



governmentattic.org

"Rummaging in the government's attic"

Description of document: National Oceanic and Atmospheric Administration
(NOAA) Wisconsin Shipwreck Facility Strategy Plan 2023

Requested date: 13-June-2023

Release date: 18-August-2023

Posted date: 12-August-2024

Source of document: Freedom of Information Request
National Oceanic and Atmospheric Administration
Public Reference Facility (SOU1000)
1315 East-West Highway (SSMC3)
Room 9719
Silver Spring, Maryland 20910
[Dept of Commerce Public Access link site](#)
[FOIA.gov website](#)

The governmentattic.org web site ("the site") is a First Amendment free speech web site and is noncommercial and free to the public. The site and materials made available on the site, such as this file, are for reference only. The governmentattic.org web site and its principals have made every effort to make this information as complete and as accurate as possible, however, there may be mistakes and omissions, both typographical and in content. The governmentattic.org web site and its principals shall have neither liability nor responsibility to any person or entity with respect to any loss or damage caused, or alleged to have been caused, directly or indirectly, by the information provided on the governmentattic.org web site or in this file. The public records published on the site were obtained from government agencies using proper legal channels. Each document is identified as to the source. Any concerns about the contents of the site should be directed to the agency originating the document in question. GovernmentAttic.org is not responsible for the contents of documents published on the website.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of National Marine Sanctuaries
1305 East-West Highway
Silver Spring, Maryland 20910

August 18, 2023

Re: FOIA Request DOC-NOAA-2023-010114

This letter is in response to your Freedom of Information Act (FOIA) request DOC-NOAA-2023-010114, which our office received on June 13, 2023.

You requested:

I request a copy of the Wisconsin Shipwreck Facility Strategy Plan, which may also be called the Wisconsin Shipwreck Facility Strategy.

The Office of National Marine Sanctuaries (ONMS) provided you an initial response on June 21, 2023, informing you that the requested document was not available to the public at that time. The document was pending final review by key partners, including the State of Wisconsin. The final review has been completed. At this time, ONMS is able to provide you with the requested document.

APPEAL RIGHTS

You have the right to file an administrative appeal if you are not satisfied with our response to your FOIA request. All appeals should include a statement of the reasons why you believe the FOIA response was not satisfactory. An appeal based on the record in this release must be received within 90 calendar days of the date of this response letter at the following address:

Assistant General Counsel for Employment, Litigation, and Information
U.S. Department of Commerce, Room 5896
14th and Constitution Ave. NW
Washington, DC 20230

An appeal may also be sent by e-mail to FOIAAppeals@doc.gov.

For your appeal to be complete, it must include the following items:

- a copy of the original request,
- our response to your request,



- a statement explaining why the withheld records should be made available and why the denial of the records was in error, and
- “Freedom of Information Act Appeal” must appear on your appeal letter. It should also be written on your envelope, e-mail subject line, or your fax cover sheet.

FOIA appeals posted to the e-mail box or Office after normal business hours will be deemed received on the next business day. If the 90th calendar day for submitting an appeal falls on a Saturday, Sunday or legal public holiday, an appeal received by 5:00 p.m., Eastern Time, the next business day will be deemed timely.

FOIA grants requesters the right to challenge an agency's final action in federal court. Before doing so, an adjudication of an administrative appeal is ordinarily required.

The Office of Government Information Services, an office created within the National Archives and Records Administration, offers free mediation services to FOIA requesters. They may be contacted in any of the following ways:

Office of Government Information Services National Archives and Records Administration
Room 2510
8601 Adelphi Road
College Park, MD 20740-6001

Email: ogis@nara.gov

Phone: 301-837-1996

Fax: 301-837-0348

Toll-free: 1-877-684-6448

If you have questions regarding this correspondence, please contact me at aida.pettegrue@noaa.gov or by phone at (240) 533-0670, or the NOAA FOIA Public Liaison Tony LaVoi at (843) 740-1274. Please refer to your FOIA request tracking number DOC-NOAA-2023-010114 when contacting us.

Sincerely,

Aida Pettegrue

Aida Pettegrue
FOIA Liaison
Office of National Marine Sanctuaries

Enclosure: 1 Responsive Document





**WISCONSIN
SHIPWRECK COAST
NATIONAL MARINE
SANCTUARY**

Facility Strategy

for NOAA's Wisconsin Shipwreck Coast National Marine Sanctuary

Final - July 2023



Banks Schott

Wisconsin Shipwreck Coast National Marine Sanctuary
Facility Strategy

Final - July 2023

Facility Programming and Consulting

*This document supersedes all previous publications.
The contents of this document are not for regulatory approval, permitting, or construction.*

Published July 2023

Cover photo by: Becky Schott, Liquid Productions

Table of Contents

Executive Summary	1
Background and Community Context	5
Focus Group Discussions.....	27
<i>History and Preservation</i>	29
<i>Education and Outreach</i>	34
<i>Environment and Ecology</i>	39
<i>Research and Operations</i>	42
<i>Recreation and Tourism</i>	45
<i>Residents and the Community</i>	50
Opportunities	53
Demographics and Market Data.....	81
Acknowledgements	93
Abbreviations and Definitions	97
References	99
Appendix	
<i>A: 2021 Demographic Data: Two Rivers</i>	101
<i>B: 2021 Demographic Data: Manitowoc</i>	103
<i>C: 2021 Demographic Data: Sheboygan</i>	105
<i>D: 2021 Demographic Data: Port Washington</i>	107
<i>E: 2021 Demographic Data: Ludington, Michigan</i>	109
<i>F: 2021 Demographic Data: Milwaukee, WI CBSA</i>	111
<i>G: 2021 Demographic Data: Chicago, IL CBSA</i>	113

This page intentionally blank.

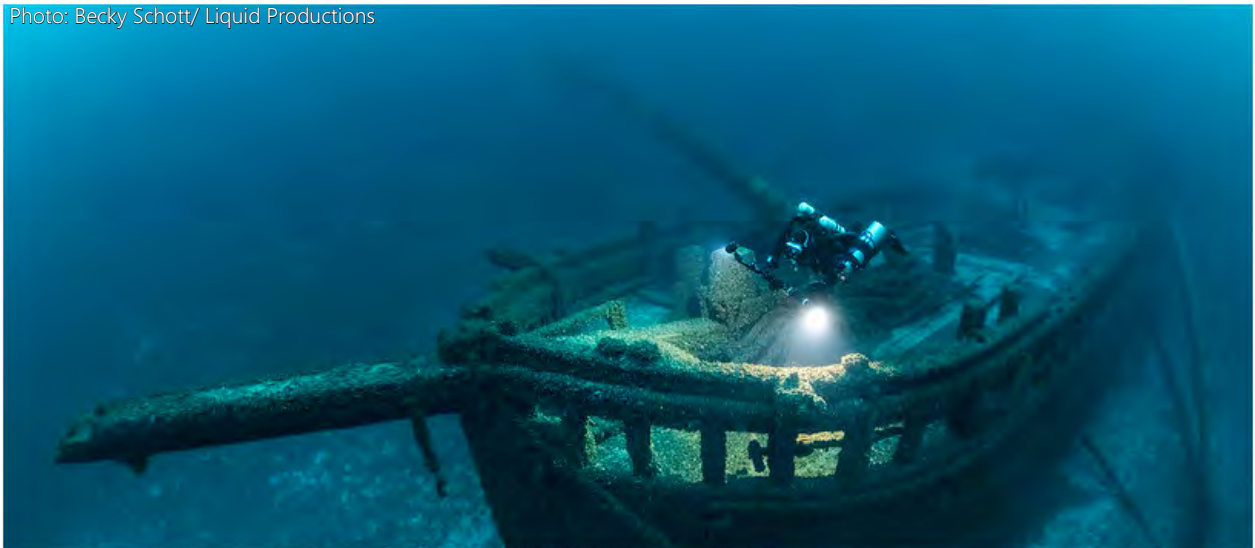
Executive Summary

FACILITY PROGRAMMING AND CONSULTING (FPC) was engaged by the National Oceanic and Atmospheric Administration (NOAA) Office of National Marine Sanctuaries (ONMS) to develop a Facility Strategy for the Wisconsin Shipwreck Coast National Marine Sanctuary (WSCNMS).

Designated in 2021, the WSCNMS provides stewardship for our nation's maritime heritage in Lake Michigan, including 36 nationally significant historic shipwrecks. Located along the state's mid Lake Michigan coast, Sanctuary boundaries span four counties and include four primary communities: Two Rivers, Manitowoc, Sheboygan, and Port Washington. These communities were instrumental in the nomination and eventual designation of the WSCNMS.

Co-managed by NOAA and the State of Wisconsin, the Sanctuary conducts a wide variety of operations, programming, and public engagement that require facilities. Indeed, all national marine sanctuaries require facilities to support mission-critical activities ranging from research and marine operations to educational programming and visitor

Photo: Becky Schott/ Liquid Productions



Executive Summary

centers. Yet each sanctuary’s mission, location, and stakeholders are different. Consequently, NOAA’s ONMS does not use a “one-size-fits-all” approach to facility planning, but rather considers a number of factors when developing facilities for new marine sanctuary sites.

Based on Sanctuary needs and stakeholder input, this report outlines a facility strategy for the WSCNMS that supports its unique operational, programming, and public engagement requirements. Equally important, it identifies opportunities and partnerships within coastal communities and with the State of Wisconsin. It is a road map rather than a blueprint, and sets the course for strategic development of Sanctuary infrastructure within coastal communities and with the State of Wisconsin.

This report addresses the infrastructure-related elements of the Sanctuary’s Final Management Plan, particularly Activity 1.1 in the Operations Action Plan: “In cooperation with Sanctuary communities, develop a strategic plan for creating a ‘NOAA presence’ in each community, to include infrastructure, research, education, outreach, interpretive/exhibit, and marketing/branding considerations.” As conditions will continue to change over time, this plan will also evolve to ensure its mission is continually being met as Sanctuary operations, staffing, programming, and public engagement increase.

Focus Group Discussion Outcomes

Stakeholder-driven focus groups played a key role in informing this study. Over 60 individuals from various organizations, representing each of the four communities and the state, participated in these discussions. Several overarching themes stood out:

- NOAA should act as a common thread that connects all the associated communities and entities within the Sanctuary region. Tourism and recreation is key to this and this should produce regional/collective benefits.
- NOAA should have a strategic and complementary physical presence (e.g. visitor experiences, exhibits, signage, research facilities, marine operations, or headquarters, etc.) and be integral in all four communities - Port Washington, Sheboygan, Manitowoc, and Two Rivers, as well as in Madison at the Wisconsin History Center.
- The Sanctuary should be a hub and catalyst for Lake Michigan research and science; the changing environment and associated ecological concerns in Lake Michigan should be presented hand-in-hand with the cultural history and significance of the Sanctuary.
- Development of on-water learning experiences would be very impactful for educators and students. This would be a new opportunity within the communities and would foster ownership of the Sanctuary, highlight the importance of Lake Michigan, and inspire action.
- Formal and informal educational programs, for all ages, are important.
- Interpretation of the Sanctuary must be representative of a wide range of perspectives and include Indigenous peoples.
- Thousands of artifacts from Sanctuary shipwrecks are coming back into the public domain. NOAA should play an important role in conservation and public access to these powerful objects.
- Technology should be utilized to connect visitors and residents with the shipwrecks and Lake Michigan.

Executive Summary

Opportunities

For the purpose of this study, NOAA has chosen to focus on establishing its physical presence in each community and the region. This includes leveraging existing and planned infrastructure to allow the Sanctuary to establish its initial building footprint in each community, enhancing existing visitor experiences, interpretive signage, installing new signage (as appropriate), and identifying needs and infrastructure to support a Sanctuary office with research and operations facilities. The concepts for each of these potential projects are detailed later in this document, including a preliminary cost estimate, and summarized in the table below.

The opportunities and partner identified are not intended to be an all-inclusive listing, rather a starting point for ideas which may serve to broaden the reach and awareness of the Sanctuary within the local, regional, and national context. Once NOAA has established its initial physical presence, additional opportunities will exist in the areas of technology, outreach, education, and research.

Project Location	Description	Preliminary Project Cost	
Two Rivers	1. High Lift Pumping Station Adaptive Re-Use	\$	712,500
Manitowoc	2. 1221 Franklin Street Maritime Artifact Conservation Lab, Visible Artifact Storage, and Education Space	\$	812,500
	3. Wisconsin Maritime Museum Sanctuary Exhibit Upgrade	\$	600,000
Sheboygan	4. Visit Sheboygan Visitor Center and STEAM Education Facility	\$	825,000
Port Washington	5. 1860 Lighthouse and Light Station Museum	\$	380,500
	6. Port Washington Historical Society Resource Center	\$	380,000
Madison	7. Wisconsin History Center	\$	450,000
To Be Determined	8. Sanctuary Research, Marine Operations, Visiting Researcher Housing, and Administrative Facilities	\$	3,675,000 to
		\$	7,875,000
Region-Wide	9. "Sanctuary Heritage Trail" Outdoor Interpretive Signage	\$	500,000
Total Preliminary Project Cost		\$	8,335,500 to
		\$	12,535,500

Note: Building construction and renovation costs were calculated utilizing a dollar per gross square foot estimate for Year 2023 (Quarter 1), by proposed building type; costs provided assume total project cost (construction + soft costs) (\$175/SF renovation; \$375/SF new construction). The purchase of land is not included. Exhibit and installation cost (\$300/SF) were based on design, construction, and installation costs incurred by NOAA's Thunder Bay NMS in 2007 and inflated to 2023, as well as recent installation expenditures at Grays Reef NMS.

Background and Community Context

IN AUGUST 2021, IN RESPONSE to a sanctuary nomination submitted by the State of Wisconsin and several lakeshore communities, NOAA designated the Wisconsin Shipwreck Coast National Marine Sanctuary. Located along the mid-Lake Michigan coast, it is the nation's 15th and newest sanctuary, and the second in the Great Lakes. It joins the diverse National Marine Sanctuary System protecting iconic natural and cultural resources in 620,000 square miles of marine and Great Lakes waters from the State of Washington to the Florida Keys, and Lake Michigan to American Samoa.

Indigenous peoples were the first to settle the shores of Lake Michigan and their cultural imprint is inherent to the Sanctuary. The Sanctuary



Ships in harbor in the City of Manitowoc, ca. 1890 (Photo: Wisconsin Maritime Museum)

Background and Community Context

waters, shipwrecks and the adjacent maritime cultural landscape represent over 12,000 years of history. A prominent feature of the WSCNMS are 36 shipwreck sites that represent vessels critical in building the nation between the 1830s and 1930s. Twenty-nine of these historic sites are listed in the National Register of Historic Places and research suggests that dozens may yet to be discovered in the Sanctuary. These ships, and the people associated with them, drove the transformation of the Great Lakes from a maritime frontier into an economic engine for the United States and one of the world's busiest waterways. Well-preserved by Lake Michigan's cold, fresh water, several of the known shipwrecks in the Sanctuary are essentially intact and all possess exceptional archaeological, recreational, and national significance. Sanctuary waters are also ancient, with cultural significance extending thousands of years into the past.

Co-managed by NOAA with the State of Wisconsin, the Sanctuary expands on the state's 30-year stewardship of these maritime heritage sites, providing opportunities for research, education, recreation and tourism, and spotlights the diversity and fragility of the largest freshwater system in the world on national and global scales. From permanent moorings at shipwrecks sites, to high-resolution lakebed mapping, to real-time wind and wave data buoys, the Sanctuary seeks to facilitate recreation and deepen our understanding of Lake Michigan. In partnership with local communities, the Sanctuary provides a venue for impactful educational experiences and a national stage for promoting heritage tourism and recreation.

The western/landward boundary of the 962 square mile Sanctuary, defined by the Low Water Datum (LWD), tracks Wisconsin's Lake Michigan shoreline, touching Ozaukee, Sheboygan, Manitowoc, and Kewaunee Counties and extending approximately 15 miles into the Lake. Along with the State of Wisconsin, the coastal communities of Port Washington, Sheboygan, Manitowoc, and Two Rivers nominated the Sanctuary in 2014, and were essential to its designation. These port cities not only provide public access to the Sanctuary waters, but are communities with whom NOAA has formed mutually beneficial partnerships in expanding awareness of the WSCNMS and Lake Michigan, especially in the areas of education, research, recreation, heritage tourism, and community engagement.

Significantly, the Sanctuary also expands NOAA's mission of science, service and stewardship in Wisconsin, impacting Lake Michigan conservation through research, education and community engagement. Highlights from the Sanctuary's first 18 months of operation include:

- Establishing the first Sanctuary Advisory Council, bringing community members together to provide advice to NOAA and help guide Sanctuary management. Council members also act as liaisons to their communities, building a strong connection between the Sanctuary and stakeholders.

- Securing over \$400,000 in grants and other outside funding to accelerate Sanctuary efforts, including research expeditions, real-time weather buoys, and outreach initiatives.
- Forming dozens of research partnerships within federal, state, university, non-profit, and commercial entities to support Lake Michigan conservation.
- Completing a sonar survey of the entire 962 square mile Sanctuary by NOAA and contract partners, to provide commercial shipping and recreational boaters with up-to-date charts. In partnership with NOAA's National Centers for Coastal Ocean Science, the Sanctuary is also using this information to produce detailed habitat maps that contribute significantly to our scientific understanding of Lake Michigan.
- Installing three real-time “smart moorings” off Two Rivers, Sheboygan, and Port Washington. The moorings transmit wind, water temperature and wave data that help boaters plan for a safe day and anglers better locate fish.
- Developing a Sanctuary-branded recreation and tourism podcast and digital short. Produced by Discover Wisconsin Media, the pieces entice travelers to explore the heritage of mid-Lake Michigan's coastal communities and have attracted over 65,000 views.
- Attracting significant media interest in the Sanctuary and region. The 2021 designation announcement alone resulted in 5,400 news stories that generated 19 million media impressions. Since 2016, there have been over 10,000 stories on the Sanctuary, generating 36 million impressions.



Photo: NOAA - WSCNMS



Photo: NOAA - WSCNMS

Background and Community Context

The Communities

An important goal of this document is to identify existing infrastructure and opportunities for collaboration that may be leveraged as the Sanctuary initiates and develops its programming and operations. Among the most obvious is the potential continuation of the partnership which began with the four communities involved in the nomination of the Sanctuary - Two Rivers, Manitowoc, Sheboygan, and Port Washington.

Each community is unique in its origins, history, development, and relationship to the Sanctuary. Each provides existing buildings, attractions, and amenities which may be invested in by NOAA to support the Sanctuary's programming and operations, and to create visitor experiences. When viewed together within the Sanctuary region, these communities are like a string of pearls - each a special experience on its own, but together stronger and more enticing to tourists and locals, alike, for the larger story they tell. Similar to the evolution of other NOAA sanctuaries, the WSCNMS will develop and grow in ways which reflect the geography, cities, and people in which it is located.

Co-management of the WSCNMS with the State of Wisconsin also provides a key element in facility planning. Potential Sanctuary exhibits placed at the new Wisconsin History Center, anticipated to open in Madison by 2027, could support tourism in coastal communities by creating awareness among the thousands of annual visitors to the state's capital. From an operational and programming perspective, Sanctuary facilities on the coast have the potential to support research and educational programming in collaboration with several state agencies, universities, and other partners.



Community, Congressional, State, and NOAA representatives at the designation ceremony for the Sanctuary in 2021 (Photo: Lake Coast Local)



North Pier Lighthouse at Rogers Fishing Village (Photo: Wisconsin Historical Society)

Two Rivers

With a population of nearly 11,400 people, the City of Two Rivers is located near the northern Sanctuary boundary. Originally called “Neshotah” (or twin rivers) for the harbor where the Mishicott and Neshoto Rivers meet, the area was the seasonal home to various Indigenous peoples, including the Ojibwe, Ottawa, Menominee, Potawatomi and Ho-Chunk. In the early 19th Century, French-Canadian and German settlers arrived, establishing a sawmill, factories specializing in woodworking, and commercial fishing operations; Bohemian and Polish immigrants arrived in the latter part of the century. Notably, J. Edward Hamilton founded his wood type factory there in 1880, putting Two Rivers on the map as the largest manufacturer of wood type used by newspaper and print shops in the nation. The company later expanded its product line to include laboratory cabinets and furniture produced in a sprawling complex of nearly 1.2 million square feet. It operated in Two Rivers for over 100 years before relocating in 2012.

Since 1838, Two Rivers has been involved in the commercial fishing industry with operations still carried on today by several of the original families who settled this area. By the 1850s, Two Rivers was a bustling harbor town with nearly 100 steamers and sailing vessels in port. Today the community still possesses one of Wisconsin’s most productive commercial fishing fleets.

While the City of Two Rivers is the smallest of the four communities in this study, its amenities and offerings are numerous. The Seagull Marina is located at the junction of the West Twin River, the East Twin River, and Lake Michigan. Among its amenities, the marina provides 50 slips for overnight and seasonal rental, docks, a boat launch, retail sales and service, campgrounds, and an RV park with 100 waterfront campsites for RVs and tents. Kayak launching is also available at the marina. During the summer, a number of companies offer charter fishing excursions for various species of trout and salmon common in Lake Michigan.

The marina is also adjacent to both the Mariners and Rawley Point Trails. The Mariners Trail, which stretches south to Manitowoc, connects in downtown Two Rivers, at Neshotah Park, to the Rawley Point Trail. This six-mile trail winds through the Point Beach State Forest, terminating at the Rawley Point Lighthouse. The 2,900 acre forest adjacent to Lake Michigan offers campsites, 11 miles of trails, and access to the lighthouse, constructed in 1853, which is operated and maintained by the U.S. Coast Guard (USCG). With a light visible for up to 19 miles, among the largest and brightest on Lake Michigan, prior to the lighthouse’s construction, 26 ships foundered or were stranded on the point. The wreckage of several of these ships may be found in the Sanctuary today. Point Beach offers the best direct paddling and snorkeling access to shallow water shipwrecks in the Sanctuary. The USCG has a seasonal presence in Two Rivers, with a station located on the river.

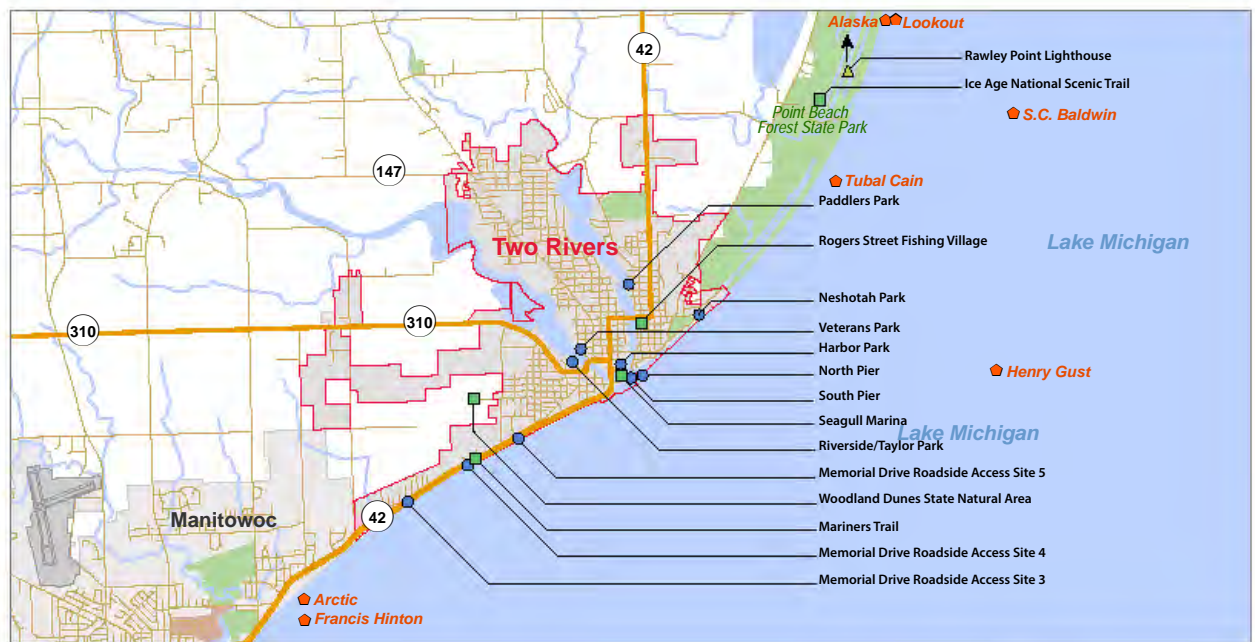


The Schooner Lookout stranded off Two Rivers (Photo: Wisconsin Maritime Museum)

Background and Community Context



Rawley Point Lighthouse in Point Beach State Forest
 (Photo: Yinan Chen, Public Domain, via Wikimedia Commons)



Landmarks and recreational areas in Two Rivers, Wisconsin, and surrounding areas

In addition to basketball courts and picnic areas, Neshotah Park includes beach access to Lake Michigan with areas for swimming, volleyball, and launching jet skis and kayaks. Just steps from downtown Two Rivers, the beach is the site of one of the largest kite festivals in the Midwest every September.

The Rogers Street Fishing Village, listed in the National Register of Historic Places, is a museum village and heritage park located on the banks of the East Twin River and dedicated to telling the story of Two Rivers' rich fishing heritage. Four historic buildings contain exhibits and artifacts related to the commercial fishing industry, as well as hundreds of artifacts rescued from the Vernon and Rouse Simmons shipwrecks. The complex also includes a 1936 wooden fishing tug, fishing sheds, and the 1886 Two Rivers North Pier Lighthouse (relocated to the Village in 1975).

Just west of the city is the Woodland Dunes Nature Center. This preserve covers over 1,500 acres and is home to thousands of native plants and wildlife; it is also an important stopover habitat for migratory birds and butterflies. Several hiking trails of varying levels of intensity and length are located throughout the preserve. The Center offers hands-on educational programs through summer camps and local schools, as well as nature-based activities for families, groups, and individuals, inviting visitors to immerse themselves in the natural world around them and develop a deeper understanding of the habitats which are found in the forested dunes and swales of this special ecological region.



Woodland Dunes Nature Center (Photo: Travel Wisconsin)

Background and Community Context

Manitowoc

Manitowoc, meaning “home of the good spirit,” was named by the Indigenous people who occupied these lands for centuries and was regarded as a spiritual place for the mixed bands of Ottawa, Potawatomi, Menominee and Ojibwa people. Prior to the European settlement of this area, three fairly large villages were present in the county (in Manitowoc Rapids, near Two Rivers, and at the fork of the Manitowoc River); additional smaller villages were located throughout the area. The first documented European exploration of the area occurred in 1779 with a trading post following shortly after, in 1795. The construction of a permanent settlement occurred in 1836, primarily occupied by the lumbermen who supported the mills which were established on the Manitowoc River. Because of access to plentiful lumber and the city’s location on a natural harbor in Lake Michigan, shipbuilding was a dominant industry in the city, beginning with wooden schooners and clippers in the mid-19th Century and pivoting later into steel vessels. Twenty-eight US Navy submarines were built in Manitowoc to support the nation’s efforts during World War II. The shipbuilding industry is still strong today, including the construction of research vessels and high-end yachts. The city is also home to a leading manufacturer of large, complex structures for a variety of industries, from massive machines for mining and heavy industry, to large-scale structures and parts for renewable energy, infrastructure, marine, and other key industries. Many of these components are shipped via water.

With a population of nearly 33,200 in 2021, the City of Manitowoc is the second largest of the four communities included in this study and the most active, commercial/industrial port. It is approximately 30 miles north of Sheboygan, along Interstate Highway 43, and less than 10 miles from Two Rivers, its neighbor to the northeast along the lakeshore.

The Manitowoc Marina is a full-service marina, located close to downtown restaurants and shops, with 250 slips, a six-lane launch and ramp, boat storage facilities, and boat repair parts/services and retail sales. In addition to charter sailing and fishing excursions, the marina also offers kayak and paddleboard rental, perfect for exploring the Sanctuary or the city along the Manitowoc River. Adjacent to the marina is the 1895 Manitowoc Breakwater Lighthouse (rebuilt in 1918; automated in 1971). To the north of the harbor is Lakeview Park, which provides beach access, parking, and picnic areas, and the Manitowoc Yacht Club. The Wisconsin Maritime Museum, located on the north bank of the Manitowoc River as it meets the harbor, is a unique existing asset which may both complement and raise public awareness of the Sanctuary. Its mission is to “connect all people with Wisconsin’s waterways, by engaging and educating the public about the Great Lakes, Wisconsin’s maritime history, Wisconsin’s World War II submarines and the USS Cobia.” Founded in 1969, the museum has grown into one of the largest maritime museums in the region with over 60,000 square feet of



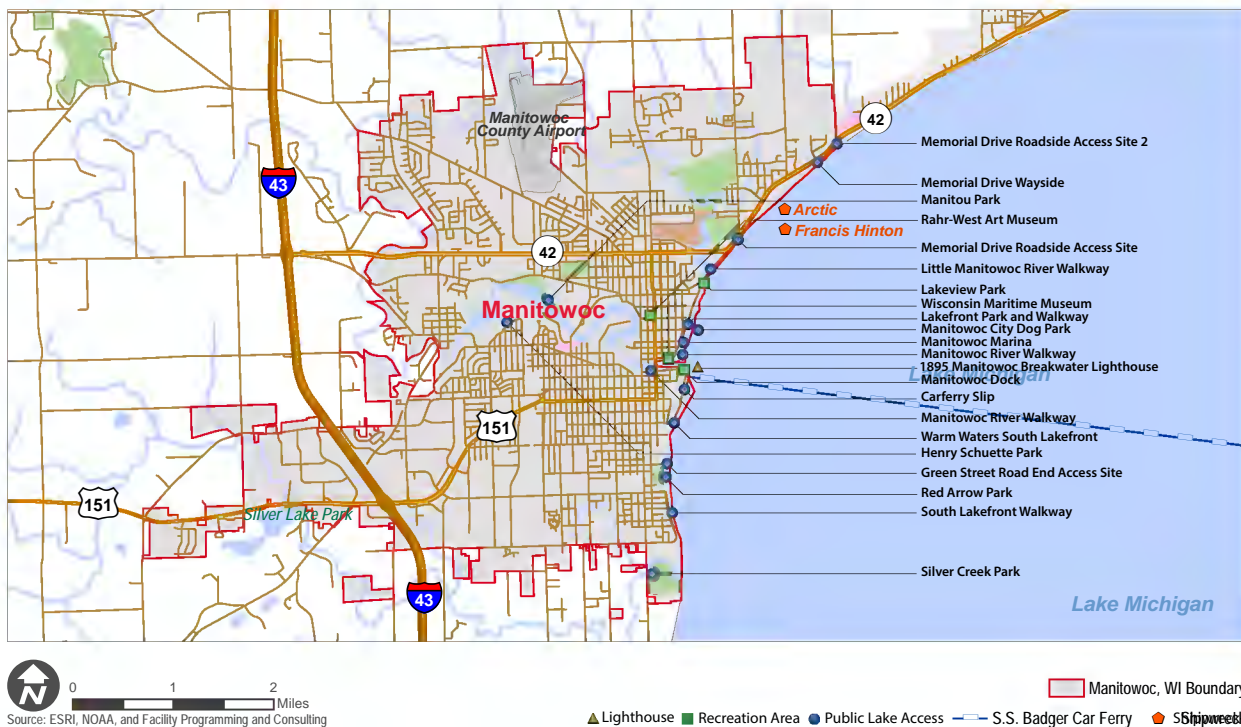
Manitowoc North Breakwater Lighthouse (Photo: Towns and Nature)



For over 150 years, shipbuilding has been an important aspect of Manitowoc’s maritime heritage and it continues to present day (Photo: Wisconsin Maritime Museum)

interactive exhibits and a collection which showcases the rich maritime history of the state. In addition, it is also the repository of the state's maritime artifacts. Roughly 10,000 shipwreck artifacts, most coming from Sanctuary shipwrecks, was recently transferred to the museum. The conservation and public display of these one-of-a-kind objects, owned by the State of Wisconsin, is a key priority for the museum. On the south side of the harbor, the Manitowoc Dock provides access to the historic S.S. Badger car ferry, based in Ludington, Michigan, which transports thousands of guests annually across Lake Michigan to and from Manitowoc, its sole Wisconsin port, every May to October. The 410-foot vessel, with exhibit space onboard, carries up to 620 passengers and 180 cars, tour buses, RVs, and semi-trucks on the four hour journey.

