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THE MICHIGAN RIPARIAN

DEVOTED TO THE MANAGEMENT AND WISE USE OF MICHIGAN'S LAKES AND STREAMS

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DEVILS LAKE AND ROUND LAKE
LENAWEE COUNTY

THE MICHIGAN RIPARIAN

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EDITORIAL and BUSINESS OFFICE: 124½ N. Main Street, P.O. Box 249, Three Rivers, MI 49093.

TELEPHONE: 616-273-8200

FAX: 616-273-2919

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EDITORIAL

Don Winne

INLAND LAKES AT RISK

The trend of development of shoreline of inland lakes in townships that do not have restrictive ordinances is damaging to our lakes. People want to build houses as close to the water's edge as possible. Many cut down trees and other vegetation between their house and lake to give them a broad open view of the lake. Extensive concrete driveways and other impervious surfaces speed storm runoff into the lake. Bulkheads are installed along the entire shoreline width of the lot destroying natural habitat for aquatic invertegrates, insects and fish. Some bulkheads encroach on the lake surface, and then back-filled to create more lake front area. Roadways are constructed to the water's edge, often filling wetlands in the process.

Shoreline property owners must reverse these practices, and accept the dictum that lake shoreline areas should be kept natural with minimal disturbance. Houses should not be built closer than 50 feet from the shoreline, and a greater distance where the slope of the land exceeds 10%. Septic systems (drywells or field systems) should be a minimum setback distance of 75 feet–more if possible. Green belts (buffer strips) should be a minimum of 30 feet in width parallel to the shoreline. A pathway to the lake through the greenbelt should not exceed 6 feet in width. Bull rushes, cattails and other shoreline and shallow water plants should be maintained to protect habitat for aquatic invertebrates, amphibians, insects and fish. Seawalls (bulkheads) should not be built, or if already installed, rip-rapped to provide habitat for aquatic animals.

A small wading and swimming area could be maintained free of rooted aquatic plants for the convenience and safety of users.

Donald E. Winne

The Michigan Riparian welcomes letters to the editor, articles for publication, comments, suggestions, and article ideas. If you wish to write an article or just have an idea for one, it would be best to write us a short note or give us a call to discuss it.

—The Editor

In This Issue:

DEQ, DNR Join in Issuing Their First Comprehensive Report on the Status of Michigan's Environment

Numerous Indicators Will Be Used to Track Trends

EDITOR'S NOTE –

In early December, 2001, the Departments of Environmental Quality and Natural Resources combined forces to issue their first joint report on the status of Michigan's natural environment. The DEQ, which was separated from the hunting, fishing and forestry oriented DNR on October 1, 1995, had issued less comprehensive reports in 1999 and 2000. The new 53-page report, which will be issued every two years, identifies 21 ecological and physical/chemical indicators that will be used as base lines to track changes over the years. The first report has 66 exhibits of charts and data showing both recent and historical trends of numerous environmental factors affecting the indicators. Some examples include: changes in developed land; trends in deer, bird and amphibian populations; PCB concentrations in trout and salmon; numerous air quality measurements and air pollution emission estimates; variations in Great Lakes water levels; records of average annual temperatures and precipitation; and various environmental clean up efforts. (The complete list of indicators is reproduced on Page 19.)

Of particular interest to Riparian readers is the fact that the report contains two pages and two exhibits on Inland Lake Water Quality based on data provided by citizen volunteers in the Cooperative Lakes Monitoring Program jointly administered by the DEQ and Michigan Lakes and Streams Associations.

The Introduction to this report is reprinted beginning in the adjacent column, with the permission of the DEQ & DNR.

Copies of the report may be obtained from the internet at **www.deq.state.mi.us** or by calling the DEQ at 517-335-3666.

