

Wisconsin Great Lakes Chronicle
2013



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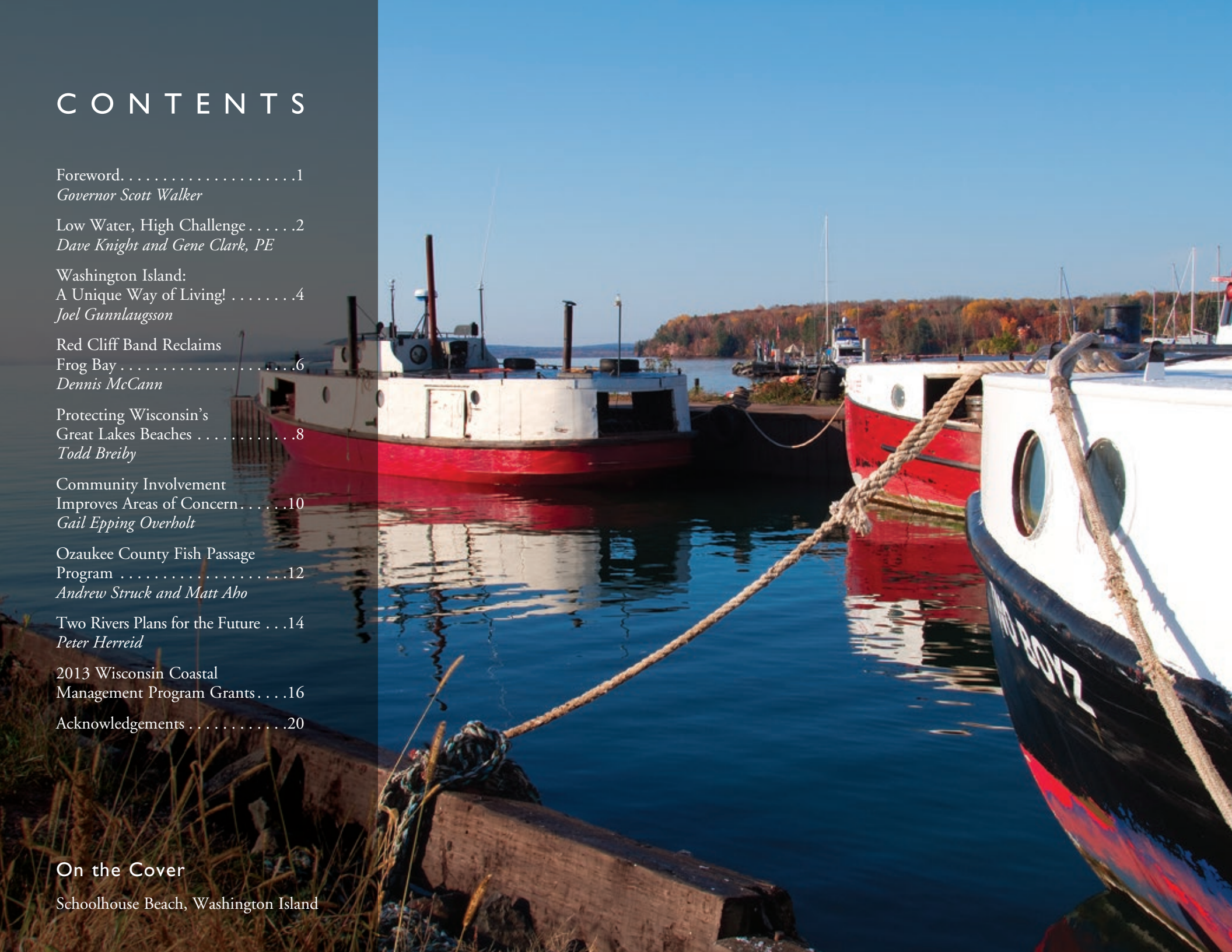
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FOREWORD

Governor Scott Walker

Dear Friends of the Great Lakes,

Wisconsin is emerging as a world leader in freshwater economic development, research and tourism. Several projects along our Great Lakes coasts highlight collaborative initiatives among state and local governments, higher education, community leaders and business associations.



Wisconsin's ports and waterways are economic lifelines for the transport of commodities and products to global markets. The Wisconsin Coastal Management Program (WCMP) is funding a Wisconsin Commercial Ports Master Plan to document the flow of waterway commodities and examine ways to increase waterborne freight transportation.

In 2012, the Wisconsin Housing and Economic Development Authority provided \$20 million in New Markets Tax Credits to Milwaukee's Global Water Center. The financing will redevelop

a vacant seven-story building into office and research space for business, government and academic tenants specializing in water products, technology and economic development.

In Racine, a WCMP grant supported Back to the Root: An Urban River Revitalization Plan. The plan sets the stage for business and community development along this important Lake Michigan tributary.

The Wisconsin Harbor Towns Association (WHTA) represents nineteen coastal communities along Wisconsin's scenic coastline. With WCMP funding, the WHTA updated the Wisconsin Harbor Towns Travel Guide to assist visitors search among the many amenities along our shores. The Guide is available online at <http://www.wisconsinharbortowns.net>.


A WCMP and Department of Tourism partnership produced new Lake Superior and Michigan episodes of the popular *Discover Wisconsin* travelogue. The shows promote the importance of Wisconsin's Great Lakes as natural resources and tourist destinations. The episodes will be televised through 2015.

Wisconsin universities are leaders in freshwater education. Graduate students at the University of Wisconsin-Milwaukee School of Freshwater Sciences are at the forefront of research that will lead to improved policies and management of freshwater resources around the world.

The Institute for Water Business at the University of Wisconsin-Whitewater is preparing students with the knowledge needed to wisely manage water resources as future business leaders. The UW-W program includes a water business minor and water emphasis.

Marquette University Law School offers its students an innovative water law curriculum. These courses prepare future attorneys to specialize in matters involving water rights, environmental policy and natural resources law.

Under the leadership and vision of its citizens, Wisconsin is moving forward to protect its water resources, offer world-class tourism amenities and enhance water-related business opportunities. Enjoy this year's *Wisconsin Great Lakes Chronicle* showcasing emerging trends and success stories along our coasts.



Extremely low water necessitates navigational dredging and exposes aging piers and breakwaters that are ill-designed for such conditions.

LOW WATER, HIGH CHALLENGE

Dave Knight and Gene Clark, PE

Of the physical variables that affect Wisconsin's coastal communities, Great Lakes water levels may be the most impactful. They dictate how waterfront property is used and managed, and to what degree commercial and recreational navigation access is available. Water levels also impact how well coastal infrastructure—such as piers, breakwaters and bulkheads—protect valuable assets from storm and flood damage.