For those interested in exploring Manitowoc by land, whether on foot or bicycle, the paved Mariners Trail stretches 6.2 miles along the lakeshore between Manitowoc and Two Rivers. Dedicated in 2002, the path is supplemented with trailside gardens, benches, picnic areas, and public art, as well as beautiful vistas of the beach, forests, and lake. Signage along the trail provides information on shipwrecks visible from land, as well as other interesting sights or facts about the region, its culture, and the natural environment. The up-and-coming downtown is filled with shops, restaurants, bars, and galleries. A short walk from downtown is the Rahr-West Art Museum, listed in the National Register of Historic Places. The former mansion, built in 1891, was donated to the city in 1941, by its owner, to be used as a museum and civic center.



Landmarks and recreational areas in Manitowoc, Wisconsin, and surrounding areas

Background and Community Context

Sheboygan

With a population of nearly 49,800 in 2021, Sheboygan is centrally located within the Sanctuary boundaries, approximately 30 miles north of Port Washington and 30 miles south of Manitowoc. Prior to the arrival of European settlers in the early 19th Century, the City of Sheboygan was frequented by numerous tribes of Indigenous peoples, including members of the Chippewa, Ho-Chunk, Potawatomi, Menominee, Ojibwe, Ottawa, and Winnebago tribes. Migrants from New York, Michigan, and New England were among the first white Americans to settle the Sheboygan area in the 1830s, though the French had been present in the region since the 17th century. Until 1856, when the Sheboygan/Mississippi Railroad broke ground, the primary mode of transportation for both people and supplies was by boat. The harbor was dredged for larger ships and construction of additional docks to support booming industries. Between 1840 and 1890, the city experienced an influx of German, Dutch, Slovenian, Croatian, Lithuanian, and Greek immigrants. Due to its proximity to adjacent forests, furniture became a key industry; so much so that Sheboygan was at one time nicknamed “Chair City.” Over time, the city would also become well-known for the manufacture of enamel-ware, including kitchen and bath fixtures. In 1970, Sheboygan was crowned the “Bratwurst Capital of the World” and is marketed today as the “Malibu of the Midwest” because of the excellent conditions for surfing, windsurfing and kiteboarding. The U.S. Coast Guard station in Sheboygan was established in 1876, and is the only full time station in the Sanctuary.

In terms of existing waterfront access and amenities, Sheboygan has much to offer. Among its various amenities, the Harbor Centre Marina provides 288 slips for vessels ranging from 30 to 50 feet, six launch ramps, and monitored parking (including on-site trailer parking) all within a protected deep water harbor. In the adjacent Deland Park are located the Sheboygan Youth Sailing Center (SYSC), open to the public and offering classes for sailors of all ages and experience levels, and the Lottie Cooper, a historic shipwreck discovered during the marina construction and re-assembled in the park. On-the-water recreational activities include guided sailing tours, charter fishing tours, surfing, and paddle sports (kayak, stand-up paddle board, etc.).

In addition to the SYSC, the City of Sheboygan also has several organizations that are closely involved with offering opportunities for the community to get on the water and experience Lake Michigan. The Sailing Education Association of Sheboygan (SEAS) is a non-profit organization that offers charters and educational programs to teach safe handling of power and sail boats, local maritime history, water safety, and traditional maritime skills to the boating community, including adaptive sailors, on Lake Michigan. SEAS offers boat rentals to its members, further removing barriers to boating participation created by financial needs. The organization works closely with the SYSC, the



*Kiteboards on the beach and surfers in the waters of Lake Michigan at Sheboygan Kite Beach
(Photo: Visit Sheboygan)*



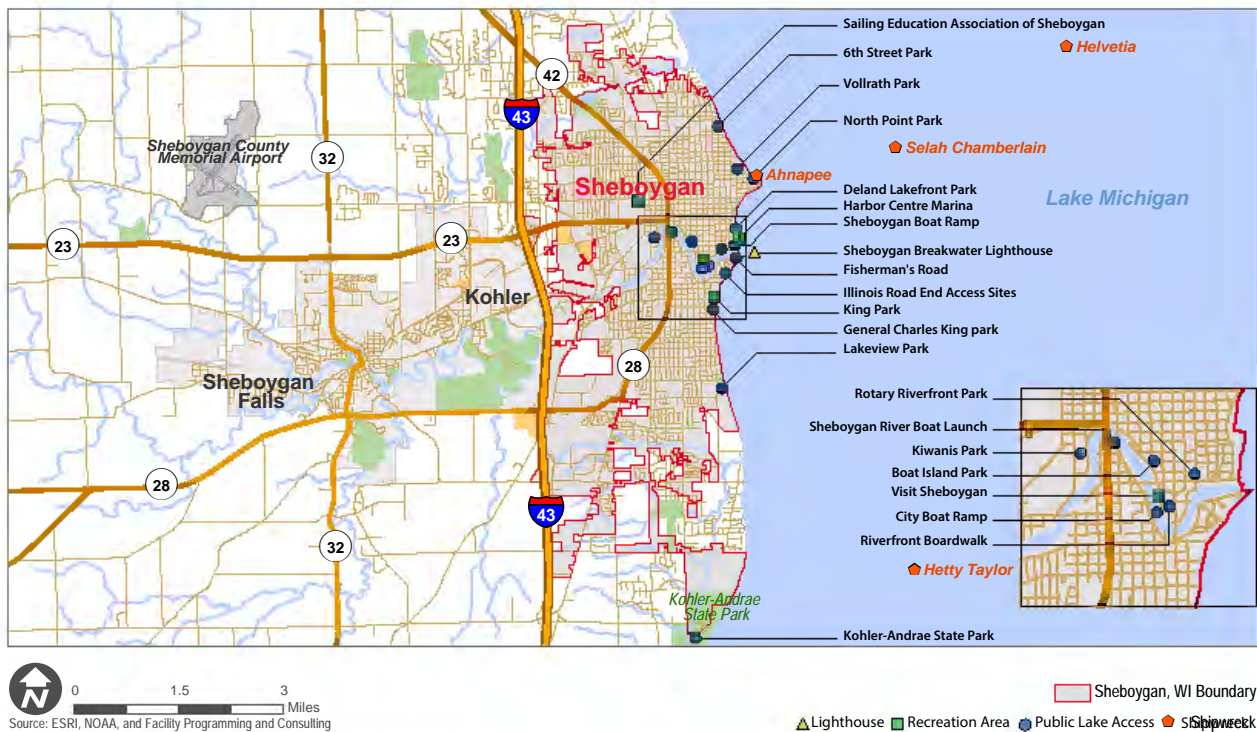
The Remains of the Lottie Cooper in Deland Park



Schooners in the Sheboygan River circa 1909 (Photo: Thunder Bay NMS Research Collection)

Sea Scouts, and Sail Sheboygan to share resources and streamline programming. The Sea Scouts is an offshoot of the Boy Scouts of America which teaches boating and boat-building skills. Sail Sheboygan acts as the host organization for sailboat races on the lake, including Olympic training, world-class regattas, and blind sailing events.

Miles of beach stretch along Lake Michigan. Visitors and locals alike are welcomed to Deland Park (North Beach), King Park (South Beach), and Kohler-Andrae State Park, a 988-acre park complete with beaches, sand dunes, and hike/bike trails. Both Deland and King Parks are popular entry points for the surf and wind sport enthusiast. From King Park - Sheboygan's "South Beach" - visitors may stroll from the South Pier towards the vibrant downtown filled with restaurants, bars, galleries, and more, and along its riverfront boardwalk dotted with artwork created by painters, photographers, and other artists from the local community. Sheboygan County maintains over 39 miles of paved, multi-use trails. Hike / bike trails are located throughout the city and the county; several parks are even connected via these trails allowing guests to tailor their experience with the natural environment. Ten historical markers, most along Lake Michigan, tell the history of the city. Museums and arts centers round out the cultural offerings. Interactive learning opportunities that expand knowledge about the lakeshore environment are provided at the Visit Sheboygan Visitor Center and at the downtown, three-story Sheboygan's Children's Museum, with nautical and ocean-themed exhibits and playground.



Landmarks and recreational areas in Sheboygan, Wisconsin, and surrounding areas

Background and Community Context

Port Washington

At the southern extent of the Sanctuary's boundary lies the City of Port Washington, located approximately 25 miles north of Milwaukee. With a population of nearly 12,300 in 2021, Port Washington provides a quiet community in which to live, but still an easy commute to Milwaukee. The area was largely settled by members of the Potawatomi tribe prior to 1835. White settlers arrived in 1835 as part of an expansion of American interests into lands controlled by the French and British prior to the War of 1812.

In the 1840s several piers were built adjacent to the mouth of the Sauk Creek, which runs through Port Washington and into Lake Michigan. A number of devastating shipwrecks in 1856 prompted city officials to petition the federal government for assistance in dredging and creating an artificial harbor. The harbor was completed in 1871 and allowed large quantities of raw materials to be shipped into the city and encouraged the development of an industrial section along the harbor. A lighthouse built on the North Bluff of the city in 1849 served as a navigational aid to the increasingly vigorous shipping industry. The lighthouse was rebuilt in 1860 as part of the U.S. Lighthouse Board's restructuring efforts. In 1889 a pierhead light located on the furthest extent of the city's north breakwater became the main light at Port Washington, when the 1860 lighthouse was discontinued in 1903. In 1934 in conjunction with major improvements to the harbor and breakwall a new pierhead light was constructed and remains a prominent feature of the harbor. The metal, Art Deco tower rests on a twenty-foot-square, cement base that has large arches on each of its faces so it does not obstruct the view of mariners using the harbor.

Commercial fishing was an important industry in Port Washington, with several local families engaged in the activity from 1870 to the early 2000s. A row of fishing shanties once lined harbor's west slip, providing a home for the equipment of the commercial fishing that the city was famous for — everything from nets to ice to barrels and smokehouses. Fishing tugs would moor along the slip and unload their huge catches of whitefish, chubs, perch and trout, which would then be processed. In 1899, nearly one-half of the city was destroyed in a large fire. Despite this devastation, a large number of pre-Civil War buildings survived and, according to the Wisconsin Historical Society, Port Washington has the largest collection of buildings from this era in the State of Wisconsin.

On land, the story of Port Washington and its relationship with Lake Michigan is told at the restored 1860 Lighthouse and Light Station Museum, owned and operated by the Port Washington Historical Society. Located on top of the north bluff, the Light Station offers spectacular views of the marina, the lake, and the Port Washington Breakwater Lighthouse, a National Register listed property, constructed in 1935, which marks the entrance to the Port Washington harbor. A number of water-based recreational and education opportunities



*Lighthouse on the Breakwater
(Photo: F-andreas, via Wikimedia Commons)*

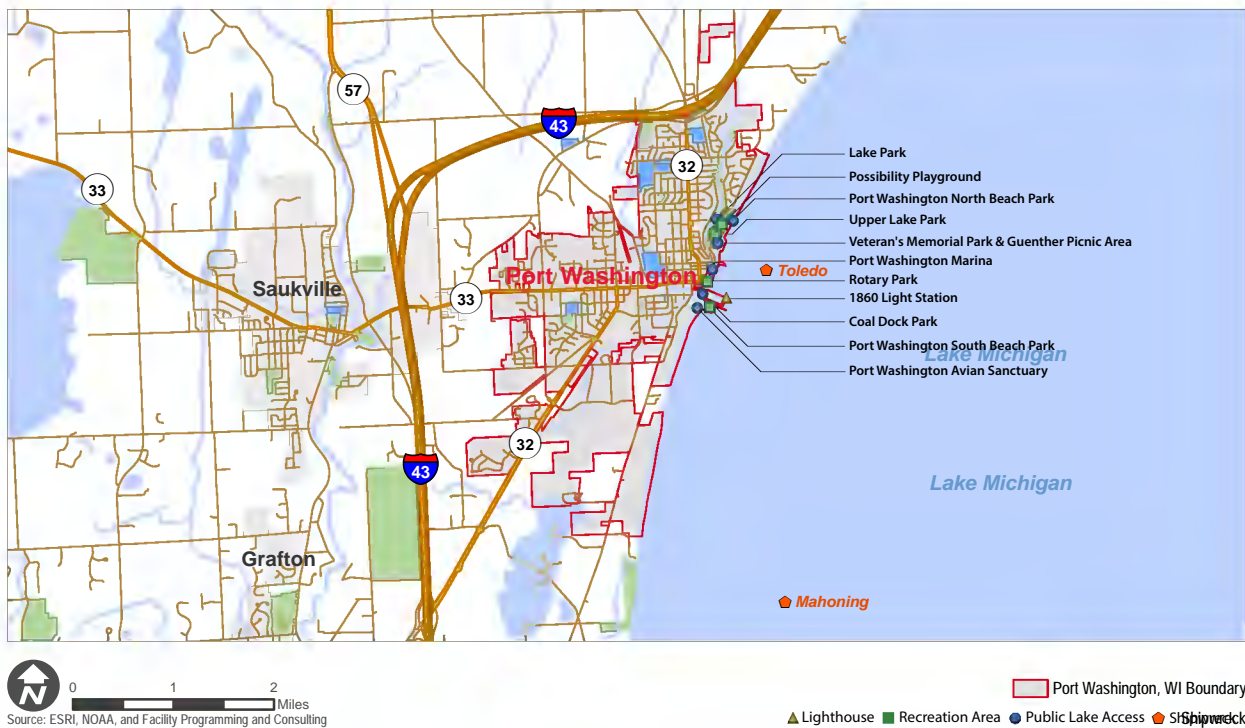


*Marina at sunset
(Photo: Port Washington Marina)*

would allow visitors to access and experience the Sanctuary, including charter fishing, boating and diving excursions; the 220-slip Port Washington Marina; and paddlesports, such as kayaking, canoeing, and paddleboarding.

Numerous local eateries, merchants, museums, galleries, and other establishments are situated along North Franklin Street and East Grand Avenue, just a few blocks from the marina. Tourists and locals alike can easily explore the heart of Port Washington on foot or by bike. More active individuals may explore the area on the Ozaukee Interurban Recreational Trail, which connects the county to the City of Milwaukee and Sheboygan over a 30-mile paved trail, or on one of several pre-planned bicycle routes complete with turn-by-turn directions, scenic views, historic villages, parks and preserves, and other points of interest.

City and county parks abound in Port Washington. Just south of the marina are Rotary Park, Coal Dock Park, Port Washington Avian Sanctuary, and Port Washington South Beach Park. Parks north of the marina include Upper Lake Park, Possibility Playground, and Port Washington North Beach Park. All of these parks provide waterfront or beachfront access with parking. Possibility Playground provides a children’s jungle gym and public bathrooms. In addition to the parks located on the waterfront, the Ozaukee Washington Land Trust protects more than 6,200 acres of forest, wetlands, and open areas among



Landmarks and recreational areas in Port Washington, Wisconsin, and surrounding areas

Background and Community Context

30 nature preserves which include trails for hiking, skiing, and snowshoeing, as well as some which allow fishing, canoeing, and kayaking. Harrington Beach State Park, about 10 miles north of Port Washington, is a popular attraction providing many amenities to the area and the lake such as parking, campgrounds, beach access, picnic areas, and hiking trails. Halfway between Port Washington and Sheboygan is the Amsterdam Dunes Preservation Area. This area offers parking, a boat launch, an undeveloped beach shoreline along with sand dunes, forest and wetlands, bluffs, farmland, streams, and local plants and wildlife.

Wisconsin Historical Society

The Wisconsin Historical Society (WHS) is the lead state agency for co-managing the Sanctuary with NOAA. Per its mission, the WHS “connects people to the past by collecting, preserving, and sharing stories.” As part of this mission, a new Wisconsin History Center is anticipated to open in Madison by 2027. The new facility will more than double the existing museum’s footprint to 100,000 square feet and will provide exhibit and collection space which connects and tells the story of all Wisconsinites through state-of-the-art technology in a modern museum environment.

The WHS is also Wisconsin’s federally-designated State Historic Preservation Office (SHPO). Among the many programs which the SHPO oversees is the State Archaeology and Maritime Preservation Program. From its inception in 1988, this program has been dedicated to preserving Wisconsin’s historic shipwrecks and other underwater non-renewable cultural resources. Staff within this program work to survey, inventory, catalog, and evaluate the state’s underwater archaeological resources. In addition, this office develops preservation strategies and best practices for the field management and stewardship of these fragile and irreplaceable resources, as well as programs that enhance public awareness and education.

In 2001, to illustrate Wisconsin’s maritime heritage in the broader context of the Great Lakes, the WHS, in collaboration with the University of Wisconsin Sea Grant Institute, began the Maritime Trails Initiative which includes online resources, developed in conjunction with museum educators, to create programming and activities for all groups to reach a broader audience and increase Great Lakes literacy on a number of topics in addition to the history of the shipwrecks, such as water quality and invasive species (www.wisconsinshipwrecks.org). While not a physical “trail” that connects shipwrecks, this online experience does identify and document their locations - along with lighthouses, museums, parks, shore-side markers, and more - to encourage divers, maritime enthusiasts, and tourists to understand these unique maritime cultural resources in the broader context of the state’s maritime history and visit them responsibly. The website also provides an online resource that documents the shipwrecks through photographs, videos, and history,



Maritime Trail markers for the Continental (top) and Rouse Simmons (Photo: Wisconsin Historical Society)

and ongoing research projects. Physical signage is installed at shipwrecks, lighthouses, historic waterfronts, museums, and attractions to offer passers-by information and highlight nearby maritime attractions.

Additional State Partners

NOAA has already developed strong partnerships with several other state agencies that will further strengthen the Sanctuary and its connection to the communities. These include the:

- University of Wisconsin
- University of Wisconsin Green Bay
 - UW Green Bay Manitowoc Campus
 - UW Green Bay Sheboygan Campus
- Wisconsin Coastal Management Program
- Wisconsin Department of Tourism (Travel Wisconsin)
- Wisconsin Office of Outdoor Recreation
- Wisconsin Department of Natural Resources

Background and Community Context

The Sanctuary

The map below and the table on the pages which follow identify the boundaries of the WSCNMS and the known shipwrecks in relation to each of the four communities and the larger regional context. Along with the year at which the ship was lost and the depth at which it currently rests is a brief description of the shipwreck and its significance. Those vessels indicated with an (*) in the table are also listed in the National Register of Historic Places.



Map identifying the boundaries of the Sanctuary, known shipwreck locations, and the relationship of the Sanctuary to the four communities involved in its nomination (Source: NOAA)

Background and Community Context

Build Date	Wreck	Casualty Date	Depth (Feet)	County	Description
1833	Gallinipper*	1851	205	Ozaukee	Wisconsin's oldest known shipwreck with ties to the fur trade and early settlement in the region; one of its masts is on display at the Rogers Street Fishing Village; the site is largely intact and offers a great location for advanced technical divers
1836	Sir William Wallace	1861	15	Sheboygan	Driven ashore in a gale while loading a cargo of wood, the vessel remains near shore and near the remains of the historic dock pilings; the wreck remains covered by sand during most seasons, but the historic pilings are great for snorkelers, with lake access nearby at Amsterdam Dunes County Park
1843	Home*	1858	167	Manitowoc	The vessel sank after a collision with another vessel, but remains largely intact on the lake bottom; the site is great for technical divers, and offers an opportunity for beautiful underwater photography
1846	Niagara*	1856	65	Ozaukee	One of the most tragic events to occur in the region, the vessel caught fire and burned to the waterline with more than 60 passengers still aboard; many interesting features remain on the site for recreational divers to explore, including the remains of the vessel's paddle wheels, and its fallen walking beam engine
1847	Mahoning*	1864	55	Ozaukee	One of only a handful of square-rigged vessels located in Wisconsin waters; the wreck site is perfect for recreational divers to explore; the vessel's boiler remains nearby the main wreckage and can be reached with a short swim
1847	Byron*	1864	55	Sheboygan	This small trading schooner, originally loaded with sundries, is a great site to explore for recreational divers
1851	Northerner*	1868	120	Ozaukee	A schooner utilized in the lumber trade which foundered in a storm; the wreck site is great for technical divers to explore, and offers unique features to see, including a beautiful carved scroll figurehead
1853	Advance*	1885	75	Sheboygan	Built in Milwaukee, this vessel operated in the lumber trade for most of its career; during the sinking, the crew managed to make it to the yawl boat, but it capsized as they approached shore, resulting in only one crew member surviving; the site sits in recreational dive range, and despite its broken hull, offers much to explore, including the vessel's bowsprit/jib boom, windlass, centerboard, and forward deck planking
1854	Toledo	1856	15	Ozaukee	The vessel was a passenger and package freight vessel which made regular trips around Lake Michigan; the vessel foundered near shore, resulting in the loss of 40 lives; the wreck site remains in shallow water just north of the Port Washington harbor, and due to moving sand, different parts of the site are uncovered by sand from year to year
1855	Lookout*	1897	8	Manitowoc	One of many vessel's to be lost to the "quicksand" of Rawley Point, the vessel is located less than 1000 feet from two other wrecks (canal schooner LaSalle and scow schooner Alaska) and makes a great site for snorkelers and paddlers
1865	Major Anderson*	1871	10	Manitowoc	The vessel was stranded in the smog produced from the same series of local fires that spread through Peshtigo and other portions of northern Wisconsin; the wreck is located near shore at Point Beach State Forest and remains partially uncovered each year, making it a great site for snorkelers and paddlers

Background and Community Context

Build Date	Wreck	Casualty Date	Depth (Feet)	County	Description
1866	Tubal Cain*	1866	10	Manitowoc	The vessel was lost in the quicksand of Rawley Point, and despite five years of its owner's attempts to pull the vessel off, it remained stuck; different parts of the vessel are exposed from the shifting sands each year, offering new features to explore
1866	Walter B Allen*	1880	163	Sheboygan	The vessel sank twice, the second time her in its current location; the site offers many interesting features for technical divers to explore, including the \$5000 pump used to originally raise the vessel off the lake bottom in Michigan, which remains on the vessel's deck; the vessel was built by the same builder as the E.B. Allen, located within Thunder Bay NMS
1867	IA Johnson*	1890	90	Sheboygan	A scow schooner that spent much of its career ferrying groceries to Washington Island; despite several salvage attempts, the vessel was abandoned; within recreational diving range, the site offers many interesting features for divers to explore, including its intact bow section and other scow schooner features
1867	Ahanappe	1884	5	Sheboygan	Also known as the potato barge, the vessel is broken into pieces and periodically, pieces of it wash in and out of shore
1868	Rouse Simmons*	1912	160	Manitowoc	One of the most well known wrecks in the Great Lakes region, Rouse Simmons was originally named for the owner of the Simmons mattress company of Kenosha, and the site remains one of the most regularly dove wrecks within the Sanctuary; it is a great site for technical divers to visit
1868	Floretta*	1885	174	Manitowoc	The vessel sank with a cargo full of iron ore, and the ore was so heavy, it broke the ship at the turn of the bilge when it collided with the lakebed, and the entire hull lifted upwards and now lays, intact, next the vessel's bottom section; this is a great site for technical diving



Home
(Photo: Tamara Thomsen)



Northerner
(Photo: NOAA / WSCNMS)

Background and Community Context

Build Date	Wreck	Casualty Date	Depth (Feet)	County	Description
1869	Pathfinder*	1886	17	Manitowoc	Vessel's cargo of iron ore remains within the hull and it can be easily seen from the surface of the water on calm, clear days; it is a great site for paddling and beginner divers
1869	Alaska*	1879	5	Manitowoc	Vessel remains very close to shore, and is often covered by sand; when visible, the site is great for snorkeling
1871	SC Baldwin*	1908	70	Manitowoc	When it sank, the vessel capsized, dumping its cargo of stone; the stone cargo is located only 2.5 miles to the NW in 40 ft. of water; while broken, much of the vessel's hull remains visible, and it is a great spot for recreational divers to explore
1873	Helvetia	1921	156	Sheboygan	An early schooner barge, the vessel was towed for most of its sailing career; with its massive size, this site is a great technical dive
1873	America*	1880	105	Kewaunee	Built as a sailing canaller, the vessel has many unique features only found on this vessel type; one of three canal schooners locate within the Sanctuary, the vessel offers many interesting features for divers to see within its broken hull
1873	Selah Chamberlain*	1886	74	Sheboygan	The vessel sank in a collision in the fog; sitting at recreational dive depths, this wreck features many interesting features for divers to explore, including its massive upright propeller, and engine
1874	LaSalle*	1875	12	Manitowoc	As a sailing canaller, the vessel was built to fit exactly within the confines of the second generation Welland Canal, and is an incredibly unique vessel; for it's shallow depth, the wreck is remarkably intact, being covered by sand much of the time since its sinking; the vessel sits close to shore off of Point Beach State Park and is a great spot for snorkeling or paddling



*Aerial view of the Pathfinder taken from powered-parachute
(Photo: Suzze Johnson)*



*Senator with cars on deck
(Photo: Milwaukee Public Library)*

Background and Community Context

Build Date	Wreck	Casualty Date	Depth (Feet)	County	Description
1874	Hetty Taylor*	1880	98	Sheboygan	The vessel was a trading schooner built in Milwaukee; located at just over 100 feet deep, this wreck remains largely intact and offers much for divers to explore
1881	Arctic*	1930	10	Manitowoc	The longest serving vessel of the Goodrich Transportation Company line - was 49 years old when it was abandoned; the wreck site is close to shore, just north of Manitowoc, and is a great spot for a longer paddle
1882	Continental*	1904	15	Manitowoc	Vessel's engine breaks the surface of the water in years of low water levels; it is a great wreck to snorkel or paddle over
1886	Vernon	1887	193	Manitowoc	Cargo of wooden ware still remain intact within the hull; this remarkably intact wreck is a great site for technical divers
1889	Silver Lake*	1900	192	Sheboygan	The only known double centerboard scow schooner; the vessel was cut completely in two by a car ferry; as one of the deeper wrecks in the Sanctuary, this site is a great location for advanced technical divers
1889	Francis Hinton*	1909	15	Manitowoc	The vessel was constructed by a local Manitowoc shipyard and came ashore in a storm; located just north of Manitowoc, this site is great for a long paddle, and is located near the wreck of the tug Arctic; many other vessels were scuttled nearby, so additional pieces of wreckage may become visible from time to time
1891	Atlanta*	1906	20	Sheboygan	A Goodrich "palace steamer", Atlanta was considered one of the most luxurious passenger steamers on the Great Lakes; located near shore, the site changes from year to year due to sand movement, so there is always something new and interesting to see for divers



America
(Photo: NOAA / WSCNMS)



"Vernon of Chicago" carved into the stern
(Photo: Tamara Thomsen)

Background and Community Context

Build Date	Wreck	Casualty Date	Depth (Feet)	County	Description
1893	Henry Gust	1935	69	Manitowoc	While not the most modern ship built within the Sanctuary, it is the most recently sunk vessel; a fishing tug originally built in Milwaukee and scuttled, this site is a great dive for recreational divers
1896	Senator*	1929	450	Ozaukee	Vessel was carrying 268 Nash automobiles from Kenosha when it sank; one of three vessel's to sink in Wisconsin waters the same week of the 1929 Stock Market crash; it is the second deepest wreck in the Sanctuary
1903	Robert C. Pringle*	1922	278	Sheboygan	The third deepest wreck, and one of the most intact vessel's within the Sanctuary
1918	Algoma	1919	85	Sheboygan	As a dredge, this is unique wreck within the Sanctuary and offers unique features not seen on other wrecks, including its dredging machinery; it is also the most modern wreck in the Sanctuary and a popular dive site for recreational divers, commonly known as the McMullen & Pitz Dredge

Those vessels indicated with an () are also listed in the National Register of Historic Places.*



A diver explores the Selah Chamberlain (Photo: NOAA)

Background and Community Context

This page intentionally blank.

Focus Group Discussions

IN NOVEMBER 2021, IN-PERSON SITE visits were conducted in Two Rivers, Manitowoc, Sheboygan, Port Washington, and Madison. City leadership and representatives from each community, the Wisconsin Historical Society, and NOAA met to discuss their respective overall vision and goals for the Sanctuary and its potential future development. Feedback from these key stakeholders (all of whom also nominated the Sanctuary) helped frame the study at the outset.

In February 2022, targeted focus group discussions were held with a wide range of stakeholders including local communities, non-profit educational and cultural institutions, museums, historical societies, K-12 and university educators and administrators, researchers, state agencies, and other NOAA partners. The focus groups were broken into thematic areas that affect the Sanctuary's facility strategy, including development of an overall Sanctuary visitor/user experience, programming and operations, educational experiences, tourism and recreation, and research and conservation. The specific thematic areas/focus groups were:

- History and Preservation
- Education and Outreach
- Environment and Ecology
- Research and Operations
- Recreation and Tourism
- Residents and the Community

Stakeholder-driven focus groups played a key role in informing this study. Over 60 individuals from various organizations, representing each of the four communities and the state, participated in these discussions. Several overarching themes stood out:

- NOAA should act as a common thread that connects all the associated communities and entities within the Sanctuary region. Tourism and recreation is key to this and this should produce regional/collective benefits.

Focus Group Discussions

- NOAA should have a strategic and complementary physical presence (e.g. visitor experiences, exhibits, signage, research facilities, marine operations, or headquarters, etc) and be integral in all four communities - Port Washington, Sheboygan, Manitowoc, and Two Rivers, as well as in Madison at the Wisconsin History Center.
- The Sanctuary should be a hub and catalyst for Lake Michigan research and science; the changing environment and associated ecological concerns in Lake Michigan should be presented hand-in-hand with the cultural history and significance of the Sanctuary.
- Development of on-water learning experiences would be very impactful for educators and students. This would be a new opportunity within the communities and would foster ownership of the Sanctuary, highlight the importance of Lake Michigan, and inspire action.
- Formal and informal educational programs, for all ages, are important.
- Interpretation of the Sanctuary must be representative of a wide range of perspectives and include Indigenous peoples.
- Thousands of artifacts from Sanctuary shipwrecks are coming back into the public domain. NOAA should play an important role in conservation and public access to these powerful objects.
- Technology should be utilized to connect visitors and residents with the shipwrecks and Lake Michigan.

**Focus Group Participants:
History and Preservation**



History and Preservation

Sanctuary waters, shipwrecks and the adjacent maritime cultural landscape represent over 12,000 years of history. Participants in the History and Preservation focus group discussed: 1) the important role that the Sanctuary should play in connecting the public with local, state, regional, and national history; 2) the role that the Sanctuary should play in preserving shipwrecks and their artifacts; and 3) ensuring that the Sanctuary can execute effective resource protection programs. Participants included individuals and organizations involved in archaeology, conservation, history, and preservation at local, state, and national levels. All agreed that the Sanctuary should be an integral component and catalyst in telling the story of Wisconsin history from its first peoples onward.

Key Takeaways:

- At strategic locations on the coast, NOAA should play a key role in developing permanent exhibits and technology that conveys history in a impactful way
- Several thousand artifacts from Sanctuary shipwrecks are housed at the Wisconsin Maritime Museum and are owned by the State of Wisconsin. NOAA could play a key role by assisting WHS and WMM in conserving these objects and creating powerful educational and visitor experiences.
- Adequate facilities are needed to support resource protection and research efforts

Telling 12,000 years of history through technology and impactful exhibits

Participants in the focus group agreed that the Sanctuary presents an exciting opportunity and focal point for creating high caliber exhibits and other interpretive elements along the lakeshore. Although this group focused on the value of conveying history to the public, the ideas mesh well with those expressed by the Tourism and Recreation focus group. By installing complementary exhibits at strategic locations, the Sanctuary could “tie the region together” and support engaging visitor experiences. This could be scalable and utilize a mix of purpose-built, retrofitted, or shared spaces. Content could range from local, state and national history to shipwrecks and exploration, and from Great Lakes ecology to ocean conservation.