Introduction reprinted with subheads added by permission of MDEQ and MDNR

Introduction

Michigan values its unique peninsular environment, its Great Lakes, its abundance of inland lakes and streams, its wide variety of landscapes, and its abundance of natural resources. Beginning in the early 1970s, concerns for how well the natural environment was being protected were being heightened amid numerous and alarming reports of contaminated drinking water, rivers, and streams and sick and dying song, predatory, and shore birds. These and other environmental consciousness-raising concerns led to a series of state and federal laws to identify and begin the process of reversing the problems. During the 1990s and 1980s, state and local governments instituted many new and/or innovative, nonregulatory programs, including pollution prevention and recycling programs. This same time period also saw the beginnings of an enhanced awareness among Michigan communities, businesses, and citizens regarding environmental stewardship and the need to conserve. As a direct result of all these factors, many of the environmental problems that were of concern 30 years ago either have been corrected or are in the end stages of being reversed.

Issues Now More Complex, Less Obvious

The state is now faced with new and more complex environmental issues. Unfortunately, many of the environmental concerns of today are not as obvious as were those of the past; often they now are of a more diffuse nature (e.g., non-point source pollution, contaminated sediments, air deposition of contaminants, invasive non-native species). Consequently, the extent of the problem is often more difficult to discern and the corrective actions and/or other types of solutions more complex and elusive. Compounding this even further has been a greatly enhanced ability to measure pollutants

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at ever decreasing levels and then trying to understand the degree of risk that such pollutants actually have to the environment and/or human health at such low levels.

Human Caused Change Measures Needed

The challenge facing Michigan in this new century will be to accurately identify and track environmental change resulting from human-related activities and to develop meaningful ways to measure the change and the degree of success of regulatory and non-regulatory programs designed to protect the environment. To date, there have been several attempts to do this. However, most of these varied approaches have resulted in a patchwork of disjointed programs and measurements. Many of these have little direct scientific meaning, are not designed to be integrated into a comprehensive understanding of the impact of human-related degradation or mitigation activities on the natural environment, and/or are incapable of differentiating human-caused from natural change.

1999 Law Requires Joint DEQ/DNR Report

The Department of Environmental Quality (DEQ) has prepared two annual Environmental Quality reports since 1999. Both documents have reported on a series of measurements best classified as environmental indicators and program outcome measures. Shortly after the 1999 DEQ report was published, Public Act 195 of 1999 (Environmental Indicators Act) was signed into law by Governor John Engler. The law requires the DEQ to work with the Department of Natural Resources (DNR) to prepare a biennial report on the quality of the environment, based on scientifically supportable environmental indicators and using sound scientific methodologies.

Environmental Board Selects Indicators

On January 28, 2000, the Michigan Environmental Science Board (MESB) was charged by Governor Engler to evaluate a series of environmental indicators proposed by the DEQ and DNR for use in the legislatively mandated report. The MESB report was submitted to the Governor in July 2001. Of a total of 23 environmental indicators proposed for consideration by the DEQ and DNR, the MESB recommended that 20 be included into a statewide environmental indicators program. The recommended indicators were based on a review of the environmental measurements that were currently being monitored or proposed to be monitored in the future by the state. The MESB also recommended that one additional indicator (Climate and Weather Change) be taken into consideration in the state's evaluation of all the other indicators (Exhibit 1) page 19.

Sample Collection Stations to be Established

In addition to identifying the environmental indicators to be used, the MESB recommended that the state begin to develop and ultimately implement a sample collection protocol, referred to as *Master Stations*, from which it can systematically and consistently collect biotic, chemical, and physical information on the state's environment. The Master Stations would need to be permanent to provide long-term trend analyses, incorporate a distributed sampling grid, be intensively monitored, and be integrated and optimized with the existing state environmental monitoring programs. The state will be working on this recommendation during the next several years.

Report Includes Two Kinds of Measures

The purpose of this document is to present the first of the biennial environmental indicators reports requested by the Michigan Legislature. The report is divided into two main sections: environmental measures and programmatic measures. The first section delineates the important ecological and physical/chemical indicators identified by the MESB to be used to track the overall quality of the state's environment and fulfills the legislative mandate. The second section of the report discusses additional agency measures that are tracked to fulfill various state or federal environmental programmatic requirements. These latter measurements, while in and of themselves may ultimately have an impact on the overall quality of the environment, are designed more to measure how well a given program is functioning to correct or control localized environmental issues and/or problems. It is anticipated that more programmatic measures will be added to future reports.