Periods of high water present obvious challenges for coastal protection as demonstrated by scenes during the mid-1980s of waves rolling over piers, houses falling off eroding bluffs and harbor waters lapping onto parks and sidewalks. But the extremely low water regime now underway presents its own challenges by necessitating more navigational dredging and exposing sections of aging piers and breakwaters that are ill-designed for such conditions.

Compounding the low lake level issue is another unfolding reality—a longstanding federal commitment to small harbor dredging and upkeep of harbor infrastructure may be coming to an end. Budgetary constraints and questions as to federal interest in maintaining once commercial—but now largely recreational—harbors have virtually deprioritized them out of the federal harbor maintenance program.

Convergence of these climatic and budgetary events could redefine the roles of state and local governments in Great Lakes harbor maintenance. But could opportunities for a more nimble and cost effective adaptive management style also emerge in the process?

It would be much easier for all concerned if Great Lakes water levels were stable, predictable or completely manageable. But they are none of the above and this year's extremes stand as yet another testament to the lakes' capriciousness.

An exceedingly warm and dry 2012 drove water levels that were already on an approximately fifteen-year downward trend to near or record setting lows in early 2013. All three of the primary drivers of Great Lakes water levels—less precipitation, more lake surface evaporation and less basin runoff—contributed to the current condition. Other hydrological factors remain in play—such as diversions into and out of the basin and flows between the lakes—but the main determiners of water levels remain climate-related.

Looking ahead, basin climate models do not project much likelihood for change in the near term. Two particularly significant trends—warming water temperatures (Lake Superior recorded the warmest water temperatures in over a century during 2012) and steadily diminishing winter ice cover—contribute to more evaporation and the potential for even lower water levels.

Another aspect of the climate model impacting coastal protection is an expectation of increased storm volatility. The US Army Corps of Engineers noted that over half of the coastal structures on the Great Lakes were built prior to World War I and 80 percent are older than their typical 50-year lifespan. Many of these structures were not designed to be exposed to the open air and low water levels may accelerate deterioration and cause actual failures.

For boaters and cargo carriers, a dredging crisis was shaping up long before current water levels exacerbated the problem. Inadequate funding of the Corps' Great Lakes dredging program for over a decade has created a backlog of over eighteen million tons of sediment in Great Lakes harbors and channels. Some 36 of 60 federally-authorized commercial harbors—seven in Wisconsin—and 46 of 80 recreational harbors—nine in Wisconsin—were in need of dredging at the start of 2013.

Despite all these needs, the federal administration's budget allowed the Corps to dredge only fifteen Great Lakes harbors in 2013, including only two in Wisconsin—Green Bay and Superior. The Corps has identified \$64 million in Wisconsin port dredging, operations and maintenance needs for FY14, but only \$12 million is provided in the President's budget.

With the Corps of Engineers withdrawing from all but the busiest Great Lakes commercial ports and not withstanding Congressional reform of the Harbor Maintenance Trust Fund which could restore a significant amount of available federal dollars, the responsibility for maintaining safe navigation access and reliable coastal protection structures may have to tilt further toward state and local entities.

According to the Wisconsin Department of Transportation, the Harbor Assistance Program

(HAP) grant cycle recently drew dredging applications totaling about \$7.45 million. A project to dredge the federal navigation channel between Washington Island and the mainland is particularly critical because the island ferry must light load and switch docks due to shallow conditions.

Harbors that do not qualify for the HAP can apply to the Wisconsin Department of Natural Resources Recreational Boating Facilities grant program. In addition, almost all dredging activity in Door County was being privately financed with over 60 permits filed during a recent seven-month period.

At least one other state, Michigan, has stepped up in 2013 with a \$21 million emergency dredging program that will assist 49 harbors impaired by low water levels. For Wisconsin and all other Great Lakes states, harbor maintenance and coastal protection are two functions that will only grow in importance, even as they may grow in difficulty to address.

With less reliance on federal resources and more dramatic lake level swings in store, state agencies and local governments are facing a literal future of uncharted waters.

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Washington Island has a diverse economy, unique natural features, a rich history and appealing cultural amenities.

WASHINGTON ISLAND: A UNIQUE WAY OF LIVING!

Joel Gunnlaugsson

I am a Ferry Captain for the Washington Island Ferry Line, the only way of getting to and from the island on a year-round daily basis. An *Islander*, I was born here and have called the island home ever since.

There are no fast food restaurants, chain motels, big box stores or movie theaters, so people make their own entertainment. People come to relax and commune with nature. Outdoor activities abound from hunting and fishing to kayaking and swimming.

The island—rich in Scandinavian tradition—has historical museums, churches and public parks to visit. Historical and cultural attractions are spread out over 36 square miles that are also good for hiking, biking and driving excursions.

Washington Island is the largest of Door County's 30 islands and located five miles northeast of the Door Peninsula tip. The island is one of a string of islands that are outcroppings of the Niagara Escarpment which runs east-west from New York State through Ontario, Michigan, Wisconsin and Illinois. The Escarpment is most famous as the cliff over which the Niagara River plunges at Niagara Falls.

Washington Island consists of rock formations and in places its sides are rugged and precipitous. Between West and Washington Harbors, high rising rocky bluffs—filled with nooks and caves and covered with evergreen trees—are picturesquely imposing. Around Detroit and Jackson Harbors, the beach is more sloping.

About 1641, the Potawatomi Indians came to the islands and greeted the first immigrants from Norway, Sweden, Denmark, Iceland, Finland and Ireland. Washington Island is today the second largest Icelandic community in North America. Trinity Lutheran Church is an authentic Norwegian stave church with acanthus carvings and hand crafted shingles.

The Town of Washington Island, established in 1850, includes five other Islands: Plum, Detroit, Hog, Pilot and Rock. Only accessible by ferry, the 900-acre Rock Island State Park is Wisconsin's only state park that constitutes an entire island. Rock Island is home to the first United States commissioned lighthouse on Lake Michigan. The refurbished Potawatomi Lighthouse is open for public tours from May to October.

Washington Island has year round residents and its own economy. A winter population of 700 grows to 3,500 in the summer. A self-sufficient community, the island has over 100 miles of paved roads, fire and EMS personnel, a medical clinic, the state's smallest K-12 school, an electric power company, a grocery store, gas stations, taverns, restaurants and motels, an airport and a helicopter pad.

The economy includes hospitality, retail, construction, farming, logging and commercial fishing. However, tourism is the island's largest industry. The ferry carries 200,000 passengers and 70,000 vehicles each year. About 65 percent of the passengers are visitors and the remainder are Islanders.



