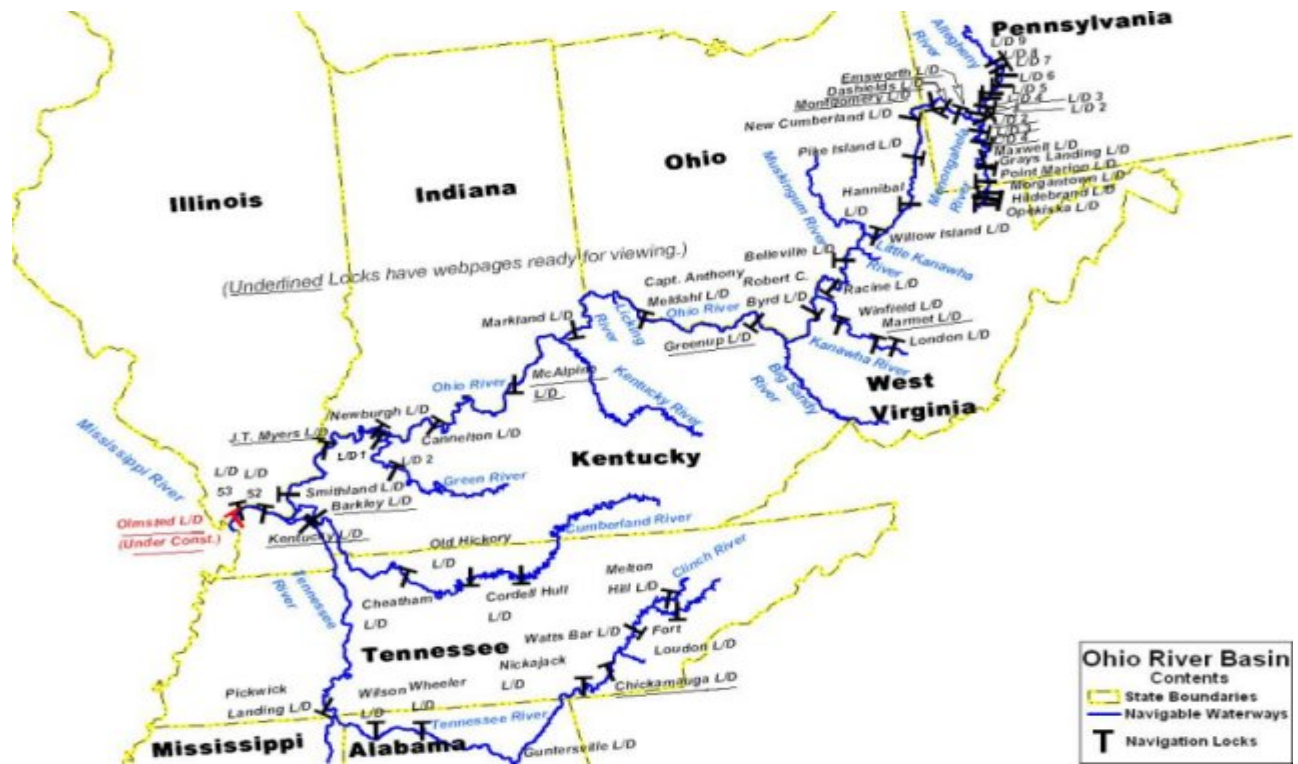


## Ohio River Basin



**WATERWAYS**  
COUNCIL, INC.

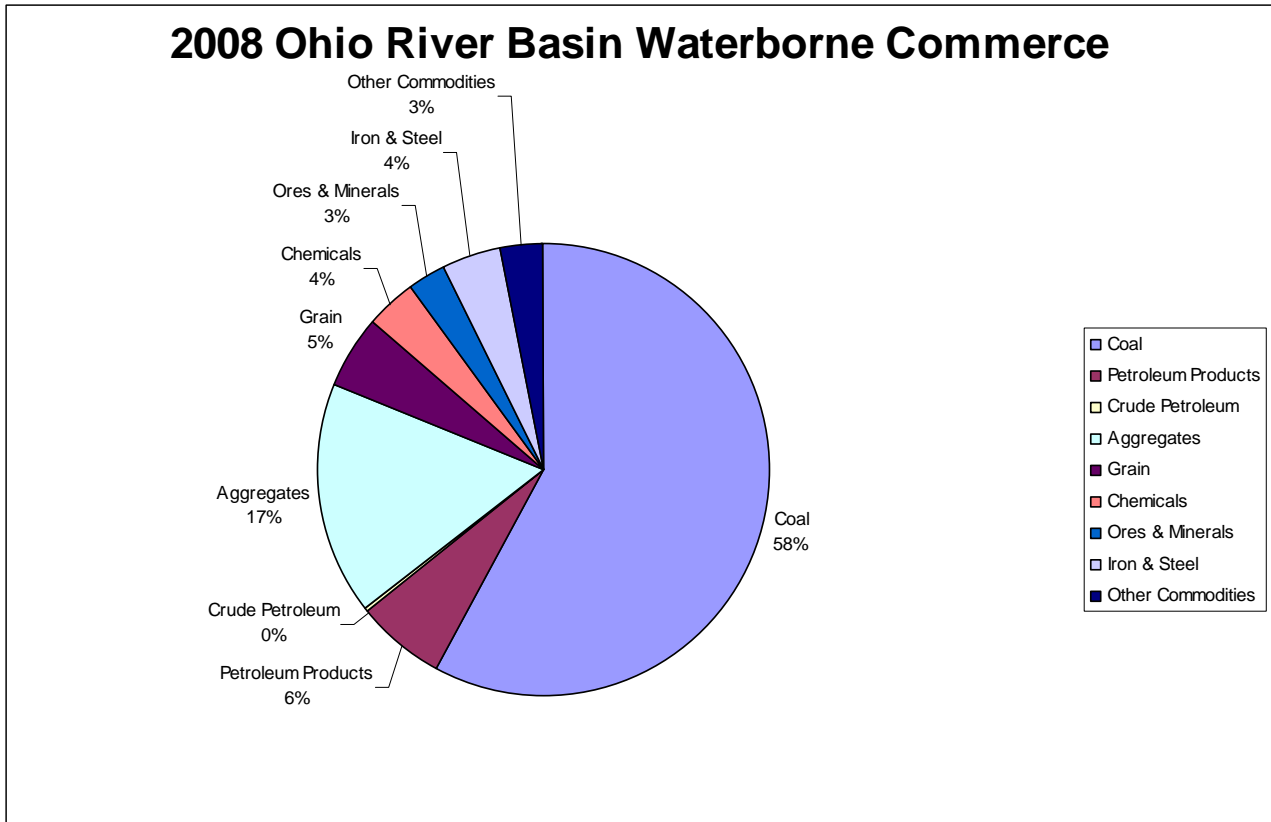
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Waterways Council, Inc. is the national public policy organization advocating a modern and well-maintained national system of ports and inland waterways.

The Ohio River Basin contains over 2,800 miles of navigable waterways. The Ohio River's 981 miles flow from Pittsburgh to the Mississippi River. The basin also includes the Ohio's tributaries, including the Tennessee, Cumberland, Monongahela, Allegheny, Green, Kanawha and Big Sandy Rivers.

In 2008, over 259 million tons of commodities moved on the waterways of the Ohio River Basin. These commodities had a combined value of over 30 billion. Coal made up 58% of this tonnage, followed by aggregates with 17%.



An analysis of the Ohio River Basin waterborne commerce data shows over 44 million tons of commodities were shipped on the river system out of the basin. A sizeable portion of this tonnage (34%) consisted of coal. Docks in the basin received over 37 million tons from outside the Ohio River System, with iron and steel, chemicals, petroleum products and coal being the largest commodities. Almost 176 million tons moved within the basin; about 72% of this amount consisted of coal. A small amount of traffic moved through the system.