First Report Admits Gaps in Coverage

This report represents the first comprehensive attempt to describe Michigan's environment and, with time, should become an important tool to help track the ever-changing environmental quality of the state. Being

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Attorney Writes

By Clifford H. Bloom
Law, Weathers & Richardson, P.C.
Bridgewater Place
333 Bridge Street, N.W., Suite 800
Grand Rapids, Michigan 49504-5360

MAXIMUM ENFORCEMENT

You have a place on a beautiful lake, which unfortunately turns into a nightmare on some weekends during the summer due to inconsiderate (and at times even careless or reckless) boaters. A speedboat zips by at high speed within 30 feet of your sailboat or kids swimming. Someone is waterskiing at night when it is so dark that it is difficult to see three feet in front of a boat. A personal watercraft is jumping wakes behind a speedboat dangerously close to a water toboggan being pulled behind the boat. What can you and your lake association do about these safety hazards? Must you wait until someone is seriously injured or killed?

Contrary to popular belief, there are many existing state laws on the books which regulate boater conduct and can be used to prosecute lawbreakers. There are state laws governing speed limits, no wake areas, minimum distances between high speed boating and other users, careless boating, and reckless boating. Unfortunately, some law enforcement officials and prosecutors in certain jurisdictions do not appear to take boating offenses and the need for water safety very seriously. Officials in some other jurisdictions do a great job in these areas.

In many of the counties where law enforcement on the lakes is weak, police officers and prosecutors will often claim a lack of money and personnel as an excuse for not having a marine safety patrol (or underfunding it) or for not pursuing boating offenses very vigorously. Conversely, several jurisdictions work closely with lake associations and have come up with an ingenious solution. In essence, the association "purchases" additional marine safety patrol hours. Such arrangements have turned out to be "win-win" situations for everyone involved. There can be dramatic increases in the amount of time that a marine safety patrol spends on a lake. Consequently, more offenses are observed by police officers and more tickets are written. Even the police officers' mere additional presence on the lakes tends to have a deterrent effect. Law enforcement agencies gain more funds, which are used for hiring additional marine patrol officers, purchasing equipment, and extending enforcement hours. Quite often, such arrangements are based on multi-year contracts, so that law enforcement agencies will be able to budget and plan over a multi-year time period.

For a case study in this type of arrangement, we can look at Kent County, which encompasses Grand Rapids. Kent County has long had a fine marine safety patrol division within the Kent County Sheriff's Department. Lake Bella Vista is an artificial private lake located approximately 12 miles northeast of downtown Grand Rapids. It is an all-sports lake, where boating can be dangerous due to the many narrow coves and bottleneck areas. Prior to entering into the new arrangement, Lake Bella Vista received approximately 0-5 hours of free marine patrols during summer weeks prior to 1995. Lake residents and the lake association became increasingly concerned about hazardous boat traffic on the lake, particularly after a youngster was severely injured. The lake association, Cannon Township, and the Kent County Sheriff's Department got together and negotiated an agreement for additional water patrol hours. The Sheriff's Department preferred not to contract directly with a private organization, such as the lake association. Instead, the lake association contracted with Cannon Township for the increased marine safety patrols and paid the negotiated funds to Cannon Township. Cannon Township in turn contracted with the Sheriff's Department for the extra patrols and paid the Sheriff's Department with the funds received from the lake association. Recently, the lake association has paid approximately $7,000–$8,000 per year for an additional 20–25 hours of marine safety patrol per week during the summer. The lake association is pleased with the program and most lake residents believe that it has had a dramatic positive impact upon boating safety on Lake Bella Vista. This type of program is also in effect in several other counties around the state of Michigan.

Letter to the Editor, January 12, 2002:

PROPOSED IRON COUNTY AIRPORT NEAR IRON RIVER, IRON COUNTY, MICHIGAN

Currently, the Michigan Department of Transportation's Bureau of Aeronautics and the Iron County Board of Commissioners (2 South Sixth Street, Suite 7, Crystal Falls, MI 49920) are attempting to relocate the Iron County Airport (presently located near Crystal Falls, MI) to a new location at Iron Lake (about 5 miles north of Iron River, Michigan). The purpose of my letter is to inform you and your members how environmental law and politics is currently being played in the State of Michigan.

