

NAVIGATION



OVERVIEW

Michigan's navigation system includes coastal infrastructure, navigation harbors, channels, locks, and dams. The system contains approximately 90 harbors, 14 waterways or rivers, the significant Soo Lock system, and numerous disposal facilities for depositing dredged material. Approximately 40 of these harbors and waterways are commercial harbors, the remainder are recreational. The Army Corps of Engineers is provided a limited amount of money each year from the federal government. That amount does not meet the annual system needs, therefore the total system needs continue to grow each year. Because commercial harbors are prioritized and exceed the available funding, recreational harbors are rarely maintained or improved.

BACKGROUND

Coastal Infrastructure

The 3,200 miles of Great Lakes shoreline within Michigan includes some of the most beautiful, valuable, and vulnerable property in the Midwest. Cities and towns have flourished along the shores of the Great Lakes because of their natural beauty and the value they bring to commerce, navigation, and recreation. Most of these coastal cities were established as ports, taking advantage of the Great Lakes as their primary mode of transporting goods, material, and people.

Over 65 coastal cities and towns around the Great Lakes Michigan shoreline have federal navigation projects that include channels into harbors or rivers for navigation structures like breakwaters and piers. These facilities are authorized to safeguard navigation activities in the federal harbors from waves and ice. However, they also provide critical flood and storm protection for buildings, roads, and facilities that developed in their shadow along

the urban waterfront. In some cases, urban waterfront includes critical infrastructure for power generation, water supply, and wastewater treatment.

Great Lakes Navigation System

The Great Lakes navigation system is a network of harbors, channels, locks, and dams that provides for interstate and international transportation of goods and materials.

The US Great Lakes navigation system includes over 130 federal navigation projects with 610 miles of channels, 117 harbors, 140 miles of breakwaters, 20 dredged material disposal facilities, and the locks at Sault Ste Marie, Chicago, and Buffalo. More than 50 of these harbors, 14 of the channels, and a significant portion of the breakwaters and dredged material disposal facilities lie within the State of Michigan.

CURRENT CONDITIONS

Coastal Infrastructure

The coastlines are subjected to harsh, rapid changes in weather and wave conditions. Waves exceeding 10 feet, created by strong winds blowing across the lake surface, can deliver a powerful force capable of moving multi-ton stones. Often, large waves combine with up to 8 feet of storm surge, creating a substantial rise in water level. The combination of storm surge and large waves, especially when accompanied by ice, generates powerful forces on harbor structures and breakwaters. These elements can be exposed to these forces many times each year, which weaken structures with each succeeding event. Many breakwater structures are built with timber, where deterioration is most acute, since wood decays rapidly when exposed to the air during low lake levels. Lake levels have been low over the last several years, speeding the deterioration.



Great Lakes Navigation System

Most of the federal harbors in the Great Lakes were constructed between 1860 and 1940. At some of these harbors, commercial navigation has declined or ceased completely during the past 50 years. Recreation has become the major industry at many of the harbors, in some cases completely replacing commercial shipping. Currently only approximately 30 federal navigation projects in Michigan support commercial navigation. Approximately 80% of Great Lakes harbor structures are older than the typical 50 year design life expected at the time of construction. Many others are more than 100 years old.

FUNDING SITUATION

Federal funding for the maintenance and upkeep of federal harbors, breakwaters, piers, and channels is prioritized based on the national economic benefits of the facility related to commercial navigation. The Harbor Maintenance Trust Fund, which is funded by user fees on commercial cargoes, is used to maintain the commercial ports. Recreational harbors are funded by the General Fund. Navigation facilities that lack significant commercial navigation are not currently a high funding priority. Consequently, maintenance of recreational harbors and those with limited commercial traffic has been deferred and will continue to be deferred if funding levels do not significantly increase.

With current funding levels, the majority of harbor structures are not likely to be repaired in the foreseeable future. Over half of federal harbors are no longer considered a budget priority because they are not used commercially. With the lack of adequate maintenance, harbor structures will continue to deteriorate. Reduced maintenance could increase commercial shipping costs, reduce recreational usage opportunities, reduce protection of natural coastal assets, and reduce protection of infrastructure currently sheltered by harbor and breakwater structures. Replacement costs of harbor infrastructure, if

not maintained, will be much more expensive than a maintenance investment today.

The funding levels for Michigan paint a much better picture than the funding levels for the Great Lakes Navigation System as a whole, including all of the lakes and surrounding navigation channels and rivers in the states of Minnesota, Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, and New York. The total of all appropriations for the system in 2006 was \$73 million. The Army Corps projects an average annual need over the next six years of approximately \$210 million per year. This is over 2 ½ times the current funding level.

GRADES

The grades given to the Michigan navigation system are based on discussions with the Army Corps of Engineers and the American Great Lakes Ports Association, and from the five year development plan prepared by the Army Corps of Engineers. The grades reflect a composite of the information collected.

Category	Grade
Commercial Harbors	C-
Recreational Harbors	D
Channels/Rivers	C-
Locks	C-

CONCLUSIONS / RECOMMENDATIONS Harbors

Examples of Michigan harbors with significant commercial use include those at Detroit, Saginaw River, Grand Haven, Muskegon, Ludington, Monroe, Ontonagon, and St. Joseph. The Army Corps of Engineers spent approximately \$8 million in 2006 on harbors in

Michigan. The harbors are mostly commercial because priorities require spending only on commercial harbors unless work on recreational harbors is specifically authorized by Congress or is imperative for safety. The Army Corps projects a need of more than \$16 million in 2008 (and beyond, annually). Commercial harbors receive most of the currently allocated funding. Recreational harbors have very little money allocated to them. Harbor funding includes coastal infrastructure such as breakwaters and piers.

Channels/Rivers

Examples of Michigan navigable channels or rivers include the Keewanaw Waterway, St. Mary's River, Saginaw River, Detroit River, Rouge River, and the Inland Route. If any of the rivers or channels are navigable but do not support commercial use, very little to no federal money is spent on them. The Inland Route in the northern lower peninsula has no money allocated to it, whereas the St. Mary's River has over \$16 million allocated. The Army Corps spent approximately \$25 million total in 2006 for navigable channels and rivers in Michigan. The Army Corps projects a need of over \$35 million annually for channel and river maintenance.

Locks

There is one major lock system in Michigan, the Sault Ste Marie or Soo Locks. The Army Corps spent approximately \$1.5 million on these locks in 2006. They project an ongoing annual need of almost \$2.5 million for upkeep.



Over the past several years the Corps has spent an average \$2 to \$2.5 million on the lock maintenance/upgrade. The Soo Locks require a partial replacement, including a second large lock, and significant upgrade in order to prepare them for use over the next 30 to 50 years. This is a significant capital investment already in the Army Corps plan. This investment need increases the near-future budget needs for the Locks to \$25 million per year over the next few years.

SOURCES

This report and grades given to the Michigan navigation system are based on discussions with the Army Corps of Engineers and the American Great Lakes Ports Association, and from the five year development plan prepared by the Army Corps of Engineers. The title of this document is "The Great Lakes Navigation System Five Year Development Plan Fact Sheets" and the document is dated November 27, 2007.