Participants emphasized that the story of the Sanctuary is not limited to the shipwrecks. It is important to ensure that the story of all of the people who utilized Lake Michigan is told and in a manner that is reflective of the various peoples, their culture, and their experiences. The history told through the lens of shipwrecks should be expanded

to include the relationship between the region's first peoples and the Lake and lakeshore landscape. Working group participants agreed that this can only be done in partnership with American Indian Tribes and Nations, and that the Sanctuary presents a new opportunity and catalyst for engaging Indigenous communities.

Interpretation should include permanent indoor exhibits at strategic community locations and regional outdoor signage that highlights, for example, how natural resources were used in daily life of the Indigenous people. Shore side trail markers may be used to identify places of importance or significance in the history or development of the area. The broader story of lighthouses and their importance in saving lives could also be incorporated into the story of the Sanctuary. The 1860 Lighthouse in Port Washington, operated by the Port Washington Historical Society, is undergoing strategic planning and could include educational facilities partnership with the Sanctuary.

Technology should play a part in further enhancing the on-land experience, allowing those on shore to form a more tangible connection to the Sanctuary, such as virtual reality. Through the installation of “pop-up” and permanent exhibits, visitors may be transported back in time to a world in which these ships once dominated the harbors and waterfronts of the four communities. Technology will also play a vital role in bringing these “portals of the past” and underwater experiences to those who are not able (or interested) to make the physical journey into the depths of the lake.

Artifacts and artifact conservation present unique opportunities

For decades, the Wisconsin Maritime Museum has showcased shipwreck artifacts that tell the history of the people, ships, and industry on Lake Michigan and the neighboring communities. It is the repository for artifacts from state bottomlands and houses the largest collection of maritime artifacts in the state. In tandem with the ongoing partnership with the Wisconsin Historical Society, focus group participants believe that this collection and its conservation and public interpretation would be considerably strengthened with the addition of NOAA support and infrastructure. Many thousands of artifacts are from Sanctuary shipwrecks and should be considered a Sanctuary resource.

Focus group participants said that consideration should be given to building or retrofitting space to house a fully functional and publicly accessible conservation lab. This could potentially be managed and operated by the WMM in partnership with NOAA and the Wisconsin Historical Society. In addition to enabling much needed conservation of the artifacts, this would give tourists and locals alike, a “behind the scenes” look at the conservation process. Much of the collection could

“I see these opportunities basically as a once in a lifetime and once in a career opportunity to make a difference and to think big.”

*—James Skibo, State Archaeologist,
Wisconsin Historical Society*

be housed in visible artifact storage where visitors could see artifacts that are typically stored out of view. Special visitor experiences could be created around this material culture/artifacts. Education opportunities that focus on the art and science of conservation would be a natural way to involve visitors with the artifacts themselves. STEAM education programming could be supported by this facility.

Additionally, the lab could become a technical resource for smaller museums and organizations across the state that may not have the expertise in-house to conserve their collections. The Sanctuary would be a good catalyst/facilitator to work with smaller museums that have collections but need assistance with conservation, storage and displays. In addition, the state may become a resource that assists in the interpretation of the stories of these artifacts, ensuring that all exhibits and information are presented to the same level, humanizing the artifacts so that visitors and the community form a connection with them, understanding their importance in history and place. Broader histories of the Great Lakes and from across the state may also be incorporated, further enhancing and enriching the narrative of each location and the Sanctuary, itself. Equally important, such a conservation and storage facility would be an important driver for tourism, public engagement, and education. Major exhibits could be built around specific collections (such as the thousands of artifacts from the schooner Rouse Simmons) and be installed in the adjacent community.

All artifacts from Sanctuary shipwrecks belong to the State of Wisconsin. However, participants suggested that artifacts should travel or be co-located in associated coastal communities. The creation of a central, state-wide database that documents the artifacts, their provenance, and their location (whether in private collections, museums, etc.) would be an essential resource to fully understand what treasures are in the collective coffers of the state, museums, and local historical societies, as well as to researchers studying the shipwrecks or the local communities within the Sanctuary. A better managed and accessible collection could also be made available to educators, students, and researchers, creating unique educational experiences and supporting academic uses of the collection.



Photo: Port Washington Historical Society



Photo: Wisconsin Historical Society

Focus Group Discussions

Sanctuary users and promoting responsible recreation

Working group participants believed strongly that the Sanctuary’s resource protection and preservation goals should be considered in facility planning (see also Research and Marine Operations focus group). For example, mooring buoys are needed to protect shipwrecks from anchor damage and to promote recreation. Adequate facilities are needed to support a mooring buoy program, including storage for buoys and related equipment that could support year-round maintenance work. Buoys may be placed on those shipwrecks that are popular with recreational divers or on those that are particularly fragile or of archaeological significance. QR codes on the buoys and web-based materials could be utilized to tell the story of the shipwreck below or give important details and statistics prior to diving.

Additionally, diver and boater educational programs focused on responsible use of Sanctuary resources are important and should be coordinated with local businesses and organizations that charter tours or sell/rent equipment. Short videos may be provided at diver/boater welcome centers, marinas, or “official” launch sites into the Sanctuary that orient divers prior to their departure. Additional signage or information may be installed along the lakefront to alert people on the preferred protocol if they find remnants that have washed ashore or while participating in recreational activities in the shallower waters, such as kayaking or snorkeling.



Photo: Wisconsin Shipwreck Coast NMS

Archaeology supports sound resource management

Recording (and in some cases re-recording) the condition, status, and location of the shipwrecks will be critical to documenting these cultural resources before they disappear, and to establish a long-term monitoring program. Adequate research facilities are required to support multidisciplinary research by the Sanctuary and its partners (see also Research and Marine Operations focus group). Environmental modeling of the lake, in conjunction with documentation of the shipwrecks, can lead to a sophisticated monitoring program that identifies those which are at most risk to loss or enhanced degradation due to the changing environment and human impacts. Monitoring of the condition of both known and newly found shipwrecks over time will be important to managing these sites. This may require coordination and resources at the local, state, and federal level to ensure consistent and continued documentation and availability of data to researchers and the general public, as appropriate. Focus group participants discussed creating partnerships with educational institutions to develop a field school, in which students and volunteers could assist with documentation and monitoring of Sanctuary resources while gaining real-world experience. Facilities to support these and other research endeavors—such as researcher housing and operational space—would be required.

This opportunity to conserve and display many thousands of artifacts from Sanctuary shipwrecks helps strengthen the policy of leaving newly discovered artifacts in place where they are found. With so many artifacts already recovered there is generally not a need to recover additional objects, unless there was a clear preservation rationale for doing so. Here again, technology could play a role in providing virtual public access to shipwrecks and related artifacts “in situ” rather than recovering them.

Education and Outreach

Formal and informal educational programming is a key way that the Sanctuary will make local and regional impacts, and reach broad segments of the public. Indeed, education is key to the Sanctuary’s mission. Educating students, educators, and the general public about WSCNMS and Lake Michigan- and their intertwined importance- will be valuable assets to ensure the success of the Sanctuary. Focus group participants agreed that engaging the public will not only increase interest and involvement, it will also foster a sense of pride, ownership, and stewardship for the Sanctuary and Lake Michigan.

Representatives in this focus group included K-12 educators, higher education institutions, and education/outreach departments within the Wisconsin Maritime Museum, Discovery World, Shedd Aquarium, Urban Ecology Center, Wisconsin Historical Society, and NOAA. It was universally acknowledged that Sanctuary education and outreach will range from the local community to state, national, and international levels, as well as across all age ranges from K-12 students, to higher learning institutions, and beyond. The group identified many educational concepts and programs that the Sanctuary could establish or support through a strategic mix of purpose-built, retrofitted, or shared facilities supported by the Sanctuary. The mix of appropriate venues and programming could eventually create hallmark education experiences for students across the Sanctuary region.

Key Takeaways:

- The Sanctuary is a living classroom; creating shore-side and on-water educational experiences is important.
- Technology should be used to extend the Sanctuary educational offerings, virtual experiential learning, and support state educational standards.
- Formal and informal learning are equally important and there are many opportunities for the Sanctuary to establish and support both.

Access to lakeshore and on-water experiences are important

A point of significant emphasis by representatives in this discussion was the need to get students down to the lakeshore- and on the water- at as an early an age as possible. The glass bottom boat operating in the Thunder Bay NMS offers a good example of the impact of on-water programs. Whether this is through custom-built shore-side educational pavilions, a NOAA-sponsored vessel, in partnership with local charter businesses, a tall ship, local non-profit organizations or communities, or with the S.S. Badger ferry, these experiences are indelible and leverage the Sanctuary as a “living classroom” to promote Great Lakes literacy

Focus Group Participants: Education and Outreach



“We as an institution are looking heavily at ‘what are the ways that we can upscale? What are ways that we can create that new generation of workers?’”

—Benjamin Joniaux, External Relations, UW Green Bay

among educators and students. The Sanctuary realm/underwater is itself a whole new environment for students to learn about. There is an opportunity to bring NOAA resources to make these experiences sustainable and a signature educational experience in the region. The development of the Visit Sheboygan STEAM Education Center, for example, offers a potential partnership opportunity where facility enhancements would lead to impactful joint educational programming.

Utilizing watersport activities closer to shore, such as kayaking and canoeing, may also be a method for transporting the classroom onto the water, allowing students a more intimate and memorable interaction with the Sanctuary. The Shedd Aquarium in Chicago expressed interest in assisting with this type of programming in the Sanctuary. Other experiences may include a guided boat tour or access to remotely operated vehicles (ROVs) while on the water to allow for exploration below the water without the need for diving skills or certification. In those communities with frontage on the lakeshore, locations may be identified on land to construct pavilions that may be utilized for outdoor classrooms to support education on the water. In some communities, existing infrastructure may already be in place that allows for groups of students to gather, learn, and experiment.

Working group participants suggested that onboard education and activities will need to be designed with educators in mind. While onboard, students may participate in age-appropriate science and research activities relating to the lake ecology, such as specimen collection and water sampling, which are also live-streamed back to a classroom. In the State of Wisconsin, the fourth grade is the year students learn about the state’s history. The Sanctuary could create materials beyond books, including sophisticated online learning tools and virtual programming that dovetails with the fourth grade curriculum.

Leverage existing NOAA programs to make impacts in Wisconsin

The Sanctuary could serve as a catalyst for students to become involved in one of the many NOAA citizen scientist programs and educational programs (e.g. Ocean Guardian School program, etc). Strategic infrastructure ranging from shore side pavilions and information stations to virtual reality equipment to providing real time data, could make these efforts easier for educators to adopt and sustain. From research to education, the Sanctuary is a conduit for the broader mission of NOAA regarding science and ocean conservation learning, awareness, and messaging. It is especially important for the delivery of ocean conservation programming in Wisconsin. By starting the experience at a young age and continuing it through secondary and even post-secondary education, the Sanctuary may be integral in the creation and training of the next generation of scientists, explorers, and researchers

Focus Group Discussions

in the areas such as ecology, environmental science, economics, and the human and social sciences. In addition, it provides an opportunity for exposure to these careers in the oceans and Great Lakes which many students may not have otherwise been exposed to.

Opportunities should be identified to assist in funding transportation costs to allow for under-served students from both within the local community and the neighboring area, to also visit, learn about, and experience the Sanctuary, allowing for education opportunities for all, despite their economic circumstances. Port Washington's close proximity to Milwaukee, for example, lends itself to programming that brings those students to the Sanctuary and offers a direct interaction with Lake Michigan. Facilities should be considered that would make this type of programming impactful and sustainable.

Employ technology

When travel to the Sanctuary is not possible, technology should be used as a tool to bring the Sanctuary into the classroom. This may be accomplished through live underwater video, data feeds from environmental data buoys, live-streaming of classroom education activities while on the water, virtual reality experiences, or other methods which are woven into the existing curriculum being taught at the elementary, middle, and high school level. Similarly, these feeds could be routed to other schools, museums, and aquariums, not only in the state, but at a broader national level. In all of these instances, the quality of the video and the method by which it is transmitted (e.g. cellular, satellite, etc.), as well as carefully designed programming, will be important to the successful engagement of the audience. The group identified the need to “connect students with real time data”, which offers a direct and dynamic understanding of Lake Michigan. All the great mapping of the lakebed that the Sanctuary is doing, for example. That's a real world, real-time connection. The Sanctuary can be a catalyst for acquiring, developing, and employing needed technology.

Broaden the Sanctuary's educational reach and promote greater public awareness

While the Sanctuary naturally fits into the topic of science education, consideration should also be given to incorporating it into other teachings, such as social studies and art. Cities and towns which neighbor the Sanctuary may incorporate day-long field trips into the curriculum so that students may learn about their collective community history on the site of where it happened, in addition to being provided access

to the Lake (which they may otherwise not experience). A “magic school bus” approach, with exhibits that travel between schools within the Sanctuary region and/or across the state, may be considered as a way in which education opportunities may be extended beyond the traditional classroom experience.

A number of higher education institutions in the state are currently involved in research and degree programs in which Lake Michigan and elements within the Sanctuary boundary are integral to the studies. The University of Wisconsin at Green Bay currently operates satellite locations in both Manitowoc and Sheboygan. In order to expand educational and research opportunities at this level, consideration may be given to providing access to laboratory space and housing, which can be limited, especially during the summer months, to researchers from other institutions. A number of existing programs - such as the Einstein Project and the Rising Phoenix - are available for NOAA and the Sanctuary to dovetail into to promote career development for children in K-8 education.

Education need not be confined to the classroom. In Port Washington, for example, land adjacent to the 1860 Lighthouse and Light Station Museum, owned and operated by the Port Washington Historical Society, may be designed to house an education center. While not immediately adjacent to the water, the site does offer spectacular views of the lake below and could be an ideal starting point from which students (or visitors) may orient themselves while learning about the history of the Sanctuary and its relationship and impact to the town and local life.

Participants noted that interpretative signage along the shoreline, highway, trails, and other areas of note will be important in educating the general public and visitors to the Sanctuary, its purpose, its relationship to the communities, and that of the communities to one another. In addition, Port Washington’s proximity to Milwaukee makes it an ideal location to educate students from the city and create a wholly new experience.



Photo: Facility Programming



Photo: Discovery World

Focus Group Discussions

Programs and exhibits may be designed for display in area museums, historical societies, and cultural centers. Partnership with both the Shedd Aquarium, located in Chicago, and Discovery World, in Milwaukee, would provide NOAA with a platform and venue to reach and educate a larger audience on the Sanctuary and conservation, in general. Discovery World, for example, hosts approximately 300,00 visitors per year; 60,000 to 80,000 of these are school-age children to whom the Sanctuary programming could easily be targeted.

To increase outreach and public awareness, seminars and lectures on topics related to the Sanctuary may be offered “live” and/or in person or via pre-recorded media. For example, participants suggested that lectures and exhibits on the car ferry SS Badger (which runs between Manitowoc and Ludington, Michigan) could add value to the passenger experience and further promote the Sanctuary and Lake Michigan conservation. Another example could engage the public in learning about the changing ecology of the lake and/or the native species which reside in the Sanctuary via a specialized dining experience which focuses on locally caught fish, prepared by local restaurants.



Mooring buoys similar to those used in Thunder Bay NMS should be installed in the WSCNMS for safe diver/boat mooring and shipwreck protection (Photo: NOAA)

**Focus Group Participants:
Environment and Ecology**



Environment and Ecology

As the largest freshwater system in the world, preserving the environment and ecology of the Great Lakes is integral to the economic and social well-being of millions of citizens. The Sanctuary can play a central role in both research and education needed to protect this natural resource. Participants in this focus group included representatives from the Wisconsin Department of Natural Resources; regional nature centers; lake, coastal, and land management organizations; and researchers focused on freshwater science and climate change. Similar to other focus groups, this group identified educational, research, and public management concepts and programs that would require a strategic and scalable mix of purpose-built, retrofitted, or shared facilities supported by the Sanctuary.

Key takeaways:

- Though its management responsibility is focused on cultural resources, the Sanctuary should be a catalyst and facilitator for multidisciplinary research and science focused on Lake Michigan.
- As part of NOAA and the National Marine Sanctuary System, the Sanctuary is uniquely positioned to educate on a wide variety of important environmental topics related to our Great Lakes and oceans.
- Lake ecology education presents new opportunities for diversity and inclusion.

The Sanctuary presents a new and exciting opportunity to engage the public on ecological issues

Participants in this group agreed that while shipwrecks are the Sanctuary’s initial draw, it is important that visitors leave with an understanding of watershed health, habitats, and how their communities are affected, on both the social and economic scale. The Sanctuary also presents a new and exciting opportunity to promote the importance of science and the values of science. It should be a key partner in studying and addressing climate change, providing context for the area and informing the public about effects of climate change on their lifestyle and the lake itself.

For example, Lake Michigan is a resource for transportation, recreation, and food. Changes in climate have affected the lake levels, fluctuating significantly in recent years, resulting in coastal erosion. Lower lake levels require freight ships to reduce their tonnage, increasing shipping costs. Rising lake temperatures have led to the habitat expansion of invasive species, such as zebra mussels. While the mussels, which have no natural predators in North America, have increased the clarity

of the lake, allowing shipwrecks to be more visible to divers, they have also caused harm to native species by ingesting their food source. In addition, mussels attach to the shipwrecks, obscuring their form and hastening deterioration. They may also threaten shipwrecks yet to be discovered or documented. In addition to the story of the shipwrecks, the Sanctuary provides an opportunity to inform and educate local communities and visitors about the lake, its ecology, and its ecosystem. As a result, they will likely become better stewards of the environment and have a vested interest in its continued health and condition.

Participants indicated that the Sanctuary can play a significant role in raising awareness of the state's ongoing lake restoration efforts, including bluff restoration, water quality initiatives, invasive species prevention, and beach restoration. Woodland Dunes, for example, is among one of the best estuaries in the state and has become a model for wetland habitat restoration efforts. Guided, or self-guided, kayak tours which link the inland resources with the Sanctuary could be a successful way to connect visitors with an understanding of their surrounding environment, their impact, and what actions they can take to benefit the lake and its inhabitants. Support of research which addresses the "biological connectivity" between watershed, rivers, harbors and Lake Michigan is important; it is all connected across multiple types of animal habitats. Ongoing mapping of Lake Michigan may extend into the Sanctuary waters to assist in identifying any biological hotspots. The Sanctuary presents an opportunity to "cross-think" what can be done in support of Lake Michigan conservation. For example, beyond biological and environmental studies, the Sanctuary offers an opportunity to study the public perception of the importance of the health of Lake Michigan and the value which people place on it as it relates to their personal lives, heritage tourism, and their local community.

Lake ecology education presents new opportunities for diversity and inclusion

Incorporating both the ecology and history of how resources have been used - by Native Americans, commercial industries, etc. - and the potential impacts faced by climate change into the Sanctuary narrative is important for context, as are inclusivity and equity. Participants suggested that experiences be created which include the local community while expanding the audience, increasing exposure to nearby urban (i.e. Milwaukee, Green Bay) and under-served populations. Existing facilities or infrastructure, such as museums, schools, and state/county parks, should be leveraged as information access and distribution points. The Urban Ecology Center, for example, may be a resource to those in the Milwaukee area; a collaboration with the WSCNMS could serve as another way to attract this population to the Sanctuary

"We have partner groups spanning Port Washington Sheboygan, Manitowoc, Two Rivers... those community groups have an opportunity to engage with and to drive the Sanctuary forward into what it is going to become."

*—Tom Mlada, Executive Director,
Lakeshore Natural Research
Partnership*



Photo: Fund for Lake Michigan

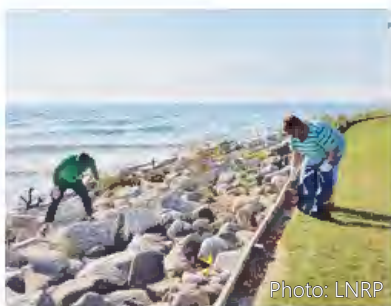


Photo: LNRP

in nearby Port Washington. Special programs/curriculum may be developed by and for teachers, museums, and other educators which provides a multi-touch approach to foster a student's interest from an early age, through high school, promote environmental stewardship, and elevate the Great Lakes to a level of importance in discussions.

The Sanctuary and its facilities should be a catalyst for ecological research

Several entities, such as the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the Wisconsin Department of Natural Resources, and the University of Wisconsin, have ongoing research in Lake Michigan and present potential partnership and collaboration opportunities for both education and research on the Sanctuary ecology. Consideration may be given to the installation of satellite lab facilities which allow researchers to conduct time-sensitive beach and water sampling while covering a larger geographic area. These “micro labs” could be strategically placed on the lakeshore, staffed by researchers and graduate students, who also act as Sanctuary ambassadors, interacting and engaging with the public. This could also provide an opportunity to engage young adults in research by placing them in positions where they learn from career professionals in the field through job shadowing. Summer programs for K-12 educators, hosted by the university, could be developed to include curriculum focused around the Great Lakes and ongoing research projects. Notably, these ideas dovetail extremely well with the newly established Freshwater Collaborative of Wisconsin, which is a partnership of Wisconsin's 13 public universities.

Technology that allows the Sanctuary's changing environment to be documented, visible, and accessible to those on shore (e.g. time lapse video) will be essential to the experience as not all who visit the Sanctuary will have the interest, ability, or willingness to dive or sail. Displays in public facilities or local businesses featuring live-stream images, could quickly and easily bring the public face-to-face with the Sanctuary and its aquatic inhabitants. Signage in existing parks and beaches with shoreline frontage may also be utilized to educate visitors on the environment they are able to see and that which they cannot, just below the surface of the water. A website which provides useful links, updates on ongoing research studies, beach health/safety, points of interest, and current events in the Sanctuary would likely raise interest and awareness among educators, researchers, and the general public.

Research and Operations

Research is a core component of the Sanctuary and includes activities such as lakebed mapping, archaeological investigations, mooring installations and maintenance, and resource monitoring. Operations include research vessels, diving, remote sensing and survey, the use of towed and autonomous systems, and other operations as required by partners. Participants engaged in this group focused both on research needs and opportunities, as well as the infrastructure needed to conduct Sanctuary and partner research. Participants included the University of Wisconsin at Milwaukee School of Freshwater Sciences, Wisconsin Department of Natural Resources, the Wisconsin Historical Society, and representatives from NOAA's Great Lakes Environmental Research Laboratory (GLERL). The group agreed that infrastructure will be important to promoting and supporting successful research operations in the Sanctuary, conducted both by NOAA staff and partners. The need for the Sanctuary to support multidisciplinary research came up in several focus groups.

Key Takeaways:

- The Sanctuary should serve as a catalyst, facilitator, and partner for a wide variety of research aimed at the conservation of Lake Michigan.
- Proper supporting infrastructure is critical to conducting Sanctuary and partner research; this includes researcher housing and operational space.
- Proper supporting infrastructure is critical to attracting research partners who will make a difference in Lake Michigan conservation.

An opportunity to support and accelerate ongoing research efforts

Sanctuary research infrastructure should support ongoing research efforts by current and potential partners. For example, every year,

Focus Group Participants: Research and Operations



Photo: NOAA / WSCNMS



Photo: Facility Programming

“There is a lot of activity on the academic side at the graduate and undergraduate level, in Wisconsin, to educate future water scientists and leaders by getting them out on the lake...Its an opportunity that very few places have...”

—Eric Leaf, Assistant Dean of Advancement, School of Freshwater Sciences at the UW Milwaukee

maritime archaeologists in the WHS State Archaeology and Maritime Preservation Program record Lake Michigan’s shipwrecks, many of which are then nominated to the National Register of Historic Places. For the Wisconsin Historical Society, recording the shipwreck locations and their degradation is a priority. There are also currently a number of environmental studies ongoing, managed by GLERL, including lake-wide surveys on mussel habitat expansion, water quality, and changes in lake level. Similarly with the Wisconsin Department of Natural Resources, whose mission to protect and restore has a nexus with the Sanctuary, and whose time-sensitive sampling could benefit from local research facilities.

From the higher education research institution perspective, there is interest in additional mapping of wildlife habitats along the coast and inland to the communities located along the Sanctuary boundaries. Participants suggested that the Sanctuary itself may become a testing ground for demonstration projects, similar to the “habitat hotel” project which is ongoing at the Harbor District in Milwaukee, in conjunction with the University of Wisconsin at Milwaukee School of Freshwater Sciences. This project installed steel sheet pilings at pilot sites in the inner harbor have been retrofitted to provide a habitat underwater for plants to grow and fish to use as they travel between the harbor, Lake Michigan, and connecting rivers, potentially restoring life and activity to an area which was once considered an aquatic desert.

Ultimately, the Sanctuary could be the location of numerous mapping and research efforts whose findings are made available and distributed with NOAA’s assistance, including connecting data sets to provide a more enhanced product. For example, the UW Milwaukee mapping of marinas in the Sanctuary would complement mapping of the lake which has already been completed by NOAA. The local communities may become part of a research study which focuses on the socioeconomic impacts in each location as the Sanctuary matures and develops. It could become the location where the next generation of marine scientists and maritime archaeologists are trained and introduced to the water through sustainable educational programming using advanced technology. Only a year into its designation, the Sanctuary already has numerous research projects underway, such as mapping of the Sanctuary’s 962 square mile lakebed. This data in turn can form the foundation of partner research such as the creation of habitat maps.

Infrastructure is essential to support current research and drive new efforts

There is consensus that appropriate infrastructure (housing, vessel dockage, dive locker, staging and storage space, etc.) is not only essential for Sanctuary research, but will drive and attract partner research

Focus Group Discussions

that will benefit Lake Michigan. To facilitate research operations, one or all communities within the Sanctuary may become a home port and/or base of operations for researchers with a dock, staging space, and other shoreside amenities that will support vessel-based research. Participants strongly agreed that dormitory type housing or lodging, especially in the summer, would facilitate partner research expeditions and attract new efforts. Such housing could be organized through a partnership agreement with local colleges and universities. A workspace, with 24-hour access, where researchers and state marine archaeologists may stage their dives, review findings, work on drawings, etc. would be beneficial. Access to these facilities may allow for research to continue year-round in the Sanctuary. Notably, regional cultural institutions struggle each year to house interns and visiting scholars. A facility that could accommodate both short and long term lodging could be a significant regional asset.

Equipment is expensive and technology changes rapidly. Consideration may be given to assisting in access to advanced technology for the research and documentation of the shipwrecks or habitats in the Sanctuary. This may include side scan and multibeam sonar, for detecting and imaging objects on the lake floor, or photogrammetry using an ROV to digitally preserve and record cultural and natural features. NOAA may also option to dock some of its research vessels which are used to study the Great Lakes within the Sanctuary; these vessels may be made available to researchers for use in their studies. Vessels are currently dispatched from GLERL in Muskegon, Michigan, and are utilized by NOAA to deploy instruments, collect samples, conduct surveys, and support ROV missions.

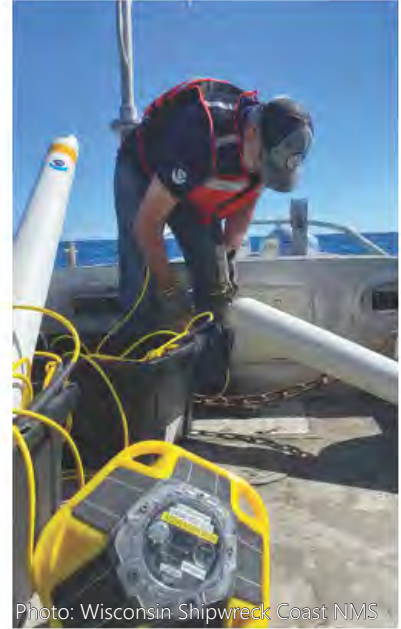


Photo: Wisconsin Shipwreck Coast NMS

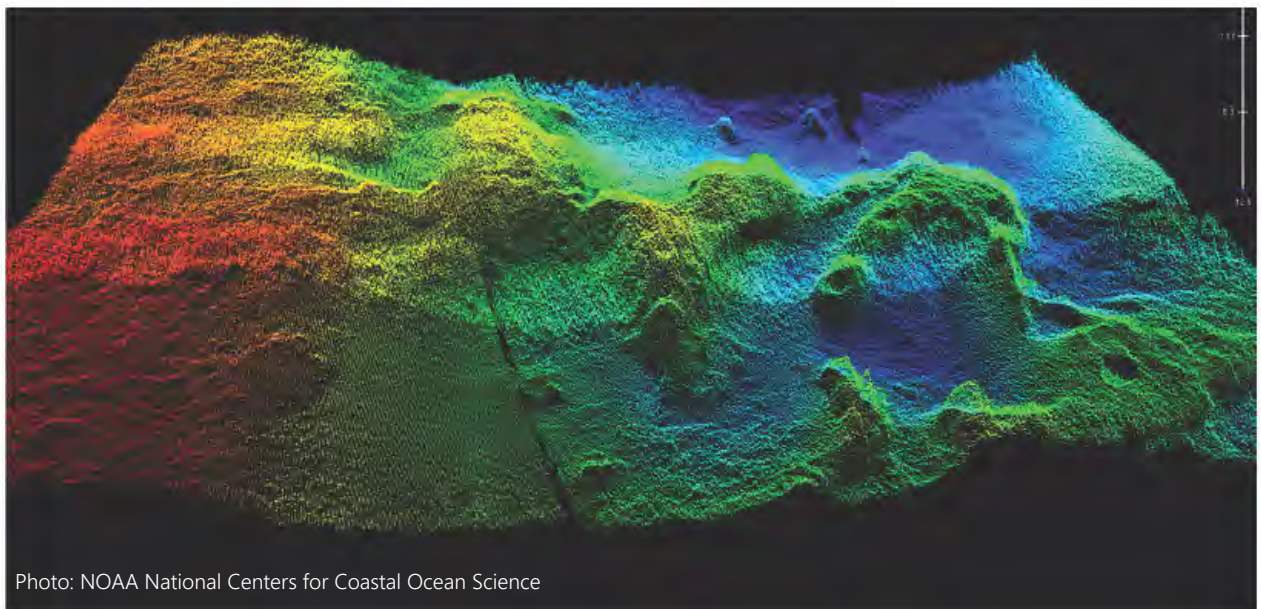


Photo: NOAA National Centers for Coastal Ocean Science

**Focus Group Participants:
Recreation and Tourism**



Recreation and Tourism

While NOAA marine sanctuary boundaries cover a wide geographic area, there is usually a central point from which visitors may gather information about and orient themselves to the sanctuary. Participants strongly believed that the Sanctuary could be most impactful in tourism “on the ground”, by creating new experiences for the public in each principal community. This would be a different approach than developing a single visitor center. These individual experiences would complement ongoing efforts, and when taken together, help branding and marketing aimed at creating a regional destination.

Key Takeaways:

- Stakeholders who nominated the Sanctuary had a vision of it supporting and expanding tourism and recreation opportunities in the region.
- The Sanctuary is a significant “point of differentiation” as compared with other destinations.
- Physical infrastructure such as exhibits and visitor centers is the way most of the public will experience the Sanctuary and derive benefits.

The Sanctuary can help differentiate the communities and region for visitors

Participants in this group noted that because the Sanctuary’s boundaries cover a wide geographic area, there should be several points from which visitors may gather information about the Sanctuary and orient themselves to the region. WSCNMS envelopes four principal and many smaller communities, along an approximately 75 mile stretch of Wisconsin’s shoreline, each with its own chapter in the Sanctuary story, and each offering a unique way in which to experience it.

Tourism professionals in the group related that visitors and residents alike will ask themselves, “what’s different and unique about what’s around me?” Points of differentiation may be a driving force in the development of a Sanctuary experience within each community. These communities already welcome tourists in different scales; the Sanctuary now provides a “national” point of differentiation. Though each is unique, these communities and what they offer in terms of recreation and tourism may be further connected and enhanced in a manner that creates an “all-inclusive” package for tourists (and locals), combining history, science, the environment, and recreation. Additionally, this allows for multiple information points within the region for visitors to interact with Sanctuary and NOAA conservation messaging.

Similar to the history and heritage focus group, participants believed that the Sanctuary should play a key role in developing and providing on-shore experiences. At first, the Sanctuary may be an activity with which people engage while already visiting one of the four communities. But as it develops and matures over time, the Sanctuary could become one of the drivers for the visit. In each community, the visitor experience will be customized to and mirror the environment in which it is located. Existing brick-and-mortar locations should be leveraged at each site to support a physical Sanctuary presence. The Sanctuary could drive a “refresh” of the local museums and exhibits, providing new content and resources and drawing new and returning visitors. In short, the Sanctuary may be a catalyst for increased and unique “experience-based” activities and heritage tourism within each community, while also creating a unifying experience along the coast.

Collaborations with local businesses will be important so that they may speak to the significance of the Sanctuary and its mission. The group related that businesses focused on recreation are expanding in Two Rivers and Manitowoc. Cross-promotion between the communities will also be beneficial to all. Local restaurants and breweries may organize happy hours or dining experiences which allow patrons to learn about the Sanctuary and the history of their community through presentations by guest speakers. Local historical societies may organize walking tours which discuss the connection between their community and Lake Michigan. Children may be engaged at a young age on playgrounds designed with shipwreck-inspired activities and toys. Experiences should be created which are tailored around families, as well as individuals.

Technology, both high and low tech, may be used in a manner which entices people to visit the Sanctuary. QR codes may be placed on interpretive signage located on trails or adjacent to Sanctuary access points, allowing those who desire to take a deeper dive into a topic. Virtual reality may be utilized to allow people to access the shipwrecks and experience a dive without ever leaving land. Apps may be developed or podcasts created which allow visitors to “choose their own adventure” as they explore the community and learn more about the Sanctuary and its surrounding context, highlighting key sites, people, and industries which were integral in the evolution of the community.

Distinctive on water experiences

Similar to the education focus group, participants here agreed that one of the best ways to experience the Sanctuary is on the water. Activities should be available for all age and mobility ranges and economic spectrums, to increase access and equity for all to the Sanctuary experience. Fishing and dive charters could educate guests on the fragility of the

“Be a tourist in your backyard... (the National Marine Sanctuary) has a real power to engage the local community and a lot of [people] are looking for that and hoping to learn more.”

—Andrew Struck, Director of Planning and Parks, Ozaukee County

lake's ecosystem or present informational videos on the Sanctuary as they head out to fishing grounds. Storytelling is even better when experienced on the water and glass-bottom boat tours may be developed for viewing and interpreting those shipwrecks in shallower waters.

The group offered a particularly exciting idea that the Sanctuary could help support: the development of boat-based tours that allow patrons to operate remotely operated vehicles (underwater robots, or "ROVs") and explore the world beneath the surface of the water. This would provide an up close and personal experience with the shipwrecks for those who don't dive, making them accessible to a large segment of the public. As researchers are well aware, every ROV dive is exciting and opens the door to new discoveries. For the public, the opportunity to experience the excitement of this type of exploration first hand, would be impactful and give the region a significant "point of differentiation"

Similarly, partnership opportunities may be considered with local kayak operators to provide guided or self-guided/audio tours to some of the shipwreck sites. The community of Two Rivers in particular offers excellent proximity to a number of shallow shipwrecks, and infrastructure could be considered to facilitate public access. For all shipwrecks in all depth rangers- from paddling to recreational diving to technical diving- the installation of permanent Sanctuary moorings at shipwreck sites will support easier and safer access for divers and paddlers while still promoting recreation. Buoys with QR codes or informational placards may be installed to alert those on the water to their location and what lies beneath them.



Photo: Visit Manitowoc Wisconsin

Focus Group Discussions

Opportunity may exist to partner with a tour operator which would travel, by lake, from these ports, with stops in each of the four communities, educating guests along the way about the Sanctuary, Great Lakes literacy, and other topics of interest. Although the replica schooner Denis Sullivan (formerly based out of Milwaukee) is no longer operating in the region, a past Sanctuary partnership with the schooner provided an excellent proof of concept for future collaboration of this type. In 2017, the sanctuary, UW Sea Grant, and the National Marine Sanctuary Foundation partnered to provide a team of educators a week-long sailing experience to learn about Great Lakes literacy and maritime heritage. As the schooner made port stops in each community, public tours and special events were made available. The idea of a “floating classroom” in the Sanctuary that can do double duty to support tourism should continue to be explored. Another tallship, or different type of vessel, might be chartered to accomplish this.

Branding and marketing opportunities

Participants said that Interstate Highway 43 will likely be the primary corridor utilized by visitors to each of the communities and the Sanctuary itself. Branding this route between Port Washington and Two Rivers, i.e. a “Sanctuary Trail,” may encourage visitors to plan a trip which stops in all communities during their travels. Directional signage, beginning at the highway, which leads visitors into the communities – downtowns, parking, and other amenities – as well as to the Sanctuary will be important in enhancing the visitor experience. Consideration



Photo: Fund for Lake Michigan

may be given to specific marketing or logo for the Sanctuary which is used on these highway signs to key visitors in. This same logo may be used on the pedestrian and hike/bike trails, which connect the communities, and to identify Sanctuary access points. This signage would support broad based marketing of the Sanctuary, by provisioning way-finding. The City of Two Rivers, for example, is excited to “capitalize on national messaging” now made possible by the Sanctuary.

Rather than marketing the communities individually, they should be presented as a package with key events in each community tied together and related; this will result in a stronger tourist experience. Wisconsin has good stories to tell and consideration should be given as the best approach for telling these in a collaborative way. Once the Sanctuary has developed a brand, companion marketing campaigns can be done; some funding assistance is available through grants provided by the Wisconsin Department of Tourism.

While the majority of tourists to this area originate from within the state, both the Milwaukee and Chicago metro areas are within a three-hour drive and could be leveraged to encourage people to explore the Sanctuary and surrounding areas as part of a weekend or extended vacation.

Collaborations with local businesses will be important so that they may speak to the significance of the Sanctuary and its mission. Cross-promotion between the communities will also be beneficial to all. Each of the four communities in the Sanctuary is also a member of the Wisconsin Harbor Towns whose purpose, since its inception in 2000, is to promote the state’s harbor towns through website, trip itineraries, e-newsletter, and social media. This platform should also be leveraged to increase awareness of the Sanctuary.

Because of its proximity to the Thunder Bay National Marine Sanctuary in Alpena, Michigan, the opportunity exists for cross-promotion between the two. Consideration may be given to potential development of a shipwreck “byway,” similar to state and national scenic byways, which markets Thunder Bay, the WSCNMS, and potentially the Lake Ontario NMS currently in proposal to a larger regional and national market.

Residents and the Community

In discussions with community leaders and participants in this focus group, it is clear that Lake Michigan is one of the region's biggest assets and the Sanctuary is seen as an element which will contribute to improving the quality of life and making the communities even more attractive to residents and visitors alike. This group felt that engagement with local residents is as important as supporting tourism and recreation.

Key Takeaways:

- The Sanctuary can contribute to local quality of life and should itself become a “member of the community.”
- Signage and facilities that support programming and public engagement can start small and build to “hallmark experiences.”
- Educational programming will be a key way that the Sanctuary makes a difference in communities.

Becoming a tourist in your own backyard

Outdoor recreation is a main tourism driver, but should be viewed as enhancing quality of life for local citizens. Popular water-based activities include diving, kayaking, windsurfing, and sailing; focus should be placed on these existing services and how to expand and build upon what is currently offered. Two Rivers, for example, has several shallow water shipwrecks off its shore- easily accessible by paddlers. The Sanctuary could help develop infrastructure to facilitate this type of recreation, which would create a unique activity in the region.

Existing trails, such as the Mariners Trail that stretches along the shore between Manitowoc and Two Rivers, could be expanded or enhanced with additional kiosks and educational stops developed by the Sanctuary. Importantly, new trails and connector links could be added to the existing to create one “Sanctuary Trail” which allows for people to hike/bike from Port Washington all the way to Two Rivers, enjoying each community and learning about the Sanctuary along the way. Wisconsin has a strong “rails to trails” program; explore if there is an opportunity to develop this further. This type of effort could build on the Wisconsin Historical Society’s Maritime Heritage Trail, and also benefit from lessons learned in developing the Great Lakes Maritime Heritage Trail at the Thunder Bay NMS.

Partnership opportunities with existing businesses/organizations, schools, cultural/arts centers, restaurants, marinas, and more should be explored. The Sanctuary may be viewed as a nexus with the arts community fostering a “creative realm.” Local artists could be invited

Focus Group Participants: Residents and the Community



“...there’s a lot of ways that we can tie this into our identity of the city... I think a lot of folks in Sheboygan are eager and excited about the opportunity just to try something new.”

—Ryan Sorenson, Mayor, City of Sheboygan

to decorate Sanctuary-inspired fiberglass shipwreck or nautical sculptures with artwork specific to the local community; these may then be installed throughout all four communities at key locations in downtown, public parks, and along the shore.

Additionally, Special events - e.g. festivals, happy hours, arts performances - that are related to the Sanctuary should be incorporated throughout the communities. These may include family friendly events and educational opportunities targeted at involving children from a young age to be interested in the Sanctuary and the value/importance of the lake as a natural resource.

Education is a key way to make community impacts

Echoing other focus groups, participants in this group agreed that incorporating the Sanctuary into the curriculum in schools around Lake Michigan and getting students out on the water at a young age could create a marquee experience that they remember for life. Often, a high percentage of students in each of these communities have never seen or experienced the lake, despite it being just blocks away from their home or school. Additionally, a focus on the science of water can help demonstrate how a healthy Lake Michigan improves people’s lives.



Focus Group Discussions

This page intentionally blank.

Opportunities

SANCTUARY AND PARTNER RESEARCH, EDUCATIONAL programming, and tourism and recreation efforts all stem largely from physical locations. Consequently, for the purpose of this study, NOAA has chosen to focus on establishing its physical presence in each community and the region. This includes leveraging existing and planned infrastructure to allow the Sanctuary to establish its initial building footprint in each community, enhancing existing visitor experiences, interpretive signage, and installing new, as appropriate, and identifying needs and infrastructure to support a Sanctuary office with research and operations facilities. The concepts for each of these potential projects are detailed on the following pages, including a preliminary cost estimate.

The WSCNMS Final Management Plan (FMP), completed in June 2020, identified four action plans, including goals, objectives, and strategies for implementation. The strategies contained in the management plan provide a foundation for the recommendations made in this document. As applicable, alignment between the proposed opportunities and those goals outlined in the FMP is highlighted in each project.

Because of the Sanctuary's presence in each of the four communities along the shores of Lake Michigan, additional opportunities, which will strengthen the Sanctuary and further its relationship with both new and existing partners - such as local county and municipal governments, private businesses/vendors, and community organizations - may be possible. Partners may include any of the numerous stakeholders represented by various local businesses, institutions, and associations which participated in the focus group discussions, as well as additional entities where a partnership is determined to be mutually beneficial.

The opportunities identified are not intended to be an all-inclusive listing, rather a starting point for ideas which may serve to broaden the reach and awareness of the Sanctuary within the local, regional, and national context. Once NOAA has established its physical presence, additional opportunities will exist in the areas of technology, outreach, education, and research. These initiatives are outlined in the table which follows and briefly discussed at the end of this chapter as future considerations for implementation as the Sanctuary develops and evolves.

Opportunities

Goal / Objective	Potential Initiative
<p>NOAA should have a physical presence and be integral in all four coastal communities and in the state capital, Madison.</p>	<ol style="list-style-type: none"> Leverage Existing Facilities and Infrastructure: Utilize and enhance existing museum, community, university, or other facilities as visitor experience locations. Design exhibits and cultivate educational programs for use and display in area museums, historical societies, and cultural centers. Create Sanctuary Research, Marine Operations, Visiting Researcher Housing, and Administrative Facilities: Partner with communities to develop, fund, and construct or renovate a Sanctuary headquarters and visiting researcher facilities, artifact conservation facility, and lakefront educational pavilions to broaden public awareness of the Sanctuary. Consideration should be given to the adaptive re-use of existing buildings. Provide NOAA and its partners with adequate facilities to support the Sanctuary’s mission, and accelerate/expand multidisciplinary Great Lakes research, science, and outreach. Enhance and Build Upon Existing Recreational Trails: Fund region-wide installation of new signage and markers on existing hike-and-bike trails which inform visitors of the Sanctuary, our national heritage, Great Lakes conservation and environmental themes, and relevance to current and future generations. Supplement existing trail/waterfront signage with substantial new signage along the shoreline, highway, trails, and other areas of note to enhance the visitor experience and marketing/branding of the Sanctuary and communities.
<p>Inform and educate local communities and visitors about the lake, its ecology, and its ecosystem; engage residents in the Sanctuary and its importance to foster stewardship and ownership.</p>	<ol style="list-style-type: none"> Engage with Youth and Educators through Programs and Curriculum: Support a bond between the Sanctuary and with children at a young age to foster and promote lifelong stewards of Lake Michigan and the Sanctuary. Create and support professional development opportunities for educators. Create and support K-12 and higher education student learning experiences. Partner with Local Businesses: Develop and support a variety of educational experiences in partnership with businesses and organizations in each of the communities. Increase Visibility through Participation at Local Festivals and Events: Promote and participate in fun, family-friendly events and educational opportunities. Research: Promote the Sanctuary as a resource for past, current, and ongoing research.
<p>Leverage technology to broaden public access and elevate awareness of the Sanctuary and the importance of conserving/protecting the Great Lakes.</p>	<ol style="list-style-type: none"> Support and Enhance Digital Outreach: Design and/or support outreach which broadens the audience and accessibility to the Sanctuary through digital materials, such as websites, apps, kiosks, exhibits, etc. Provide Researchers Access to Advanced Technology: To accelerate Sanctuary research, and to facilitate and support broader Lake Michigan science and research, fund or make available advanced marine technology. Create a Centralized Database: Working in conjunction with the state and the Wisconsin Maritime Museum, assist in the creation of a central artifact database and visualization platform available to the general public, educators, and researchers.

Physical Presence Initiative 1: Leverage Existing Infrastructure

Existing facilities or infrastructure, such as museums, visitor centers, vacant buildings, and state/county parks, should be leveraged as visitor experience and information venues, and educational programming venues. Existing venues located within the Sanctuary boundaries and region which would complement its mission and leverage existing partnerships include, but are not limited to, the following:

- Two Rivers
 - High Lift Pumping Station Adaptive Re-Use
- Manitowoc
 - 1221 Franklin Street Maritime Artifact Conservation Lab, Visible Artifact Storage, and Education Space
 - Wisconsin Maritime Museum Sanctuary Exhibit Upgrade
- Sheboygan
 - Visit Sheboygan Visitor Center and STEAM Education Facility
- Port Washington
 - 1860 Lighthouse and Light Station Museum
 - Port Washington Historical Society Resource Center
- State of Wisconsin
 - New Wisconsin History Center (scheduled to open by 2027)

Although not discussed in detail here, additional opportunities for satellite exhibits and/or outreach and programming components may be explored both within the State of Wisconsin and the surrounding Great Lakes region at entities such as the following:

- Rogers Street Fishing Village (Two Rivers, Wisconsin)
- Woodland Dunes Nature Center (Two Rivers, Wisconsin)
- Above and Beyond Childrens Museum (Sheboygan, Wisconsin)
- Discovery World Wisconsin (Milwaukee, Wisconsin)
- Shedd Aquarium (Chicago, Illinois)
- SS Badger Carferry (Ludington, Michigan)

High Lift Pumping Station Adaptive Re-Use

Two Rivers, Wisconsin

The City of Two Rivers is currently in the concept planning phase for the adaptive re-use and development of the former Water Department high lift pumping station, located at 1901 Memorial Drive, for use as a new Visitor Center. The historic building is highly visible and situated at the gateway to downtown Two Rivers from State Highway 42, with good access to/from the Mariners Trail and nearby South Breakwater Trail.

The south half of the building is planned for visitor center use, while the north half of the building, approximately 1,500 square feet (highlighted on the floor plan on the adjacent page), would be available for tenant use. Additional space in the basement level below would be available for mechanical and storage functions.

The basement and first floor will be both visually and physically connected through a central, monumental ramp located within the two-story volume, allowing for flexibility in display and exhibit options from small to large scale, as well as ease of accessibility for visitors and staff, alike.

Preliminary total project cost, as estimated in 2021 based on the concept drawings and renderings prepared by Vision Architecture (Neenah, Wisconsin), was approximately \$1.15 million. However, costs are subject to change as the scope of work is not yet fully defined and are provided here as a reference only.

As part of its strategy, NOAA would supplement exhibits already planned for the Visitor Center, focusing on opportunities for recreation

Potential Project

1. Exhibits and Installations
2. Assist with Renovation Costs

Potential Project Size

1,500 Square Feet

Conceptual Project Cost

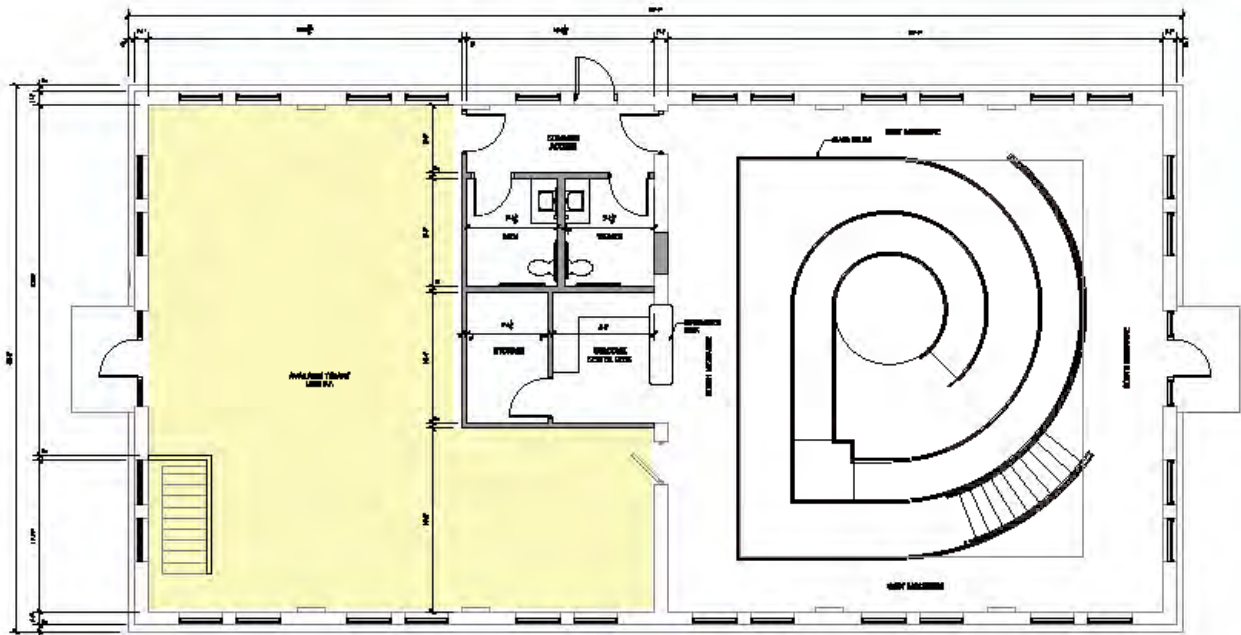
\$ 450,000 Exhibits and Installation
\$ 262,500 Renovation (\$175/SF)

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a “NOAA presence” within sanctuary communities that supports the sanctuary’s mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary’s mission.



in the Sanctuary off Two Rivers, shipwrecks of the area, and Great Lakes conservation messaging. In addition, NOAA may potentially assist with renovation costs. The venue provides NOAA with a high traffic and visible location for promoting Great Lakes conservation, recreation, and tourism. Two Rivers has a number of shallow water, paddling-accessible shipwrecks off its shores, providing a unique visitor experience in the region.



MAIN LEVEL PROPOSED PLAN
SCALE: 1/4" = 1'-0"

1221 Franklin Street Maritime Artifact Conservation Lab, Visible Artifact Storage, and Education Space

Manitowoc, Wisconsin

The Wisconsin Historical Society has an existing Memorandum of Understanding noting the Wisconsin Maritime Museum's status as the preferred repository for recovered shipwreck artifacts. Recently the Museum received the single largest collection of recovered Great Lakes shipwreck artifacts anywhere, containing thousands of rare and compelling pieces. To enhance this visitor experience, the Museum is proposing the expansion of its campus to include the adaptive reuse of a former automotive sales and service building located at 1221 Franklin Street. This will allow visitors to the region a potentially multi-day experience while providing them "behind the scenes" experiences into the research and conservation of these irreplaceable artifacts. The facility is proposed to include:

- Conservation lab
- Visible artifact storage
- Classroom and workshop areas
- Wooden boat building and restoration shop
- Outdoor artifact park surrounding the building

Potential areas for NOAA investment and collaboration include an approximately 6,200 square foot artifact conservation lab and approximately 7,500 square feet of visible artifact storage. Both spaces would be viewable by the public, allowing a distinctive visitor experience in the region. Preliminary total project cost, as estimated in 2022 based on the concept drawings prepared by A.C.E Building Service (Manitowoc,

Potential Project

1. Visible Artifact Storage
2. Assist with Renovation Costs

Potential Project Size

5,000 Square Feet (2,500 SF Each)

Conceptual Project Cost

\$ 375,000 Visible Artifact Storage (\$150/SF)

\$ 437,500 Conservation Lab and Renovation (\$175/SF)

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - R-1:** Characterize the sanctuary's underwater cultural resources and cultural landscape features.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary's mission.



Panoramic of artifacts currently stored at 1221 Franklin Street, including the recently transferred private collection of shipwreck artifacts; cataloging of these artifacts, in partnership with the Wisconsin Historical Society, is currently underway

Wisconsin), was approximately \$800,500. However, costs are subject to change and are provided here as a reference only. As part of its strategy, NOAA would supplement exhibits and installations related to the visible artifact storage and collaborate on outfitting the conservation lab. In addition, NOAA may potentially assist with building renovation costs. The venue provides NOAA with a key facility for educational programming, as well as numerous outreach and research opportunities.



Wisconsin Maritime Conservation Lab & Boat Restoration Workshop



Wisconsin Maritime Museum Sanctuary Exhibit Upgrade

Manitowoc, Wisconsin

The Wisconsin Maritime Museum and its partners are positioning themselves to be the largest attraction in the Great Lakes to share irreplaceable maritime history objects- and their stories- with visitors from around the globe. For over 50 years, the museum has impressed regional, state, national, and even international visitors. With heritage tourism already playing an ever increasing role in travel plans, the Wisconsin Maritime Museum's Shipwreck Immersive Experience will establish Wisconsin's Shipwreck Coast, recently designated as a National Marine Sanctuary, as the premier destination for viewing the historic treasures of the Great Lakes and experiencing the thrill of discovery and the passion for preserving its rich maritime history.

Since 2015, the museum has maintained a 3,000 square foot exhibit featuring the Sanctuary, but it is now dated. The exhibit is featured in the popular, high traffic area of the museum. The gallery space is dramatic, with excellent potential for NOAA exhibits on heritage, conservation, shipwrecks, and marine technology, among other topics. The space would be purposefully designed to support both formal and informal educational experiences.

The proposed project, the Immersive Shipwreck Experience, creates a wholly new experience aimed at attracting substantial new audiences by creating an unforgettable visitor experience centered on thousands of unique shipwreck artifacts- and the stories they hold. This is public history and archaeology on a large and ambitious scale. The exhibit will also feature a virtual reality experience using NOAA-obtained footage from Sanctuary shipwrecks. To bring this experience into reality, the existing museum will be reconfigured to create innovative spaces that dramatically expand its ability to share shipwreck artifacts with the public and develop and install national-caliber exhibits.

Both this project and 1221 Franklin Street are completely shovel-ready. Plans are in hand and construction can start immediately with an estimated two year construction period from start to finish. The proposed work includes renovation of the lower level of the museum for:

- Exhibits and visible artifact storage
- Classroom to support science, engineering, arts, and math (STEAM) learning
- Artifact staging and storage

Preliminary total project cost, as estimated in 2022 based on the concept drawings prepared by A.C.E Building Service (Manitowoc, Wisconsin), for the renovation was approximately \$645,000. However, costs are subject to change and are provided here as a reference only. As part of its strategy, NOAA would supplement exhibits, technology, and installations ,both current and proposed, for display at the museum.

Potential Project

1. Exhibits and Installations

Potential Project Size

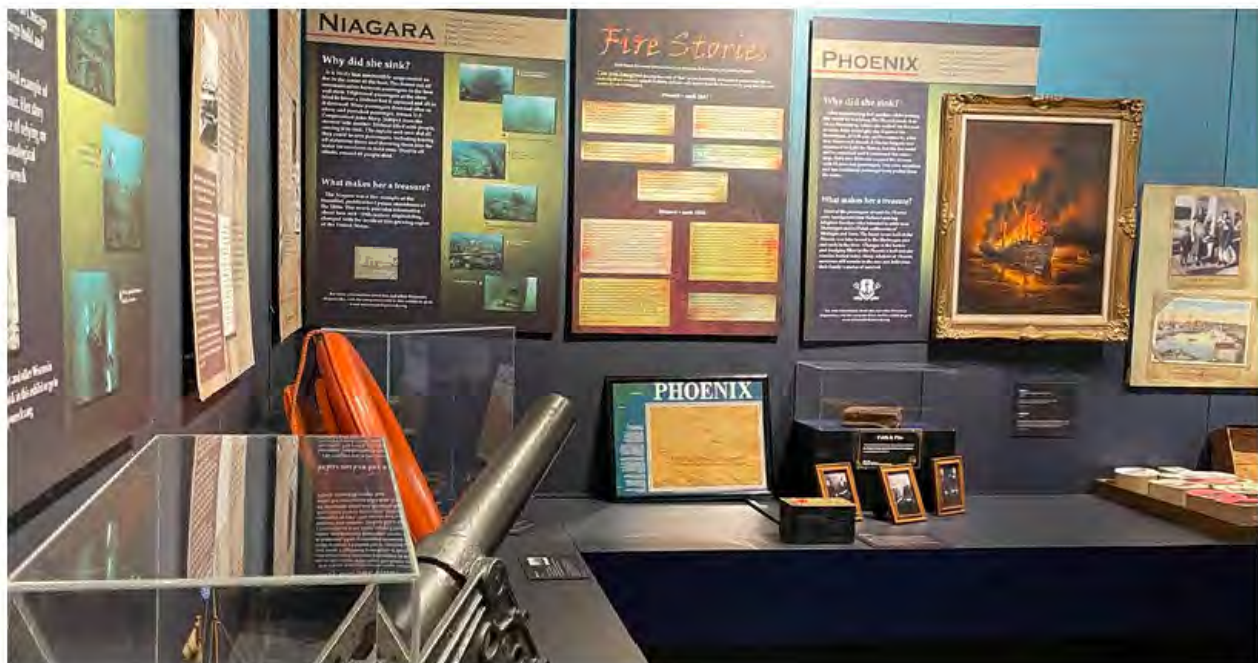
3,000 Square Feet (Existing Exhibit Area)

Conceptual Project Cost

\$ 600,000 Exhibits and Installation

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a "NOAA presence" within sanctuary communities that supports the sanctuary's mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary's mission.



Wisconsin Maritime Museum photograph of interior showcasing existing shipwreck exhibit

Visit Sheboygan Visitor Center and STEAM Education Facility

Sheboygan, Wisconsin

Interactive learning opportunities that expand knowledge about the lakeshore environment are currently in the early stages of being provided at the Visit Sheboygan Visitor Center. Exhibits focus on science, such as the Science on a Sphere (SOS) - a suspended spherical screen which projects hundreds of programs made available by NOAA, and a state-of-the-art classroom provides additional educational opportunities for local students in the fields of science, technology, engineering, and mathematics. The Great Lakes Basin continues to face invasive species, climate change, and pollutants. Currently, there is a significant STEAM skills knowledge gap for industry professionals. Closing the skills gap by providing experiences and education that integrate STEAM concepts at an early age will translate into interest and skills in the environmental, freshwater, and clean energy fields.

Science on a River, Inc. (SOAR) is a new 501c(3) non-profit organization promoting ecological and environmental education and hands-on experiences to the local community and visitors to the area. SOAR focuses on science, technology, engineering, arts and mathematics (STEAM) programs in a dynamic setting that allows the public to engage with the natural environment of Lake Michigan's lakeshore. The vision for the center is to create on-the-water, land, laboratory, and classroom experiences that provide the opportunity for participants to learn about the relationship between lakeshore life and



Visit Sheboygan Visitor Center sales floor (Left) with Sheboygan-centric souvenirs and pieces produced by local artists; Science on a Sphere (Right)

Potential Project

1. Exhibits and Installations
2. Assist with Construction Costs of Dock or Pier

Potential Project Size

3,000 Square Feet (Exhibit Space Only)

Conceptual Project Cost

\$ 450,000 Exhibits and Installation
\$ 375,000 Dock Construction (\$125/SF)

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a “NOAA presence” within sanctuary communities that supports the sanctuary’s mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary’s mission.



Visit Sheboygan Visitor Center interactive classroom

environmental-ecological impact with respect to habitat husbandry and conservancy, fresh water health, and wildlife sustainability. The Center is specifically suited for school and tour groups, adults, families, corporate groups, and the community at large who are interested in Clean Energy, eco-tourism, urban ecology, and water-related recreation exhibits, as well as activities and learning opportunities through STEAM-centered programs and curricula. The organization is currently in redesign of previous bid-ready drawings, prepared by Ayres Associates in 2021, for the development of a “science on the river” experience which may include a freshwater lab adjacent to the Sheboygan River, located right in its backyard, and additional learning labs which will support watershed and Great Lakes literacy.

Preliminary total project cost, prior to the required redesign, was approximately \$1.4 million. However, costs are subject to change and are provided here as a reference only. As part of its strategy, NOAA would supplement exhibits and installations at the Center, as well as continue to support the SOS through new programming. NOAA would also assist with construction of a dock or pier to facilitate student access to the Sheboygan River for education related to watershed and Great Lakes literacy. The Center provides the Sanctuary with the infrastructure to conduct large-scale educational programming. Similar to the other opportunities within other communities, this shared-space concept allows each partner organization to leverage the other in pursuit of a specific objective (i.e. STEAM education and providing students access to the water as a laboratory).



STEAM CENTER - SHEBOYGAN, WI | SITE PLAN RENDERING

Ayres Associates Inc. | 127 First Street, South Shore, WI 53082 | 414.336.8888 | www.ayres.com | 4.11.23 302

1860 Lighthouse and Light Station Museum

Port Washington, Wisconsin

The Port Washington Historical Society (PWHS) was founded in 1991. Over the years the organization has demonstrated its strong volunteer commitment as a non-profit educational organization dedicated to the preservation, advancement and dissemination of the history of the Port Washington area. From 2000 to 2003 the PWHS restored and now maintains the Port Washington 1860 Light Station, a National Register listed property. Overlooking downtown Port Washington, the Light Station includes replica lightkeeper's quarters and a lantern tower. Land adjacent to the 1860 Lighthouse and Light Station Museum, owned and operated by the PWHS, is under consideration for construction of an education center. A vacant lot directly behind the Lighthouse may also be available for purchase. The former Generator Building, also located on the property, is currently being utilized for storage; ideally, the historical society would like to renovate this space for gallery and exhibit space.

As part of its strategy, NOAA would assist with building renovation and adaptive reuse costs to the Generator Building, creating a new space for visitor experiences. NOAA would assist with the concept, design and installation of exhibits focused on the Sanctuary, local and national maritime heritage, and Great Lakes conservation. Exhibits would be designed with educational programming in mind, allowing both formal and informal educational programs to be created. This would include scheduled tours (e.g. bus tours), regular tourism traffic, and also provide local educators with a unique venue for formal programming. Within the 1860 Lighthouse itself, NOAA would assist with the development of new exhibits on the first floor.

In addition, NOAA could, in partnership with the City of Port Washington, rehabilitate the wooden stairway leading from the 1860 Lighthouse to downtown. This connectivity between the two is key in creating a connected visitor experience in Port Washington. Improving this pathway with a more accessible and pedestrian-friendly design would enable connected programming that includes the 1860 Lighthouse, historic downtown, and the waterfront, enhancing both tourism and educational programming.

Potential Project

1. Exhibits and Installations
2. Assist with Renovation Costs

Potential Project Size

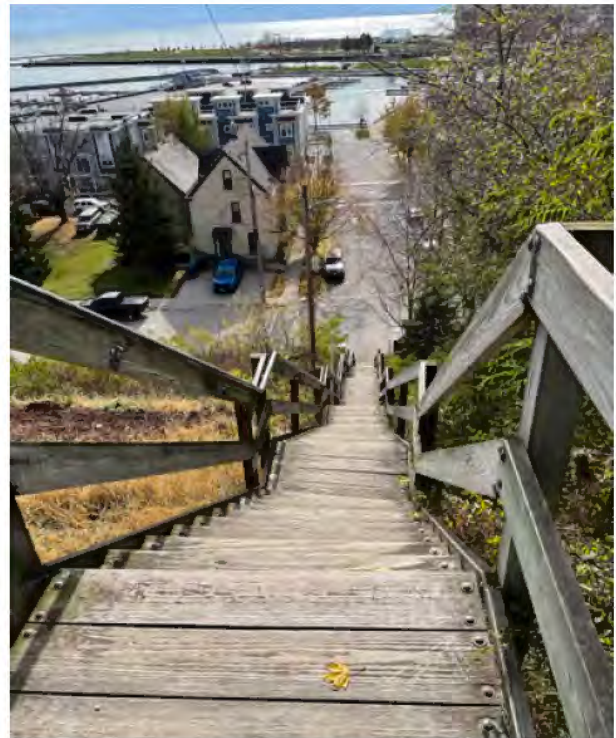
700 Square Feet

Conceptual Project Cost

\$ 210,000 Exhibits and Installation
\$ 122,500 Renovation (\$175/SF)
\$ 48,000 Public Stair

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a "NOAA presence" within sanctuary communities that supports the sanctuary's mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary's mission.



Clockwise (from top left): Generator Building; the 1860 Lighthouse; Wooden staircase connecting to downtown; View of the harbor and the Port Washington Breakwater Lighthouse from the north bluff; Interior photos of the Generator Building

Port Washington Historical Society Resource Center

Port Washington, Wisconsin

The Port Washington Historical Society main office, research center, and gallery, is located at 205 North Franklin Street, in the historic Blake Building. The highly visible downtown location provides an excellent opportunity to engage both residents and visitors. Much of the first floor is currently being re-imagined as an exhibit space, given the recent sale of the Port Exploreum building, which formerly housed PWHS exhibits. The downtown PWHS building also provides a unique opportunity to create a connected visitor experience in Port Washington: from the 1860 Lighthouse and Light Station Museum to the PWHS building and waterfront via a potentially improved public staircase/pathway. In this way, each location is both a standalone asset and part of a broader experience that would be of interest to residents, visitors, educators, and students. This arrangement lends itself nicely to formal and informal educational programming, as well as branding and marketing. Port Washington's rich maritime heritage and culture, shipwrecks and national heritage, research and exploration, and Lake Michigan conservation are all thematic areas that could be presented within this connected experience.

As part of its strategy, NOAA would invest in exhibits and educational installations at the PWHS building. This would include enhancements to a popular, publicly accessible genealogy and local history library and digital workstation located adjacent to the exhibit space. Additionally, as the Sanctuary program continues to grow and develop, consideration may be given to locating a satellite office or workspace for WSCNMS staff within the building.

Potential Project

1. Exhibits and Installations
2. Potential Tenant (Office Space)

Potential Project Size

800 Square Feet

Conceptual Project Cost

\$ 240,000 Exhibits and Installation
\$ 140,000 Renovation (\$175/SF)

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a "NOAA presence" within sanctuary communities that supports the sanctuary's mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary's mission.



Port Washington Historical Society located in the historic Blake Building in downtown

Potential Project

- 1. Exhibits and Installations

Potential Project Size

1,500 Square Feet (Exhibit Space Only)

Conceptual Project Cost

\$ 450,000 Exhibits and Installation

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary’s mission.

Rendering of the New Wisconsin History Center (Source: Wisconsin Historical Society)

Wisconsin History Center

Madison, Wisconsin

In 1986, the Wisconsin Historical Society, one of the most active and diverse in the nation, renovated a 1953 hardware store, located at 30 North Carroll Street, in downtown Madison to operate as the Wisconsin Historical Museum. However, WHS has outgrown this space and plans are underway for the construction of a new and expanded museum, designed by industry-leading exhibit designers Ralph Appelbaum Associates in association with international engineering and planning firm SmithGroup, the award-winning Continuum Architects + Planners, and the Institute for Human Centered Design. The new Wisconsin History Center is planned to open in 2027. Construction is anticipated to begin in 2024. Two properties adjacent to the current museum have been acquired, providing an expanded footprint for the new five-story, 100,000 square foot facility which will house more than 290 million items. The new facility will more than double the exhibition space of the existing museum and is projected to welcome 200,000 guests annually. Seventy percent of the funding for the \$165 million center comes from the state; the rest from private funds.

NOAA and the State of Wisconsin have a unique and timely opportunity to leverage this exciting undertaking and create a Sanctuary presence in downtown Madison - one that would connect hundreds of thousands of visitors with our national maritime heritage and the local communities in the Sanctuary. As part of its facility strategy, NOAA would assist with the design and installation of a gallery/exhibit, potentially using virtual reality footage and other technically-driven products generated by NOAA and the Sanctuary.



Physical Presence Initiative 2: Create Sanctuary Research, Marine Operations, Visiting Researcher Housing, and Administrative Facilities

Research operations within the Sanctuary and Lake Michigan may be facilitated by locating a central, home port and/or base of operations for researchers within the Sanctuary, further establishing a physical presence and community awareness of NOAA, the Sanctuary, and its mission. This may include design and construction of an operational and staging space, as well as other shore-side amenities, such as laboratory space and housing, to support multidisciplinary research by NOAA scientists, the state, and higher education institutions within the region and across the nation. The Sanctuary will also require administrative space and offices.

Potential building components may include:

- **Administrative Offices** - While the Sanctuary may seek to co-locate its staff or have space available in each community with partner entities, this building would serve as the headquarters for the WSCNMS. Up to eight staff, including the Sanctuary superintendent, outreach/program coordinators, and other staff related to the day-to-day operations of the Sanctuary would be housed here. Additionally, space would be provided for both NOAA and visiting researchers. Note: Quantity of office and work areas is preliminary and should be scalable based on the evolution and success of co-locating staff with community and partner agencies.
- **Research and Marine Operational Space** - Functions required to support NOAA and partner on-water researchers are included in this area. A general workspace would allow state, university, and non-profit partners to stage their field projects, review findings, work on drawings, etc. Additionally, lab facilities would allow researchers to conduct time-sensitive activities, such as beach and water sampling. This space would also include a significant storage area for mooring buoys and field equipment, as well as a dive locker with air compressor for filling SCUBA tanks. Note: this space does not necessarily need to be attached to the Administrative Offices and could be located separately.
- **General Building Space** - This area includes those functions required to support activities within the new building. As this facility may serve as the “face” of NOAA and the WSCNMS to the public and visiting researchers, a small exhibit/gallery space with interpretive materials may be included in the main lobby. A large multi-purpose room may be beneficial for use during research conferences, public/community outreach events, and other special events which the Sanctuary may host.

Potential Project

1. New NOAA Research Facility

Potential Project Size

21,000 Square Feet

Conceptual Project Cost

From \$ 3,675,000 (Renovation; \$175/SF) to \$ 7,875,000 (New Construction; \$375/SF)

Alignment with NOAA FMP

- **Strategy RP-1:** Produce baseline assessment of recreational use of sanctuary resources.
- **Strategy RP-2:** Develop and begin implementation of a systematic monitoring program for shipwrecks and other underwater cultural resources that will inform sanctuary management.
- **Strategy RP-3:** Develop a shipwreck mooring program to protect sites from anchor damage and facilitate public access.
- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy RP-5:** Develop a plan to increase awareness of sanctuary regulations and state law, and to enhance law enforcement efforts.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - R-1:** Characterize the sanctuary’s underwater cultural resources and cultural landscape features.
- **Strategy - R-2:** Develop partnerships with local, state, national, and international researchers and organizations to enhance sanctuary research programs and support broader Great Lakes conservation efforts.
- **Strategy - SO-1:** Develop a “NOAA presence” within sanctuary communities that supports the sanctuary’s mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy - SO-2:** Develop infrastructure for research vessels, equipment, and field operations.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary’s mission.

- **Researcher Housing** - Experience at the Thunder Bay National Marine Sanctuary demonstrates that when a sanctuary can provide short- and medium-term housing, more researchers and scientists conduct work there. Affordable and readily available housing is one of the barriers to attracting state, regional, and national researchers to the mid-Lake Michigan area. This is on par with providing researcher time on sanctuary vessels (and reducing that barrier to research), which is an important part of the Sanctuary's mission. By developing local research housing, the Sanctuary will have a significant beneficial impact on Lake Michigan conservation. From small projects to entire field schools, housing is key to developing and supporting a wide variety of research in the Sanctuary- and making it sustainable. Additionally, the focus groups revealed that there is a strong demand for short- and long-term housing for interns and scholars working at regional cultural institutions; a NOAA facility could help alleviate this need.

College and university housing, which may be vacant or not fully occupied during the summer, may offer part of the solution for researchers in need of temporary housing, a resource which can be limited, especially during the peak summer months when competition with tourists is high. As part of its facility strategy, NOAA would work with local institutions to re-develop or enhance existing space to create researcher housing and related amenities.

The preliminary space program which follows outlines the conceptual potential needs for this type of facility and is utilized as a starting point for project planning discussions. This should be further refined and enhanced in a detailed program of requirements (POR) which will outline the total space required (by type, quantity, and size), functional adjacencies, and necessary site improvements for the determined extent of improvements. This could also be used as decision-making tool to assist NOAA in identifying a potential site location for this facility, as well as establish costs and budget. As an alternative to new construction, NOAA may also consider the lease or renovation of an existing facility or facilities to meet its needs.

Opportunities

Research and Administration Building	Capacity	No. and Size of Space(s)	NSF
WSCNMS Administrative Offices			
Superintendent Office	1 + 4 guests	1 @ 180 nsf	180
Staff Office (Programs / Outreach / Research / Education / Other)	1 + 2 guests	4 @ 120 nsf	480
Visiting Scientist / Research Office	1 + 2 guests	2 @ 120 nsf	240
Staff Workstations	1 staff	6 @ 64 nsf	384
Reception / Waiting Area	4 guests	1 @ 100 asf	100
Beverage / Coffee Alcove		1 @ 25 asf	25
Open Collaboration Area	2 to 4	1 @ 120 asf	120
Workroom / Supply Storage		1 @ 100 nsf	100
	Allowance for Internal Circulation (30%)		489
Total WSCNMS Administrative Offices			2,118
Research and Support Space			
Researcher Workroom		1 @ 500 nsf	500
Research Lab		1 @ 1,200 nsf	1,200
Research Material / Supply Storage		1 @ 1,500 nsf	1,500
Dive Locker		1 @ 500 nsf	500
Covered Boat Storage (Winter)		1 @ 800 nsf	800
Total Research and Support Space			4,500
General Building Space			
Entry Lobby		1 @ 500 nsf	500
Exhibit / Display Area		1 @ 500 nsf	500
Multi-Purpose Room		1 @ 1,200 nsf	1,200
A/V Support Closet		1 @ 80 nsf	80
Table / Chair Storage		1 @ 200 nsf	200
Conference Room	12 seats	1 @ 300 nsf	300
Breakroom		1 @ 400 nsf	400
General Building Storage		1 @ 200 nsf	200
Receiving Area		1 @ 200 nsf	200
Total General Building Space			3,580
Total Proposed NSF			10,198
Total Proposed GSF (65% Efficiency)			15,689
Researcher Housing			
	Capacity	No. and Size of Space(s)	NSF
Entry Vestibule		1 @ 100 nsf	100
Living / Dining Room		1 @ 300 nsf	300
Kitchen		1 @ 200 nsf	200
Sleeping Quarters	1 to 2	10 @ 200 nsf	2,000
Bathrooms		2 @ 400 nsf	800
Laundry		1 @ 100 nsf	100
General Building Storage		1 @ 200 nsf	200
Total Researcher Housing			3,700
Total Proposed NSF			3,700
Total Proposed GSF (70% Efficiency)			5,286
Total Proposed Project GSF			20,974

Potential Project

1. Outdoor Interpretive Signage

Potential Project Size

Region-wide

Conceptual Project Cost

\$ 500,000 Exhibits and Installation

Alignment with NOAA FMP

- **Strategy RP-4:** Increase and encourage access and responsible use of sanctuary resources by fostering greater awareness among recreational users.
- **Strategy ED-1:** Increase awareness and knowledge of sanctuary resources, the Great Lakes, and the ocean through education and outreach programs.
- **Strategy ED-2:** Enhance sanctuary communications to create greater awareness.
- **Strategy - SO-1:** Develop a “NOAA presence” within sanctuary communities that supports the sanctuary’s mission and infrastructure needs, and that recognizes, leverages, and complements individual assets in sanctuary communities.
- **Strategy SO-5:** Seek development partnerships and opportunities that support the sanctuary’s mission.



Maritime Trail marker for the Phoenix (Photo: Wisconsin Historical Society)

Physical Presence Initiative 3: Enhance and Build Upon Existing Recreational Trails

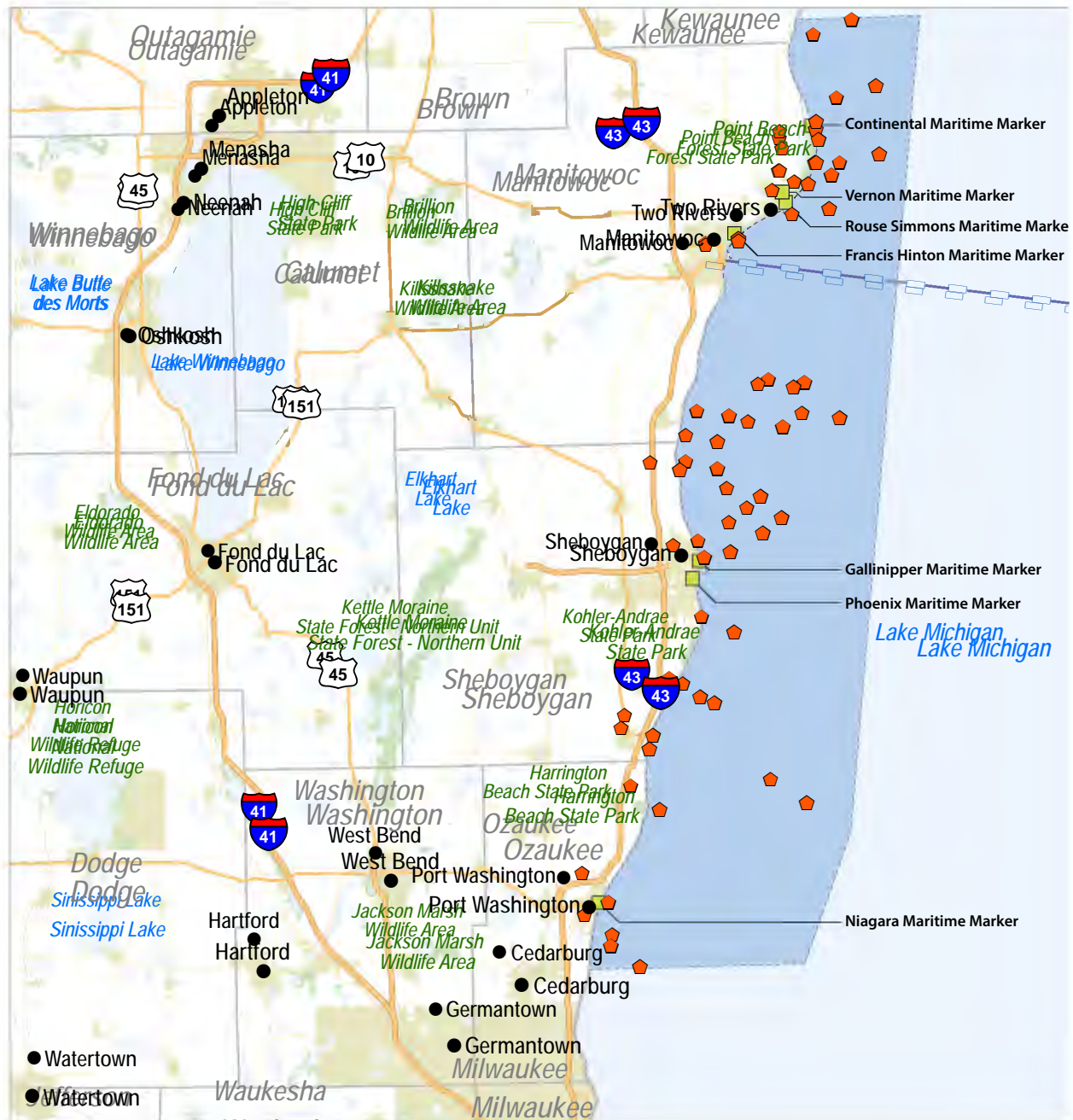
This project would 1) promote awareness of the Sanctuary and the historical, cultural and natural significance of the region; 2) promote and increase recreation and tourism in coastal communities; 3) enhance quality of life for local residents. The project would create a region-wide series of outdoor interpretive signs and venues within the Wisconsin Shipwreck Coast National Marine Sanctuary, focused on promoting tourism, recreation, and education in the coastal communities of Two Rivers, Manitowoc, Sheboygan, and Port Washington. With the input of these communities, NOAA would develop a master plan for a region-wide, Sanctuary-branded outdoor interpretive and educational Trail. Dozens of full-color, standalone shoreside interpretive panels that connect the public to the historical, cultural and natural wonders of the Sanctuary and region would be installed. Additional signage would provide information on regional Lake Michigan conservation efforts and how these efforts impact the communities. Larger outdoor installations at key locations would provide “deeper dives”, promoting regional recreation and tourism, a “call to action”, and pathway for tourists to get more information. Segments of the Trail would be purpose-built to support formal and informal educational experiences.

Branded as a single network of signage, the project would support regional and state tourism and recreation efforts and provide wayfinding for these activities. An interactive companion website would further allow communities and the state to leverage this initiative. Tribal communities would be engaged to ensure the history that predates the first shipwreck in the Sanctuary is represented appropriately.

Each of the four communities within the Sanctuary, as well as the State of Wisconsin, have made investments in creating unique outdoor recreation and trail experiences for both residents and visitors alike to enjoy. The “Sanctuary Heritage Trail, would complement and expand on the state’s Maritime Trails signage, and add significant interpretive infrastructure to existing community trails. These trails may be further enhanced and awareness of the Sanctuary promoted through the design and construction of new trails, connector links, and signage to the existing to create one “Sanctuary Heritage Trail.” This would allow people to hike/bike from Two Rivers all the way to Port Washington, enjoying each community and learning about the Sanctuary along the way via outdoor interpretive signage. Existing trail and park infrastructure which may be leveraged include:

- Mariners Trail; Rawley Point Trail; Neshotah Park(Two Rivers/ Manitowoc)
- Deland Park; King Park; Sheboygan Interurban Trail (Sheboygan)
- Ozaukee Interurban Recreational Trail (Port Washington)

Opportunities

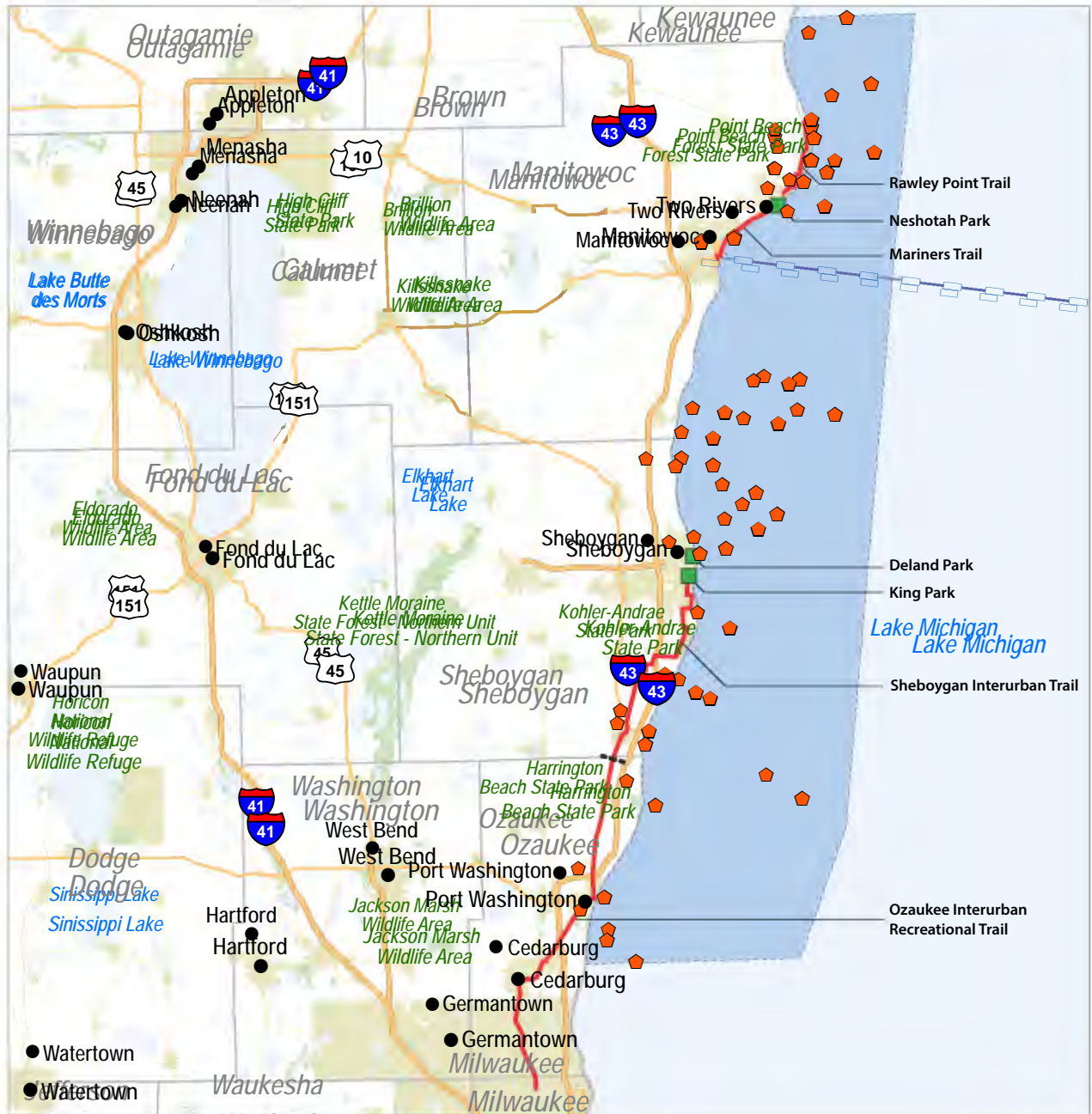


0 5 10 Miles

Source: ESRI, NOAA, and Facility Programming and Consulting

- Trails Marker
- ⬠ Shipwreck
- S. Shipwreck
- WI Shipwreck Coast National Marine Sanctuary
- WI Shipwreck Coast National Marine Sanctuary

Map indicating the location of historical markers associated with the Sanctuary and installed by the Wisconsin Historical Society and the UW Sea Grant Institute as part of the Maritime Trails initiative



Map indicating the location of existing outdoor recreation trails which may be connected between all communities in order to create one “Sanctuary Trail”

Future Considerations - Education and Outreach

Education and Outreach Initiative 1: Engage with Youth and Educators through Programs and Curriculum

To engage children at a young age regarding the importance of the lake, the Sanctuary, and the local and regional history, NOAA may work with the state and local school districts to incorporate the Sanctuary into the curriculum in schools and assist in organizing activities and field trips which get the students out on the water. The Inland Seas Education Association (ISEAS), located in Suttons Bay, Michigan, is a potential partner which, since 1989, has provided learners of all ages with hands-on experiences aboard traditionally-rigged tall ship schooners, along the shores of the Great Lakes, and in local rivers, streams, and wetlands (<https://schoolship.org/>). On land, consideration may be given to operation of a “magic school bus” which travels between schools and/or across the state. Special programs/curriculum may be developed by and for teachers, museums, and other educators which provides a multi-touch approach that fosters a student’s interest from an early age, through high school, promotes environmental stewardship, and elevates the Great Lakes to a level of importance in discussions. In addition, summer programs for K-12 educators, hosted by universities and colleges, could be developed to include curriculum focused around the Great Lakes and ongoing research projects. Incorporation of both the ecology and the history of how resources have been used is important.

At the time of publication of this report, the Rawley Point field project had partnered with the University of Wisconsin Sea Grant and the Wisconsin Maritime Museum to create a hands-on learning experience for 20 teachers. Educators from the Two Rivers/Manitowoc area, Milwaukee and Green Bay explored new avenues for bringing marine tech and archaeology into their classrooms. These programs are just the start of a promising educational outreach with potential for high impact on the state’s youth.

Also at the time of publication of this report, the S/V Denis Sullivan had recently been sold to the World Ocean School, a nonprofit based in Boston; while the departure of the Sullivan from Lake Michigan means it is no longer a viable partner, NOAA should still explore alternative ways to accomplish the goal of developing on-water educational experiences.

Education and Outreach Initiative 2: Partner with Local Businesses

Through partnerships with local restaurants and breweries, happy hours or dining experiences may be sponsored which allow patrons to learn about the Sanctuary and the history of their community through

presentations by guest speakers from NOAA, the Wisconsin Historical Society, or other organizations. For example, guests could learn about the changing ecology of the lake and/or the native species which reside in the Sanctuary from a researcher during a specialized dining experience which ties together food and beverage specialties, prepared by local restaurants. Other outreach and education opportunities may include:

- Walking tours by local historical societies which discuss the connection between their community and Lake Michigan
- Playgrounds designed with shipwreck-inspired activities and toys to engage children at a young age and foster an interest in maritime history and the importance of Lake Michigan

In partnership with local businesses, seminars and lectures on topics related to the Sanctuary may be offered “live” and/or in person or via pre-recorded media in their shops, on their ships, and other locations. Travelers on the S.S. Badger could learn about the various shipwrecks which lie below via on-demand video presentations as the travel between Ludington, Michigan, to Manitowoc and back. Partnership opportunities may be considered with local kayak operators to provide guided or self-guided/audio tours to some of the shipwreck sites and link to inland resources (ie. Woodland Dunes, Sheboygan River, etc.). Partnership with local dive and charter educational programs, such as the Sheboygan Youth Sailing Center (SYSC) and Sailing Education Association of Sheboygan (SEAS), would put the Sanctuary front and center with area youth and sailing enthusiasts.

To increase visibility in the public realm, invitations could be made to local artists to decorate Sanctuary-inspired fiberglass shipwreck or nautical sculptures with artwork specific to the local community; these may then be installed throughout all four communities at key locations in downtown, public parks, and along the shore.



The S.S. Badger car ferry travels between Manitowoc and Ludington, Michigan seasonally throughout the summer

Opportunities

From a tourism and recreation perspective, the opportunities to incorporate NOAA and the Sanctuary into activities are endless. In any effort undertaken, care should be taken to provide experiences and activities for all age and mobility ranges, as well as across all economic spectrums, to increase access and equity for all to the Sanctuary experience. Ideas include:

- Partner with a tour operator which would travel, by lake, from these ports, with stops in each of the four communities, educating guests along the way about the Sanctuary, maritime history, and other topics of interest, similar to an excursion on the tallship Dennis Sullivan, formerly home ported in Milwaukee, but now on the East Coast. Partnership with a sailing vessel or other vessels of opportunity, such as UW-Milwaukee's RV Neeskay, would provide unique, sustainable educational and recreational experiences within the Sanctuary area and communities.
- Consider potential development of a shipwreck "byway," similar to state and national scenic byways, which markets Thunder Bay, the WSCNMS, and potentially the Lake Ontario NMS currently in proposal to a larger regional and national market.
- Fishing and dive charters could educate guests on the fragility of the lake's ecosystem or present informational videos on the Sanctuary as they head out to their destination.
- ROV, paddling, and snorkeling based tours may be developed for viewing shipwrecks in a variety of depths and locations. Special tours may be developed which allow patrons to operate ROVs and explore the world beneath the surface of the water, allowing for an up close and personal experience with the shipwrecks without the need to dive.



NOAA Diver using photogrammetry to document a shipwreck (Photo: NOAA)



NOAA Research vessel lowering an ROV into Lake Michigan (Photo: NOAA)

Education and Outreach Initiative 3: Increase Visibility through Participation at Local Festivals and Events

Each of the four communities within the Sanctuary have embraced the lake as an asset and already offer multiple events, festivals, and fairs which would provide NOAA the opportunity to increase its visibility and presence and further raise awareness of the Sanctuary among the general public. Activities include the Annual Kites Over Lake Michigan in Two Rivers and Brat Days in Sheboygan, for example. Together with each of the communities NOAA may choose to promote and participate in “fun” events - e.g. festivals, happy hours, arts performances - that are related to the Sanctuary, including family-friendly events and educational opportunities targeted at involving children from a young age to be interested in the Sanctuary and the value/importance of the lake as a natural resource.

Education and Outreach Initiative 4: Research

In terms of research, the Sanctuary may become the receptacle for numerous mapping and research efforts whose findings are made available and distributed with NOAA’s assistance. Recording (and in some cases re-recording) the condition, status, and location of the shipwrecks is a priority for the state. Through partnerships with NOAA and with educational institutions, an opportunity exists to develop a field school in which those pursuing a career in maritime archaeology could assist the WHS divers with documentation and monitoring of the artifacts while gaining real-world experience. Similar to the proposed central database in which artifact data is cataloged, field school divers could assist with the creation and documentation of an “endangered shipwrecks” listing which identifies those which are at most risk to loss or enhanced degradation due to the changing environment.

The focus of research may even expand beyond the shipwrecks; local communities may become part of a research study which focuses on the socioeconomic impacts in each location as the Sanctuary matures and develops. The Sanctuary itself may become a testing ground for marine technology demonstration projects and used by commercial companies and academic institutions alike.

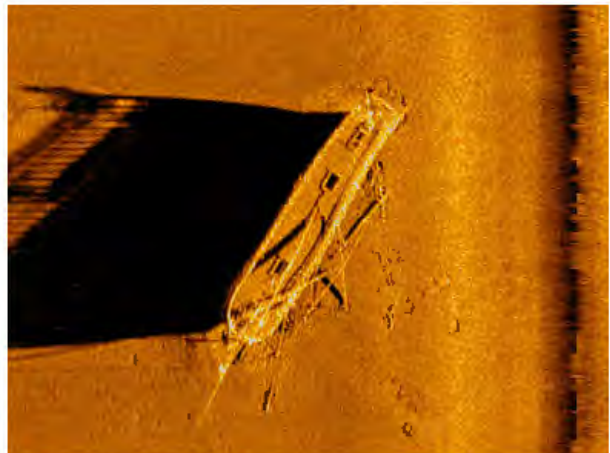
Opportunities



Diagram of designated National Marine Sanctuaries in the Great Lakes; together these could be marketed as a shipwreck byway (Source: NOAA)



A researcher explains to students in the field (Photo: NOAA)



Sonar image of the Gallinipper (Photo: University of Delaware)



Deployment of an autonomous underwater vehicle in the WSCNMS (Photo: NOAA)

Future Considerations - Technology

Technology Initiative 1: Support and Enhance Digital Outreach

To raise interest and awareness among educators, researchers, and the general public, consideration may be given to the design of a website which provides useful links, updates on ongoing research studies, beach health/safety, points of interest, and current events in the Sanctuary. Alternatively, existing websites for each community and the Sanctuary, itself, could be modified to accommodate this type of information.

Advances in technology allow audiences to be engaged, near and far, without ever leaving their home or participating in a dive. Technology also allows for a more equitable experience and increased access to the Sanctuary across multiple age and socioeconomic groups. Opportunities include, but are not limited to:

- Live-view underwater cameras
- Real-time buoy data
- Virtual reality experiences
- “Live dive” experiences
- Public access to ROVs while on the water and/or onshore which allow for exploration below the water without diving

It should be noted that the quality of the video and the method by which it is transmitted (e.g. cellular, satellite, etc.) will be important to the successful engagement of the audience through technology.

Similarly, apps or podcasts could be developed which allow visitors to “choose their own adventure” as they explore the community and learn more about the Sanctuary and its surrounding context, highlighting key sites, people, and industries which were integral in the establishment and evolution of the community evident today. Historic sites and lighthouses, for example, could be connected through a “virtual” or physical driving/cycling tour along the Interstate Highway 43 corridor and communities which line the western shore of the lake, guiding travelers via their cell phone to various destinations along the way while at the same time learning the rich and unique history of the local area.

Technology Initiative 2: Provide Researchers Access to Advanced Technology

NOAA may be able to provide assistance to researchers and maritime archaeologists through access to advanced technology which allows for more detailed study and documentation of the shipwrecks or habitats in the Sanctuary. This may include side scan and multibeam sonar, for detecting and imaging objects on the lake floor, or photogrammetry using a remotely-operated vehicle (ROV) to digitally preserve and record the shipwreck.

Technology Initiative 3: Create a Centralized Database

Research Focus Group participants believe it imperative that the vast number of maritime artifacts, both in private and publicly held collections, be documented and cataloged into a centralized database, and that the Sanctuary should play a supporting role. Information would include provenance and current location. This central database would be made accessible to state conservation agencies, researchers, and potentially the general public. At present, the state maintains a database, but it is neither complete nor accessible outside their circle. Ideally, this database would be a collaborative effort between the Wisconsin Historical Society and the Wisconsin Maritime Museum which, in addition to conserving the artifacts, would assist with cataloging and archiving this information.

Demographics and Market Data

THE WISCONSIN SHIPWRECK COAST NMS covers 962 square miles in the waters of Lake Michigan. It is probable that any facilities or improvements to support the development of the Sanctuary will be used primarily by local residents, followed by tourists from within the state, and then the region. For the purpose of this study, in order to understand the market and demographics of the four principle communities located within the Sanctuary boundaries, demographic data available from ESRI, a global supplier of geographic information system (GIS) software and demographic data, were utilized. The information presented here is a summary of the findings; additional data and analysis is available in the Appendix. Each community - Two Rivers, Manitowoc, Sheboygan, and Port Washington - is discussed individually on the following pages. Since a number of visitors to the Sanctuary will originate from Ludington, Michigan, and travel via ferry to Manitowoc, analysis was also prepared for this location. Additionally, the metropolitan areas of Milwaukee and Chicago were analyzed as these will be a likely source of Sanctuary visitor. In general, the populations which interact with the Sanctuary will fit into at least one of the following three categories - 1) Local Resident; 2) Day Tripper; and 3) Extended Day Trip or Weekend Tourist. These categories limit the drive-time to each of the communities to a maximum 180 minutes. However, a number of visitors will also be willing to travel further for the Sanctuary experience. While they are excluded from this analysis, they are not excluded from the considerations which are presented in this study. In addition, because of the proximity of these communities to one another, there will be an overlap in the data presented.

For the maps which follow, note that the average drive-time is not calculated for a specific time of day (e.g. rush hour), but rather an indicator of typical drive-time as an average across all days and times of the week. ESRI, utilized for this study, models the movement of the typical automobile observing the rules of the road. Note that those residing near major highways/thoroughfares are often able to travel greater distances and in less time than those in more rural or suburban areas, due to greater freeway access and higher speed limits versus slower trafficked areas on roads with many traffic lights, slowing the free flow of traffic.

Two Rivers

The Local Resident

Because of its proximity to Manitowoc, Two Rivers demographic profile is similar. The city is located within a 60-minute drive of Port Washington, to the south; Appleton, to the west; and Green Bay, to the north. In 2021, the City of Two Rivers had a population of approximately 11,400 people; nearly two-thirds of this population was in the age 18 to 64 age cohort. The median household income was \$50,100 and just over one-half of the population had graduated high school and received some college education or an advanced degree.

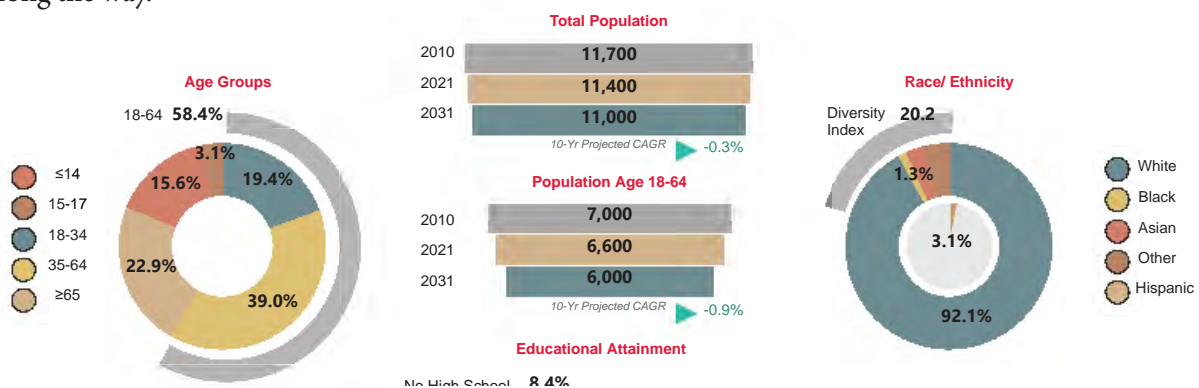
While there is large share of the market which mirrors that of the primary markets of Manitowoc and Sheboygan, according to ESRI data, the largest share of the market in this community (45.3%) consists of older residents who tend to be semi-retired empty nesters who have no plans to leave their homes or the community. While they enjoy a slower pace of life, this segment tends to support local businesses and actively participate in outdoor activities and community events. Motorcycling, hunting, and fishing are popular; walking is the main form of exercise.

The Day Trippers

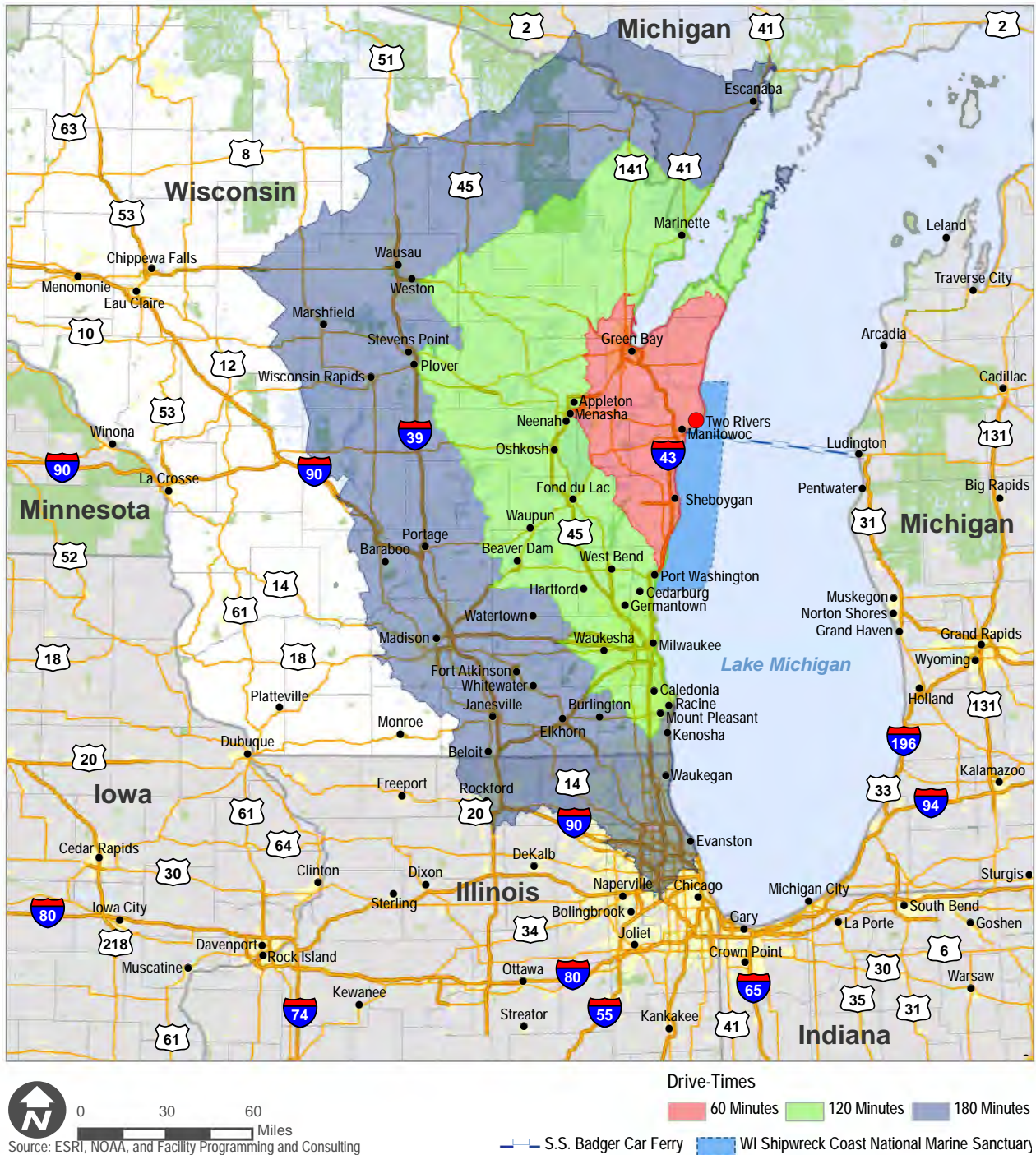
For those who may choose to explore Two Rivers as a day trip, it is accessible from as far south as Mount Pleasant and Racine; Plover, to the west; and Marinette, to the north, in under 120 minutes.

The Extended Day Trip or Weekend Tourist

Within the 180 minute drive-time, the market for potential Wisconsin Shipwreck Coast NMS tourists in Two Rivers includes residents as far south as Evanston, Illinois; west to Madison, Baraboo, and Marshfield; and north into Michigan's upper peninsula. The population living within this area may consider visiting the Sanctuary as part of an extended weekend vacation, coupled with other historic sites in the area and along the way.



2021 Market Summary for Two Rivers, Wisconsin



Map indicating the area which may be covered in a 60, 120, and 180 minute drive-time from Two Rivers.

Manitowoc

The Local Resident

Manitowoc is located within a 60-minute drive of Port Washington, to the south; Appleton, to the west; and Green Bay, to the north. In 2021, the City of Manitowoc had a population of approximately 33,200 people; nearly two-thirds of this population was in the age 18 to 64 age cohort. The median household income was \$50,100 and just over one-half of the population had graduated high school and received some college education or an advanced degree.

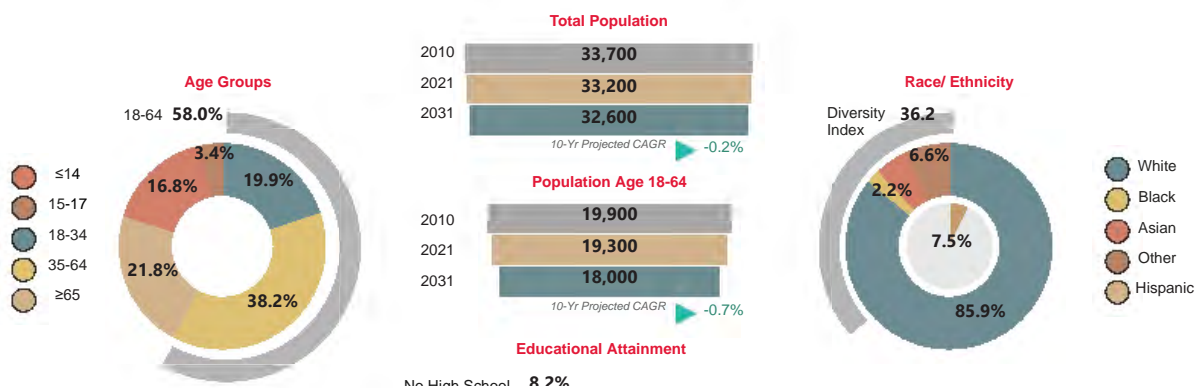
Similar to Sheboygan, according to ESRI data, the largest share of the market in this community (22.6%) consists of residents living primarily in low-density, settled neighborhoods, working and living in the same community which their parents worked and resided. This segment tends to be a younger market, primarily working in the manufacturing, retail trade, and health care sectors. In their leisure time, they enjoy outdoor activities such as fishing and taking trips to the zoo.

The Day Trippers

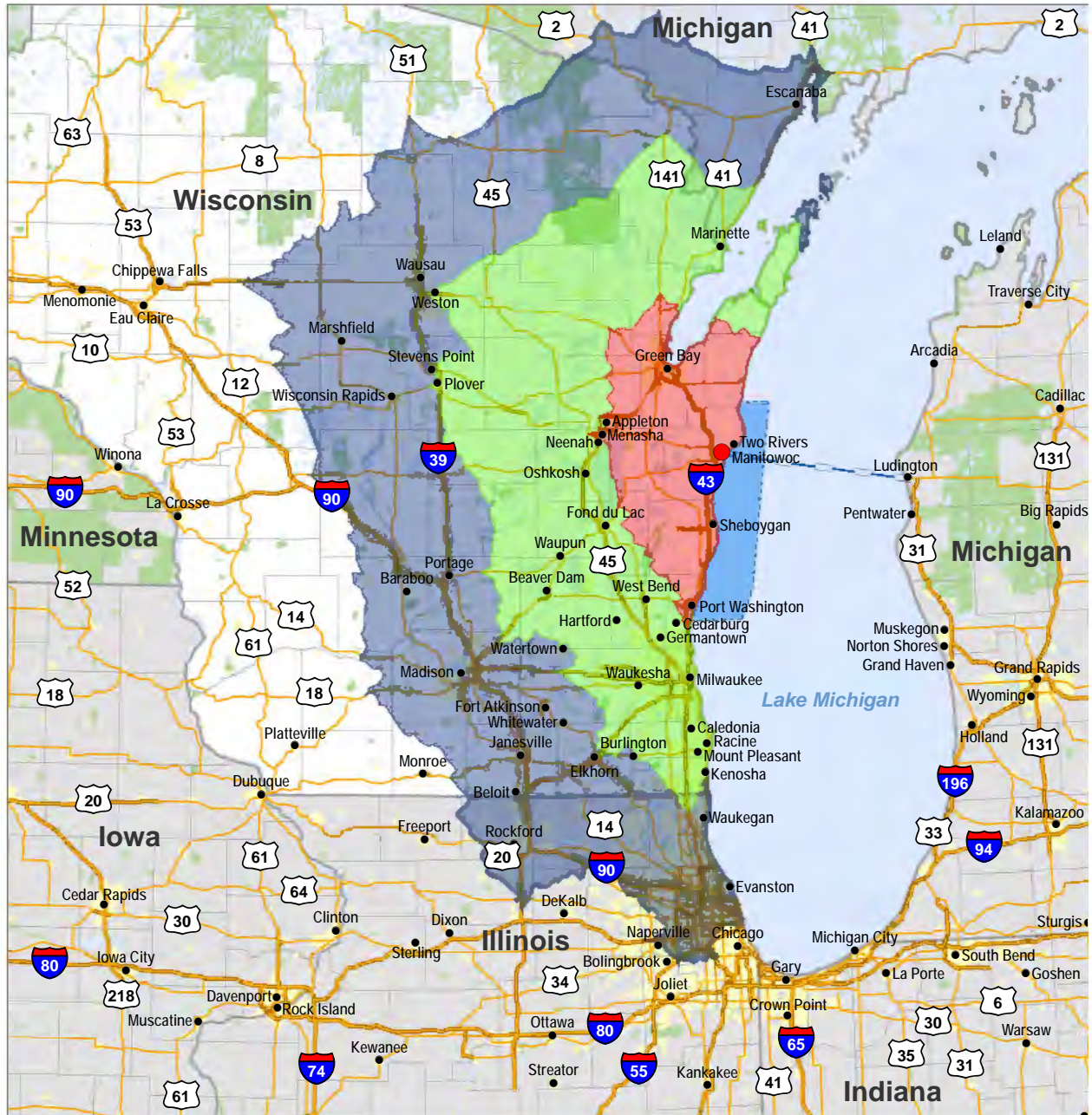
For those who may choose to explore Manitowoc as a day trip, it is accessible from as far south as Mount Pleasant; Plover, to the west; and Marinette, to the north, in under 120 minutes.


The Extended Day Trip or Weekend Tourist


When the drive-time is expanded to 180 minutes, the market for potential Wisconsin Shipwreck Coast NMS tourists in Manitowoc includes some residents in the north and west suburbs of Chicago, such as Naperville and Evanston; west to Madison, Baraboo, and Marshfield; and north into Michigan's upper peninsula. The population living within this area may consider visiting the Sanctuary as part of an extended weekend vacation, coupled with other historic sites in the area and along the way.



2021 Market Summary for Manitowoc, Wisconsin




 0 30 60 Miles
 Source: ESRI, NOAA, and Facility Programming and Consulting

Drive-Times
■ 60 Minutes ■ 120 Minutes ■ 180 Minutes
 S.S. Badger Car Ferry  WI Shipwreck Coast National Marine Sanctuary

Map indicating the area which may be covered in a 60, 120, and 180 minute drive-time from Manitowoc.

Sheboygan

The Local Resident

Sheboygan is centrally located within the Sanctuary boundary and within a 60-minute drive of Milwaukee and Port Washington, to the south; Fond du Lac, to the west; and Green Bay, to the north. In 2021, the City of Sheboygan had a population of approximately 49,800 people; nearly two-thirds of this population was in the age 18 to 64 age cohort. The median household income was \$51,800 and nearly one-half of the population had graduated high school and received some college education or an advanced degree.

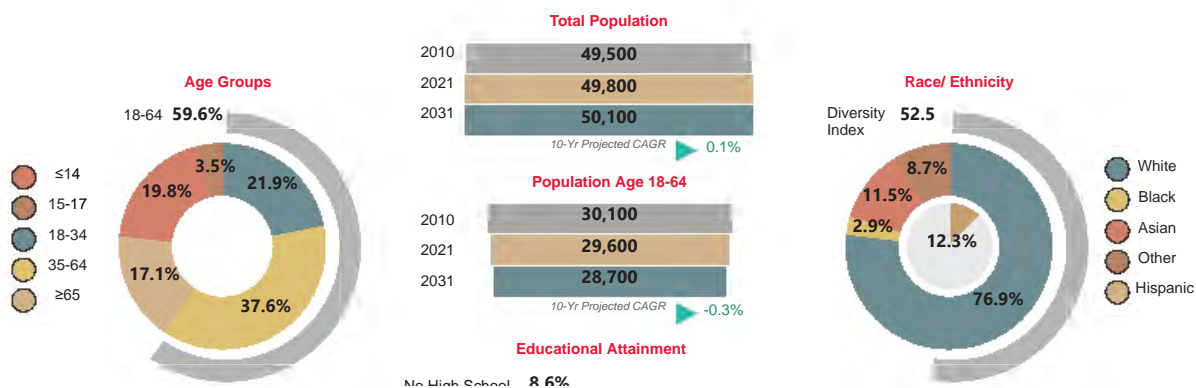
According to ESRI data, the largest share of the market in this community (19.5%) consists of residents living primarily in low-density, settled neighborhoods, working and living in the same community which their parents worked and resided. This segment tends to be a younger market, primarily working in the manufacturing, retail trade, and health care sectors. In their leisure time, they enjoy outdoor activities such as fishing and taking trips to the zoo.

The Day Trippers

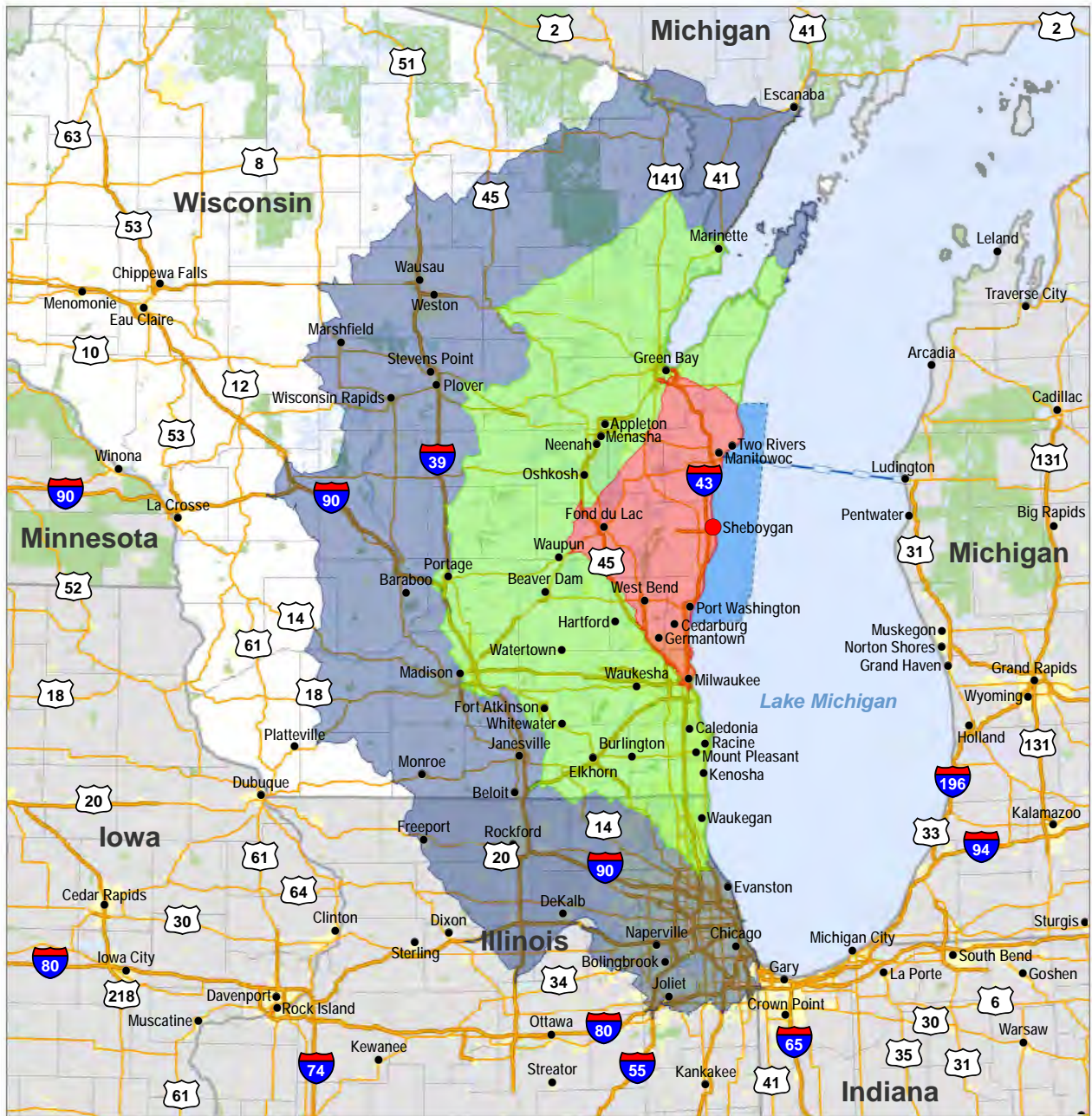
For those who may choose to explore Sheboygan as a day trip, it is accessible from Waukegan, to the south; Portage, to the west; and Marinette, to the north, in under 120 minutes.

The Extended Day Trip or Weekend Tourist

Increasing the drive-time to 180 minutes, the market for potential Wisconsin Shipwreck Coast NMS tourists in Sheboygan includes areas in northern Illinois, as far south as Joliet and the far west suburbs of Chicago; west towards Baraboo and Madison; and into the upper peninsula of Michigan, to the north. The population living within this area may consider visiting the Sanctuary as part of an extended weekend vacation, coupled with other historic sites in the area and along the way.



2021 Market Summary for Sheboygan, Wisconsin



0 30 60 Miles
 Source: ESRI, NOAA, and Facility Programming and Consulting

Drive-Times
 60 Minutes 120 Minutes 180 Minutes
 S.S. Badger Car Ferry WI Shipwreck Coast National Marine Sanctuary

Map indicating the area which may be covered in a 60, 120, and 180 minute drive-time from Sheboygan.

Port Washington

The Local Resident

Port Washington is located within a 60-minute drive of Caledonia, just south of Milwaukee; Waukesha to the west; and as far north as Two Rivers. In 2021, the City of Port Washington had a population of approximately 12,300 people; two-thirds of this population was in the age 18 to 64 age cohort. The median household income was \$69,400 and nearly three-quarters of the population had graduated high school and received some college education or an advanced degree.

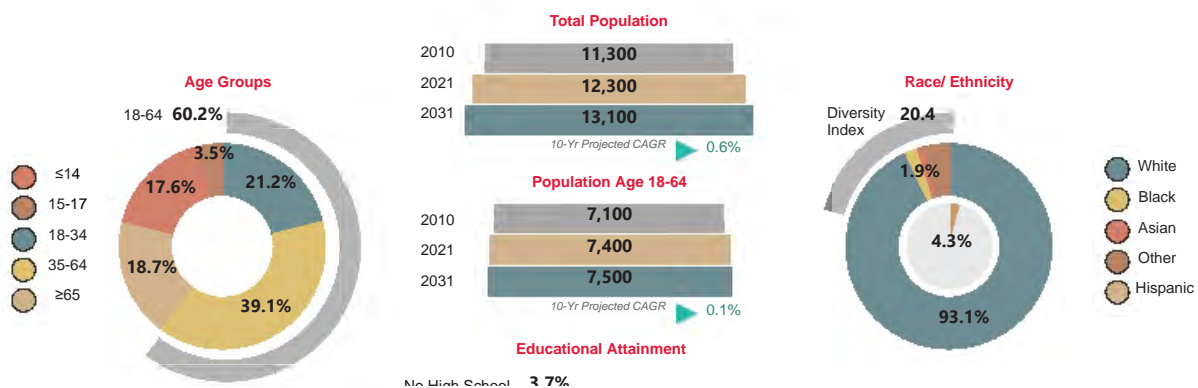
According to ESRI data, the largest share of the market in this community (28.4%) consists of young, educated professionals typically found in the urban outskirts of a large metropolitan area, like Milwaukee. Residents tend to be physically active and into the latest technology. This segment enjoys frequenting bars/clubs, attending concerts, and going to the beach. In addition, they are active in a variety of sports, including backpacking, rock climbing, football, Pilates, running, and yoga.

The Day Trippers

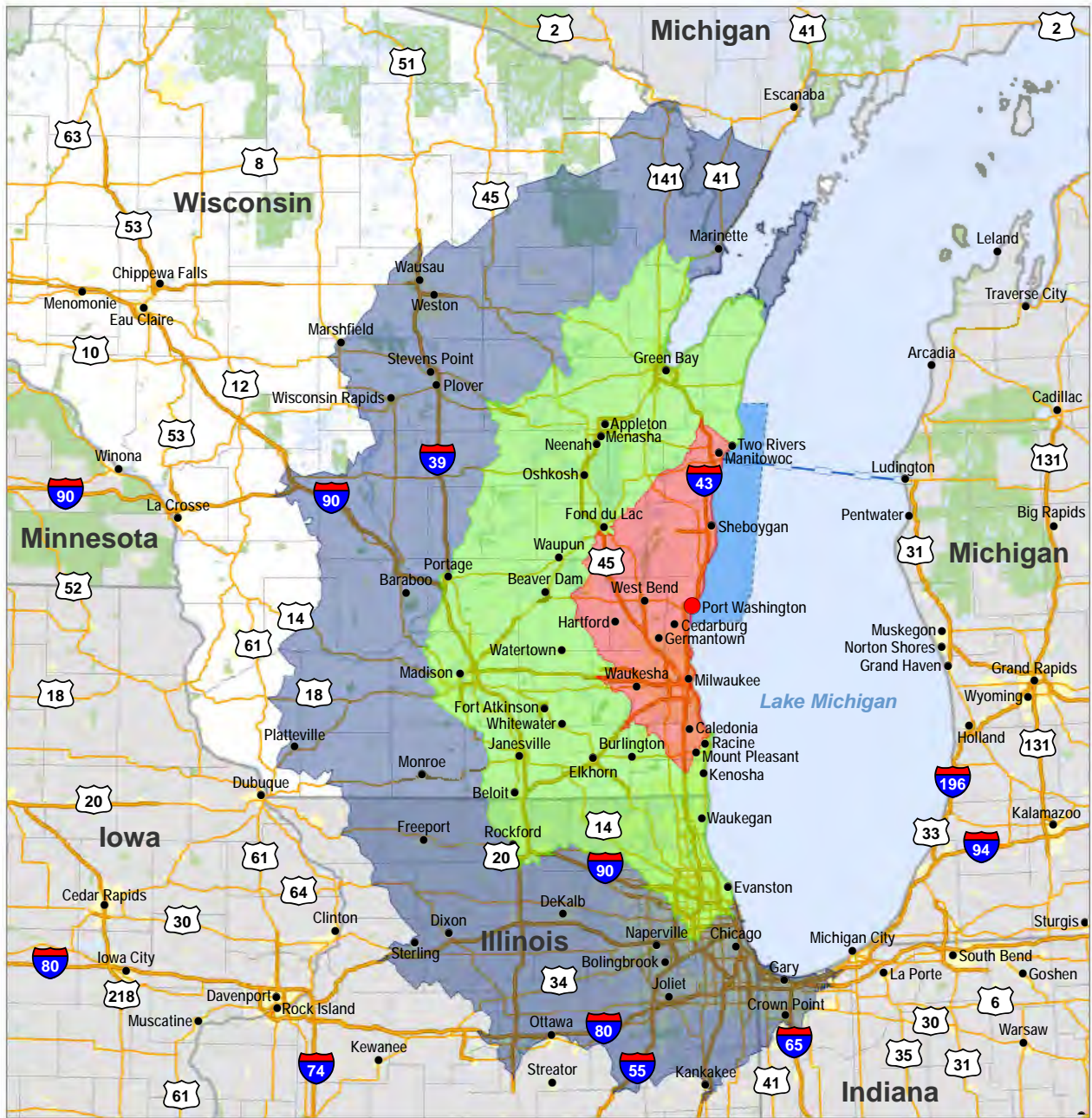
For those who may choose to explore Port Washington as a day trip, it is accessible from the northern suburbs of Chicago, to the south; Madison, to the west; and Green Bay, to the north, in under 120 minutes.

The Extended Day Trip or Weekend Tourist

When the drive-time is expanded to 180 minutes, the market for potential Wisconsin Shipwreck Coast NMS tourists in Port Washington grows significantly, expanding into northern Illinois, as far south as Kankakee, west to Platteville, and north towards Michigan's upper peninsula. The population living within this area may consider visiting the Sanctuary as part of an extended weekend vacation, coupled with other historic sites in the area and along the way.



2021 Market Summary for Port Washington, Wisconsin



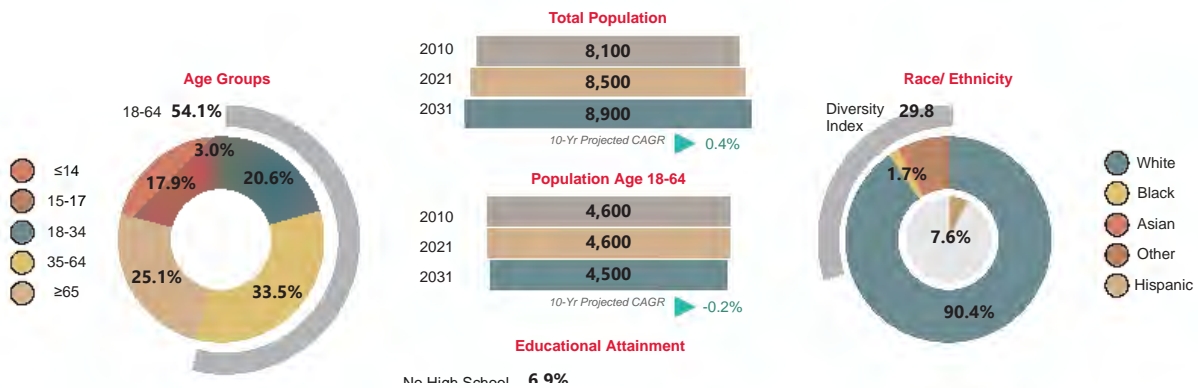
Source: ESRI, NOAA, and Facility Programming and Consulting

Drive-Times
 60 Minutes 120 Minutes 180 Minutes

Map indicating the area which may be covered in a 60, 120, and 180 minute drive-time to Port Washington.

Ludington, Michigan

In 2021, the City of Ludington had a population of approximately 8,500 people; nearly two-thirds of this population was in the age 18 to 64 age cohort. The median household income was \$46,100 and just over one-half of the population had graduated high school and received some college education or an advanced degree. Just over one-third of the primary market (35.8%) in Ludington, according to ESRI data, mirrors that of Sheboygan and Manitowoc, consisting of multi-generational households, working and residing in the same community as their parents did.



2021 Market Summary for Ludington, Michigan



Landmarks and recreational areas in Ludington, Michigan, and surrounding areas

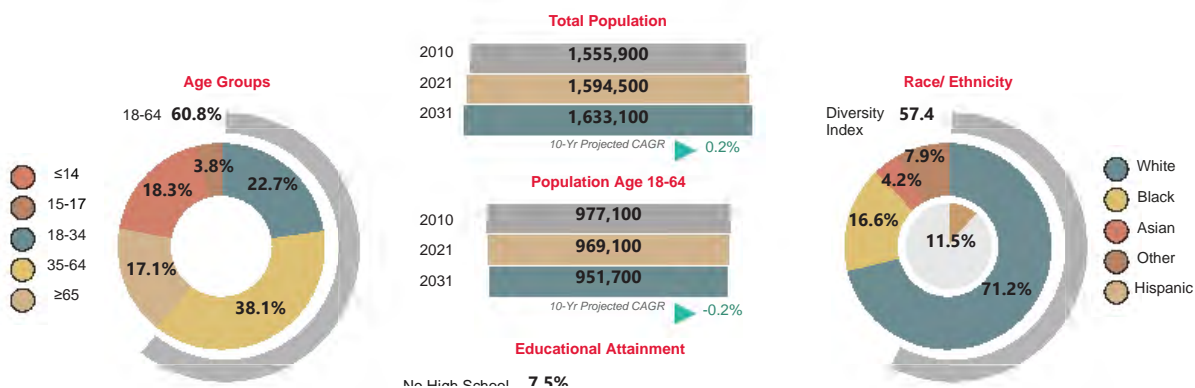
Milwaukee, Wisconsin

In 2021, the Milwaukee-Waukesha Core-Based Statistical Area, or CBSA, had a population of nearly 1.6 million; nearly two-thirds of this population was in the age 18 to 64 age cohort. A CBSA is defined by the U.S. Census Bureau as a metropolitan statistical area which has at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties. The extents of the Milwaukee-Waukesha CBSA and the data provided below include Port Washington, to the north.

The median household income was \$64,800 and more than 90 percent of the population had graduated high school and received some college education or an advanced degree.

In contrast to the smaller communities, the profile of the Milwaukee-Waukesha CBSA is a more diverse and varied tapestry. According to ESRI data, nearly one-quarter (22.3%) of the population is composed of a well-educated and diverse workforce including professionals in health care, retail trade, and education, or skilled workers in manufacturing and construction.

Many of these families consist of two-income married couples approaching retirement age, but with no intent of retiring any time soon; the median age is between 40 and 45 years old. Many are empty nesters or do not have children. This population generally has no interest in moving and resides in well established, older neighborhoods outside the urban core in primarily single-family homes, although duplex and townhouses are also prominent. Their lifestyle includes home remodeling and gardening, plus the active pursuit of a variety of sports and exercise including hunting and fishing, motorcycling, hiking and camping, and even golf. They enjoy good food and wine, plus the amenities of the city’s cultural events.



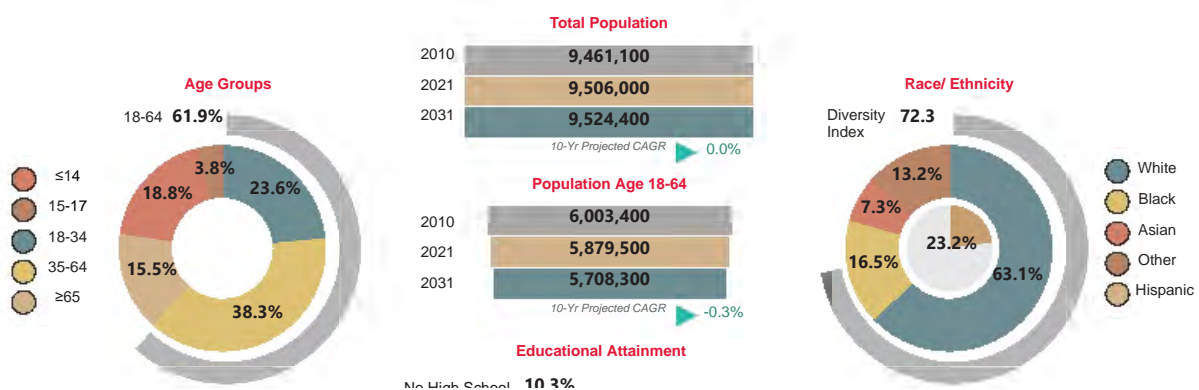
2021 Market Summary for Milwaukee, Wisconsin Core-Based Statistical Area (CBSA)

Chicago, Illinois

The Chicago-Naperville-Elgin CBSA has a population of approximately 9.5 million in year 2021. The median household income was \$76,100. The extents of the Chicago-Naperville-Elgin CBSA also include a portion of northwest Indiana and the cities of Hammond, Gary, and Valparaiso.

The CBSA profile is a diverse and varied tapestry, similar to that of the Milwaukee-Waukesha CBSA. According to ESRI data, nearly one-quarter (23.7%) of the population is composed of college graduates or those who have had some college education. While the majority of this segment live in established, older neighborhoods, a small percent (5.2%) reside, either alone or with a roommate, in older apartment buildings and condos in the urban core of the city. This urban segment of the population is comprised of consumers in their late twenties and early thirties which are highly mobile, educated, and in one of the fastest-growing segments. This population tends to be single, tech savvy, environmentally conscious, lives close to their job, and usually walks or takes a taxi to get around the city. Although they are well paid, a large portion of their income is dedicated to rent, clothes, and the latest technology.

In contrast, their suburban counterpart primarily consist of two-income married couples which tend towards more affluence, many working as professionals in finance, information/technology, education, or management. They live in both new and established neighborhoods on the periphery of metropolitan areas and commute to the city center for work. While home improvement and remodeling projects are a priority, these are preferably completed by contractors. Residents spend their spare time participating in a variety of sports or watching movies, shop online and in a variety of stores, from upscale to discount, as well as enjoy good food and wine, plus the amenities of the city's cultural events.



2021 Market Summary for Chicago, Illinois Core-Based Statistical Area (CBSA)

Acknowledgements

A significant commitment of time and effort was made by the following participants to produce the **Facility Strategy** for the Wisconsin Shipwreck Coast National Marine Sanctuary. Their participation is greatly appreciated.

NOAA - Office of National Marine Sanctuaries (ONMS)

Russ Green	Superintendent, Wisconsin Shipwreck Coast National Marine Sanctuary
LeAnn Hogan	Regional Operations Coordinator, Eastern Region
Ellen Brody	Great Lakes Regional Coordinator
Matt Brookhart	Director, Eastern Region
Dennis Donahue	NOAA Marine Superintendent, Great Lakes Environmental Research Lab

Facility Programming and Consulting

Doug Lowe, AIA	Principal in Charge
Bryan Sibille	Project Manager
Molly Cundari, AIA	Senior Programmer
Amanda Murray, AIA	Senior Programmer
Erik Nielsen	Programmer

Focus Group: Education and Outreach

Samantha Betancur	Campus & Outreach Coordinator, University of Wisconsin Green Bay
Kevin Cullen	Deputy Director / Chief Curator Wisconsin Maritime Museum
Andrea Densham	Senior Director of Conservation Policy and Advocacy, Shed Aquarium
Natalie Dorrier-Hyde	Director of Partnerships & Programs, Lakeshore Natural Resource Partnership and Interim Development Projects, Riveredge Nature Center
Kurt Griesemer	Coordinator of Primary Education, Wisconsin Historical Society
Jody Henseler	K-12 Educator, Two Rivers Schools
Benjamin Joniaux	External Relations, UW Green Bay

Acknowledgements

John Katers	Dean, Science, Engineering and Technology at University of Wisconsin, Green Bay
Kristen Leffelman	Southeast Outreach Coordinator, Wisconsin Historical Society
Ken Leinbach	Executive Director, Urban Ecology Center
Anne Moser	Education Coordinator, UW Sea Grant
Maria Parrot-Ryan	Senior Editor of K-12 Publications, Wisconsin Historical Society Press
Paul Pinkston	Director of Facilities Planning and Management, University of Wisconsin, Green Bay
Jamie Schramm	Manitowoc Campus Executive Officer, UW Green Bay
Titus Seilheimer	Fisheries Outreach Specialist, UW Sea Grant
Dawn St. George	Executive Director, Port Washington Historical Society
Emily Tyner	Director of Freshwater Strategy, University of Wisconsin, Green Bay
Bryan Wunar	President and CEO, Discovery World

Focus Group: Environment and Ecology

Todd Breiby	Program Specialist, Wisconsin Coastal Management Program
Vicki Elkin	Executive Director, Fund for Lake Michigan
Mike Friis	Program Manager, Wisconsin Department of Natural Resources
Steve Galarneau	Director, Office of Great Waters Wisconsin Department of Natural Resources
Stacy Hron	Lake Michigan LAMP Coordinator, Wisconsin Department of Natural Resources
John Janssen	Professor, School of Freshwater Sciences at University of Wisconsin, Milwaukee
Jess Johnsrud	Assistant Director / Education Coordinator, Woodland Dunes Nature Center & Preserve, Inc.
Amber Meyer Smith	Program Officer, Fund for Lake Michigan
Tom Mlada	Executive Director, Lakeshore Natural Research Partnership
Titus Seilheimer	Fisheries Outreach Specialist / UW Sea Grant
Marjie Tomter	Ozaukee Washington Land Trust

Focus Group: History and Preservation

Kevin Cullen	Deputy Director / Chief Curator Wisconsin Maritime Museum
Cathy Green	Executive Director, Wisconsin Maritime Museum
John Jensen	Professor, University of West Florida
Daina Penkiunas	State Historic Preservation Officer, Wisconsin Historical Society
Amy Rosebrough	Maritime Archaeologist, Wisconsin Historical Society
James Skibo	State Archaeologist, Wisconsin Historical Society
Dawn St. George	Executive Director, Port Washington Historical Society
Tamara Thomsen	Maritime Archaeologist, Wisconsin Historical Society
Caitlin Zant	Maritime Archaeologist, Wisconsin Historical Society

Focus Group: Recreation and Tourism

Robert Harris	Director of Planning and Development, City of Port Washington
Amy James	Consultant / Interim CEO of Tourism, City of Two Rivers
Leslie Kohler	Director, Sea Education Association of Sheboygan
Nate Scherper	Local Kayak Rental Business Owner
Chad Pelishek	City Planner, City of Sheboygan
Jason Ring	Executive Director, Manitowoc Area Visitor & Convention Bureau
Elizabeth Runge	Economic Development Director, City of Two Rivers
David Spiegelberg	Regional Tourism Specialist, Wisconsin Department of Tourism
Andrew Struck	Director of Planning and Parks, Ozaukee County
Kristina Tadeo	Executive Director, Port Washington Main Street Inc.
Kathy Tank	Executive Director, Port Washington Tourism Council
Amy Wilson	CEO, Visit Sheboygan

Acknowledgements

Focus Group: Research and Operations

Dennis Donahue	Operations Manager, Lake Michigan Field Station, NOAA
Eric Leaf	Assistant Dean of Advancement, School of Freshwater Sciences at University of Wisconsin Milwaukee
Rae-Ann MacLellan Hurd	Lake Michigan Sediment and Monitoring Coordinator at Wisconsin Department of Natural Resources
James Skibo	Wisconsin State Archeologist
Tamara Thomsen	Archaeologist at Wisconsin Historical Society
Caitlin Zant	Maritime Archaeologist / Cultural Resource Specialist at Wisconsin Historical Society

Focus Group: Residents and the Community

Kaitlin Piazza	Planner, Business & Housing Development, City of Manitowoc
Elizabeth Runge	Community Development Director, City of Two Rivers
Ryan Sorenson	Mayor, City of Sheboygan
Adam Tegen	Community Development Director, City of Manitowoc

Abbreviations

Many terms in this document have been abbreviated. Please reference list below for common abbreviations utilized throughout this document.

AC	Acres
ADA	Americans with Disabilities Act
A/E	Architect/Engineer
DNR	Department of Natural Resources
DOC	Department of Commerce
EA	Each
GSA	US General Services Administration
GSF	Gross Square Feet
HVAC	Heating, Ventilation and Air Conditioning
WSCNMS	Wisconsin Shipwreck Coast National Marine Sanctuary
NO	Number
NOAA	National Oceanic and Atmospheric Administration
NSF	Net Square Feet
ONMS	Office of National Marine Sanctuaries
QTY	Quantity
SOW	Statement of Work
USF	Usable Square Feet

Definitions

Gross Square Feet (GSF)	The area within the outside face of the exterior walls of the building which includes net square feet, non-assignable square feet, building service area, circulation area, mechanical area, and structural area
Net Square Feet (NSF)	The usable area or area within the inside face of the interior walls of each space
Non-Assignable Square Feet (NASF)	Areas such as mechanical space, telecommunication closets, janitor closets, etc., which are an inherent part of the building, but are not usable space for the owner's program activities (includes building service, circulation, and mechanical areas)

Net vs. Gross Square Feet

The tables and charts later in this document depict area sizes in Net Square Feet (NSF) and non-assignable square feet unless Gross Square Feet (GSF) is specifically noted. Net square footage measures only the usable area of a given space. It does not include spaces such as lobbies, corridors (except for internal circulation within suites) and other public and support spaces such as mechanical rooms, toilets, stairs, etc. These types of spaces are included in the non-assignable square footage. The sum of the net square footage, the non-assignable square footage, and the structural areas is equal to the gross square footage of the building.

Internal Circulation

In addition to stairwells, elevators, lobbies, and mechanical rooms, the net-to-gross factor for the building will include space for major building corridors which provide access to the major spaces in the facility. This space allocation does not include enough space for hallways and semi-public waiting or reception spaces which are affiliated with office suites. The suites themselves are accessed from the major building corridors, while the offices and other spaces within the suite are accessed from "internal circulation."

References

National Oceanic and Atmospheric Administration. *Wisconsin Shipwreck Coast National Marine Sanctuary Designation Final Environmental Impact Statement and Final Management Plan*. June 2020.

The following websites were reference in preparation of this report.

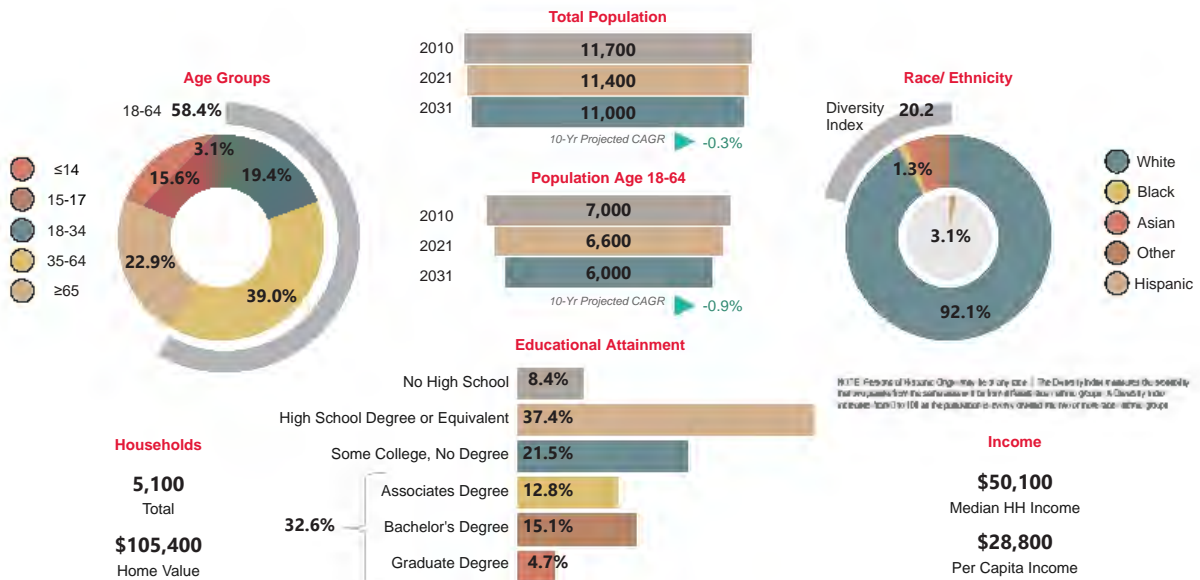
- City of Manitowoc: www.manitowoc.org/
- City of Sheboygan: www.sheboyganwi.gov/
- City of Two Rivers: two-rivers.org/
- Manitowoc County Historical Society: www.manitowocountyhistory.org/
- Port Washington Historic Society: www.pwhistory.org/
- Port Washington Main Street: www.visitportwashington.com/
- Rogers Street Fishing Village: www.rogersstreet.com/historic-district/index.html
- Two Rivers Main Street: tworiversmainstreet.com/
- Visit Sheboygan: visitsheboygan.com/
- Wisconsin Department of Natural Resources: dnr.wisconsin.gov/
- Wisconsin Historical Society: www.wisconsinhistory.org/
- Wisconsin Shipwrecks: www.wisconsinshipwrecks.org/Home#anchor3

References

This page intentionally blank.

A: 2021 Demographic Data: Two Rivers

Market Summary



Businesses and Employment

Sector	PCT %	Businesses	Employment	PCT %
Manufacturing	8.5%	30	1,230	26.0%
Health Care	9.1%	30	950	20.2%
Retail	13.2%	50	390	8.2%
Government	5.2%	20	340	7.3%
Accommodation	8.5%	30	330	7.0%
Education	2.2%	10	330	7.0%
Other Services	13.2%	50	210	4.5%
Finance	8.0%	30	190	4.0%
Transportation	1.9%	10	150	3.2%
Wholesale	1.9%	10	140	3.0%
Professional	7.7%	30	130	2.7%
Entertainment	3.3%	10	100	2.1%
Construction	6.3%	20	90	1.9%
Real Estate	3.6%	10	40	0.8%
Administrative	1.7%	10	30	0.6%
Information	1.4%	10	30	0.7%
Utilities	0.6%	0	20	0.4%
Mining	0.3%	0	10	0.2%
Unclassified	3.3%	10	10	0.1%
Agriculture	0.0%	0	0	0.0%
Headquarters	0.0%	0	0	0.0%

Occupations

White Collar	42.6%
Blue Collar	36.4%
Services	21.0%

Occupation Breakdown

Management	10.3%
Professional	16.5%
Sales	5.0%
Admin	10.8%
Farming	0.3%
Construction	4.8%
Maintenance	1.4%
Production	21.5%
Transportation	8.4%

* Market Area: Is the same as the region referenced in the YELLOW bar highlighted at the top of the page

An estimated **360** businesses are located within the Market Area and they employed approximately **4,730** workers.

In terms of employment, the **Manufacturing** sector was the largest in the Market Area with approximately **1,230** workers. This sector accounted for an estimated **30** businesses.

Appendix A

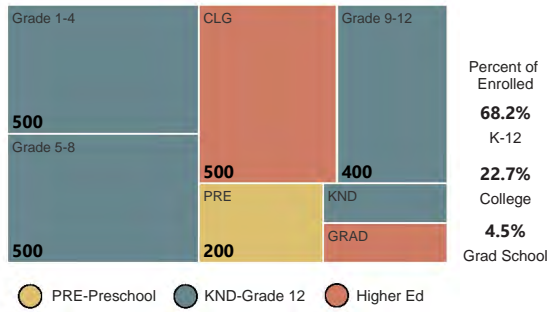
Education Enrollment

Total Enrolled in School	2,200
Not Enrolled in School	8,600
Percent in/ Not in School	20.4% 79.6%

Household Expenditures on Education

Total Spending	\$5,050,100
Average/ Household	\$995
Index	58

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$3,025,000	\$596	56
K-12 Tuition	\$703,200	\$138	58
Other School Supplies	\$216,600	\$43	70
Rental of Books/ Equipment	\$198,100	\$39	70
Supplies for College	\$133,800	\$26	60
Supplies for K-12 Schools	\$95,900	\$19	89
Test Preparation/ Tutoring Services	\$68,200	\$13	51
Vocational Tuition	\$36,900	\$7	51
Tuition for Other Schools	\$36,800	\$7	51
Supplies for Preschool	\$6,400	\$1	40
Supplies for Vocational Schools	\$2,900	\$1	63

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

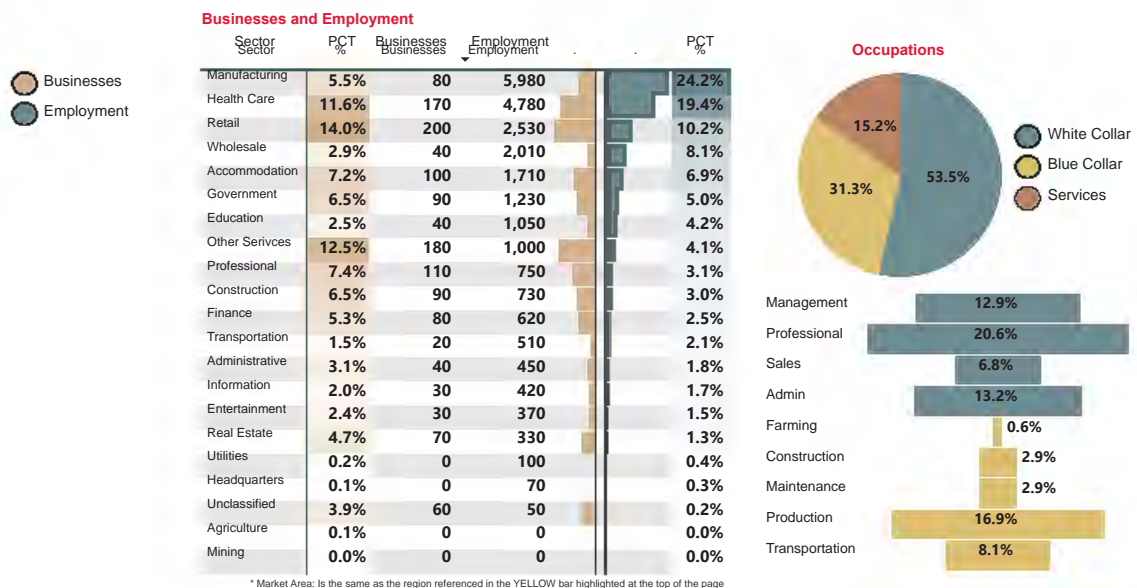
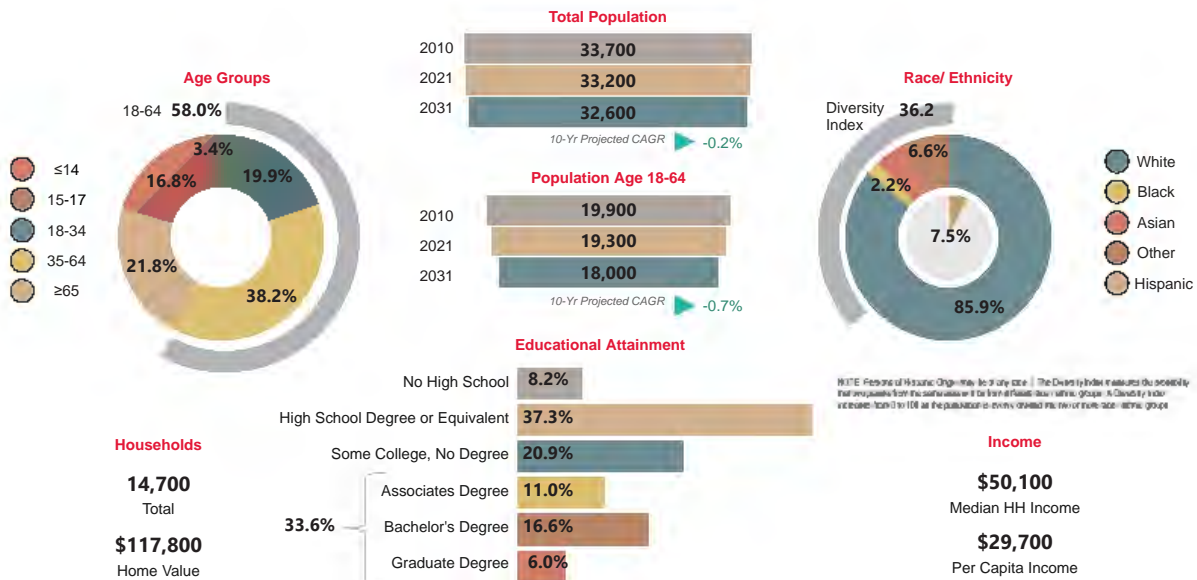
Market Area: Two Rivers City, WI

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Two Rivers City, WI				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Cozy Country Living	(6F) Heartland Communities	2,300	45.3%	45.3%	1,996	2.3%
2	Hometown	(12B) Traditional Living	1,240	24.3%	69.6%	1,282	1.9%
3	GenXurban	(5E) Midlife Constants	820	16.1%	85.8%	657	2.5%
4	Cozy Country Living	(6B) Salt of the Earth	400	7.9%	93.6%	274	2.9%
5	Hometown	(12C) Small Town Simplicity	320	6.4%	100.0%	348	1.8%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

B: 2021 Demographic Data: Manitowoc Market Summary



Appendix B

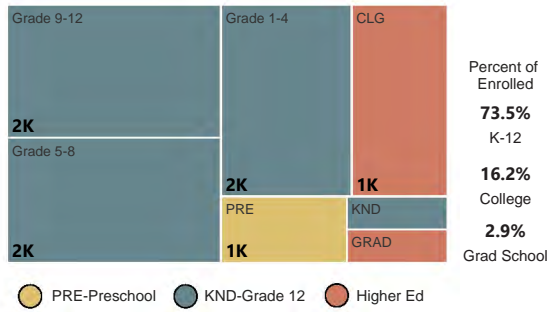
Education Enrollment

Total Enrolled in School	6,800
Not Enrolled in School	25,000
Percent in/ Not in School	21.4% 78.6%

Household Expenditures on Education

Total Spending	\$15,633,000
Average/ Household	\$1,065
Index	62

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$9,389,900	\$640	61
K-12 Tuition	\$2,098,100	\$143	60
Other School Supplies	\$652,700	\$44	73
Rental of Books/ Equipment	\$600,200	\$41	74
Supplies for College	\$426,900	\$29	66
Supplies for K-12 Schools	\$268,200	\$18	86
Test Preparation/ Tutoring Services	\$217,400	\$15	57
Vocational Tuition	\$122,200	\$8	59
Tuition for Other Schools	\$116,000	\$8	56
Supplies for Preschool	\$22,900	\$2	50
Supplies for Vocational Schools	\$9,300	\$1	69

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

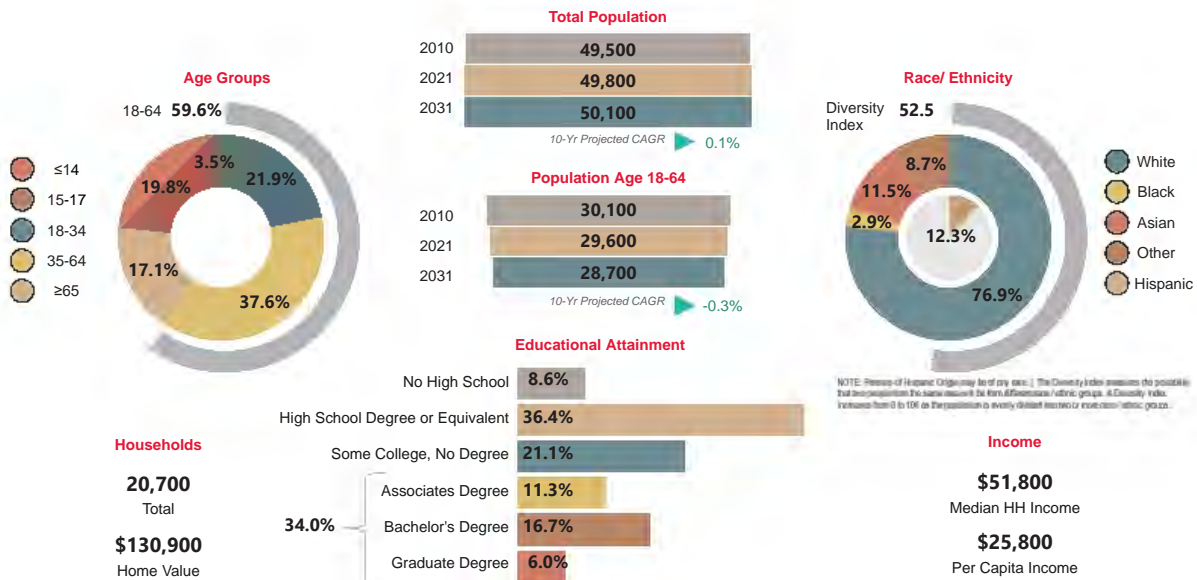
Market Area: Manitowoc City, WI

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Manitowoc City, WI				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Hometown	(12B) Traditional Living	3,320	22.6%	22.6%	1,193	1.9%
2	GenXurban	(5E) Midlife Constants	2,250	15.3%	37.9%	622	2.5%
3	Hometown	(12C) Small Town Simplicity	1,910	13.0%	51.0%	713	1.8%
4	Cozy Country Living	(6F) Heartland Communities	1,360	9.2%	60.2%	407	2.3%
5	Rustic Outposts	(10D) Down the Road	1,210	8.2%	68.4%	706	1.2%
6	Cozy Country Living	(6B) Salt of the Earth	1,090	7.4%	75.8%	258	2.9%
7	GenXurban	(5D) Rustbelt Traditions	990	6.7%	82.5%	311	2.2%
8	Cozy Country Living	(6D) Prairie Living	630	4.3%	86.8%	404	1.1%
9	Middle Ground	(8G) Hometown Heritage	610	4.1%	91.0%	349	1.2%
10	Senior Styles	(9E) Retirement Communities	560	3.8%	94.8%	318	1.2%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

C: 2021 Demographic Data: Sheboygan Market Summary



Businesses and Employment

Sector	PCT %	Businesses	Employment	PCT %
Health Care	14.3%	300	7,910	23.6%
Manufacturing	4.2%	90	4,450	13.3%
Retail	12.0%	250	3,730	11.1%
Accommodation	9.5%	200	2,890	8.6%
Wholesale	2.9%	60	2,270	6.8%
Education	2.4%	50	2,250	6.7%
Government	4.4%	90	1,870	5.6%
Finance	6.9%	140	1,690	5.0%
Other Services	13.8%	290	1,540	4.6%
Professional	8.9%	180	1,210	3.6%
Construction	4.1%	90	960	2.9%
Administrative	2.8%	60	900	2.7%
Entertainment	2.0%	40	710	2.1%
Real Estate	4.2%	90	410	1.2%
Information	1.7%	40	390	1.1%
Transportation	1.2%	30	250	0.7%
Unclassified	4.0%	80	60	0.2%
Headquarters	0.2%	0	30	0.1%
Agriculture	0.1%	0	20	0.0%
Utilities	0.1%	0	20	0.1%
Mining	0.0%	0	0	0.0%

Occupations

White Collar	48.3%
Blue Collar	36.2%
Services	15.5%

Occupation Breakdown:

Management	12.1%
Professional	17.1%
Sales	7.6%
Admin	11.5%
Farming	0.5%
Construction	2.8%
Maintenance	2.5%
Production	19.7%
Transportation	10.7%

* Market Area: Is the same as the region referenced in the YELLOW bar highlighted at the top of the page

An estimated **2,070** businesses are located within the Market Area and they employed approximately **33,540** workers.