As President of the Iron Lake Homeowners Association I am very concerned for the environment at Iron Lake. Loons, moose, wolves, and bald eagles have been identified in and around the proposed airfield construction area at the Lake by the DNR among others. Loon nesting sites in particular will be directly threatened. Wildlife habitat and wetlands will be destroyed through direct construction, as well as through associated development at the Lake.

I recognize that the purpose of the proposed airport is to foster economic development. However, locating the airport in a relatively pristine area at Iron Lake will have indirect and direct impacts on the natural resources of the area. It should also be noted that there are two other airports located within 20 miles of Iron Lake and it is our belief that taxpayer money would be better served in expanding the existing airport at Crystal Falls, rather then starting all over on a brand new airport facility.

Presently, the County Board is planning an Environmental Assessment (EA) of the proposed site through its consultant Mead and Hunt. As you are aware, an Assessment is basically an environmental inquiry, a poor substitute for an Environmental Impact Statement study (EIS) where environmental experts conduct scientific analysis of water, effect on wildlife habitat, etc. All our members (and other concerned citizens of Iron County are asking) is that an EIS be conducted before the airport is built. What makes this situation so outrageous is we sent a letter to the DNR requesting that an EIS be performed. I now quote their response in their letter dated January 3, 2002:

> "Michigan is a block grant State, and therefore the Bureau of Aeronautics is responsible for environmental clearance of airport projects at general aviation airports, the proposed airport is envisioned to be a general aviation airport. Therefore, the Michigan Department of Transportation's Bureau of Aeronautics is the lead State entity for the environmental clearance for this project."

The bottom line is this—all the State has to do to destroy a lake environment is to get block grant money and buy lake frontage, thereby it abrogates environmental responsibility from the DNR to another State entity who wishes to construct. If you or your organization have any suggestions on how to stop this outrage, I would appreciate your advice. In any event we would appreciate you bringing this to the attention of your members and readers.

— Dale F. Martell, PO Box 389, Iron River, MI 49935

Loss of wetlands likely choking Muskegon River

THE GRAND RAPIDS PRESS ■ SUNDAY, DECEMBER 9, 2001

➤ *Scientists cite increased water flow and sediment build-up near the river's mouth.*

MUSKEGON — More water is flowing down the Muskegon River than in previous years, carrying with it sandy sediment that is choking the waterway near its mouth.

The findings by University of Michigan scientists show the trend is evident over the past century. Although they are not certain about a cause, they think it could be the loss of riverside wetlands in the upper third of the river's 2,634-square-mile watershed.

For years, scientists and those working to restore the river to its natural state have wondered why so much sediment – mostly sand – has built up near where the river empties into Muskegon Lake.

The sediment has filled in some wetland areas in the Muskegon State Game Area, destroying spawning areas for some types of fish and damaging water quality. And some portions of the biologically rich delta have nearly dried up.

Officials say the ecological integrity of the game area itself is threatened. The research shows the amount of rain falling on the river's watershed remained constant, but the proportion of rainfall that makes its way into the river has risen.

"There is something like 50 percent more sediment transport occurring than in the 1930s," said Mike Wiley, leading scientist who worked on the study.

The source of most of the flow increase is not runoff from developed areas along the lower river, but seems to be tied to the loss of wetlands along the river's upper reaches, experts say.

The river begins at Higgins Lake and winds 219 miles before emptying into Muskegon Lake and, finally, Lake Michigan. As riverside forests and marshlands have disappeared, the water that once was used by the trees and aquatic plants goes directly into the river.

The increased flow in the upper third of the watershed allows the river to carry more sediment until it reaches the game area. There, the river's current slows and it dumps its load of sand. That is making the river delta shallower and wider.

Today, the south channel is nearly 5 feet shallower than it once was, and water that once flowed through the south channel is being diverted to the north, Wiley said. But shifting channels may just be part of the river's natural cycle.