<b>Ohio River Basin – 2008 Waterborne Commerce</b> (tonnage in thousands; values in millions of \$)						
<b>COMMODITY</b>	<b>TONNAGE</b>					<b>VALUE</b>
	<b>Shipped</b>	<b>Received</b>	<b>Within</b>	<b>Through</b>	<b>TOTAL</b>	
<b>Coal</b>	15,732	7,135	126,796	25	149,688	\$5,739
<b>Petroleum Products</b>	1,433	5,790	9,951	52	17,200	\$2,622
<b>Crude Petroleum</b>	52	0	531.56	0	584	\$58
<b>Aggregates</b>	11,302	871	31,278	62	43,513	\$2,243
<b>Grain</b>	10,766	1,690	1029.64	55	13,540	\$2,265
<b>Chemicals</b>	869	7,294	1,060	55	9,278	\$4,547
<b>Ores &amp; Minerals</b>	38,313	7,148	293.671	92	7,572	\$1,039
<b>Iron &amp; Steel</b>	2,569	5,944	1,539	357	10,410	\$6,738
<b>Other Commodities</b>	1,541	2,129	4,032	292	7,995	\$5,100
<b>TOTAL</b>	<b>44,117</b>	<b>37,816</b>	<b>176,327</b>	<b>963</b>	<b>259,779</b>	<b>\$30,349</b>
<i>Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics</i>						

Navigable waterways within the Ohio River Basin flow through or past 9 states: Alabama, Illinois, Indiana, Kentucky, Mississippi, Ohio, Pennsylvania, Tennessee and West Virginia. Barge shipments that move on basin waterways originated or terminated in 10 other states: Arkansas, Florida, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Oklahoma and Texas.

The leading shipping state within the basin was Kentucky, with over 72.3 million tons of commodities worth \$5.7 billion. West Virginia was next with more than 55.5 million tons of goods. Louisiana was the leading shipping state into the Ohio River Basin, moving over 20 million tons of commodities worth over \$6.3 billion.

**Ohio River Basin**  
**Commodities Shipped By Barge To and From States – 2008**  
(tons in thousands; values in millions of dollars)

**Basin States**

Shipments By	Commodity			Shipments To	Commodity		
	Tons*	Value*	Top		Tons*	Value*	Top
Kentucky	72,356	\$5,781	Coal	Ohio	49,756	\$5,155	Coal
West Virginia	55,565	\$3,095	Coal	Kentucky	44,242	\$5,733	Coal
Illinois	39,460	\$2,844	Grain	Pennsylvania	30,038	\$2,760	Coal
Pennsylvania	23,309	\$1,628	Coal	West Virginia	28,733	\$2,037	Coal
Indiana	16,332	\$1,588	Aggregates	Tennessee	25,847	\$2,346	Coal

**Non-Basin States**

Shipments By	Commodity			Shipments To	Commodity		
	Tons	Value	Top		Tons	Value	Top
Louisiana	20,436	\$6,383	Ores/Minerals	Louisiana	31,198	\$3,339	Grain
Alabama	3,832	\$1,995	Iron/Steel	Alabama	10,662	\$2,753	Coal
Texas	3,169	\$2,259	Chemicals	Mississippi	2,873	\$647	Aggregates

*Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics*

*\* - Includes Intrastate Shipments*

Ohio was the leading Ohio River Basin state in receipts of waterborne barge traffic, with almost 50 million tons worth \$5.1 billion. Next is Kentucky, with over 44 million tons. Among non-basin states, Louisiana led in receipts of Ohio River Basin commodities, with over 31 million tons worth \$3.3 billion.

There are over 911 manufacturing facilities, terminals, and docks in the Ohio River Basin that shipped and received tonnage in 2008. The Port of Huntington includes 100 miles of the Ohio River, 90 miles of the Kanawha River and 9 miles of the Big Sandy River. The port shipped and received over 76 million tons of commodities in 2008, making it the largest port in the Ohio River Basin and the largest inland port in the United States. The Port of Pittsburgh includes 41 miles of the Ohio River, 90 miles of the Monongahela River and the entire 72 navigable miles of the Allegheny River. It ranks 2<sup>rd</sup> among the nations' inland ports.

