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FOREWORD

Governor Jim Doyle

Dear Friend of Wisconsin's Great Lakes:

Wisconsin's clean and plentiful fresh waters are integral to our history, our culture and our commerce. Whether one studies satellite images of Wisconsin's Great Lakes coastlines, walks along a beach or drives through one of our many coastal communities, it is easy to see the impact the Great Lakes have on our region and the greater global community. Together with the other Great Lakes states and Canadian provinces, the region is home to 100 million people and the world's third largest economy.

In Wisconsin, we are fortunate to have over 1,000 miles of Great Lakes shoreline running from our southern to northern borders. Our coasts include landscapes as diverse as urban river walks and waterfronts, isolated parks and wilderness areas. More than just pretty places, our Great Lakes shores and waters form the foundation for much of Wisconsin's heritage and economy, while providing us with recreation and drinking water.

The Great Lakes are a key route to the world and will continue to grow in importance to our region's economy in the years ahead. For generations, the Great Lakes have been the doorway for our earliest citizens and immigrants and the highway for the products of our mills, farms, factories and mines.

As Governor of Wisconsin and Chair of the Council of Great Lakes Governors, protecting and enhancing our Great Lakes is one of my top priorities. I am proud of the major strides we have made to build a long-term foundation to protect our Great Lakes.

In the last year, we have taken a number of steps to ensure the future of Wisconsin's Great Lakes resources. Working with the other eight Great Lake states, two Canadian provinces and the United States government, we passed and ratified the Great Lakes Compact. The Compact protects coastal communities by creating standards for sustainable management of Great Lakes waters.

Additionally, the Department of Administration's Wisconsin Coastal Management Program received high marks and praise following its latest federal review and onsite evaluation. The State also completed a revision of the Wisconsin Great Lakes Restoration and Protection Strategy to guide our actions into the future.

Despite these important steps forward, we still have work to do. Working together with private citizens and organizations, local and tribal governments, federal and Canadian government agencies, we will continue our efforts to protect the Great Lakes.

Fortunately, we have a strong partner in the federal government that has stepped up to help us protect the Lakes. In President Obama's 2010 budget proposal, the administration calls for an unprecedented $475 million investment to clean up contaminated sites, protect critical natural habitats and provide greater access to the Great Lakes. With this newly energized partner, we will likely be able to highlight many more successes for the Great Lakes in the years ahead.

In the 21st century, the Great Lakes continue to help define our state's economy. In the years ahead, as freshwater needs grow throughout the rest of the country and world, the value of protecting our Great Lakes will become even easier to see. With the cooperative measures we have taken to safeguard this invaluable resource, we have ensured that future generations of Wisconsin residents will continue to enjoy our precious fresh waters.

Corrosion studies will produce alternatives for prolonging the useful lives of docks and supporting structures.

FINDING SOLUTIONS TO A MYSTERIOUS HARBOR CORROSION PROBLEM

Gene Clark and Kathleen Schmitt Kline

Chad Scott, a structural engineer and commercially certified diver, was on a routine port structure inspection dive in the Duluth-Superior Harbor several years ago when he came face-to-face with a problem—one big enough to put his fist through.

"I've seen some corrosion here and there at other Great Lakes ports, but nothing like this," he recalled.

Further investigations found that corrosion is widespread throughout the harbor with all types of steel piling covered with pits and some with holes larger than a softball. By comparing older and newer sheet pile installations, it was found that some steel structures designed to last fifty to one hundred years are now deteriorating at a rate that would require repair or replacement in thirty years of service or fewer.

The accelerated corrosion could have significant financial and safety implications for the port that handles the largest total cargo volume in the Great Lakes. Over thirteen miles of steel sheet piling are corroding around the harbor and if the problem is not addressed soon, the structural integrity of the facilities may deteriorate to the point where the failing steel would have to be completely replaced.

"This is potentially a very costly problem," said James Sharrow, facilities manager of the Duluth Seaway Port Authority. "We have more than 100 million dollars of possible repairs in our harbor to steel that's being damaged by corrosion."

To begin a systematic approach to the problem, the Wisconsin and Minnesota Sea Grant programs, the Duluth Seaway Port Authority, the U.S. Army Corps of Engineers and the University of Minnesota-Duluth formed a steering committee that invited an independent group of experts to visit the port. The specialists in corrosion, microbiology and chemistry came up with a list of possible causes of the corrosion as well as recommendations for addressing the damage.

One possible cause they identified is that microorganisms such as iron oxidizing bacteria could be eating away at the steel, a phenomenon known as microbiologically influenced corrosion (MIC). Researchers at the University of Minnesota-Duluth have identified bacterial communities living on the corroded steel, but more research is needed to prove conclusively that MIC is the true culprit behind the corrosion.

While several studies continue to probe the cause of the aggressive corrosion, companion studies have begun to investigate ways to protect new and existing steel structures from further damage. With support from the Wisconsin Coastal

Management Program, Wisconsin Sea Grant initiated several studies to investigate methods to slow down or stop the corrosion affecting steel structures already in place with an eye toward saving port and harbor infrastructure before having to completely replace the damaged steel.

One common method for protecting steel from corrosion is to cover the steel with a protective coating. Several facilities around the Duluth-Superior Harbor had already been treated with coatings, so the first study assessed and documented these coated areas to see how they were holding up over time. These areas will be inspected yearly to determine which coatings have the highest durability to withstand the scouring action of ice, impacts from vessels and wave action. There are additional studies ongoing within the harbor to determine if new coating products could work, especially in very severe ice conditions.

A second study explored three different options for protecting steel structures from corrosion. Two types of jackets were installed on steel pilings already in place in the harbor. Jackets appear to be promising techniques for extending the lifetime of originally unprotected steel that has been attacked by the rapid corrosion, but is still serviceable. The jackets will be monitored to see how well they hold up against Lake Superior's harsh winter ice conditions and protect the pilings from corrosion.

Another alternative option installed was a cathodic protection system (CPS), commonly used in salt water harbor facilities, but very uncommon in freshwater environments. CPS works by sacrificing anodes attached to the steel structure they protect. The corrosion attacks the anodes and keeps the steel from deteriorating. Various CPS configurations were installed in the harbor on both coated and uncoated steel and will be monitored to see if this is a financially viable method of protecting steel in a freshwater port.

The results of the studies are anticipated to provide effective and affordable options for extending the life of steel structures around many Great Lakes port and marina facilities. Deeply pitted steel has also been observed in Two Harbors, Minnesota, Thunder Bay, Ontario, Madeline Island and Bayfield, Wisconsin, and at locations along Michigan's Keweenaw Peninsula.

Because this type of rapid corrosion had rarely been seen previously in freshwater harbors, Wisconsin Sea Grant is working with the harbor corrosion committee to spread the word to other Great Lakes port authorities and marina owners to examine their steel structures closely. While corrosion problems around the region may have different causes, the results of the studies will be beneficial for all facility managers as they consider repair alternatives for prolonging the useful lives of their docks and supporting structures.

For more information about the ongoing studies, visit www.seagrant.wisc.edu/coastalhazards.

Gene Clark is a coastal engineering specialist at the University of Wisconsin Sea Grant Institute. He may be reached at (715) 394-8472 or gclark1@uwsuper.edu. Kathleen Schmitt Kline is a science writer at the University of Wisconsin Sea Grant Institute. She may be reached at (608) 262-6393 or kkline@aqua.wisc.edu.

The collective personality of Wisconsinites is our competitive advantage in marketing the Great Lakes.

MARKETING WISCONSIN'S GREAT LAKES TOURISM EXPERIENCE

Secretary Kelli A. Trumble

There is no question that the Great Lakes are a tremendous asset for Wisconsin's tourism industry. It is equally true that several of our neighboring states also offer travelers Great Lakes experiences. In the course of a recent two-year brand research process, we unearthed the reality that parity travel products—such as the Great Lakes—on their own are not enough to create a preference for Wisconsin. But the collective personality of Wisconsinites is.

The mission of the Wisconsin Department of Tourism is to inspire people to love the Wisconsin experience. To accomplish that and bring much needed revenue to the State in the process, we have done what all good marketers do: build a brand that is uniquely ours.

Travelers told us Wisconsinites have a knack for creating extraordinarily fun, original and welcoming experiences. They also view us as hardworking, genuine and true stewards of our natural resources. Visitors cite those attributes as the tie-break in choosing Wisconsin as their vacation destination. That is our competitive advantage in marketing the Great Lakes.

The Wisconsin advantage is evident throughout our coastal communities. For instance, many cities and villages offer original festivals that flourish because of their very location on the Great Lakes. However, it is their Wisconsin personality that makes them shine. Milwaukee's Summerfest is the world's largest outdoor music festival, and its success is inextricably tied to its Lake Michigan shoreline venue and the hospitality of the people of Milwaukee.

The Department of Tourism is working with coastal communities to enhance and promote the Wisconsin experience. For example, Tourism wisely provided joint-effort marketing grants to the Discover Wisconsin Harbor Towns project that promotes spring travel to a long list of Great Lakes cities including Racine, Kenosha, Manitowoc, Marinette, Sturgeon Bay and Superior, and many points in between.

The Port Washington Maritime Heritage Festival used Tourism grant dollars to turn what had been a small event into a spectacular weekend festival resplendent with the appearance of five tall ships that drew an attendance of 27,000 and generated visitor spending nearing $1 million.

It should come as no surprise that some of Wisconsin's most original thinkers invented brands that have to do with a day on the water. Some of the most notable include Evinrude Outboard, Mercury Marine, St. Croix Rods, Harken sailboat hardware, and Carver, Cruisers and Palmer Johnson yachts. That originality carries forward today with innovative travel products and services directed at our visitors.

For instance, our tourism industry's commitment to sustaining the Great Lakes and Wisconsin's other natural resources led the Department of Tourism to launch the nation's first eco-conscious travel initiative, Travel Green Wisconsin. This program certifies businesses that are doing their part to voluntarily reduce their environmental footprint and educate travelers on the State's precious resources.

Travel Green Wisconsin debuted just a few years ago and already boasts more than 260 certified businesses. The list of certified businesses includes five charter and ferry lines offering visitors environmentally sounds choices for exploring and traveling the Great Lakes and the Port Superior Marina Association, a marina located at the entrance to the Apostle Islands Lakeshore. A myriad of resorts and bed and breakfasts that rim the beautiful waters of the Great Lakes are also members of Travel Green Wisconsin, each demonstrating the importance of preserving the lakes both to their businesses and our future.

Wisconsin originality is prevalent throughout our coasts. The Great Lakes inspired Wisconsinites to create the charming one-of-a-kind arts enclaves of Bayfield and Door County that attract hundreds of thousands of visitors each year. Milwaukee's Discovery World at Pier Wisconsin with its incredible sailing school vessel, the *S/V Denis Sullivan*, and Whistling Straits golf course, sculpted into the Lake Michigan coastline in Sheboygan and host of the PGA Championship, both celebrate the beauty of Lake Michigan.

Whitefish Dunes State Park in Door County attracts more visitors than any other day-use park in the State. And let us not forget the wonderful lighthouse tours that honor the heritage and romance of our Great Lakes.

A July 2008 study of travelers from Chicago and the Twin Cities produced a list of their most memorable Wisconsin vacation activities, and six of the top ten have ties to the Great Lakes—boating, swimming, fishing, sightseeing, camping and hiking. The economic ripple effect picks up even greater momentum when one considers those same travelers who participate in Wisconsin Great Lakes activities—such as boating and charter fishing—also spend money on dining, shopping and lodging.

By celebrating the originality of Wisconsin's people and the extraordinary experiences they have created, especially experiences on the pristine waters and sweeping shorelines of the Great Lakes, we have built a preference for Wisconsin that last year translated to $13.1 billion in traveler spending, making tourism one of the top three industries in the State.

The State's tourism industry also supported 310,300 full-time job equivalents, and generated $1.5 billion in State government revenues and $664 million in local government revenues to fund education, public safety and other government services. That is a predictable revenue stream for the State that we can all appreciate now more than ever.

Kelli A. Trumble is Secretary of the Wisconsin Department of Tourism. She may be reached at (608) 266-2345 or ktrumble@travelwisconsin.com.

Designation of the Lake Superior NERR will recognize the national significance of the St. Louis River freshwater estuary.

LAKE SUPERIOR NATIONAL ESTUARINE RESEARCH RESERVE: CLOSER TO REALITY

Travis Olson

Residents along Lake Superior's coast will soon benefit from the designation of the Lake Superior National Estuarine Research Reserve (NERR) at the St. Louis River freshwater estuary. The Lake Superior NERR will be only the second reserve on the Great Lakes and among a national network of 27 reserves designated by the National Oceanic and Atmospheric Administration (NOAA).