In terms of employment, the **Health Care & Social Assistance** sector was the largest in the "Market Area" with approximately **7,910** workers. This sector accounted for an estimated **300** businesses.

Appendix C

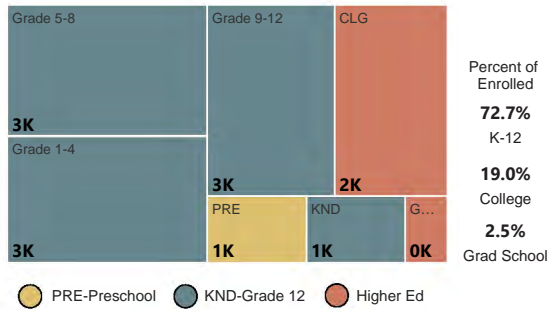
Education Enrollment

Total Enrolled in School	12,100
Not Enrolled in School	34,300
Percent in/ Not in School	26.1% 73.9%

Household Expenditures on Education

Total Spending	\$21,362,800
Average/ Household	\$1,030
Index	60

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$12,982,700	\$626	59
K-12 Tuition	\$2,707,800	\$131	55
Other School Supplies	\$851,900	\$41	67
Rental of Books/ Equipment	\$823,900	\$40	72
Supplies for College	\$592,600	\$29	65
Supplies for K-12 Schools	\$330,500	\$16	75
Test Preparation/ Tutoring Services	\$295,000	\$14	54
Vocational Tuition	\$169,300	\$8	58
Tuition for Other Schools	\$151,600	\$7	52
Supplies for Preschool	\$29,800	\$1	46
Supplies for Vocational Schools	\$11,900	\$1	62

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

Market Area: Sheboygan City, WI

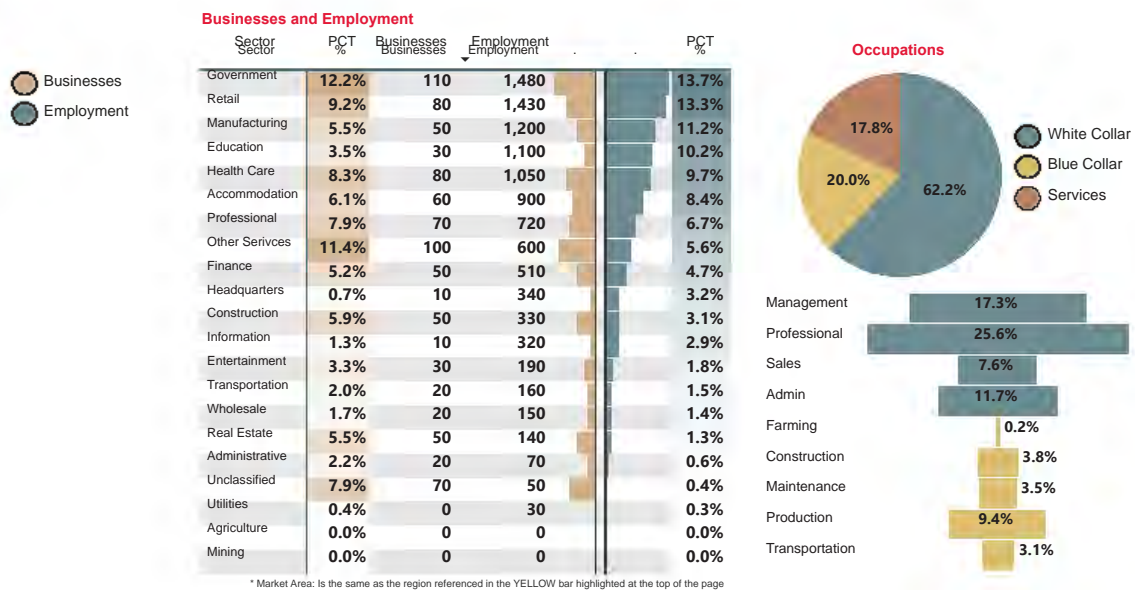
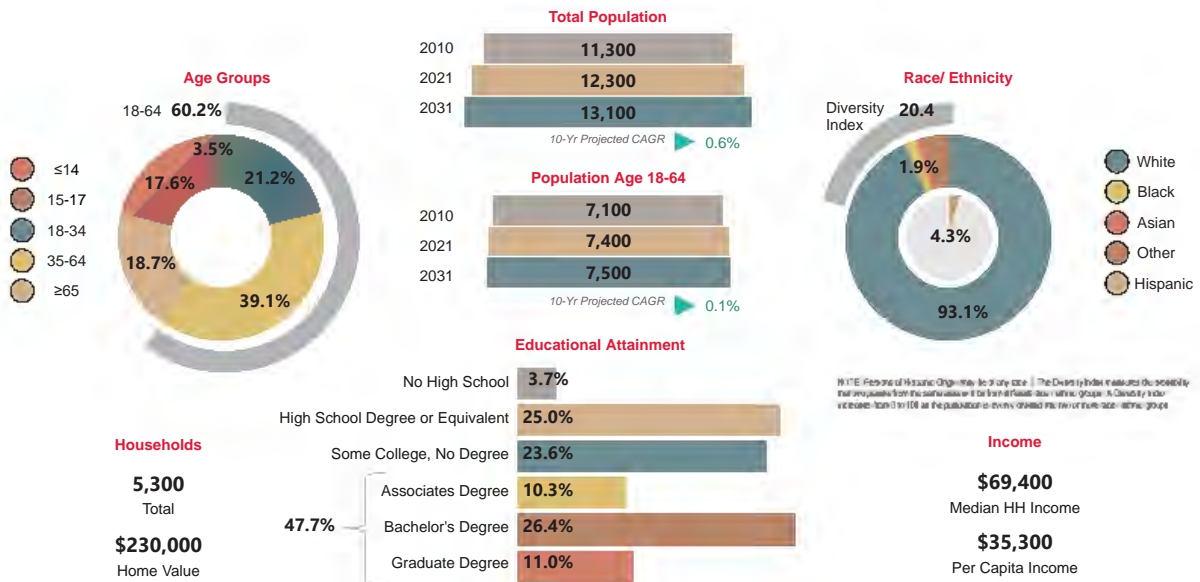
SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Sheboygan City, WI				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Hometown	(12B) Traditional Living	4,050	19.5%	19.5%	1,028	1.9%
2	Cozy Country Living	(6F) Heartland Communities	3,040	14.7%	34.2%	646	2.3%
3	GenXurban	(5D) Rustbelt Traditions	2,910	14.0%	48.2%	647	2.2%
4	Middle Ground	(8G) Hometown Heritage	2,300	11.1%	59.3%	934	1.2%
5	Middle Ground	(8F) Old and Newcomers	1,960	9.5%	68.8%	412	2.3%
6	Midtown Singles	(11D) Set to Impress	1,740	8.4%	77.2%	607	1.4%
7	Cozy Country Living	(6B) Salt of the Earth	1,340	6.5%	83.6%	226	2.9%
8	Hometown	(12C) Small Town Simplicity	800	3.9%	87.5%	212	1.8%
9	Senior Styles	(9F) Social Security Set	640	3.1%	90.6%	379	0.8%
10	GenXurban	(5B) In Style	580	2.8%	93.4%	125	2.2%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

D: 2021 Demographic Data: Port Washington

Market Summary



Appendix D

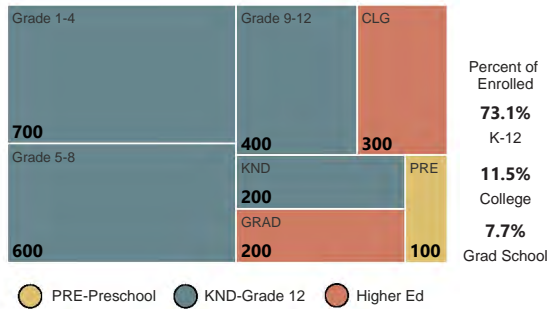
Education Enrollment

Total Enrolled in School	2,600
Not Enrolled in School	8,800
Percent in/ Not in School	22.8% 77.2%

Household Expenditures on Education

Total Spending	\$8,126,700
Average/ Household	\$1,542
Index	89

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$4,933,500	\$936	89
K-12 Tuition	\$1,086,100	\$206	86
Other School Supplies	\$293,000	\$56	91
Rental of Books/ Equipment	\$267,300	\$51	91
Supplies for College	\$212,400	\$40	92
Test Preparation/ Tutoring Services	\$111,400	\$21	81
Supplies for K-12 Schools	\$100,100	\$19	89
Vocational Tuition	\$68,600	\$13	92
Tuition for Other Schools	\$61,100	\$12	82
Supplies for Preschool	\$14,800	\$3	90
Supplies for Vocational Schools	\$4,500	\$1	92

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

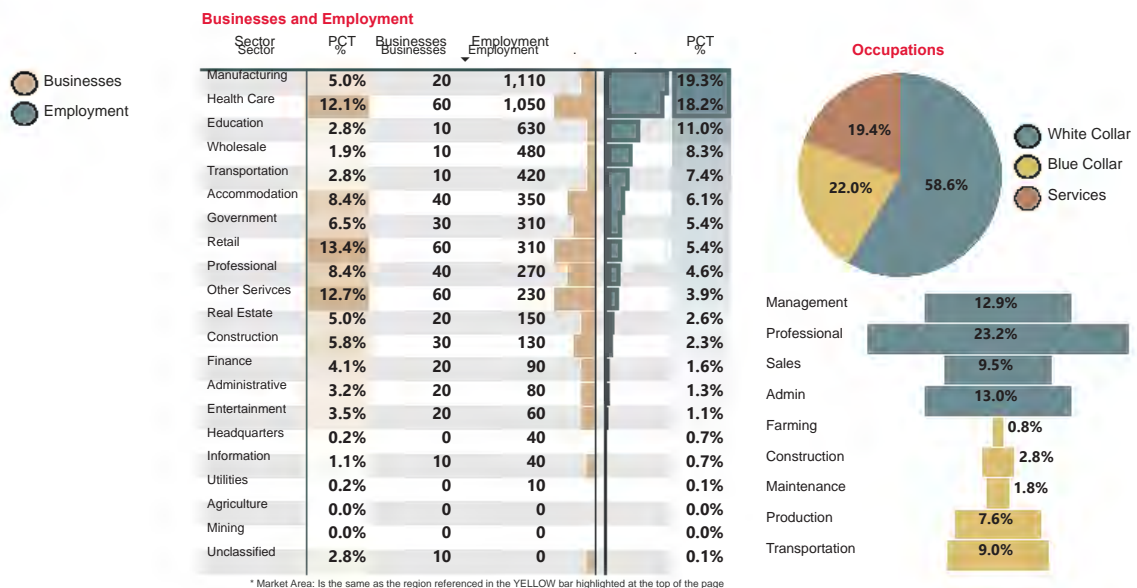
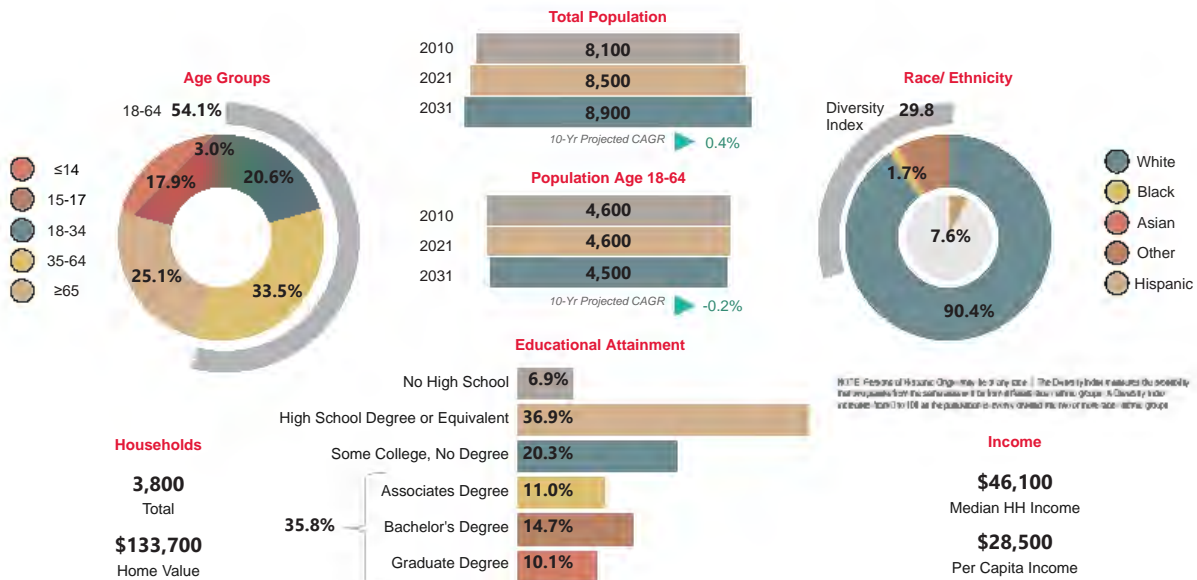
Market Area: Port Washington City, WI

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Port Washington City, WI				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Middle Ground	(8C) Bright Young Professionals	1,500	28.4%	28.4%	1,254	2.3%
2	Cozy Country Living	(6A) Green Acres	1,050	19.9%	48.3%	610	3.3%
3	Middle Ground	(8E) Front Porches	840	16.0%	64.3%	1,018	1.6%
4	Family Landscapes	(4A) Workday Drive	570	10.7%	75.0%	362	3.0%
5	GenXurban	(5B) In Style	550	10.4%	85.4%	466	2.2%
6	Middle Ground	(8F) Old and Newcomers	420	8.0%	93.4%	346	2.3%
7	GenXurban	(5E) Midlife Constants	350	6.6%	100.0%	269	2.5%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

E: 2021 Ludington, Michigan Market Summary



Appendix E

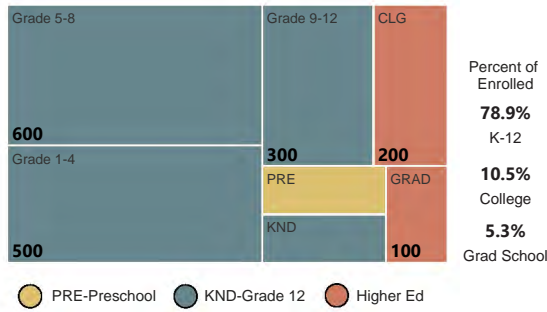
Education Enrollment

Total Enrolled in School	1,900
Not Enrolled in School	6,100
Percent in/ Not in School	23.8% 76.3%

Household Expenditures on Education

Total Spending	\$4,029,700
Average/ Household	\$1,073
Index	62

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$2,439,800	\$649	61
K-12 Tuition	\$501,500	\$133	56
Other School Supplies	\$162,000	\$43	70
Rental of Books/ Equipment	\$153,300	\$41	73
Supplies for College	\$111,700	\$30	68
Supplies for K-12 Schools	\$62,200	\$17	78
Test Preparation/ Tutoring Services	\$56,900	\$15	58
Vocational Tuition	\$32,500	\$9	61
Tuition for Other Schools	\$30,500	\$8	57
Supplies for Preschool	\$6,100	\$2	51
Supplies for Vocational Schools	\$2,500	\$1	73

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

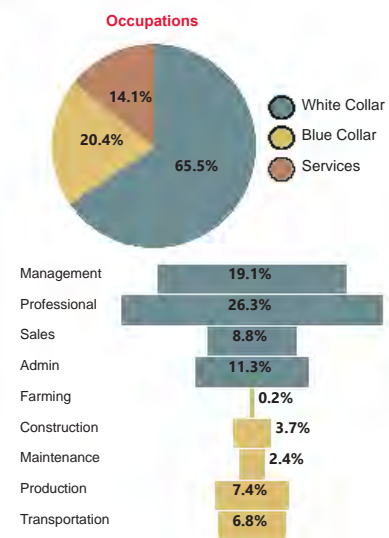
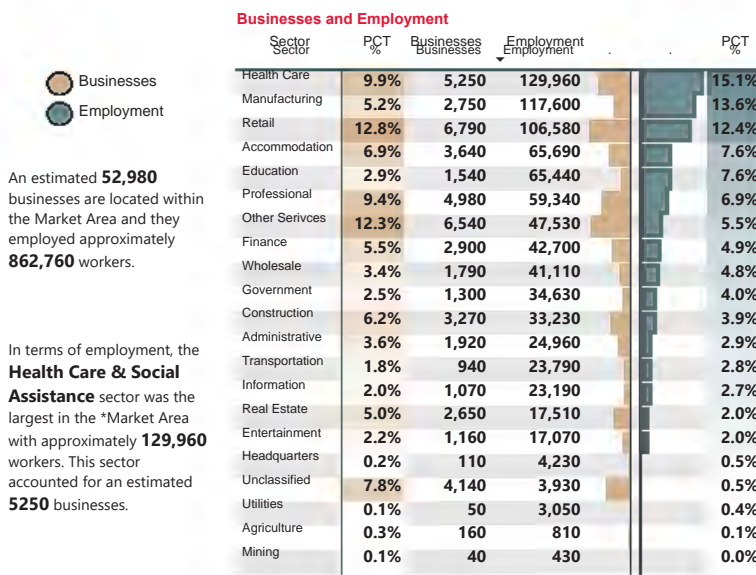
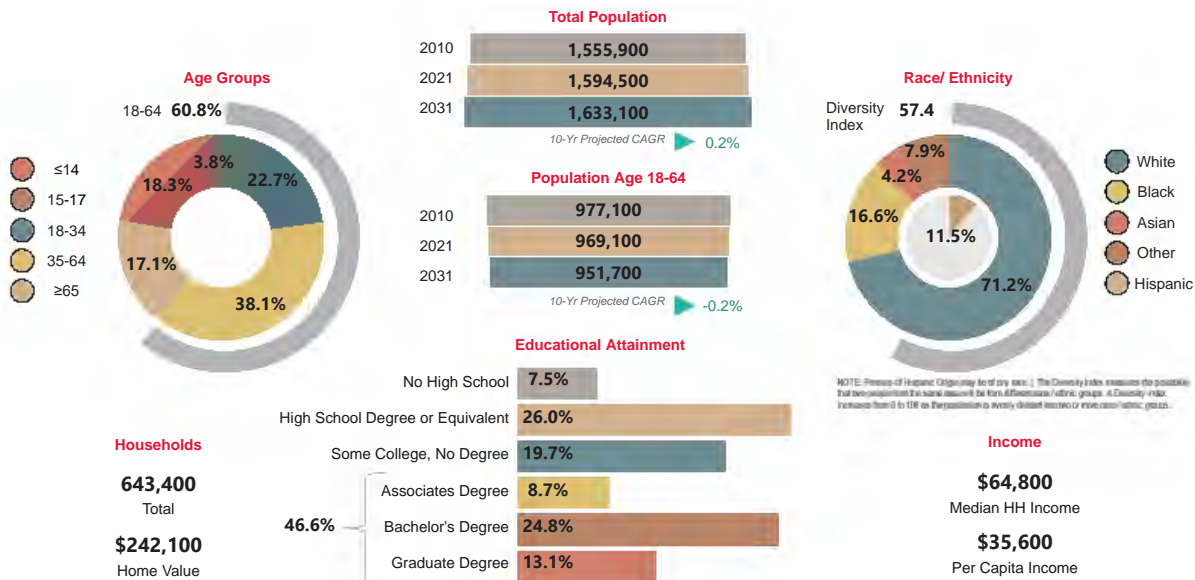
Market Area: Ludington City, MI

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Ludington City, MI				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Hometown	(12B) Traditional Living	1,340	35.8%	35.8%	1,886	1.9%
2	Hometown	(12C) Small Town Simplicity	1,010	27.0%	62.7%	1,474	1.8%
3	Senior Styles	(9E) Retirement Communities	960	25.6%	88.3%	2,133	1.2%
4	GenXurban	(5E) Midlife Constants	360	9.7%	98.0%	393	2.5%
5	Cozy Country Living	(6E) Rural Resort Dwellers	80	2.0%	100.0%	198	1.0%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

F: 2021 Demographic Data: Milwaukee, WI CBSA Market Summary



Appendix F

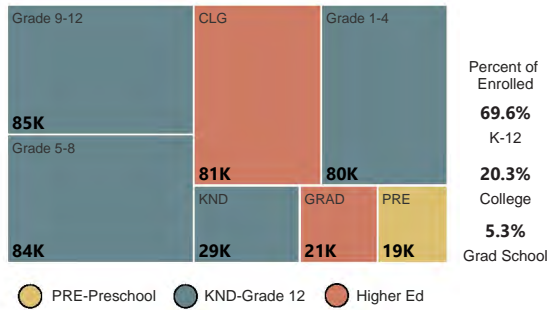
Education Enrollment

Total Enrolled in School	397,600
Not Enrolled in School	1,120,100
Percent in/ Not in School	26.2% 73.8%

Household Expenditures on Education

Total Spending	\$1,103,099,300
Average/ Household	\$1,714
Index	99

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$685,129,800	\$1,065	101
K-12 Tuition	\$141,845,500	\$220	92
Other School Supplies	\$37,533,400	\$58	95
Rental of Books/ Equipment	\$35,177,000	\$55	98
Supplies for College	\$28,117,400	\$44	99
Test Preparation/ Tutoring Services	\$15,098,500	\$23	90
Supplies for K-12 Schools	\$12,365,600	\$19	90
Vocational Tuition	\$8,862,700	\$14	97
Tuition for Other Schools	\$7,825,600	\$12	86
Supplies for Preschool	\$1,785,800	\$3	88
Supplies for Vocational Schools	\$546,000	\$1	92

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

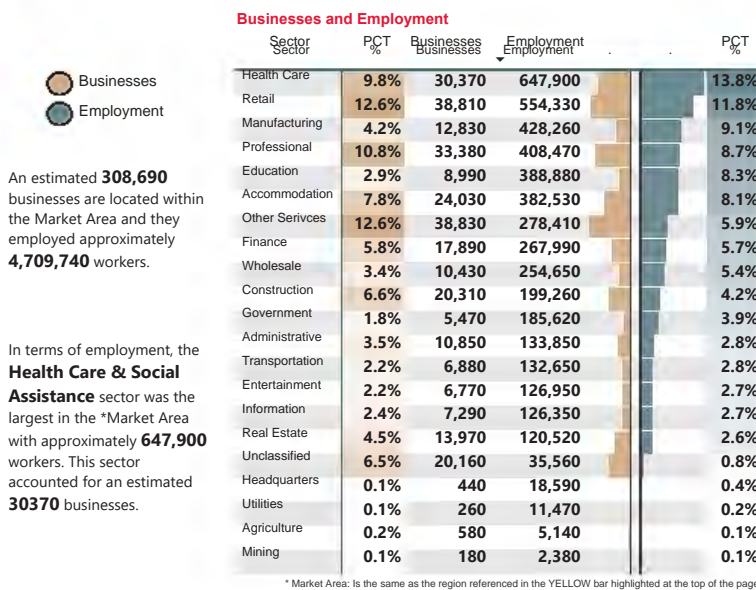
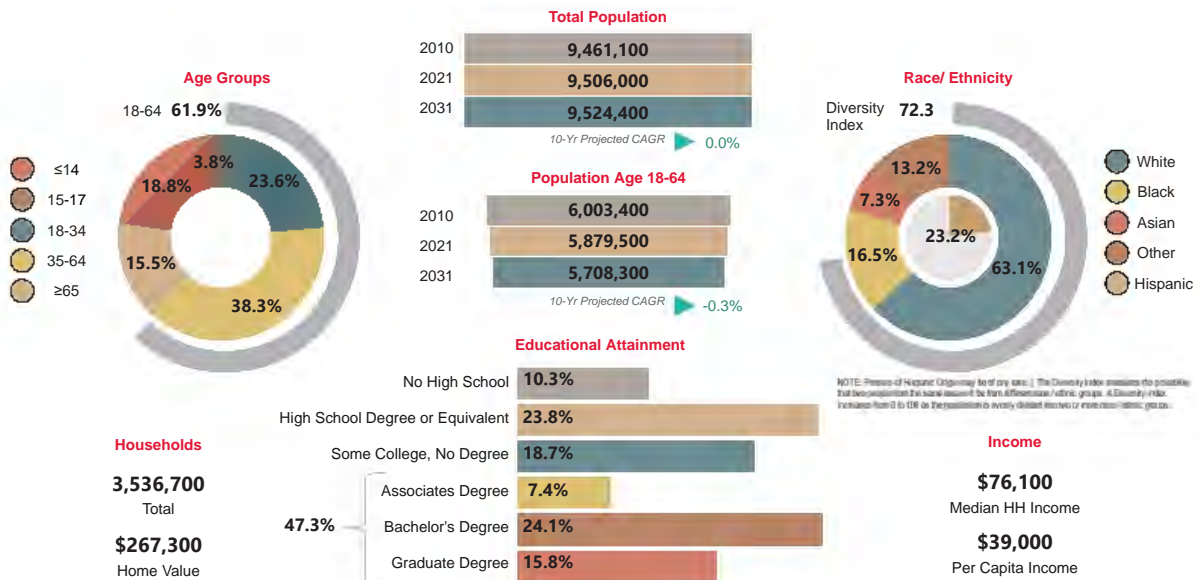
Market Area: Milwaukee-Waukesha, WI CBSA

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Milwaukee-Waukesha, WI CBSA				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	GenXurban	(5C) Parks and Rec	52,400	8.1%	8.1%	417	2.0%
2	Cozy Country Living	(6A) Green Acres	47,900	7.4%	15.6%	228	3.3%
3	Affluent Estates	(1D) Savvy Suburbanites	43,200	6.7%	22.3%	226	3.0%
4	Middle Ground	(8E) Front Porches	40,000	6.2%	28.5%	396	1.6%
5	GenXurban	(5D) Rustbelt Traditions	33,400	5.2%	33.7%	239	2.2%
6	Midtown Singles	(11E) City Commons	31,900	5.0%	38.7%	571	0.9%
7	Family Landscapes	(4A) Workday Drive	26,200	4.1%	42.7%	137	3.0%
8	GenXurban	(5B) In Style	26,100	4.1%	46.8%	181	2.2%
9	GenXurban	(5A) Comfortable Empty Nesters	24,000	3.7%	50.5%	153	2.4%
10	Middle Ground	(8F) Old and Newcomers	23,800	3.7%	54.2%	161	2.3%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.

G: 2021 Chicago, IL CBSA Market Summary



Appendix G

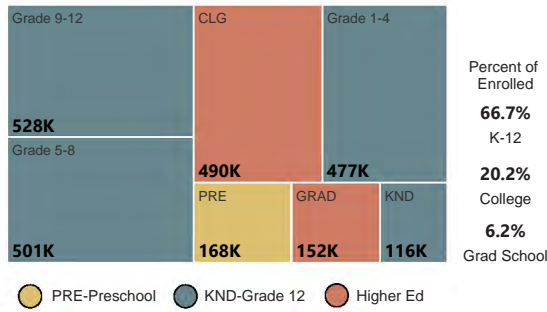
Education Enrollment

Total Enrolled in School	2,431,100
Not Enrolled in School	6,739,000
Percent in/ Not in School	26.5% 73.5%

Household Expenditures on Education

Total Spending	\$7,275,208,500
Average/ Household	\$2,057
Index	119

School Enrollment by Grade Level



SOURCE: 2015-2019 American Community Survey

Spending Category	Total Expenditures	Average/ Household	Index
College Tuition	\$4,501,217,600	\$1,273	120
K-12 Tuition	\$988,696,800	\$280	117
Other School Supplies	\$244,677,800	\$69	113
Rental of Books/ Equipment	\$229,221,800	\$65	117
Supplies for College	\$180,016,500	\$51	116
Test Preparation/ Tutoring Services	\$115,559,400	\$33	125
Supplies for K-12 Schools	\$79,868,200	\$23	106
Tuition for Other Schools	\$60,437,400	\$17	121
Vocational Tuition	\$58,577,500	\$17	117
Supplies for Preschool	\$13,649,900	\$4	123
Supplies for Vocational Schools	\$3,626,600	\$1	111

NOTE: An index of 100 reflects the national average. An index of 120 suggests spending is 20 percent above the average.

Tapestry Segmentation Area Profile - Top 10 Segments by Household

Market Area: Chicago-Naperville-Elgin, IL-IN-WI CBSA

SOURCE: ESRI and Facility Programming and Consulting

Rank	LifeMode Group	Tapestry Segments	Chicago-Naperville-Elgin, IL-IN-WI CBSA				U.S.
			Households	PCT of TTL	CUML PCT	*Index	PCT of TTL
1	Affluent Estates	(1D) Savvy Suburbanites	187,200	5.3%	5.3%	178	3.0%
2	Uptown Individuals	(3B) Metro Renters	183,700	5.2%	10.5%	302	1.7%
3	Upscale Avenues	(2B) Pleasantville	172,200	4.9%	15.4%	228	2.1%
4	Hometown	(12A) Family Foundations	152,900	4.3%	19.7%	426	1.0%
5	Family Landscapes	(4A) Workday Drive	141,800	4.0%	23.7%	135	3.0%
6	GenXurban	(5C) Parks and Rec	130,900	3.7%	27.4%	189	2.0%
7	Next Wave	(13B) Family Extensions	125,300	3.5%	30.9%	498	0.7%
8	Next Wave	(13A) Diverse Convergence	117,800	3.3%	34.3%	278	1.2%
9	Affluent Estates	(1B) Professional Pride	113,600	3.2%	37.5%	197	1.6%
10	Family Landscapes	(4B) Home Improvement	104,800	3.0%	40.4%	175	1.7%

Index: A segment index value of 100 indicates the share of households within the local area is the same as the U.S. base. Values < 100 means the share is smaller while values > 100 means it has more households.



**FACILITY
PROGRAMMING**
AND CONSULTING

1221 Broadway, Suite 101
San Antonio, Texas 78215
Phone: 210-228-9600
Fax: 210-228-9697
facilityprogramming.com

Architectural Programming
Laboratory Planning
Strategic Facilities Planning
Needs Assessment
Space Utilization Analysis
Demographics Analysis

SAN ANTONIO | HOUSTON