Forests originally covered the island. Predominantly evergreen, these trees are still found in uncleared areas. Lake proximity makes the climate mild and equable. In the spring, fruit and vegetation are comparatively safe from the late frosts. Combined with soil that seems peculiarly adapted to fruit, the island is an excellent orchard region. Apples grow well and acres of cherry trees are cultivated. Small fruits abound.

The soil gives a unique flavor to peas and other vegetables that make them much sought by canneries. Potatoes are extensively raised. Crops are harvested under contract at profitable prices.

An island industry to note is *place based marketing* that has grown out of the high quality local agriculture. Local produce is prominently featured at local restaurants and enjoyed by Islanders and visitors alike.

Finding a use for Washington Island's natural wheat—certified organic in 2008—allowed local farmers to participate competitively in commercial agriculture and benefit the regional economy. Capital Brewery's Island Wheat Ale increased the two primary growers' wheat harvests to more than half a million pounds—all herbicide and pesticide-free—spanning 800 acres.

The island's narrow six-mile passage connecting Lake Michigan and Green Bay has turbulent currents and strong sudden winds that the local Indians called *Door to Death*. The Death Door's Spirits vodka, white whiskey and gin distillers are committed to working with local farmers to increase the use and fame of the island's wheat. All of these unique commodities help to diversify the island's economy.


As a ferry captain, the Great Lakes low water level is of particular concern. Year-round ferry access generates \$16 million of annual economic activity through transportation of passengers, vehicles and cargo. In January 2013, a record drop in lake level made it impossible to run the icebreaking ferry and Detroit Harbor was unusable for non-icebreaking vessels. This necessitated a \$750,000 dredging project at Potato Dock and the State has allocated \$5.2 million to dredge the Detroit Harbor channel.

As town chairman, Washington Island continues to work on geographic constraints—insularity of island life, diversifying the economy and preserving natural features and biodiversity. By their very nature, islands are isolated and sensitive to change. These attributes make them refuges for natural heritage and biological diversity and thus have high conservation value. While the island's features are subject to threats from human activity, we view these challenges as opportunities.

Spend time on Washington Island, the best island life Wisconsin has to offer!

Joel Gunnlaugsson is a Ferry Captain, the Island Town Chairman, a Door County Board Supervisor, a Lions Club member and the 2nd Assistant Fire Chief. He wishes to acknowledge the following sources: washingtonisland.com, washingtonisland-wi.com, ediblechicago.com and Islands of Life: A Biodiversity and Conservation Atlas of the Great Lakes Islands. He may be reached at (920) 847-2522 or chairman@washingtonisland-wi.gov.





The Johnsons' act of goodwill guarantees Frog Bay's towering canopy and pebbled beach will remain in its pristine state.

RED CLIFF BAND RECLAIMS FROG BAY

Dennis McCann

When David Johnson bought a prime piece of Lake Superior frontage at public auction in 1980, he learned that the Red Cliff Band of Lake Superior Chippewa also wanted the land but could not afford to place a bid. He would recall years later that it made him feel a bit awkward to obtain one-time tribal land in such a way, but not so uncomfortable that he considered turning the land—which he knew would someday have much greater value—back to the Tribe.

Yet when that same parcel and adjacent land owned by Mr. Johnson were dedicated as the new Frog Bay Tribal National Park in late 2012, he attended as the man of honor. The park became possible because Mr. Johnson and his wife, Marjorie—working through the Bayfield Regional Conservancy—sold the 87-acre property to the Red Cliff people at half its appraised value.

The Johnsons' act of goodwill guarantees the site's towering canopy and pebbled beach will remain in its pristine state. Following a pipe ceremony, the event moved to speeches—including one by Mr. Johnson who dedicated the park to his recently deceased wife.

The new park is a victory for conservation, but also a triumph for the Red Cliff Band because it marks the return of land that had historically been located within tribal boundaries and carried great cultural and spiritual significance. And by creating the nation's first tribally-owned national park

open to the public, *this gem*—as Tribal Chair Rose Gurnoe-Soulier called it—will be enjoyed by more than just tribal members.

Tribal Vice-Chair Marvin Defoe, whose inspiration it was to declare the land a tribal national park, credited Mr. Johnson for seeing the value of working with the Tribe and the Conservancy to permanently protect a special place.

“I would like to acknowledge him for the generosity,” said Mr. Defoe. The Chippewa's very identity is indelibly tied to the land and the water and the Johnsons' actions will allow them to “make sure the land is held in reverence again.”

It was Mr. Johnson's own reverence for the land that allowed the property to maintain so much of its natural beauty. He preferred to keep the property—with its diverse boreal forest community of hemlock, white pine, spruce and other species—in its pristine state.

He declined the financial benefits of placing the land into the state's Managed Forest Law program because doing so would have required occasional logging. For the same reason, the Johnsons did not put the land on the market for fear that any interested developer would carve it into 150-foot lots.

Instead, the land was conserved to create a park for all to enjoy. The Conservancy will hold a conservation easement on the entire property to preserve its beaches, forest and ravines against any development.



How the transfer came about involved more than a bit of serendipity. The Johnsons had been long-time neighbors of and close friends with former Sen. Gaylord Nelson and his family. Sen. Nelson is deemed the father of the Apostle Islands National Lakeshore, and the view from the Johnsons' Frog Bay property is of islands managed as part of the Gaylord Nelson Wilderness.

It was Sen. Nelson's daughter, Tia—who said Marjorie Johnson was “like a second mother to me”—who put the Johnsons in contact with Ellen Kwiatkowski, then executive director of the Conservancy, and initiated discussions that led to tribal acquisition. At the time, Ms. Kwiatowski said, “The thing I like about this project is it brings so many groups together.”

Under the purchase agreement, a committee of elders, natural resource professionals, tribal government representatives and Bayfield Regional Conservancy staff will oversee management of the park. Tribal crews and volunteers will maintain trails and access roads, tribal wardens will enforce game regulations, and tribal police will enforce park hours.

Almost as soon as the acquisition was completed, Red Cliff natural resources employees began establishing new trails. A bathroom was built at the small parking area at the park entrance, and in 2013 the Tribe plans to build a footbridge over a steep ravine to link the parking area with the new trail loop.



However, Chad Abel, Red Cliff Natural Resources Administrator, said visitors were not waiting for the improvements to be completed before visiting the long off-limits site. Every morning, Mr. Abel said, five or six cars were already in the parking area and some visitors even came in winter to snowshoe down to the beach.