"On the one extreme, what we've done has led to this," Wiley said. "The other possibility is, that for a river this size in this setting, there would be continual channel movement regardless of flow changes." ■

LOCAL PARTNERSHIP PRESERVES A MICHIGAN ORCHARD INDUSTRY

Peninsula Township, Michigan, made history in August 1994 when it approved a property tax increase to fund a $6 million program to purchase development rights (PDR) on farmland. The first Midwestern community to tax itself to protect farmland by PDR, Peninsula Township created a collaborative effort to support the local orchard industry and better manage growth. To date, close to 4,000 acres of the township's best agricultural and scenic lands have been protected.

Between 1968 and 1989, the peninsula lost 1,100 acres of agricultural land to development. Expanding population - 13 percent growth in the '80s - and the subsequent building boom increasingly threatened the peninsula's tart cherry industry. Many farmers unable to meet production costs or mortgage payments were forced to sell their land. Other farmers retired on the proceeds from selling their properties at rates of $4,000 an acre or more.

"The escalating land values and declining farm profits threatened to destroy the peninsula's best soils and forever change its agricultural character and way of life," says Dennis Bidwell, director of land protection with American Farmland Trust (AFT) and one of the advisors to the township PDR program.

With financial assistance from state and local sources and technical assistance from AFT and Michigan State University, township leaders began in 1990 a collaborative effort to bring PDR to Peninsula Township. Township officials worked with planners, academicians, farmers, land trusts and local residents in a community-wide PDR campaign.

During the four-year campaign, PDR supporters assessed township residents' interest in farmland preservation, publicized the PDR, collected resident input and studied financing options. The proposed PDR ordinance had strong public support and was approved by the Township Board in May 1994.

The next step was voter approval of a property tax increase as the PDR's primary funding source. With only months before the vote, Concerned Citizens in Support of PDR, an independent group, joined the campaign to assess the program's practical value for Peninsula Township. Volunteers presented extensive recommendations to the township, including proposed changes, financing options and a plan for the public education campaign.

"This voluntary program for permanent preservation easements seemed the only fair and effective approach to protect a unique agricultural resource against intensive pressure toward development," says John Wunsch, a third-generation township orchard owner and member of Concerned Citizens.

In August 1994, Peninsula Township voters approved a 1.25 mill tax increase over 15 years. Local funds, together with subsequent support from federal and state agencies and private foundations, have enabled the purchase of development rights on about 40 percent of the peninsula's 9,000 acres of farmland and scenic land. The positive response exceeded expectations, says Gordon Hayward, township planner.

"This program has widespread support from not only township residents, but also the chamber of commerce, real estate brokers, home builders, farm bureau and environmental groups," Hayward says. The township now is planning to assess resident support for a second property tax to expand the PDR program.

The program does not eliminate growth for Peninsula Township, Hayward says, but it does allow for managed growth. "We no longer have to plan to provide urban services for those 4,000 acres, so we can look at other options, such as creating small villages with higher density and lower infrastructure costs, providing low and moderate income housing and increasing public transportation services."

Through the PDR program, Peninsula Township can continue to grow while protecting its agricultural heritage and the viability of the orchard industry. "People wanted to preserve agriculture as an industry, preserve the rural character of the township, preserve the quality of life and preserve property values for residents and farms alike," Hayward says.

Source: "Forging New Protections: Purchasing Development Rights to Save Farmland," a publication available from American Farmland Trust, (413) 586-9330.

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the first document of its type and scope, it is recognized that there are gaps in its coverage. However, with time, these data gaps will be filled as more and better information becomes available and as new indicator measures that are just now beginning to be reported have been operational for a period of time.

Short-Term Changes May Be Misleading

Finally, with reports of this nature, there are caveats that must be taken into account in their interpretation. First, care will need to be taken not to exaggerate the importance of a change that may occur in a given measure from one reporting period to the next. In terms of many environmental systems, a period of as long as ten years is a relatively short time frame for a natural or human-influenced disturbance or a corrective action to be realized within an ecosystem. It can generally take several years worth of monitoring data to properly identify and assess the emergence of either a positive or negative trend. Consequently, the importance of this and subsequent biennial reports will be best reflected in terms of their ability to demonstrate long-term changes that may be taking place in the environment rather than short-term anomalies that may occur from year to year.

