



Navigation

Navigation is travel or transportation over water. Many different kinds of boats and vessels are used on rivers to move people and products from one place to another. Navigation was extremely important for foreign and domestic trade and travel in the early days of our country before cars, trucks, trains and airplanes were invented. In those days, rivers were used as "roads" to connect inland settlements to river and coastal ports. Communities established at these ports became important economic, cultural and social hubs in the development of our nation. Many of the products we use and eat today are still transported by vessels on inland waterways. Towboats push barges loaded with products such as grain, coal and petroleum up and down rivers to loading and unloading facilities. Navigation activities in the United States take place at thousands of ports and terminals along more than 25,000 miles of waterways. Most rivers in the western part of the United States are not used for commercial navigation. Some of these rivers are used instead for recreation, irrigation and generation of electricity. Shallow harbors or rivers are made safe for navigation by dredging or the construction of locks and dams.

The St. Paul District's navigation program provides a safe, reliable, cost-effective and environmentally sustainable waterborne transportation system on the Upper Mississippi River for the movement of commercial goods and for national security needs. To do this, the district maintains a 9-foot navigation channel and 13 locks and dams from Minneapolis to Guttenberg, Iowa. Keeping this system open is vital to the nation's economy. In 2012, 13.5 million tons of commodities were shipped on the Mississippi River with the St. Paul District's area of operation, including 7 million tons of grain grown in the Upper Midwest. The industries making these shipments saved nearly \$288 million by using the inland waterways instead of overland shipping methods.

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Locks and Dams

The Corps of Engineers maintains navigation channels, much like road crews maintain highways, and builds breakwaters or jetties to protect public property from shoreline erosion. A 9-foot navigation channel is maintained on the Upper Mississippi River so river vessels can transport goods north of St. Louis. To achieve a 9-foot channel in the Upper Mississippi River, Congress authorized the Corps of Engineers to construct a system of navigation locks and dams in the 1930s. Dams are built on rivers to hold back water and form deeper navigation "pool." Most of the pools in the United States are maintained at a constant minimum water depth of nine feet for safe navigation. Dams

make it necessary for river vessels to use a series of locks to "step" up or down the river from one water level to another. Additional benefits from the locks and dams include adding river recreational areas for public use, providing water supply for several river communities and serving as nesting grounds for migratory birds. In addition to the 13 locks and dams, the St. Paul district also manages more than 1,300 wing dams and 200 revetments.

Navigation Channel

Sedimentation in the channel is caused by the normal cycle of silt movement, erosion from high water or heavy rains, overdevelopment along river banks and changes in river currents. To maintain the 9-foot navigation channel, the Corps must remove material that settles in the channel area.

Mechanical or hydraulic dredging are methods used for the removal of that material. This material is placed in designated areas along the river. Some of these areas are beneficial use placement areas. Beneficial use of dredged material is the productive use of the material by the public or private sectors. Examples of common beneficial uses of dredged material in the St. Paul District are upland habitat development, wetland creation, aquatic habitat enhancement, creation of areas for bird nesting, beach nourishment, winter road maintenance, levee repair and improvement, aggregate for concrete, lining fly ash pits, bank protection and general purpose fill such as the I-90 bridge construction in Winona, Minn. The St. Paul District is responsible for maintaining the 9-foot navigation channel for 243.6 miles on the Mississippi River from Minneapolis at river mile 857.6 to Guttenberg, Iowa, at river mile 614.0. The district is also responsible for maintaining 40.6 miles on three tributaries: the Minnesota, St. Croix and Black rivers.