Looking ahead, the Tribe's goal is to acquire adjacent parcels to protect even more of the Frog Bay watershed. First, though, the Tribe is enjoying its unique accomplishment.

Mr. Defoe said a tribal national park—a name that reflects the sovereignty of the Red Cliff people—will allow members to share more of their reservation, culture and traditions with the larger world. That, he said, is possible only through public access to Frog Bay, access that would not be available if the land was privately owned.

“It's kind of like you own a home, (but) you can't go in that one bedroom there.”

Now, he said, the home is open to all.

Dennis McCann is a Bayfield writer and author whose latest book is This Superior Place: Stories of Bayfield and the Apostle Islands. He may be reached at dennis.mccann@yahoo.com.



Excellent beach health
and water quality leads to
increased coastal visitors
and a positive economic
impact on the state.

PROTECTING WISCONSIN'S GREAT LAKES BEACHES

Todd Breiby

Many Wisconsin coastal communities are premier tourist destinations that offer diverse water-related recreational opportunities. World-renowned natural resources and thousands of Great Lakes-based businesses enhance the quality of life for residents and have a direct impact on the state's economy, job market and tourism industry.

Great Lakes beaches—found in many of Wisconsin's harbor towns and coastal communities—are integral to the vitality of local economies. Beaches are anchors for recreational, economic and waterfront development activities and provide access for individuals to connect with the Great Lakes. In addition, beaches are seen as indicators of the health of the Great Lakes and its watersheds.

With more than 190 public beaches along Wisconsin's Lake Michigan and Lake Superior coastlines, harbor towns and local tourism associations are increasingly promoting their Great Lakes beaches to statewide, regional and national audiences. It is estimated that \$3-5 billion of tourism activity is directly connected to water-related recreation in Wisconsin's Great Lakes counties with each beachgoer bringing \$35-\$50 per day to the local economy. Therefore, excellent beach health and water quality leads to increased visitation and usage, which in turn has a positive economic impact on the state.

Bacterial contamination, *Cladophora*, toxic algal blooms and outbreaks of Type E botulism in fish and birds are examples of health concerns that can result in poor quality beach and water resources.

Elevated fecal indicator bacteria such as *E. coli* in recreational waters pose a public health risk and directly impact the local economy due to swim advisories and beach closures.

In addition, other issues—some originating far inland—are putting stress on the Great Lakes. Nonpoint and point source pollution, land use practices and invasive species are impacting water quality at beaches in Wisconsin and throughout the Great Lakes.

Over the last decade, the commitment of local governments and beach managers, state programs, a robust research community and collaboration at all levels have placed Wisconsin at the national forefront for beach research, management and education. Several examples of Wisconsin's leadership are particularly notable.

In 2012, the **City of Racine** became the first municipality on the Great Lakes to receive permission from the US Environmental Protection Agency to use qPCR (quantitative polymerase chain reaction) to produce a more rapid response in monitoring recreational waters. This process means that decisions to open or close beaches can be made the same day on which samples are collected. Traditional methods are culture-based with results not available for 18-24 hours. That means swimmers would not know until the next day if they swam in contaminated water.

Early successes from the City of Racine rapid testing process led to collaborative efforts with



the University of Wisconsin-Oshkosh on the establishment of **regional rapid method testing facilities** funded by the Great Lakes Restoration Initiative (GLRI). In addition, the Wisconsin Coastal Management Program (WCMP) funded two Wisconsin Department of Natural Resources (DNR) projects: one to develop a decision support tool to predict *E. coli* levels in real-time, and a second to develop operational nowcasts—real-time predictive models—at high priority beaches.

Local governments continue to seek cost effective ways to monitor recreational water quality and provide the necessary notifications to protect public health, particularly in light of the potential absence of federal Beaches Environmental Assessment and Coastal Health Act (BEACH Act) funding. With 2013 funding from the

WCMP, **Ozaukee and Sheboygan County Health Departments**—in coordination with the Wisconsin DNR—will test a two-tiered nowcast system. This project will run a standard Tier I nowcast model on days when beach monitoring is conducted, plus an automated Tier II nowcast using only web-accessible data on other days when samples cannot be taken.

Through funding from the WCMP and the GLRI, **beach re-engineering projects** on Lake Michigan and Lake Superior have addressed issues of contamination. These stewardship projects—including the identification of contamination sources, the development of design plans and the implementation of best management practices—have greatly assisted in resurrecting beaches as coastal gems. Mitigated beaches have shown

substantial increases in usage. Successful examples include North Beach in Racine, Bradford Beach in Milwaukee and Egg Harbor Beach in Door County.


Racine's North Beach is one of five **Blue Wave** beaches in Wisconsin. Certified in 2004, North Beach was the first in Wisconsin and the second on the Great Lakes to receive this unique national designation for outstanding environmental stewardship. Designations such as Blue Wave certification reflect the dedicated efforts of local communities and stakeholders who have worked diligently to improve and maintain the health of these coastal resources.

Wisconsin has made substantial progress over the last decade in restoring and enhancing its Great Lakes beaches, but more work is on the horizon. Continued efforts include the active monitoring of beaches and recreational waters following the implementation of best management practices, economic analyses of the effects of beach mitigation on local communities, and the development of cost-effective means to sustainably monitor Wisconsin's Great Lakes recreational waters.

Looking ahead, Wisconsin is committed to ensuring its Great Lakes beaches play a vibrant role in the quality of life of its coastal communities and in the economy for us all.

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Citizen voices and
volunteer activities
are important resources
in the process of
cleaning Wisconsin's
Areas of Concern.

COMMUNITY INVOLVEMENT IMPROVES AREAS OF CONCERN

Gail Epping Overholt

The natural harbors and tributaries along the Great Lakes have long been important industrial and recreational centers. In Wisconsin's early days when transportation by water was common, shoreline communities grew into hubs of shipping, commerce and industry. Rivers were dammed, dredged, straightened, widened and often lined with concrete to accommodate needed economic growth.

Over time, the waters became heavily polluted by industrial, agricultural and urban use. This pollution eventually compromised or eliminated many of the important environmental functions that human and natural communities depend upon. The loss of these functions—or beneficial uses—was the principal reason that five Wisconsin waterways became listed as Areas of Concern (AOCs).

The US-Canada Great Lakes Water Quality Agreement identifies fourteen beneficial uses that are used in designating AOCs, including healthy fisheries, clean beaches, safe drinking water and suitable habitat for wildlife. Thanks to support from the Great Lakes Restoration Initiative and a resurgence of local interest, Wisconsin is now poised to take giant leaps toward restoring many of these beneficial uses and even delisting these waterways as Areas of Concern.

