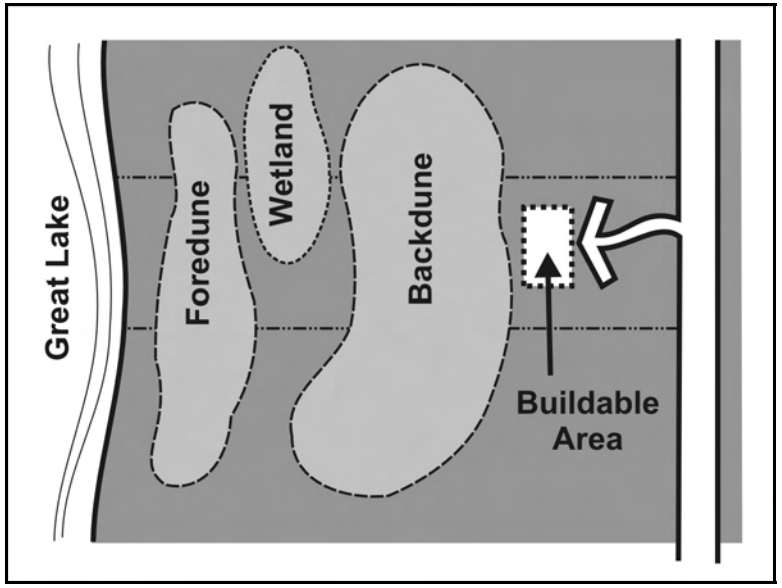


Graphic by John Warbach, Planning & Zoning Center, Inc.

Access is an issue linked to connecting a driveway between a structure and the public or private road leading to the lot. Especially on long narrow lots, such as those in a designated critical dune or environmental area, it may be difficult to site an access road without seriously and negatively impacting the dune or sensitive natural features in the area. See Figure 3.8.

"Buildability" relates to the issue of whether a proposed lot of a certain size and shape results in an area of land on which a permanent residence or other structure may be

Figure 3.8
Buildable Area on Lot in a Designated Critical Dune Area



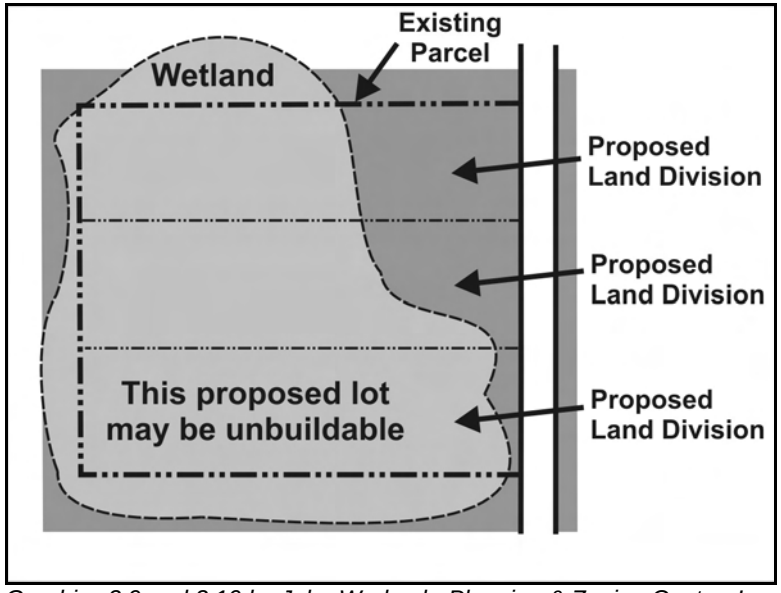
Graphic by John Warbach, Planning & Zoning Center, Inc.

built under existing environmental regulations. For example, a proposed land division of a parcel that is largely wetland and that includes no high ground, may have no place on which a residence and a septic field could be legally sited. See Figure 3.9. Approval of such land divisions undermines the integrity of the environment, of environmental enforcement and sets up multiple governmental agencies for potential takings claims.

On the other hand, ensuring that a lot is "buildable" under all applicable regulations prior to approval, not only protects the environment, but also plays an important consumer protection function—people can buy a lot that is "buildable". Unfortunately, the land division provisions of Section 109 of the Land Division Act can be read to prohibit a community from denying approval of a proposed land division on the

grounds it is not “buildable”, under local zoning or various environmental regulations. As a result, many communities feel obliged to approve such land divisions, but then file a notice with the County Register of Deeds that such a lot does not conform with other applicable regulations, and if it were purchased for a building use, such as for a residence or business, that such a request would be denied. This is a very awkward way to protect the consumer, but appears to be the only lawful way to do so under Section 109. Michigan appellate courts have upheld a township zoning regulation prohibiting counting unbuildable area on a site due to wetlands when calculating permitted density. See Frericks v.Highland Twp. 228 Mich App 575, appeal denied, 459 Mich 966 (1999).