System Too Complex for Summary Ratings

Care also should be taken as to how the results of this report are reported. It is neither scientifically defensible nor responsible to summarize the results of all the various environmental indicators down to a one or two word conclusion about the overall health of such a highly complex system as the environment. While certainly simple to understand, such relative comparison labels as *good, moderate, bad*, etc., are at best unscientific since they are indefinable, and at worst may be a disservice to the citizens of Michigan since they can be misleading. In almost all cases, further explanation and additional qualifying information will be needed to accurately describe what the cumulative environmental measurements appear to be indicating.

Exhibit 1. **Michigan Environmental Science Board Recommended Environmental Indicators**

Ecological Indicators:	Land Cover
	Breeding Bird Abundance
	Trends in Habitat of Interior and Edge Bird Species
	Trends in Game Fish Populations
	Trends in Benthic Macroinvertebrate and Fish Populations
	Trends in Frog and Toad Populations
	Invasive Species
	Forest Acreage, Mortality, Growth, and Removals
	Vegetation Structure and Diversity
	Lichen Communities
Physical/Chemical Indicators:	Ambient Levels of Criteria Air Pollutants
	Stream Flow
	Inland Lake Water Quality
	Contaminant Levels in Fish
	Inland Lakes Sediment Trends
	Contaminant Levels in the Connecting Channels, Saginaw Bay, Grand Traverse Bay, and Major Tributaries
	Climate and Weather Change
Future Indicators:	Ambient Levels of Air Toxic Contaminants
	Rates of Deposition of Persistent and Bioaccumulative Air Toxics and Acidic Components
	Trends in Mammalian Populations
Optional Indicator:	Contaminant Levels in Bald Eagles

DAN GLICKMAN, SECRETARY, UNITED STATES DEPARTMENT OF AGRICULTURE, SPEAKS OUT FOR BUFFERS

Dan Glickman, Secretary of Agriculture is a prime promoter of buffer strips. "Properly installed and maintained buffers can help keep pesticides, sediments and nutrients from reaching waterways," he says. "When combined with conservation tillage and nutrient and pest management, buffers can all but eliminate serious water pollution and related environmental problems from farms."

Buffers protect soil and water. And they make economic sense.

More than 100,000 farmers and ranchers are convinced. Collectively, they have established nearly 612,000 miles of buffers stretching from California to Maine, Washington to Florida, Minnesota to Texas and every state in between.

Ask Paul Hendrickson, Garfield, Washington. He swapped cows for trees. His buffer project covers 250 acres and protects a stream. Or — how about Gene Barto of Tiffin, Ohio. He seeded 40 acres of filter strips and waterways to help clean up Lake Erie. John Long, Newberry, S.C., has miles of contour buffers to protect fragile piedmont soils. Trout swim in a temperate stream protected by a riparian buffer zone on Bernie Beatty's New Jersey dairy farm. It has been the only cool spot during one of the worst summer droughts ever.

Kentucky farmer and precision consultant, Rick Murdock, argues that buffers also boost your bottom line. Buffer zones are often seeded on low producing areas, so inputs are diverted to better soils. Yield averages often increase because of it. He has records to prove you can save $80 an acre, or more, by not farming along blue-line streams.

Buffers do not represent new technology. Their benefits have been known for years. The 1996 Farm Bill revived the buffer concept and continues to provide the enticement to establish them. The Natural Resources Conservation Service (NRCS) is spearheading a drive to get more buffers in place. The Farm Service Agency (FSA), local soil and water conservation districts, the Cooperative Extension Service, state conservation offices, agribusiness and others have joined the cause.

Common sense conservation is the theme of the vigorous promotional effort. You'll hear it referred to as the National Conservation Buffer Initiative.

The goal is to install two million miles of buffer strips by 2002. The effort focuses on encouraging enrollment of land in government conservation programs, as well as linking it to many other public and private campaigns.

There are a host of basic benefits. They add beauty to the countryside and visually showcase your commitment to protect the land for future farmers. Vegetation provides habitat for nesting birds and many species of wildlife.