The road to delisting can be long and complicated. At each step of the way, local experts pinpoint and evaluate existing problems and identify causes. They then develop corrective

actions and strategies to achieve desired results. With community support, work proceeds to meet restoration goals for each beneficial use.

In Wisconsin, officials recognize that cleaning up an AOC must be community-driven to be successful. Persons directly affected by the AOC lead efforts to achieve cleaner water, stronger local economies and revitalized communities. Citizens are encouraged to voice their expectations and contribute their knowledge to produce solutions based on the complexities of their communities. Both large and small Wisconsin AOC projects demonstrate the wisdom of the community-based approach.

The Sheboygan River AOC has made impressive progress and creates a path for other Wisconsin AOCs to follow. From dredging toxic sediment to evaluating river-bottom plants and animals, the work seems endless. However, the Sheboygan River project proves the old saying, “many hands make light work.”

This tremendous effort is due to collaboration and partnership across a spectrum of interests. The US Environmental Protection Agency, the Wisconsin Department of Natural Resources, the City of Sheboygan, Sheboygan County, Pollution Risk Services (Tecumseh Corporation) and Wisconsin Public Service have established a foundation of institutional cooperation.

Local governments serve a critical role by contributing the matching funds required to complete the work that will take this AOC to

the third stage of the cleanup plan. During this last stage, monitoring will show whether conditions have improved sufficiently to allow the Sheboygan River AOC to be delisted.

At the citizen level, people from all walks of life are involved in data collection through science programs provided by UW-Extension. For example, training sessions and hikes allow residents to contribute knowledge about Wisconsin bats, freshwater mussels and birds. The success of the Sheboygan River restoration is due to the dedication of countless people from different agencies, organizations and backgrounds who have contributed their energy and expertise to this large, coordinated effort.

Over 200 people make up the citizen Stakeholder Input Group (SIG) involved in the **Milwaukee Estuary AOC**. A key feature of the SIG is a twelve-member stakeholder delegation team representing public, private and nonprofit interests in the Milwaukee area formed to improve public input and act as an idea incubator for public engagement. In addition, a technical team developed a Fish and Wildlife Habitat Plan that identifies a broad range of restoration projects. Each technical team member brings unique expertise to the table for an ecosystem-based, multi-pronged approach.

An important component of the Milwaukee AOC project is an education, information and outreach campaign led by the SIG. The campaign will



increase public involvement through interpretive signage, live video of underwater habitats, canoe and kayak expeditions, workshops and cleanup events. The SIG approach embodies Milwaukee's commitment to community engagement.

Smaller—but no less important—projects are at work at AOC's along Wisconsin's coasts. For instance, high school students in the Lower Fox-Green Bay AOC are serving as citizen scientists by creating videos that illustrate the complexities of the river system. Similarly, students in Sheboygan are gaining hands-on experience by assessing the health of the river ecosystem as they monitor a variety of water parameters alongside experts and their teachers at Camp Y-Koda.

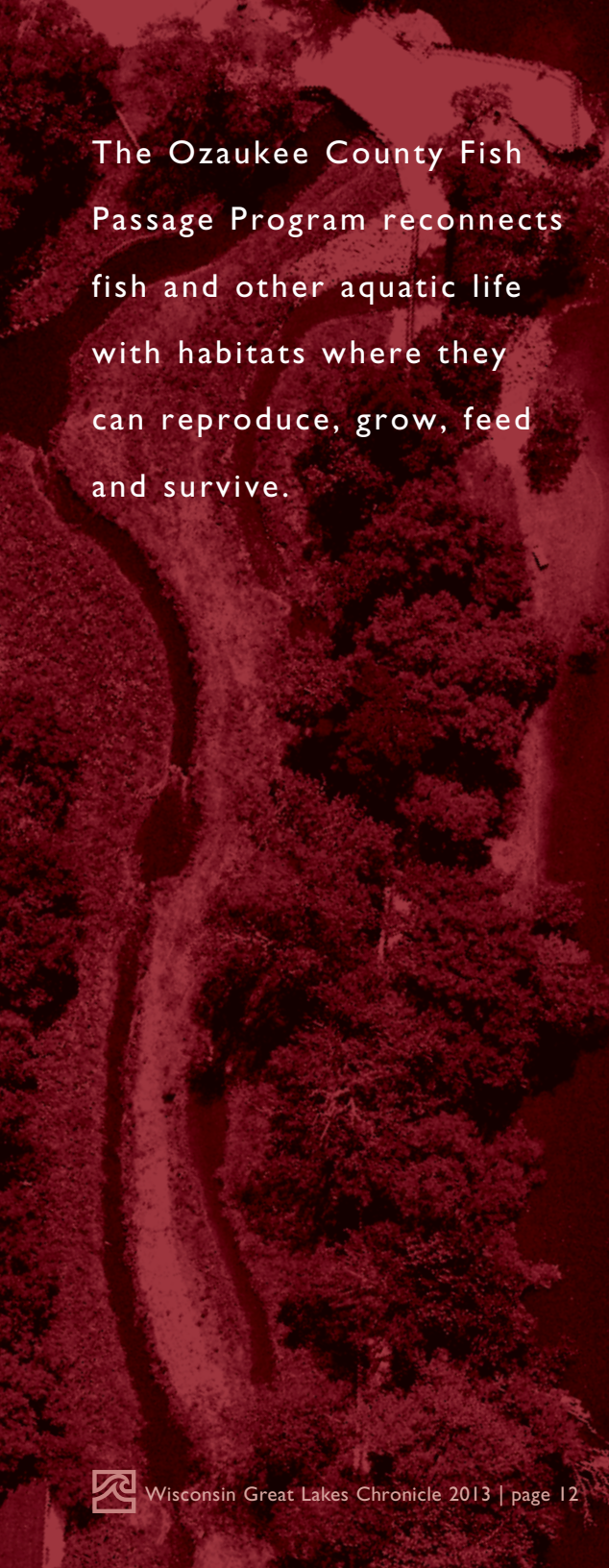
Milwaukee's River Ambassadors—citizens versed in the history of the city and local restoration projects—are volunteers who educate citizens and visitors along the Riverwalk about interesting river characteristics. It is not uncommon to engage an

Ambassador on a bustling summer evening about floating islands that provide resting places for migrating fish.

In Sheboygan, families volunteer to cut invasive brush, pick up litter and monitor frog and toad populations in wetlands. Birders along both the Sheboygan and Menominee Rivers enter their observations into the Cornell Lab of Ornithology's eBird web-based database.