Figure 3.9
Division of Land With Wetlands Should Not Result in Creation of Unbuildable Lots



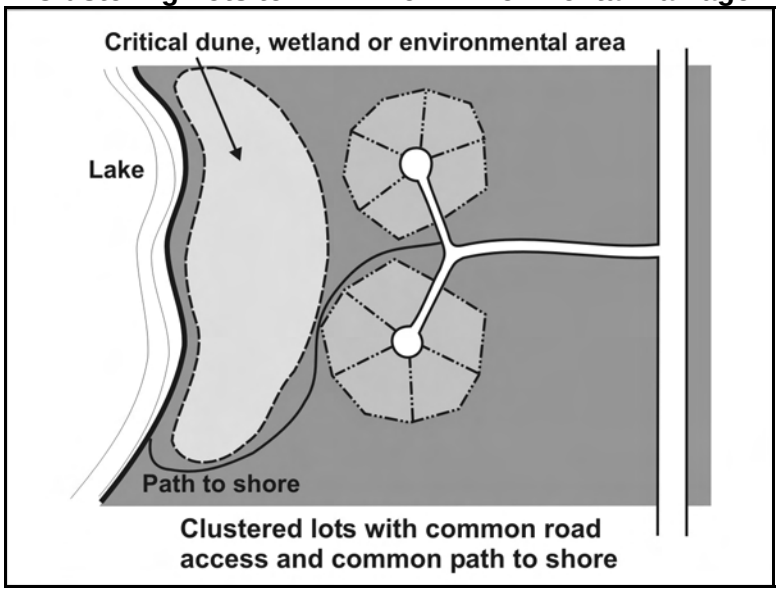
Graphics 3.9 and 3.10 by John Warbach, Planning & Zoning Center, Inc.

Proactive Measures

The best proactive measures a community can take to prevent the creation of lots that do not undermine the integrity of the environment and are “buildable”, are listed below:

- Adopt and consistently administer land division regulations
- Adopt and consistently administer subdivision regulations
- Try to persuade landowners who propose to create “unbuildable” lots not to do so. If unsuccessful, file a notice with the County Register of Deeds that runs with “unbuildable” parcels that informs purchasers of the unique status of such lots

Figure 3.10
Clustering Lots to Minimize Environmental Damage



- Put provisions in the shoreline district provisions or shoreline overlay provisions of the zoning ordinance which:
  - Require wide and deep lots with shared access — unless;
  - Lots are clustered with all the common open space along the shoreline, sensitive environmental areas are avoided and all access is shared. See Figure 3.10.

PUBLIC SPENDING AND CAPITAL IMPROVEMENT PROGRAMS

Another important way to protect sensitive natural features is to watch how, where and when the public spends money on public facilities. Where new public facilities are constructed, and where they are not can have profound effects on natural resources. The extension of sewer and water lines into a sensitive environmental area, like a sand dune, or the construction of a new road along a large wetland complex will have significant long term impacts–many of which could be negative. At the same time, the construction of a sewer line around an inland lake being contaminated by leaking septic tanks can help restore water quality in the lake. Communities that work with nature avoid creating the conditions which promote intensive development in areas with a large area of sensitive natural features.

Large capital improvements should be planned to meet future needs and should be based on the master plan–just as zoning should be. When the master plan has a solid foundation on a natural features inventory, future land uses will be planned in locations to avoid negative impacts on sensitive natural features. Subsequently, future capital improvements will then be located to accommodate needed community growth in locations that do not negatively affect sensitive natural features. The best tool for planning for future public improvements is the capital improvement program or CIP. This is a schedule of proposed capital improvements for the next 5-6 years. It specifies where the facilities are proposed to be located, what their cost will be, the means of financing and when they will be constructed. Each year the CIP is updated. This process permits plenty of time to examine the CIP for its environmental friendliness and to ensure that public investments aid, rather than diminish, the quality of local natural resources.

OTHER KEY SOURCES FOR MORE GUIDANCE

The interested reader is encouraged to consult the **Community Planning Handbook** available from the Michigan Chapter of the American Planning Association and **Land Use Tools and Techniques: A Handbook for Local Communities** published by the Southeast Michigan Council of Governments for additional information on the techniques in Part III. Other useful references include: **Michigan Planning Guidebook**, the **Michigan Zoning Guidebook**, and **Michigan Laws Relating to Planning**. Each is available from the Planning & Zoning Center at Michigan State University, www.pzcenter.msu.edu .

Michigan
DNRE
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE