



**US Army Corps
of Engineers** ®
Detroit District

HARBOR INFRASTRUCTURE INVENTORIES Manitowoc Harbor, Wisconsin



Harbor Location: Manitowoc Harbor is on the west shore of Lake Michigan about 79 miles north of Milwaukee, Wisconsin.

Authority: River & Harbor Acts of 2 Mar 1907, 30 Aug 1935, 26 Aug 1937, 23 Oct 1962, 14 Jul 1960 (Sec 107), 31 Dec 1968.

Project Description: Manitowoc Harbor is a deep draft commercial harbor. The harbor is protected by over 4,100 feet of breakwaters and piers.

Traffic: 315,000 tons in 2009

Transportation Importance: Locally significant receiving port on the Great Lakes. Commodities received include coal, cement, and bio fuels. Boat building is a significant economic catalyst to the local economy.

Congressional Interest:

- Representative Thomas E. Petri R-WI-6
- Senator Ron Johnson R-WI
- Senator Herb Kohl D-WI

Current Condition Assessment: **B**



Date of Site Visit: 27 August 2009

Summary of Impact: Prevailing waves come from a northerly and southerly direction. The immediate impact a break or overtopping of one or both breakwaters would likely be increased shoaling within the federal channel limiting or denying access to the harbor. The marina is sufficiently protected by the Confined Disposal Facility immediately to the west, and would not likely be directly affected by a failure of either breakwater. However, the ferry terminal and coal delivery dock could be exposed to greater wave action and possible inundation. Within the shadow of the southern breakwater is the municipal waste water treatment plant. Shore structures immediately west of the harbor are a Budweiser brewing facility, the Wisconsin Maritime Museum, a Best Western Hotel, and a YMCA. Most of the downtown area is located on a bluff roughly 15 feet above the harbor.

Description of Structures:



1. Municipal Waste Water Treatment Plant: City owned and operated. The treatment plant processes an average of 9.0 million gallons per day and has a rated capacity to treat up to 15.5 million gallons per day. Manitowoc has a separated sewerage system, and, therefore, storm water is not combined with sanitary sewage. The storm water has its own conveyance system to remove the water to various discharge points around the city. In 2001, a major upgrade to the facility was completed at a cost of \$20,300,000.



2. Lake Michigan Car Ferry Terminal: Boarding terminal for S.S. Badger which crosses Lake Michigan to Ludington, MI. Terminal consists of a small admin building, docks and ramps, and a parking lot. Ferry is coal fired and uses coal stored in next lot.



3. Utility Coal Storage: Coal storage for power plant owned by Manitowoc Power Utility. Lake Michigan Car Ferry also uses the site to store coal for its ship. Power plant is located about a quarter mile to the south. Coal is transferred by either truck or rail to the power plant. The plant is fueled by a combination of resources including coal, petroleum coke, natural gas, fuel oil, and waste paper pellets. Fuel is delivered by water, rail, and truck. Five steam turbine generators in the power plant convert steam energy produced by the boilers into electrical energy. Total turbine capacity is 79 megawatts, with the largest unit being a 32 megawatt unit installed in 1963.



4. Budweiser Brewing Facility: Facility prepares barley by cleaning, grading, storage, steeping, germination and kilning into malt. Raw materials and finished products are shipped by rail.



5. Wisconsin Maritime Museum: A 60,000 square foot museum documenting maritime history of Wisconsin with a unique collection of model ships and boats, an operating steam engine, and displays of historic vessels and marine engines. The Museum also has a World War II era submarine moored next to the facility. Open to the public free of charge.



6. Best Western Hotel: Multistory hotel with brick façade.



7. YMCA: Manitowoc and Two Rivers YMCA.



8. Manitowoc Marina: Privately run marina on leased land from the city that consists of 235 slips (both transient and seasonal). Complex includes dry storage, repair facilities, and boat showroom. Piers consist of floating docks. Originally built in 1985 at a cost of roughly \$3 million.



9. Elementary School



10. Residential Area: Various single family homes.

Potential Impact Area: The following graphic displays property parcels that could be impacted within various zones defined by different setbacks from the shoreline behind existing Federal coastal structures. Values are based on real property tax assessments from these parcels, and don't reflect any detailed coastal zone damage assessments. Figures simply reflect property values at various setbacks.