No matter the scope of the effort, it is important that citizen voices are included in the process of cleaning Wisconsin's Areas of Concern. All who love our Great Lakes region—its woods, lakes, rivers and prairies—should feel welcome to participate in the care and preservation of our precious waters and lands.

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The Ozaukee County Fish Passage Program reconnects fish and other aquatic life with habitats where they can reproduce, grow, feed and survive.

OZAUKEE COUNTY FISH PASSAGE PROGRAM

Andrew Struck and Matt Aho

Fish and other aquatic life require access to various habitats as well as Lake Michigan to reproduce, grow, feed and survive. In a productive ecological system, fish and aquatic life can move freely up and down rivers and streams from Lake Michigan to wetlands and floodplains to fulfill critical life cycle needs. This freedom of movement is critically important on watersheds connected to Wisconsin's Great Lakes.

For instance, native northern pike are weak swimmers and jumpers and very susceptible to impediments. They can only jump eight inches, have difficulty with velocities greater than two feet per second and require frequent rest areas when traveling through streams. Passage for adults moving upstream and young-of-the-year moving downstream are equally crucial.

In 2006, the Ozaukee County Planning and Parks Department received Wisconsin Coastal Management Program (WCMP) funding to identify high quality habitats and aquatic life passage impediments on eleven major tributaries to the Milwaukee River and Lake Michigan. This initial inventory was the impetus for a \$5.2 million National Oceanic and Atmospheric Administration (NOAA) grant in 2009 to establish a countywide Ozaukee Fish Passage Program (Program). The Department has since leveraged an additional \$3.5 million of federal, state, local and private grants to further develop and implement the Program.

Many native species spend much of their adult lives in Lake Michigan, but migrate many miles to spawn in high quality riparian habitats in the upper Milwaukee River watershed. The watershed downstream of Ozaukee County is highly urbanized and little of the formerly-abundant wetland and riparian habitat remains in its natural state. In-stream habitat has also been significantly altered in many locations for navigation and development. Therefore, the lower river and estuary have experienced reduced native species abundance and diversity.

In contrast, the upper watershed in Ozaukee County has significant areas of relatively high quality native species' spawning habitat. Until recently, access to these areas was fragmented by large dams and other impediments. Since many freshwater fish move long distances for life-cycle functions, these areas can provide habitat suitable for spawning and juvenile development if hydrologically connected.

The Program addresses impediments that fragment aquatic connectivity and inhibit access to these high quality habitats. Impediments include dams, improperly placed or sized culverts, invasive vegetation, log and debris jams, pervious fill deposits, and straightened, incised and disconnected stream channels.



To date, the Program has removed or remediated 195 impediments to fish and aquatic life passage on the mainstem Milwaukee River and 30 tributary streams reconnecting over 100 stream miles to hundreds of acres of wetlands and floodplain for spawning habitat.

Major projects include construction of a nature-like fishway at the Mequon-Thiensville Dam, designing a fishway for the Grafton Bridge Street Dam, and the Lime Kiln Dam and Newburg Dam removals. In addition, the Program has remediated 45 large road/stream crossing impediments and removed 144 small-scale impediments.

The Program has also produced economic benefits for the County. The Department has invested in failing local transportation infrastructure without significant local tax investment, created jobs by generating over 62,000 paid labor hours—including job training opportunities to at-risk inner city youth, provided over 3,000 volunteer hours to 300 individual volunteers, and supported education and outreach to over 7,800 individuals.

In 2010, the Department received additional WCMP funding to improve conservation planning for coastal fish and wildlife resources by developing a Fish and Wildlife GIS-based Decision Support Tool. The tool identifies target species for conservation focus and critical habitats important to ensure their survival. Planners and decision makers use the tool to prioritize areas where limited conservation dollars may produce the maximum benefits for habitat restoration and improvement projects.

Preliminary tool outputs are guiding multiple large scale habitat improvement and restoration projects including a pilot wetland restoration on Sandhill Creek to improve lateral hydrologic connectivity to the floodplain. Two other large scale projects with multiple partners will address stream re-meandering, restoration of hydrologically and biologically functional floodplains, bank and in-stream structure restoration and wetland enhancements on one mile of both Mole Creek and Ulao Creek.


The Program has also implemented comprehensive environmental monitoring to document baseline and trend data and gauge environmental response to impediment removals and habitat improvement projects. The Program monitors fisheries—including mainstem and tributary waterways—through electro-fishing, tributary larval fish trapping, tagging and tracking of fish, and an underwater camera located in the nature-like fishway at the Mequon-Thiensville dam. The camera has documented the passage of 36 fish species and six wildlife species including the rare softshell turtle. A live streaming video of the fishway is available online at www.ozaukeefishway.org.

Larval fish trapping has documented the rare Iowa darter and the least darter, a species of concern in Wisconsin. Additional environmental monitoring includes continuous and discrete water quality sampling and sediment contaminant characterization sampling to better understand the ecological health of local rivers and streams.



Through the support of the WCMP, NOAA and numerous federal, state, local and private partners, the Ozaukee County Planning and Parks Department's Fish Passage Program has significantly improved the ecological function and productivity of the region's natural resources by making connections across our watersheds.

Andrew Struck is the Director of the Ozaukee County Planning and Parks Department. He can be reached at (262) 238-8275 or astruck@co.ozaukee.wi.us. Matt Aho is the Program Manager for the Department's Ozaukee Fish Passage Program. He can be reached at (262) 236-2005 or maho@co.ozaukee.wi.us.



Two Rivers is nurturing resources to attract the entrepreneurial talent and educated workforce needed to drive its economic transformation.

TWO RIVERS PLANS FOR THE FUTURE

Peter Herreid

As waves tumble onto shore before the picture windows of the Water's Edge Restaurant, it is not uncommon to hear Italian, German or other European languages drift over from a neighboring table. Travelers from as far away as the land of Gutenberg are frequently attracted to the City of Two Rivers to see rare pieces of wood type at the Hamilton Museum.

Another European draw—particularly among immigrants from Eastern Europe—is Carp Fest, the City's annual carp fishing tournament. Carp is a popular sport fish in Europe and anyone who has accidentally hooked one while fishing for a *game* fish understands the thrill of landing a large specimen. The East and West Twin Rivers converging downtown are excellent carp habitat and give the City one of its nicknames, Carptown.

The City's other, more appealing nickname to marketers—the Cool City—is also rooted in its geographical position on a node of land jutting out several miles into Lake Michigan. This feature produces a cooling lake effect in the summer that makes Two Rivers *the coolest spot in Wisconsin*. That is not a bad reputation to have following Wisconsin's record heat in 2012! Neshotah Beach, the Kites over Lake Michigan Festival, Point Beach State Forest and other nearby natural amenities draw visitors to Two Rivers during the summer months as well.

Despite all of these natural and cultural advantages, the City's once vibrant manufacturing base is shrinking and its population declining.

The closure of the Thermo Fischer Plant and the Kewaunee Power Station are recent contributors to job losses. But while the City may be transitioning from its industrial past, it is working toward a future with new plans to drive economic growth.

The **City of Two Rivers 20-Year Comprehensive Plan** provides the sort of predictability sought by investors because it states the City's intentions for future development and guides its land use decisions. Adopted in 2010, the Comprehensive Plan's recommendations have rung through subsequent planning efforts and discussions at city hall.

City staff point to poster-size maps displaying smart growth areas identified as opportunities for redevelopment. The City welcomes new strategies for lands where factories once produced wood type and other goods, where commercial fleets brought back hulls full of fish, and where coal was once offloaded and stockpiled. As recommended by the Comprehensive Plan, the City recently adopted a detailed bicycle and pedestrian plan and harbor plan as additional strategies for economic development.

The **Harbor Master Plan**—developed with a 2011 Wisconsin Coastal Management Program (WCMP) grant—identifies engineering alternatives to calm the waters within the harbor and other ways to make the harbor more welcoming to visiting boaters. A 2012 WCMP grant funded a design plan to repair failing seawalls and add more transient docking within the harbor. Furthermore, the Harbor Master Plan prioritizes public projects that could serve as catalysts for

private redevelopment in the harbor area, such as city-owned shoreland with a trail connection from the South Pier to the Mariners Trail.

The **Mariners Trail** runs six miles along the lakefront between Two Rivers and Manitowoc and has the longest continuous view of Lake Michigan in Wisconsin. Since completed in 2002, the trail has been wildly popular for strolling, bicycling, dog-walking and in-line skating. Much credit for the success of the Mariners Trail goes to an active friends group that beautifies the trail with artwork, gardens and landscaping. The Friends of Mariners Trail has also advocated

for trail upgrades and organized supporting infrastructure such as benches, bike racks and a bike repair stand.

While the Mariners Trail leads into downtown Two Rivers from the south, the Rawley Point Trail leads north through the Point Beach State Forest to the Rawley Point Lighthouse. The City touts both recreational trails as among its most attractive assets for economic development.

The ambitious **City of Two Rivers Bicycle and Pedestrian Plan**, adopted in May 2013, identifies specific ways in which to build upon

the popularity of the Mariners and Rawley Point trails. The plan recommends incremental measures to improve the link between the trails with a long-term vision to build shared-use paths running along the waterfront downtown. The 17th St. Bridge—a key connection between the trails—has already been reconstructed with an expanded sidewalk and bike lanes, the first on-street bike facilities in Two Rivers.

Funding has been secured for the construction of trails to the high school and site planning is underway. The Bicycle and Pedestrian Plan contends that by continuing the construction of more off-street shared use paths and making streets and intersections more bike and pedestrian friendly, Two Rivers could define itself as one of the most livable communities along the lake—an affordable town where it is easy and convenient to walk or bike to parks, beaches, schools, stores and other daily destinations.

Two Rivers is mindful of the natural and community assets that improve the quality of life for its citizens and visitors. Nurturing these resources will help retain and attract the entrepreneurial talent and educated workforce needed to drive Two Rivers' economic transformation.

Peter Herreid is the Grant Administrator for the Wisconsin Land Information Program and the Comprehensive Planning Grant Program. He prepared the City of Two Rivers Bicycle and Pedestrian Plan under the direction of the City's Bicycle Committee. He may be reached at (608) 267-3369 or peter.herreid@wisconsin.gov.





2013 WISCONSIN COASTAL MANAGEMENT PROGRAM GRANTS

Project Name

Grantee

WCMP Award

Project Description

Contact

Coastwide

Wisconsin Commercial Ports Master Plan

Brown County Port & Solid Waste

\$48,391

Complete the first phase of the Wisconsin Commercial Ports Master Plan.

Mr. Mark Walter, (920) 492-4965

My Healthy Wetlands: A Handbook for Wetland Landowners in Northeast Wisconsin

Wisconsin Wetlands Association

\$43,216

Produce a handbook for private wetland landowners containing information about wetlands, their importance and wetland management.

Ms. Katie Beilfuss, (608) 250-9971

DNR and NERR Master Planning Along Lake Superior

Department of Natural Resources

\$30,000

Complete site assessments at three DNR properties within the Lake Superior NERR boundaries as the first step in the master planning process.

Ms. Erin Crain, (608) 266-5244

Bluff Erosion Hotspots on Wisconsin's Lake Michigan Shoreline

Association of State Floodplain Managers

\$26,800

Analyze unstable bluffs or hotspots on Lake Michigan to determine why some areas have stabilized since 1976.

Dr. David Mickelson, (608) 257-1825

Technical Assistance

Bay-Lake Regional Planning Commission

\$20,000

Support coastal management activities and technical assistance to local governments in the Bay-Lake region.

Ms. Angela Pierce, (920) 448-2820

Technical Assistance

Northwest Regional Planning Commission

\$20,000

Support coastal management activities and technical assistance to local governments in the Northwest 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



Western Lake Superior Migratory Bird Habitat Education

Natural Resources Foundation of Wisconsin
\$19,352

Provide education and technical information to private landowners, land managers and community planners on migratory bird issues.
Ms. Barb Barzen, (608) 261-4381

Wisconsin Master Naturalist Program

Board of Regents of the University of Wisconsin System
\$19,302

Produce an advanced training curriculum to increase Great Lakes literacy and service, and develop a standard of achievement for naturalist volunteers.
Ms. Kate Reilly, (608) 265-5496

Groundwater Education and Well Testing Program

Iron County Land and Water Conservation Department
\$12,903

Implement a groundwater education and well testing program in Ashland and Iron Counties that engages landowners on land use practices and groundwater impacts.
Ms. Heather Palmquist, (715) 561-2234

Coastal Technical Assistance to Local Governments

Department of Natural Resources
\$342,641

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

Prentice Park Trail Accessibility Improvements

City of Ashland
\$61,529

Improve public access at Prentice Park by upgrading existing trails, removing invasive species and developing a public access landing for canoes/kayaks on Fish Creek.
Ms. Sara Hudson, (715) 682-7059

Bayview Pier Project

City of Ashland
\$27,900

Develop plans for the reconstruction of the former Ashland ore dock to create an accessible fishing, swimming and viewing pier.
Mr. Pete Mann, (715) 682-7904

Brown County

Brown County Comprehensive Plan Update

Brown County Planning Commission
\$30,000

Update two chapters of the Brown County Comprehensive Plan.
Mr. Aaron Schuette, (920) 448-6486

Sensiba Wildlife Area Trail Development

Village of Suamico
\$30,000

Construct 3.25 miles of trail on top of dike structures in the Sensiba Wildlife Area.
Mr. Ron Van Straten, (920) 405-3828

Door County

Lakeshore Park Expansion

Town of Jacksonport
\$55,000

Purchase 2.79 acres with 197 feet of lake frontage to expand the existing Lakeside Park.
Mr. Thomas Wilson, (920) 309-0050

Sturgeon Bay West Waterfront Redevelopment

City of Sturgeon Bay
\$30,000

Provide a schematic design and cost estimates for a public gathering space and baywalk.
Mr. Marty Olejniczak, (920) 746-6908

Bay Shore Blufflands Conservation Master Plan

Door County Land Trust
\$27,500

Create a Conservation Master Plan for a 4,200-acre state natural area on the eastern shoreline of Green Bay.
Ms. Jodi Milske, (920) 746-1359

Plum Island Waterside Structures

Engineering Evaluation

Friends of Plum and Pilot Islands
\$4,250

Complete an engineering evaluation of the Plum Island pier, breakwall and boat house supports to ensure public safety.
Mr. Paul Schumacher, (920) 823-2109

Douglas County

Coastal Wetland Inventory

Department of Natural Resources

\$90,789

Update data for the Wisconsin Wetland Inventory for Douglas County.

Ms. Lois Simon, (608) 266-8852

Kenosha County

Harbor Sedimentation Feasibility Study and Analysis

City of Kenosha

\$50,400

Produce a feasibility study and alternatives analysis of sediment management in the Kenosha Harbor.

Mr. Micheal Lemens, (262) 653-4150

Chiwaukee Prairie State Natural Area Acquisition

Department of Natural Resources

\$25,000

Acquire up to seven small lots totalling 3.2 acres as part of a long-term project to consolidate DNR ownership of a premier natural area.

Mr. Marty Johnson, (262) 884-2391

Manitowoc County

Hika Park Public Access

Village of Cleveland

\$36,000

Develop an interpretive walk, boardwalk, and pedestrian bridge linking the existing public recreation area to a restored ridge and swale wetland.

Ms. Stacy Grunwald, (920) 693-8181

Sheet Wall and Riverwalk Preliminary Design Report

City of Manitowoc

\$32,000

Complete a report to determine the design, location and feasibility of constructing a sheet wall and adjacent riverwalk along the east bank of the Manitowoc River.

Mr. Paul Braun, (920) 686-6930

Milwaukee County

Reed Street Yards Riverwalk

City of Milwaukee Redevelopment Authority

\$75,000

Construct the Reed Street Yards Riverwalk, the final link of the Hank Aaron State Trail in the Menomonee Valley.

Mr. Dan Casanova, (414) 286-5921

Oak Creek Lakefront Redevelopment

City of Oak Creek

\$50,000

Complete final engineering and construction of a public access trail connecting Milwaukee County's Bender Park with the City's bike trail network.

Mr. Gerald Peterson, (414) 768-6504

South Milwaukee Shoreline Park Plan

City of South Milwaukee

\$29,500

Develop a park plan for 18.5 acres on Lake Michigan in the City of South Milwaukee.

Mr. Kyle Vandercar, (414) 762-2222

Burnham Canal Wetland Project Public Access

Milwaukee Metropolitan Sewerage District

\$27,000

Develop a soft trail around a wetland as part of a larger restoration and clean-up of the Burnham Canal.

Mr. Kevin Schafer, (414) 225-2088



Bender Park Lake Michigan Shoreline Preservation

Milwaukee County
\$25,000

Acquire 95 acres of rare undeveloped land adjacent to Bender County Park.

Mr. James Keegan, (414) 257-4775

Harambee Green Infrastructure Plan

Groundwork Milwaukee
\$16,500

Develop a green infrastructure best management practices plan for the northern half of the Harambee Neighborhood in Milwaukee.

Ms. Mary Beth Driscoll, (414) 763-9947

Beach Ambassador Training

Alliance for the Great Lakes
\$8,134

Improve understanding of water quality and beach health by training beach ambassadors to deliver information in English and Spanish to beach visitors.

Ms. Jamie Cross, (616) 850-0745

Ozaukee County

Ozaukee County Coastal Resource Open Space Master Plan

Ozaukee County Planning and Parks Department
\$28,241

Produce a detailed open space master plan to protect and restore Ozaukee County's coastal resources.

Mr. Andrew Struck, (262) 238-8275

Enhanced Beach Nowcasting and Sanitary Survey

Ozaukee County Public Health Department
\$11,900

Test and validate a two-tiered early-warning nowcast system for recreational water quality at all five of Ozaukee County's high priority beaches.

Ms. Kirsten Johnson, (262) 284-8170

North Beach Bluff Stabilization Study

City of Port Washington
\$7,440

Study the bluff adjacent to North Beach and provide bluff slope stabilization recommendations.

Mr. Rob Vanden Noven, (262) 268-4267

Racine County

Racine Root River Riverfront Promenade Schematic Design

Racine County Economic Development Corporation
\$30,000

Design a public gathering and event space on the Root River riverfront in the City of Racine.

Mr. Gordy Kacala, (262) 898-7412

Sheboygan County

Two-Tier Nowcast System for City of Sheboygan Beaches

Sheboygan County Health and Human Services Department
\$4,468

Test and validate a two-tiered early-warning nowcast system for recreational water quality at three high priority beaches in the City of Sheboygan.

Mr. David Roettger, (920) 459-0325



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

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Page, Image, Source

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 5. Detroit Harbor, Joel Gunnlaugsson
 6. Frog Bay, Travis Olson
 7. Frog Bay, Grandon Harris
 8. North Beach, Racine, Wis. Department of Tourism
 9. Bradford Beach, Milwaukee, Wis. Department of Tourism
 10. Milwaukee River Salmon Fishing, Wis. Department of Tourism
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- Back Cover, Bob Browne (2013), Anne Iwata

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 WISCONSIN COASTAL
MANAGEMENT PROGRAM





Wisconsin Great Lakes Chronicle 2013 is dedicated to the life and works of Bob Browne. Bob was a leader, learner and steward of Lake Superior who always reminded us that “water is life.”