<b>Ohio River Basin Major Ports 2008</b> (tons in thousands; values in millions of dollars)							
Port	River Miles	Tons				Commodity	
		Shipped	Received	Intra Port	Total	Value	Top
Huntington	199	45,514	19,506	4,313	69,333	\$5,091	Coal
Pittsburgh	203	11,780	18,528	11,510	41,818	\$3,857	Coal
Cincinnati	27	3,020	10,422	3	13,445	\$1,964	Coal
Louisville	11	593	6,787	56	7,436	\$1,101	Petroleum
Mount Vernon	4	4,185	1,024	0	5,209	\$712	Coal
Nashville	13	327	2,987	0	3,314	\$716	Aggregates
Chattanooga	18	361	1,870	0	2,231	\$686	Aggregates
Guntersville	6	212	1,523	8	1,743	\$284	Grain
Knoxville	9	0	210	0	210	\$69	Petroleum

*Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics*

Among Congressional Districts, Kentucky's 1<sup>st</sup> Congressional District was the leading shipper of commodities in the Ohio River Basin. This district shipped over 41 million tons of commodities mainly, of coal and aggregates, with a combined value of \$2.5 billion. Illinois 19th was next, moving 27.1 million tons.

<b>Ohio River Basin</b> <b>Barge Tonnage Shipped By Congressional Districts – 2008</b> (values in millions of dollars)			
Shipments by	Tons*	Value*	Top Commodity
Kentucky 1 <sup>st</sup>	41,423,269	\$2,504	Coal
Illinois 19 <sup>th</sup>	27,140,579	\$1,278	Coal
West Virginia 3 <sup>rd</sup>	24,500,221	\$1,660	Coal
Kentucky 4 <sup>th</sup>	23,590,891	\$2,286	Coal
Louisiana 3 <sup>rd</sup>	19,674,025	\$3,695	Iron/Steel
Ohio 6 <sup>th</sup>	17,863,043	\$1,607	Coal
West Virginia 2 <sup>nd</sup>	15,624,794	\$765	Coal
Pennsylvania 12 <sup>th</sup>	15,348,912	\$608	Coal
West Virginia 1 <sup>st</sup>	14,315,666	\$731	Coal
Illinois 12 <sup>th</sup>	10,558,586	\$1,420	Coal

*Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics*

\* - Includes Intra District Shipments

The leading Congressional District in receipts of Ohio River Basin commodities was Ohio 6<sup>th</sup>, which received over 27 million tons. This tonnage was mostly coal, and had a combined value of over \$3.4 billion. Louisiana District 3 was second, receiving over 23 million tons. Alabama District 5 ranked 12<sup>th</sup> in tonnage, but had the 4<sup>th</sup> highest value of commodities received, with almost 7.4 million tons worth almost \$2.4 billion.

<b>Ohio River Basin</b>			
<b>Barge Tonnage Shipped To Congressional Districts – 2008</b>			
<b>(values in millions of dollars)</b>			
<b>Shipments to</b>	<b>Tons*</b>	<b>Value*</b>	<b>Top Commodity</b>
<b>Ohio 6<sup>th</sup></b>	<b>\$27,036,742</b>	<b>\$3,473</b>	<b>Coal</b>
<b>Louisiana 3<sup>rd</sup></b>	<b>\$23,888,150</b>	<b>\$2,425</b>	<b>Coal</b>
<b>Kentucky 4<sup>th</sup></b>	<b>\$20,447,696</b>	<b>\$2,807</b>	<b>Coal</b>
<b>Indiana 9<sup>th</sup></b>	<b>\$19,293,829</b>	<b>\$1,073</b>	<b>Coal</b>
<b>West Virginia 1<sup>st</sup></b>	<b>\$14,178,755</b>	<b>\$880</b>	<b>Coal</b>
<b>West Virginia 2<sup>nd</sup></b>	<b>\$13,848,757</b>	<b>\$1,062</b>	<b>Coal</b>
<b>Pennsylvania 4<sup>th</sup></b>	<b>\$13,588,843</b>	<b>\$1,267</b>	<b>Coal</b>
<b>Ohio 2<sup>nd</sup></b>	<b>\$12,724,965</b>	<b>\$501</b>	<b>Coal</b>
<b>Tennessee 8<sup>th</sup></b>	<b>\$12,680,508</b>	<b>\$749</b>	<b>Coal</b>
<b>Kentucky 3<sup>rd</sup></b>	<b>\$9,634,253</b>	<b>\$912</b>	<b>Aggregates</b>
<i>Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics</i>			
<i>* - Includes Intra District Shipments</i>			