The Lake Superior NERR is proposed to include approximately 15,000 acres of public land and water centered on the City of Superior. The anticipated designation of the Lake Superior NERR in 2010 will recognize the national significance of the St. Louis River freshwater estuary and lead to innovative programs that will benefit residents throughout the Lake Superior region.

The Wisconsin Coastal Management Program (WCMP) has long supported the designation of a Lake Superior NERR. A 2002 WCMP grant supported an initial feasibility study by the University of Wisconsin-Extension and The Nature Conservancy. The Wisconsin Coastal Management Council in 2003 endorsed pursuing a reserve on Lake Superior. WCMP staff assembled a multi-agency partnership for the site selection process that resulted in the nomination of the St. Louis River.

The University of Wisconsin-Extension is presently leading an extensive partnership of government agencies and organizations to develop integrated programs for research, education and resource stewardship at the Lake Superior NERR. Advisory committees are developing priorities that will be incorporated into a management plan to guide the work of Reserve staff for the next five years.

Research and monitoring of the St. Louis River and its watershed are of great interest to scientists and natural resource managers. Research priorities at the Lake Superior NERR will include preventing and controlling invasive species, restoring native plants and animals (wild rice is of particular interest), measuring the effect of land uses on water quality, and predicting the effects of climate change on the river and Lake Superior. Several monitoring stations set up in the Reserve will measure water and air quality and link to a national data center used by researchers throughout the world.

The Reserve will leverage existing research programs at regional and national institutions. The Wisconsin and Minnesota Sea Grant Institutes have already issued a joint request for research proposals that focus on the St. Louis River. Future partners in research may include the University of Wisconsin-Superior (a core

partner in the NERR), the University of Minnesota-Duluth, the U.S. Environmental Protection Agency Mid-Continent Division, the University of Wisconsin-Milwaukee Great Lakes WATER Institute, and the Wisconsin and Minnesota Departments of Natural Resources. The Reserve will also attract research from other institutions through graduate research fellowships and a national research grant program.

The Lake Superior NERR will educate citizens and students about Lake Superior's freshwater estuaries and coastal resources. Onsite programs will provide opportunities for school field trips and hands-on research projects, teacher workshops and classes, and visitor education. Reserve programs will also reach students and residents in community settings. As with research programs, the Reserve will utilize partnerships with existing organizations such as school districts, colleges and universities, local and tribal governments, aquariums, zoos and nature centers.

The Lake Superior NERR will also promote natural resource stewardship of the estuary. All of the property within the proposed boundary is publicly owned by one of four partner agencies: the City of Superior, Douglas County, the University of Wisconsin-Superior and the Wisconsin Department of Natural Resources.

Much of the Reserve consists of second-growth forest and wetlands that are characteristic of the Superior Coastal Plain. The Reserve will be managed to protect the key features that make it a valuable setting for research and education, and focus on restoring native ecosystems and controlling invasive species.

In addition to managing natural resources for research purposes, the Reserve will continue to accommodate existing recreational uses. Hunting, fishing, boating, cross-country skiing, archery, bicycling and bird watching are some of the activities that will continue within the Reserve boundaries. The Reserve partners are also coordinating with the Great Lakes Indian Fish and Wildlife Commission to ensure that tribal members continue to have access to off-reservation natural resources.

Finally, the Lake Superior NERR will be a resource for the entire community. Area residents will be invited to serve on advisory committees to provide input on Reserve programs and management. Existing programs like the Water Action Volunteer program that measures and monitors water quality will continue and expand at the Reserve. In addition, research, education and stewardship programs will have a great need for adult and school-aged volunteers in many capacities.

The Lake Superior NERR will soon be up and running with benefits to the Twin Ports region and all of Lake Superior. Superior will be home to an internationally important research program, unique education opportunities, continued conservation of a freshwater estuary and a source of community pride and activity.

Travis Olson is a program and planning analyst with the Wisconsin Coastal Management Program. He may be reached at (608) 266-3687 or travis.olson@wisconsin.gov.

The Brown County Park and Recreation Plan details the current needs and vision for all Park System facilities and trails.

PLANNING BROWN COUNTY'S PARKS

Aaron Schuette

Brown County's system of parks covers the spectrum of recreational opportunities. From one of Wisconsin's top-rated public golf courses, to the natural beauty of L.H. Barkhausen County Park, to camping, fishing and boating at Cecil Depeau Bay Shore County Park, to rollerblading on the Fox River Trail, Brown County provides countless ways for visitors and residents to enjoy the outdoors.

Each of Brown County's eighteen county-owned parks and three state-owned and county managed recreational trails fills its own unique niche. The Brown County Park and Outdoor Recreation Plan: 2008-2013—funded in part through the Wisconsin Coastal Management Program—will ensure the needs of existing parks are met and future opportunities are properly planned.

The 2008-2013 Plan was prepared in 2008 by the Brown County Planning Commission and the Brown County Facility and Park Management Department with the assistance of a steering committee. The Plan updates goals, objectives, policies and implementation activities identified in the original 2001 Brown County Park and Outdoor Recreation Plan.

In developing the Plan, the committee identified short-term needs of each park and kept an eye on the long-term goals of the County relating to new recreational facilities and natural resource protection. Of particular importance to users of coastal resources are plans for improvements to L.H. Barkhausen County Park and Fort Howard Paper Foundation Wildlife Area located on Green Bay's western shoreline, and Cecil Depeau Bay Shore County Park located on the eastern shore.

L.H. Barkhausen County Park and the adjoining Fort Howard Paper Foundation Wildlife Area are critical to the Brown County Park System and the overall water quality of Green Bay because of their proximity to the fragile coastal wetlands associated with the west shore of the bay. Although L.H. Barkhausen County Park is not located directly on the coast, it is comprised of approximately 475 acres of natural marsh, wildlife ponds, meadow and forest that drain through a series of small streams approximately one-half mile to the waters of Green Bay.

The West Shores Interpretive Center at Barkhausen is a former duck-hunting lodge and contains a number of interactive displays related to the history of the site and the fragile ecology of west shore wetlands flora and fauna. Immediately

southeast of Barkhausen on the bay shore sits the 440-acre Fort Howard Paper Foundation Wildlife Area also owned and managed by Brown County. Hiking trails traverse both parks to provide public access to the perimeter and interior of these beautiful natural areas.

Specific recommendations in the Brown County Park and Outdoor Recreation Plan for L.H. Barkhausen County Park and the Fort Howard Paper Foundation Wildlife Area include protection, access and restoration activities, including:

- Adjacent bay shore property acquisition
- Expansion of a marsh overlook platform
- Parking lot and trailhead expansion at the Fort Howard Paper Foundation Wildlife Area
- Restoration of a former agricultural field to wetlands and wildlife habitat
- Restoration of a waterway to improve access for northern pike to critical spawning habitat

Cecil Depeau Bay Shore County Park is an 81-acre site on the rocky eastern shoreline of Green Bay where the Niagara Escarpment bluff meets the water. Scenic hiking trails follow the ledge of the Escarpment—a geologic formation created over 400 million years ago by an ancient sea—and provide breathtaking views of the waters of Green Bay. The Park offers an improved boat launch, refuge harbor and transient mooring for boaters as well as year-round camping and playground facilities easily accessible from State Highway 57.

The 2008-2013 recommendations for Cecil Depeau Bay Shore County Park strongly support improving boating and fishing access to the waters of Green Bay through:

- Construction of a fish cleaning station
- Repair and expansion of the existing harbor breakwater
- Improvement of the walkway on the harbor breakwater to improve accessibility for shore fishing
- Expansion of the existing boat launch
- Addition of restroom buildings

The L.H. Barkhausen County Park/Fort Howard Paper Foundation Wildlife Area and Cecil Depeau Bay Shore County Park are only two of the eighteen county parks and trails considered in the 2008-2013 Brown County Park and Recreation Plan. The Plan details the current needs and future vision for all Brown County Park System facilities and trails. With the assistance of the Wisconsin Coastal Management Program, the completion of the Plan provides eligibility for Brown County to apply for various state and federal grant programs to implement the overall vision through its detailed recommendations.

While in the Greater Green Bay area, Brown County invites you to visit any and all of our parks. Whether you want to stroll through the Northeastern Wisconsin Zoo, fish for world class walleye on the Fox River, golf Brown County Golf Course, bicycle the Mountain-Bay State Recreational Trail or simply relax and enjoy the sunset over the waters of Green Bay, Brown County has a park for you.

Aaron Schuette is a senior planner with the Brown County Planning Commission. He may be reached at (920) 448-6480 or schuette_am@co.brown.wi.us.

Innovative programs may protect Wisconsin's Great Lakes from contamination by old medicines.

DISPOSAL OF OLD MEDICINES

Steve Brachman

Over the last several years, public attention has increased regarding the improper management of old medicines. Consumers historically have been told to flush their unused and or expired medicines when not needed. Broadly known as PPCPs (pharmaceutical and personal care products), these emerging contaminants are increasingly showing up in the waters of Wisconsin.

Many wastewater treatment facilities lack the ability to remove PPCPs prior to returning treated water to lakes and streams. Although PPCP levels found in waterways are very low and do not seem to have an impact upon human health, researchers from the University of Wisconsin-Milwaukee Great Lakes WATER Institute and the U.S. Environmental Protection Agency have found that even low levels alter fish behavior and reproduction. It is now recommended that consumers and health care professionals discontinue flushing or dumping down the drain most old pharmaceuticals and personal care products.

Old and unused medicines pose other risks. Accidental ingestion by children and the elderly is a significant health issue in the United States with over 78,000 children less than five years of age treated each year for medicine poisoning. Illegal use or theft is an ongoing problem since prescription drugs now account for the second most commonly abused category of drugs behind marijuana and ahead of cocaine, heroin and methamphetamine. Finally, unnecessary accumulation of unneeded medicines in health care facilities is both wasteful and costly.

As a result, there has been a great deal of activity to develop innovative programs to educate the public regarding alternative methods of disposal of old medicines. For example, communities are organizing one-day collection programs similar to Clean Sweeps that collect hazardous household wastes. Typically operated by local governments, wastewater treatment plant operators, neighborhood pharmacies or local police, these events have grown in Wisconsin from only six in 2006 to over sixty in 2008.

Although consumer response has been very strong, one-day events have serious limitations. For example, many consumers find the events inconvenient due to sometimes long traffic lines and infrequent availability. Law enforcement agencies must attend the events—usually at significant cost—to manage controlled substances according to U.S. Drug Enforcement Agency standards. Finally, considerable mobilization time and resources are required to publicize, market, locate and provide safe disposal for one-day collection events.

In 2007, the University of Wisconsin-Extension and the Wisconsin Department of Natural Resources formed a pharmaceutical waste working group to begin addressing these issues. Made up of local government officials, state agency representatives and pharmacists, this group recommended exploring new methods of collecting old medicines. Two potential models have emerged as a result—permanent collection drop-offs at household hazardous waste centers or police departments, and a pilot mail back program.

La Crosse County, for example, now operates a medicine collection program that utilizes deputized County staff to receive and dispose of unwanted medicines. Similarly, police and sheriff departments in Columbia County and Marshfield place secure drop boxes at their locations for ongoing disposal.

An old medicine mail back pilot program has served as perhaps the most convenient collection program to date. For many years, pharmacies, hospitals and drug manufacturers have utilized reverse distributors to manage expired or recalled pharmaceuticals by simply shipping them back to a centralized facility for safe disposal. Capitalizing upon Wisconsin's existing pharmaceutical return infrastructure, the mail back pilot used Capital Returns in Milwaukee to operate a hotline and mail back service for consumers in Waukesha and Winnebago Counties.

The program's kick off in May 2008 utilized over one hundred pharmacies to post notices and distribute package inserts notifying residents in the two counties of the toll-free call center for old medicines. By contracting the call center, consumers were instructed which types of medicines could be accepted and provided a shipping container for return shipment. As a result, over 1,700 households were able to conveniently ship back their old medicines during the eight-month pilot period.

But have these innovative efforts encouraged significant consumer behavior change? A recent survey of participants in the mail-back pilot indicated that consumer participation may lead to real modifications in disposal practices. For example, eighteen percent of randomly sampled residents of Winnebago and Waukesha Counties either poured down the sink or flushed their old medicines, while only two percent of the mail back program participants continued this practice. Thirty-six percent of the random sample indicated that they stored old medicines in their home indefinitely or placed them in the trash as is, while less than five percent of the mail back program participants practiced similar behaviors.

Other steps are under consideration in Wisconsin's pursuit of safe alternatives for old medicine disposal. One option would continue the mail back pilot program should the U.S. Drug

Enforcement Agency ease the ability of reverse distributors to accept and manage consumer medications. There also exists great interest in exploring product stewardship approaches to unwanted pharmaceutical disposal. For instance, model legislation in the State of Washington provides for industry-funded disposal at pharmacies. In addition, the state pharmaceutical society and others are exploring approaches to change prescribing practices allowing smaller quantities to be more effectively utilized.

Regardless of the approach chosen, it is essential that Wisconsin's Great Lakes be protected from contamination by old medications.

Steve Brachman is a solid and hazardous waste specialist at the UW-Extension Solid and Hazardous Waste Education Center. He may be reached at (414) 227-3160 or steve.brachman@ces.uwex.edu.

La Pointe is doing its part to prevent pollutants from entering Lake Superior.

SMALL COMMUNITY STORMWATER MANAGEMENT

Sandra Dee Schultz-Naas

Madeline Island—located in Lake Superior along the Bayfield Peninsula—is among the 22 Apostle Islands and home to La Pointe, one of Wisconsin's oldest communities. La Pointe was established as a French trading post as early as 1693 but was home to the Ojibwe people long before.

Today, about 250 people reside year-round in La Pointe. During summer months, history, nostalgia and the promise of a unique island experience draw as many as 2,500 visitors per day to this small unincorporated community.

This large influx of people and the town's proximity to Lake Superior create significant natural resource management issues. Of the most serious issues, runoff events are aggravated by the fact that most visitors enter and exit the Island by ferry at a single point.

Runoff from storm and snow melt negatively impact water quality if not properly treated. In 1990, the International Joint Commission recommended the designation of Lake Superior as a demonstration area for zero discharge of persistent toxins. To carry forward the demonstration, Wisconsin, Minnesota, Michigan and Ontario entered into an agreement to form the Lake Superior Binational Forum.

The Binational Forum set about to assess urban stormwater impacts on the Lake Superior basin. Thirteen municipalities were studied and yearly averages determined for pollutants entering the basin through storm drain systems. The study found that thousands of pounds of phosphorus, nitrates, lead, chlorides and other oxygen consuming materials annually ended up in wetlands and ultimately Lake Superior. In addition, almost 34 billion pounds of solids found their way to the Lake through storm drains.

The Town of La Pointe fully realized that a clean Lake Superior was vital to its economy and quality of life. While not a large community, La Pointe wanted to be part of the Binational Forum's noble effort to reduce stormwater impacts on the lake.

La Pointe's Town Road Foreman Keith Sowl knew firsthand how tourism activity could aggravate runoff events. After hearing about the Binational Forum goals and research in 2000, Mr. Sowl and former Town Chairman Burke Henry discussed how stormwater runoff from their community impacted Lake Superior and how best La Pointe could help reduce that impact.

Armed with research and a plan, Mr. Sowl and Mr. Henry worked with the Town Board to begin a comprehensive upgrade of the stormwater management program in La Pointe and at strategic locations around the Island where heavy traffic was an issue. The Town placed a strong emphasis on improving public access while insuring that stormwater best management practices were included in all designs. Partnership funding from agencies including the Wisconsin Coastal Management Program, the Wisconsin Department of Natural Resources, the U.S. Army Corp of Engineers Section 154 Program, the Ashland County Land & Water Conservation Department and neighboring communities helped make these plans reality.

Stormwater Management Upgrades and Demonstration Project. The absence of sidewalks, curb and gutter, and limited space for parking contributed to a runoff management problem in the commercial area of La Pointe. Water ran quickly through the drainage system due to the lack of retention areas. Heavy foot and car traffic denuded vegetation resulting in sediment and pollutant transport through eroding ditches and over unpaved parking lots. Gas, oil and other nonpoint pollutants were picked up by runoff and deposited directly into coastal wetlands and eventually into Lake Superior.

The Town road crew addressed these issues by constructing stormwater collection and transport systems, curb and gutter, sidewalks and outfall protection as part of a major upgrade nearest coastal wetlands. At the same time, they solicited Laurie's Store for a stormwater best management practice demonstration project. Here they collected roof water and directed it to a rain garden, added green space to provide for infiltration of runoff, and used oil, debris and sediment collectors in the stormwater intake drains.

Winter Public Access and Stormwater Management. A 2.5-mile ice road connects La Pointe and Bayfield during the winter. With an estimated use of about 600 cars per day, Island and mainland approaches contributed much sediment to the Lake and became dangerous to navigate. La Pointe and Bayfield improved their respective winter approaches to Lake Superior by incorporating sediment and erosion control measures and rerouting runoff from the long, steep slopes that provide access from land to ice.

Public Access for Recreation and Emergency Services. La Pointe is currently working on developing a trail and boat dock at North Shore Park on the north end of the Island. This new access will not only improve public access to Lake Superior, but also provide a path for improved emergency services to assist boaters, ice fishers and campers.

While some of the faces and names have changed, the tiny community of La Pointe continues to do its part to curb pollutants from entering Lake Superior. At just fourteen miles long and three miles wide, Madeline Island is having a big impact on Lake Superior's future. With the help of many funding agencies, La Pointe has taken a proactive role in meeting the Binational Forum's zero discharge goals for Lake Superior, the greatest of the Great Lakes.

Sandra Dee Schultz-Naas, CPESC, is a soil scientist at Stable Solutions LLC. She may be reached at (715) 209-1006 or stablesolutions@centurytel.net.

The Great Lakes has the potential to create significant quantities of renewable energy for Wisconsin.

WIND ON THE WATER

Timothy Le Monds

Wisconsin has three primary native options for producing electricity from renewable sources: wind, hydroelectric and biofuels. Exploring these renewable energy sources has become increasingly important given heightened concerns about global warming, the availability of fuel supplies and price volatility.

The use of renewable energy in Wisconsin has grown in recent years due in large part to the establishment of a renewable portfolio standard (RPS). This standard requires that ten percent of the state's electricity be produced from renewable sources by 2015. Recently, Governor Jim Doyle and the Governor's Task Force on Global Warming (Task Force) recommended expanding the RPS to twenty-five percent by the year 2025, with ten percent of total retail electric sales coming from renewable resources within the state.

Due to its availability, wind generation is expected to become a large component of Wisconsin's renewable energy portfolio. Meeting the state's energy needs by generating electricity from wind provides significant environmental benefits compared to the use of fossil fuels. These benefits include reduced dependence on non-native energy sources, reduced emissions of air pollutants and greenhouse gases, reductions in the generation of solid wastes, and little or no water consumption. Despite these benefits, there exist concerns about using on-land wind resources for power including reliability, relative costs, effects on wildlife and impacts on existing land uses.