Because the strips act as barriers and filters to help control surface runoff, fish and aquatic life in and around ponds, streams and rivers are protected from potential pollutants.

The flexibility of where conservation buffers fit make them especially useful for farmers and ranchers all across the nation. They can be installed along the edge of a field or within a field, next to a stream or around a pond. They work almost anywhere fragile lands and water need protection (and along lake shores).

Filter strips of grass or other permanent vegetation are used to intercept or trap sediment, organic pesticides, nutrients and other contaminants before they can reach a body of water.

(Editor's Note: Even though this article was published for USDA by Farm Progress Companies, the idea of buffers around lakes is absolutely necessary if we are to prevent our lakes from degradation.)

MICHIGAN WETLANDS UNDER ATTACK

Applications to the Michigan Department of Environmental Quality to alter wetlands have been received at the Lansing office at the rate of about 2 a day since the beginning of this year. The greatest number – 111 – were applications to fill wetlands. Second in number were applications to construct ponds – 82. Ranking third in requests were applications for driveways and roads in wetlands – 81. Ranking fourth in requests were applications to construct buildings in wetlands. Most of these applications were approved unless there was aggressive public opposition.

All wetlands greater than 5 acres in size in counties of 100,000 populations or more require a permit from the DEQ. Wetlands in counties of less than 100,000 population and that are not contiguous to a lake or stream are not protected under the Wetland Protection Act, Part 303, Act #451, Public Acts of 1994, unless and until an inventory of all of the wetlands in the county has been completed.

A permit for the changing of a wetland is required for all wetlands contiguous to lakes and streams regardless of the total population of the county. Unless and until the owner of a wetland becomes convinced of the value and benefits of wetlands, the applications to destroy them will not slow down.

The benefits of wetlands, as identified in the WETLANDS PROTECTION ACT, are as follows:

- Flood and storm control by the hydrologic absorption and storage capacity of the wetland.
- Wildlife habitat by providing breeding, nesting, and feeding grounds and cover for many forms of wildlife, waterfowl, including migratory waterfowl, and rare, threatened, or endangered wildlife species.
- Protection of subsurface water resources and provision of valuable watersheds and recharging ground water supplies.
- Pollution treatment by serving as a biological and chemical Oxidation basin.
- Erosion control by serving as a sedimentation area and filtering basin, absorbing silt and organic matter.
- Sources of nutrients in water food cycles and nursery grounds and sanctuaries for fish.

WETLANDS: AMERICA'S TREASURES

Education and communication have always been the cornerstones of the U.S. Environmental Protection Agency's partnership with the Terrene Institute.

Through the years, we have worked together to create public awareness of how valuable our nation's watersheds and wetlands are to all Americans — whether they just eat fish or catch them, hunt deer or watch birds. The very fact we can enjoy these activities depends on the health of our wetlands.

And, in turn, the health of our wetlands depends on how we treat them. People like you, working with farmers and businesses in your local community, can help protect and restore your local wetlands. Through education and cooperation, we can help conserve and enhance our nation's valuable wetland resources.

From: Terene Institute
4 Herbert St.
Alexandria, VA 22305

ROADWAY ACROSS A WETLAND CONTIGUOUS TO A SMALL (93 ACRE) KALAMAZOO COUNTY LAKE SPELLS ITS DOOM

Little Sugarloaf Lake is only 93 acres in size and lies mostly in Section 6 of Schoolcraft Township. Its maximum depth is 31 feet and average depth is approximately 10 feet.

The picture shows a roadway to the waters edge. The filling of the shoreline wetland together with the buildings constructed along the roadway portends an expanded use to accommodate power boats on this fragile lake.

The filling of the wetland together with the removal of trees a short distance from the lake sets a precedent to continue this kind of development around the south shore of this small lake.

This lake has been used primarily by fishermen in rowboats in the past. What does the future hold? Unless local government, together with help from the state, denies further requests to fill the shoreline wetlands, this is another lake to become urbanized and destroyed. If we are going to save our lakes for what they were destined to be—a good fishery and wildlife habitat refuge—local and state government needs to deny further destruction of shoreline wetlands and legislate buffer strips for the protection of the lakes.