There are 60 active navigation locks and dams in the Ohio River Basin operated by the Corps of Engineers (see map). There are 20 active projects on the Ohio River, 9 on the Monongahela River, 8 on the Allegheny River, 3 on the Kanawha River, 4 on the Kentucky River, 2 on the Green River, 4 on the Cumberland River, 9 on the Tennessee River, and 1 on the Clinch River.

Ground was broken on Olmsted Locks and Dam in 1996. Locks and Dam 52 and 53 will be replaced with a single facility consisting of twin 110' x 1200' lock chambers and a submersible dam.

Construction began at McAlpine was completed in 2009. This project will added a second 1200' lock in place of the existing 600' lock. Innovations associated with this project include roller compacted concrete walls, wrap around filling and emptying system with in-chamber culverts, a shortened guide wall and reduced cofferdam length.

At John T. Myers and Greenup Locks and Dams, major repairs of the main chambers associated with heavy use and age force greater future reliance on the inadequately-sized auxiliary chamber. This results in accelerating transit costs. The John T. Myers and Greenup Locks Improvements Interim Feasibility Report, a product of the Ohio River Mainstem Study, recommends a 600' extension of the auxiliary chamber and a miter gate

quick changeout system at both projects, along with rehabilitation of the main chamber at Greenup. These projects were authorized for construction in the Water Resources Development Act of 2000.

Emsworth, Dashields and Montgomery Locks are the only remaining navigation projects on the Ohio River that do not have a 110' x 1200' lock chamber. The costs associated with major rehabilitation and major maintenance over a 50-year economic design life may exceed the cost of replacement with new larger facilities. Any closures of the main chambers for repairs force greater future reliance on the very small auxiliary chambers. As part of the Ohio River Main Stem Study of navigation modernization, replacement plans involving two or three projects are being evaluated.

Kentucky Lock and Dam's current single lock chamber is insufficient to handle increasing tonnage and was authorized for construction by WRDA 96. The lack of an auxiliary chamber forces tows to use Barkley Lock during periods of extended delays and closures. Kentucky Lock is at 90% capacity and tows face average delays of 5 to 6 hours. The project, as authorized, recommends construction of a new lock chamber at Kentucky L&D measuring 1200' by 110', to be located landward of the existing 600' lock. The new lock will use in-sill intakes with wall filling valves and culverts located in lock walls. A multi-port filling and emptying system will be used to fill and empty the lock chamber. The Corps will use floating approach wall in the upper approach (similar to Olmsted walls) and is considering the use of pre-cast cofferdam which will become a permanent lock wall. This would help to reduce congestion and interference with traffic using the existing lock. The lower guide wall combines roller compacted concrete (RCC) with the foundation constructed "in-the-wet" (cast-in-place) to avoid costly cofferdam construction. The upper guide wall and guard wall will be floating concrete pontoon walls. Construction on the project began in July of 1998 and the scheduled completion date is 2011, depending upon funding.

The modernization plan for the lower Monongahela River includes replacement of the fixed crest dam at Lock and Dam 2 with a gated dam (to be called Braddock Dam). The locks at Locks and Dam 4 would be replaced with new twin 84' x 720' chambers, and this project will be renamed Charleroi Locks and Dam. Locks and Dam 3 will be removed. This project was authorized in the Water Resources Development Act of 1992 (WRDA 92) and provides for a "two for three" lock replacement. The project consists of a new gated dam at L&D 2, removal of L&D 3, and two new 720' x 84' locks at L&D 4. The Corps completed a two-segment float in dam for L&D 2 at Braddock, PA. This dam involved underwater foundation preparation, float-in components, and tainter gates operated by hydraulic cylinders. The new locks at L&D 4 will be constructed in stages in order to maintain navigation. Construction began in 1995 and is currently scheduled for completion in 2013, depending upon funding. The current schedule calls for completion of work by 2008 at a cost of \$705 million. The Braddock project won an Award of Merit under the American Society of Civil Engineers (ASCE) 2004 Outstanding Civil Engineering Achievement Awards Program (OCEA).