Harnessing Wisconsin's Great Lakes wind resources offers several potential advantages over on-land wind projects. First, offshore wind projects have the potential to produce power on a large scale that may be more economical than terrestrial wind projects due to the presence of more robust and consistent winds. Second, these same winds allow offshore projects to use larger turbines with a higher potential output than could be used on land. In addition, offshore projects may produce fewer concerns about interfering with existing land uses. Taken as a whole, these advantages have the potential to offset the challenges, risks and higher initial costs that might be expected with developing and operating an offshore wind project.

In recognition of these benefits and the need to identify potential concerns, the Task Force recommended that the Public Service Commission of Wisconsin lead a study group to investigate the feasibility of generating electricity from offshore wind resources on the Great Lakes. The study group found that offshore wind projects are technically feasible and represent one potential approach to meeting a portion of the

state's long-term energy needs. Other major findings in the study include:

- The development of wind projects in the Great Lakes will require a coordinated effort by state and federal agencies, local government, affected Indian Tribes and possibly the Wisconsin Legislature.
- In the near term, the cost of energy generated from offshore wind will likely exceed the cost of energy generated from terrestrial wind projects. As offshore wind technology and operational experience improve, the cost of energy from offshore wind may decrease.
- Offshore wind projects are technically feasible in the near-shore areas of the Great Lakes with present day technology. There exist significant technological challenges with the development of wind projects in deeper water locations where the best project sites may be located based on wind resources and other considerations.
- Wisconsin's existing transmission system could—without substantial upgrades—support the development of smaller-scale offshore wind projects of less than 600 MW that are located near a city. Projects larger than 600 MW may require more substantial upgrades to the existing transmission system including developing new transmission lines.

The study also found that of the two lakes, Lake Michigan likely offers greater opportunities for development of offshore wind projects and should be the focus of any future efforts by the State. Wisconsin's waters in Lake Superior are not extensive and a substantial portion is subject to development or use restriction.

Any offshore wind project in the Great Lakes will need to be large enough to take advantage of economies of scale, and obviously larger projects will require larger expanses of water. European experience with offshore wind projects has demonstrated that such projects typically require more area than comparable land-based wind projects due to the wind disturbance caused by multiple rows of turbines. For example, the proposed Cape Wind project near Cape Cod, Massachusetts—with a proposed capacity of 468 MW—would require 26 square miles to accommodate 130 turbines.

The Public Service Commission of Wisconsin will continue its investigation of offshore wind development in the Great Lakes. Next steps will include collection of wind resource, wildlife and other ecological data, further research on the development of deep water foundations, and discussions with other states and Canada on procuring a construction vessel for the Great Lakes.

Work will also begin with the Wisconsin Legislature to consider statutory changes to facilitate the development of offshore wind generation on the Great Lakes.

While tapping the vast wind resources of the Great Lakes has the potential to create significant quantities of renewable energy for Wisconsin, further investigation is required before moving forward with a large scale project that harnesses wind on the water.

Timothy Le Monds is director of governmental and public affairs with the Public Service Commission of Wisconsin. He may be reached at (608) 267-0912 or Timothy.LeMonds@psc.state.wi.us.

2009 WISCONSIN COASTAL MANAGEMENT PROGRAM GRANTS

Project Name
Grantee
WCMP Award
Project Description
Contact

Coastwide

Predicting and Reducing Bacterial Contamination at Great Lakes Beaches
Department of Natural Resources
$40,295
Modify and link the Long-Term Hydrologic Impact Assessment and Virtual Beach modeling tools into a single user-friendly decision-support tool to support real-time prediction of *E. coli* levels.
Mr. Adam Mednick, (608) 261-6416

St. Louis River Estuary Monitoring and Assessment Project
Lake Superior Research Institute
$29,271
Provide baseline monitoring and assessment for several sites within the St. Louis River estuary using volunteers trained and coordinated by a partnership between UW-Superior, UW-Extension and the DNR.
Ms. Sue O'Halloran, (715) 394-8525

Great Lakes State Natural Area BioBlitzes
Natural Resources Foundation of Wisconsin
$26,800
Plan and host Great Lakes BioBlitzes at three State Natural Areas in Kenosha, Douglas and Door Counties in day-long events including scientists, naturalists and the public.
Mr. Jeffrey Potter, (608) 261-4392

Managing Invasive Species: Our Coastal Roadways and Parks
Town & Country Resource, Conservation & Development, Inc.
$25,000
Train government land managers on implementing scientifically sound weed management practices along public roadways and within county and municipal parks.
Dr. Jill Hapner, (262) 335-4802

Beach Contamination through Volunteer Action
Alliance for the Great Lakes
$24,976
Identify and address beach contamination through the use of citizen-based monitoring, demonstration projects, education and training.
Ms. Stephanie Smith, (312) 933-0838

Technical Assistance
Bay-Lake Regional Planning Commission
$20,000
Support coastal management activities and technical assistance to local governments in the Bay-Lake region.
Mr. Mark Walter, (920) 448-2820

Technical Assistance
Northwest Regional Planning Commission
$20,000
Support coastal management activities and technical assistance to local governments in the Lake Superior region.
Mr. Jason Laumann, (715) 635-2197

Technical Assistance
Southeastern Wisconsin Regional Planning Commission
$20,000
Support coastal management activities and technical assistance to local governments in the Southeast region.
Dr. Don Reed, (262) 547-6721

Conservation Tillage in the Lake Superior Basin
Ashland County Land and Water Conservation Department
$17,000
Purchase a no-till seed drill for use by farmers and landowners in Ashland, Iron, Bayfield and Douglas Counties for pasture rejuvenation, reseeding, wildlife habitat enhancement, native grassland restoration, buffer installation and establishment of cover crops.
Mr. Tom Fratt, (715) 682-7187

Wisconsin Coastal Guide
University of Wisconsin Sea Grant Institute
$16,911
Produce several enhancements to the Wisconsin Coastal Guide, a web mapping site that encourages exploration of coastal attractions and cultural events along the Great Lakes Circle Tour.
Dr. David Hart, (608) 262-6515

Culvert Replacements on Fisheries and Sediment Delivery
Bad River Watershed Association
$14,920
Monitor fish friendly culvert installations at four sites in the Bad River watershed to evaluate how culvert replacements affect fish populations, stream habitat and sediment delivery.
Ms. Michele Wheeler, (715) 682-2003

Lyme Grass Control at Coastal State Natural Areas and State Parks/Forests
Department of Natural Resources
$14,000
Address a new invasive species of dune grass near Lake Michigan by inventorying rare plant locations, removing lyme grass from five sites and monitoring treatment results to improve future control efforts.
Mr. Joe Henry, (920) 662-5194

Comprehensive Planning Data Acquisition and Webmapping Site
Bay-Lake Regional Planning Commission
$12,919
Develop and maintain a complete, uniform dataset of land use and future land designs for the Bay-Lake region.
Mr. Mark Walter, (920) 448-2820

Bayfield County Aquatic Invasive Species Education
Bayfield County Aquatic Invasive Species Program
$7,720
Educate Bayfield County residents, K-12 schools and visitors on the problems posed by aquatic invasive species.
Ms. Stefania Strzalkowska, (715) 373-6167

Coastal Wetland Inventory
Department of Natural Resources
$90,691
Convert aerial photographs to digital files for Brown and Door Counties and update wetland map changes for other coastal counties.
Ms. Lois Simon, (608) 266-8852

Technical Assistance to Local Units of Government
Department of Natural Resources
$389,230
Support core waterway and wetland permitting staff and local government technical assistance in the three coastal regions.
Ms. Lois Simon, (608) 266-8852

Ashland County

Ashland Waterfront Access Reclamation and Enhancement
City of Ashland
$31,250
Improve winter vehicular access and summer lake access for paddlers to the lake, stormwater treatment and other site amenities for pedestrian accommodation.
Ms. Brea Lemke, (715) 682-7041

Bayfield County

North Fish Creek Flood Flow and Sediment Erosion Reduction
University of Wisconsin-Madison
$10,240
Monitor a dry detention installation site and stream gauges along North Fish Creek and present a methodology for design and distribution of dry detention basins with the goal of decreasing erosion and sedimentation.
Dr. John Hoopes, (608) 262-2977

Cornucopia Waterfront Project
Town of Bell
$10,000
Upgrade public marina restrooms to accommodate an increasing number of people using the marina.
Mr. William Sloan, (715) 742-3470

Brown County

Lower Fox River and Green Bay Shoreline Waterfront Redevelopment Plan
Brown County Planning Commission
$29,960
Create a plan for the Lower Fox River and Green Bay shoreline to coordinate local, county, state and federal efforts to redevelop the waterfront consistent with adopted county and local comprehensive plans.
Mr. Aaron Schuette, (920) 448-6480

Door County

Hidding Purchase
Town of Liberty Grove
$50,000
Acquire 6.8 acres with 214 feet of Green Bay shoreline adjacent to an existing Town boat launch and allow for safer and increased access to Green Bay.
Mr. Walter Kalms, (920) 854-2934

Portage Park Land Expansion
Town of Sturgeon Bay
$50,000
Acquire 4.9 acres with 424 feet of shoreline on Lake Michigan adjacent to Portage Town Park providing additional opportunities for beach access with minimal facilities development or maintenance.
Mr. Dan Cihlar, (920) 743-7844

Door County Public Beaches Best Management Practices
Door County Soil and Water Conservation Department
$46,000
Provide Door County municipalities with a cost-share incentive for the construction of structural and non-structural practices to reduce the amount of stormwater contaminants from entering beaches.
Ms. Amanda Brown, (920) 746-2214

Douglas County

Arrowhead Pier Reconstruction, Phase II
City of Superior
$130,317
Reconstruct Arrowhead Pier including a new pier on steel pilings with a composite decking system, railing, benches and lighting.
Ms. Mary Morgan, (715) 395-7279

City of Superior Wetland Evaluation
Department of Natural Resources
$25,000
Analyze the cumulative impacts of past wetlands losses and potential future losses in the City of Superior.
Ms. Nancy Larson, (715) 395-6911

Iron County

Protecting Lake Superior Resources in Iron County – Phase II
Iron County
$24,500
Correct zoning map inconsistencies and develop new zoning ordinance language to protect Lake Superior resources.
Mr. Mike Saari, (715) 561-3375

Milwaukee County

Erie Street Plaza
City of Milwaukee Department of City Development
$75,000
Construct the Erie Street Plaza in the Third Ward Neighborhood as a sustainable garden intended to complement the features of the neighborhood.
Ms. Alyssa Elver, (414) 286-5802

Warnimont Park Bluffs Access and Protection
Milwaukee County Department of Parks, Recreation & Culture
$42,320
Provide for trail construction, a wood viewing deck and interpretive signage in Milwaukee County's Warnimont Park and at the Warnimont Bluff Fens State Natural Area.
Mr. James Keegan, (414) 257-4775

Milwaukee River Bulkhead Survey
Port of Milwaukee
$40,000
Utilize results from an updated survey of Milwaukee's riverfront properties to set up, review and implement new bulkhead lines and property descriptions.
Mr. Larry Sullivan, (414) 286-8139

Milwaukee's Central Park Master Plan
Milwaukee Riverkeeper
$30,000
Develop a master plan for recreational usage and environmental restoration of 800 acres that are adjacent to the Milwaukee River and currently protected by a zoning overlay district.
Ms. Ann Brummitt, (414) 287-0207

Atwater Beach
Village of Shorewood
$21,579
Restore and revitalize Atwater Beach through the construction of a community-built playground and boardwalk at beach level.
Ms. Ericka Lang, (414) 847-2647

Oconto County

Boat Ramp Reconstruction
City of Oconto Parks Department
$52,536
Reconstruct eight city boat ramps on the Oconto River and Green Bay.
Mr. Kale Proksch, (920) 834-7706

Oconto County GIS Wetland Restoration Inventory
Oconto County Land Conservation Department
$22,237
Develop a GIS inventory of 300 wetland restoration projects on private land to implement conservation programs and complete a coastwide inventory of private wetland restorations.
Dr. Jill Hapner, (262) 227-6404

Ozaukee County

Little Menomonee Creek Wetland Restoration Project-Phase II
Milwaukee Metropolitan Sewerage District
$50,000
Restore wooded wetlands and natural streambanks at a 103-acre site to increase potential flood storage and improve water quality and wildlife habitat.
Mr. Robert Schermeister, (414) 225-2053

Bluff and Beach Profile Education and Outreach
University of Wisconsin-Madison
$29,985
Evaluate the impacts of a shore protection system at Concordia University using oblique video imaging techniques, combined ground penetrating radar and sub-bottom profiling geophysical instruments.
Dr. Chin H. Wu, (608) 263-3078

Rain Garden Initiative
Ozaukee County Planning, Resources and Land Management Department
$9,000
Establish seven rain garden demonstration sites owned by Ozaukee County, the Villages of Grafton and Fredonia and the Town of Cedarburg.
Mr. Geoff Schramm, (262) 284-8270

Racine County

Potential Nonpoint Source Contributions in Ambient Waters
City of Racine Health Department
$29,117
Conduct parallel testing on surface water samples along the Root River and at North and Zoo Beaches to continue research into quantitative real-time polymerase chain reaction development and validation.
Dr. Julie Kinzelman, (262) 636-9501

Root River Public Access
City of Racine
$9,890
Provide access to the Root River by implementing public access plan recommendations including boat launches, access and overlooks, adequate signage and handicap accessibility to public canoe and kayak launches.
Mr. Donnie Snow, (262) 636-9131

ACKNOWLEDGMENTS

The Wisconsin Coastal Management Program was established in the Department of Administration (DOA) in 1978 under the Federal Coastal Zone Management Act. The program and its partners work to achieve balance between natural resource preservation and economic development along Wisconsin's Great Lakes coasts. The program thanks its principal federal partner, the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, for the technical and financial support it provides on behalf of Wisconsin's coastal communities.

