



Upper St. Anthony Falls

(Minneapolis, Minnesota)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Construction: Lock: 1959-1963; Dam: 1951

Congressional District: MN-5

Description

Upper St. Anthony Falls (USAF) Lock & Dam is located at Mississippi River Mile 853.9, in Minneapolis, Minnesota; it is the northern-most lock.

USAF Lock is located near the right descending bank and consists of a single lock chamber 56 feet wide by 400 feet long. The upper pool elevation is 799.2 feet, tailwater elevation is 750.1 feet, and the vertical lift is 49.1 feet. In addition to four lock miter gates, there is an upstream lock Tainter gate for passing flow through the lock chamber during high water. There is no auxiliary lock or provisions for one.

On the left descending bank there is a horseshoe dam with a chord dam downstream of the horseshoe and a concrete overflow spillway owned by Xcel Energy Center that ties into the Lock. On the right descending bank the Corps has a short non-overflow concrete dam between the Lock and the bank.



Dam tours can be scheduled for the Upper Saint Anthony Falls Visitor Center in downtown Minneapolis. The Visitor Center, which sits atop the central control station, offers dam tours May 1 to Oct. 1. Tours are offered year round, but are subject to availability Oct. 2 to April 30.

History/Significance

The U.S. Army Corps of Engineers, St. Paul District, closed the Upper St. Anthony Falls Lock to all navigation at 11:59 p.m., June 9, 2015. The action was required by the Water Resources Reform and Development Act of 2014 and ended all use of the lock by commercial, recreation and other navigational uses. Cargo that would normally be transported through the lock by barge must now be moved by truck or other transportation means. The lock's visitor center also closed.

The lock was put into operation in September 1963. In 1937, Congress authorized a 4.6 mile extension of the 9-foot channel at its upstream end and two additional complexes were built in Minneapolis: the Lower St. Anthony Falls Lock and Dam, and the Upper St. Anthony Falls Lock and Dam. The construction of these complexes, also known as the Upper Minneapolis Harbor Development, extended the 9-foot channel over the St. Anthony Falls. Below the St. Anthony Falls, the narrow gorge of the Upper Mississippi River only allowed for a relatively small river terminal. By extending the 9-foot channel, the Upper Mississippi Harbor Development project permitted the construction of larger and more suitable river terminal sites above the falls.

St. Anthony Falls has a fall of 74 feet, and had historically been used to furnish waterpower for sawmills and flour mills in the area. To ascend the falls the Corps needed a 25-foot lift at the lower lock, and a 49.1-foot lift at the upper lock. The Lower St. Anthony Falls Lock and Dam project also replaced the original Northern States Power Company Dam, which had been built in 1897.

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The Upper St. Anthony Falls Lock and Dam fixed concrete dam was built in 1951, when an existing timber dam was destroyed by flood. The timber dam had been constructed in the 1870s in an effort to protect the St. Anthony Falls from upstream progression. Since the concrete dam was in place, the Corps only needed to construct a navigation lock. But, with a rise of 49.1 feet, the lock was the highest lift on the river and an engineering challenge costing the federal government more than \$18 million to build.

Annual Tonnage (20-Year Historical)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
2015	298,900	2010	663,935	2005	1,154,000	2000	2,238,564
2014	711,959	2009	686,470	2004	1,494,539	1999	2,064,130
2013	821,150	2008	942,300	2003	1,942,747	1998	2,051,540
2012	815,190	2007	998,770	2002	2,042,700	1997	1,879,930
2011	764,851	2006	1,315,770	2001	1,826,375	1996	1,722,008

Commodity Tonnage (2015)

All Units (Ferried Autos, Passengers, Railway Cars)	-	Primary Manufactured Goods	13,500
Coal, Lignite, and Coal Coke	-	Food and Farm Products	-
Petroleum and Petroleum Products	-	Manufactured Equipment & Machinery	6,400
Chemicals and Related Products	-	Waste Material	-
Crude Materials, Inedible, Except Fuels	279,000	Unknown or Not Elsewhere Classified	-

Vessel & Lockage Data (2015)

Average Delay - Tows (Hours)	3.68	Non-Commercial Vessels	8
Average Processing Time (Hours)	0.19	Non-Commercial Flotillas	8
Barges Empty	195	Non-Commercial Lockages/Cuts	8
Barges Loaded	207	Percent Vessels Delayed (%)	27
Commercial Vessels	207	Recreational Vessels	684
Commercial Flotillas	206	Recreational Lockages	252
Commercial Lockages/Cuts	206	Total Vessels	899
Non-Vessel Lockages	-	Total Lockages/Cuts	466

The 9-foot Channel Navigation Project

The 9-foot Channel Navigation Project includes 37 lock and dam sites (42 locks) on 1,200 river miles in Illinois, Iowa, Minnesota, Missouri and Wisconsin. Constructed largely in the 1930s, it extends from Minneapolis-St. Paul on the Upper Mississippi River to its confluence with the Ohio River and up the Illinois Waterway to the T.J. O'Brien Lock in Chicago.

The maintenance needs of this aging infrastructure have surpassed annual operations and maintenance funding. This limited funding has adversely affected reliability of the system and has primarily resulted in a fix-as-fail strategy, with repairs sometimes requiring days, weeks or months. Depending on the nature of a failure and extent of repairs, shippers, manufacturers, consumers and commodity investors can experience major financial consequences. Additionally, today's 1,200'-long tows must split and lock through in two operations within the Project's 600' chambers. This procedure doubles and triples lockage times, increases costs and wear to lock machinery, and exposes deckhands to higher accident rates.

More than 580 facilities ship and receive commodities within the Project. Grains (corn and soybeans) dominate traffic; cement and concrete products are the second largest group. A modern 15-barge tow transports the equivalent of 1,050 semi-trucks (26,250 tons, 937,387 bushels of corn, or 240 rail cars). Annually, the 9-foot project generates an estimated \$1 billion of transportation cost savings compared to its approximately \$115 million operation and maintenance cost.

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