



LaGrange Lock & Dam

(Versailles, Illinois)
Illinois River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction: 1936-1939

Congressional District: IL-18

Description

LaGrange Lock and Dam is 80.2 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois, 7.8 miles below Beardstown, Illinois.

LaGrange Lock and Dam consists of a 1,066-foot-long dam and a 110-foot-wide by 600-foot-long lock. The maximum lift is 10 feet with an average lift of 4.5 feet. It takes approximately 10 minutes to fill or empty the lock chamber.

LaGrange uses a Chanoine wicket dam, the navigable pass type. The wicket section is 436 feet long containing 109 wickets. Each wicket is 3.75 feet wide by 14.92 feet high, with a .25-foot gap between wickets. From 1987-1991, a major rehabilitation changed the physical components of the dam and operating procedures by replacing 26 of the original 135 wickets with a single 84-foot long submersible Tainter gate adjacent to the lock wall.



It takes 24-36 hours for water to travel from Peoria Lock and Dam to LaGrange during flood or high flow conditions.

History/Significance

The lock opened in 1939. Following the Supreme Court's decree of April 21, 1930, limiting the diversion of water from Lake Michigan, a new navigation plan was developed calling for removing four old locks and dams at Henry, Copperas Creek, LaGrange and Kampsville; new locks at LaGrange and Peoria, and a dam on the Mississippi River at Alton, Illinois, to provide the required navigation depth from the mouth of the Illinois to LaGrange. The lock is used only during low and moderate river flows when the wicket dams are raised to maintain the nine-foot navigation depth. During high flows, the wickets are lowered and open river conditions prevail.

LaGrange is one of only two wicket dams on the Illinois Waterway. The lock and dam elements of the complex were completed at a cost of \$2,744,592.

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>
1992	33,124,929	1997	34,871,796	2002	35,858,094	2007	29,046,034
1993	33,320,840	1998	36,097,504	2003	35,136,029	2008	26,690,243
1994	38,343,363	1999	35,59,7851	2004	34,681,667	2009	25,119,313
1995	38,952,953	2000	35,164,245	2005	31,708,944	2010	25,241,087
1996	35,369,900	2001	36,729,826	2006	32,903,584	2011	25,355,072

U.S. ARMY CORPS OF ENGINEERS – ROCK ISLAND DISTRICT

CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004
Corporate Communications Office, (309) 794-5274, www.mvr.usace.army.mil

Commodity Tonnage & Lockages (2011)

Coal	1,126,031
Petroleum	3,639,922
Chemicals	4,947,221
Crude Materials	3,767,628
Manufactured Goods	1,904,161
Farm Products	9,757,894
Manufactured Machinery	121,550
Waste Material	53,053
Containers & Pallets	1,600
Unknown	36,012

<u>Subtotals:</u>	Grain	8,251,924
	Steel	816,697

<u>Lockages:</u>	Commercial Boats:	2,774
	Recreation Boats:	183
	Light Boats:	221
	Other Boats:	76
	Total Boats:	3,055
	Total Cuts:	3,739

Current Maintenance Issues

Item (Critical Rank Order)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Lock - Major Rehabilitation • Lock - Major Maintenance • Systemic Miter Gate Replacement • Permanently Close Butterfly Valves • Add Guide Cells | <ul style="list-style-type: none"> • Paint Dam Tainter Gate, Service Bridge and Machinery • Emergency Stackable Miter Gates • Systemic Filling Valve Replacement • Office and Maintenance Building |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

TOTAL ESTIMATED COST: \$75,900,000

The Water Resources Development Act of 2007 (WRDA 07) Title VIII authorized the dual-purpose navigation and ecosystem restoration plan for the Upper Mississippi River and Illinois Waterway. The new 1,200-foot lock, which is located landside, will cost approximately \$261,000,000. The design and construction of the new lock is dependent upon annual appropriations.

LaGrange Lock is in need of a major rehabilitation of lock concrete, electrical and mechanical systems. The lock went through rehabilitation in 1986 to 1988; it included minor concrete repairs, repositioning lock machinery, and installing a traveling level.

For more than 70 years, the lock has been exposed to multiple freeze/thaw cycles and flooding, causing a gradual but incessant degradation of the lock components. Frequent flooding and temperature extremes, combined with high usage, has resulted in significant deterioration of lock concrete and the decline of mechanical and electrical systems performance and reliability. The vertical concrete has deteriorated to the point that sections have had to be removed and/or threaten to fall into the lock chamber. Barges can become wedged under the armor, resulting in a dangerous situation for deck hands, lock personnel, and potential damage to the barges. Hazardous working conditions exist due to deteriorated horizontal concrete on the land and river walls of the lock chamber. The mechanical and electrical systems require constant patching and labor intensive repairs. Parts are difficult to obtain and have to be specially made in most cases. The probability of failure of the mechanical and electrical systems, requiring extensive and expensive repairs, in the next several years is very high. The potential at any time for an incident to occur due to deteriorated lock concrete, in which the lock has to be closed for more than a week, is very probable with the potential increasing every year the lock concrete is not repaired. In 2004, an expert panel concluded that the lock concrete was in need of rehabilitation at the earliest possible opportunity.

Bulkhead slots are needed on the downstream end of the lock to allow for lock dewatering with bulkhead sections. As there are currently no bulkhead sections available on the Illinois Waterway, a set would need to be purchased under this project for lock dewatering during the rehabilitation. A Rehabilitation Evaluation Report was approved in 2005 with an estimated total cost of \$64 million. A preliminary schedule of work was developed with construction spanning over a three year period. Three lock closures will be required of approximately 30 days each with two of the three closures involving lock dewatering.

UPDATE: October 2012