Wisconsin Coastal Management Program

Jim Doyle
Governor

Michael L. Morgan
Secretary, DOA

Brian Vigue
Administrator, Division of Intergovernmental Relations, DOA

Harald (Jordy) Jordahl
Deputy Administrator, Division of Intergovernmental Relations, DOA

Mike Friis
Leader, Resource Policy Team and Manager, WCMP

Travis Olson
Wetland Protection & Land Use Planning Coordinator, WCMP

Kathleen Angel
Federal Consistency Coordinator, WCMP

Todd Breiby
Coastal Nonpoint Control and Education Coordinator, WCMP

Wisconsin Coastal Management Council

Mayor Larry MacDonald, *Bayfield, Chair*

Todd Ambs, *Wisconsin Department of Natural Resources*

Robert Browne, *Superior*

Sharon Cook, *Milwaukee*

Patricia Hoeft, *Oneida*

James P. Hurley, *University of Wisconsin Sea Grant Institute*

Larry Kieck, *Wisconsin Department of Transportation*

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William Schuster, *Sturgeon Bay*

Ervin Soulier, *Odanah*

Brian Vigue, *DOA*

Senator Robert W. Wirch, *Kenosha*

Editor

James M. Langdon, *Deputy Administrator, Division of Enterprise Operations, DOA*

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Page, Image, Source

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3, Jacket Work, Gene Clark

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5, Sheboygan, Wisconsin Department of Tourism

6, St. Louis River, Michael Anderson

7, St. Louis River, Michael Anderson

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9, Bay Shore Park, Brown County Planning Commission

10, Commercial Fishing, Jeff Gunderson

11, Pharmaceutical Collection, City of Superior

12, Chequamegon Bay, Todd Breiby

13, Griggs Landing, Keith Sowl

14, Wind Turbines, Todd Spink (Courtesy of DOE/NREL)

15, Wind Farm, Ruth Baranowski (Courtesy of DOE/NREL)

16, Brule River, Mike Friis

20, Gathering Waters Festival, Todd Breiby

21, Ashland, Mike Friis

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Wisconsin Coastal Management Program

101 East Wilson Street
PO Box 8944
Madison, Wisconsin 53708-8944
(608) 267-7982
http://coastal.wisconsin.gov
coastal@wisconsin.gov

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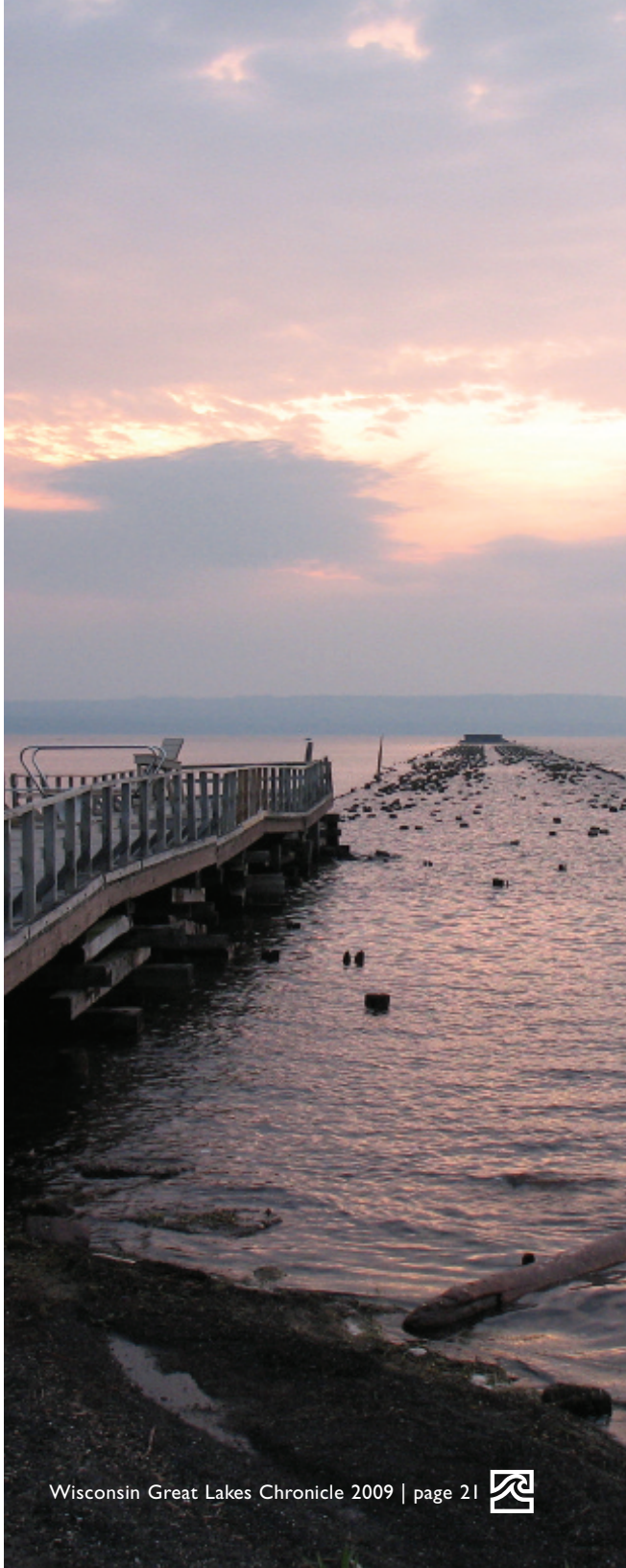

Wisconsin Great Lakes Chronicle 2009 is dedicated to the lives and works of Martin Hanson (left) and Phil Keillor, environmental lions who contributed greatly to the health and protection of the Great Lakes.

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