On the Kanawha River, the capacity at Winfield Locks was increased after the completion of a new 110' x 800' lock chamber. Construction of the new 800' x 110' lock at Winfield, formerly the site of one of the most congested locks in the inland navigation system, began in 1990 and the new lock became operational in the fall of 1997. This project was a

pioneer, using two innovative, cost effective features that are now under active consideration for other projects. These are hydraulic operators for the new tainter gate and long span prefabricated beams for the upper approach wall.

Marmet L&D on the Kanawha River officially opened the new 800 x 110' lock on January 23, 2008 ahead of schedule. Construction began in 2002 and was expected to be operational in 2008 with all construction completed by 2009. While the new lock is open for river traffic, more work needs to be done to complete the project. That includes demolition of the old approach walls, construction of an upstream guard wall, final grading, replanting of the construction site and completion of recreation areas including fishing access.

Both existing old 56' x 360' chambers lock chambers will be used as a backups during scheduled maintenance. An improvement to Marmet Locks was authorized in 1996. The Marmet project, as authorized for construction by WRDA 96, recommends construction of a new 800' x 110' lock landward of the existing locks. This project contains a number of innovative features which have greatly reduced expected construction costs. These features include long-span prefabricated beams for the upper approach wall; sill face intakes for the filling and emptying (F&E) system (which eliminates mass concrete upper approach walls), a central culvert F&E system (which permits smaller chamber monoliths), and a minimal cofferdam footprint.

Ohio River Basin

OHIO RIVER BASIN LOCKS AND DAMS									
(tonnage in ktons)									
Ohio River					Kanawha River				
2008 Tonnage					2008 Tonnage				
Lock	Mile	Upbound	Downbound	Total	Lock	Mile	Upbound	Downbound	Total
<a href="#">Emsworth</a>	6.2	12,441	8,145	20,586	Winfield	31.1	4,864	13,816	18,680
<a href="#">Dashields</a>	13.3	13,366	7,661	21,027	<a href="#">Marmet</a>	67.7	1,172	14,343	15,515
<a href="#">Montgomery</a>	31.7	11,145	9,805	20,950	London	82.8	32	2,152	2,184
New Cumberland	54.4	21,274	8,732	30,006	Cumberland River				
Pike Island	84.2	26,314	9,456	35,770	2008 Tonnage				
Hannibal	126.4	23,564	25,713	49,277	Lock	Mile	Upbound	Downbound	Total
Willow Island	161.7	27,072	22,508	49,580	<a href="#">Barkley</a>	30.6	2,902	471	3,373
Belleville	203.9	26,967	22,508	49,475	Cheatham	148.7	8,821	408	9,229
Racine	237.5	27,379	22,723	50,102	Old Hickory	216.2	4,782	0	4,782
Robert C. Byrd	279.2	33,999	19,083	53,082	Cordell Hull	313.5	*	*	*
<a href="#">Greenup</a>	341	23,997	38,027	62,024	Allegheny River				
Meldahl	436.2	23,404	31,752	55,156	2008 Tonnage				
Markland	531.5	31,594	24,087	55,681	Lock	Mile			Total
<a href="#">McAlpine</a>	606.8	39,419	19,336	58,755	Lock & Dam 2	6.7	1,341	168	1,509
Cannelton	720.7	38,953	21,129	60,082	Lock & Dam 3	14.5	1,341	163	1,504
Newburgh	776.1	52,367	21,224	73,591	Lock & Dam 4	24.2	146	541	687
<a href="#">John T. Myers</a>	846	47,037	24,939	71,976	Lock & Dam 5	30.4	27	44	71
Smithland	918.5	45,446	34,385	79,831	Lock & Dam 6	36.3	20	0	20
L/D 52	938.9	51,788	38,272	90,060	Lock & Dam 7	45.7	20	0	20
L/D 53	962.6	37,037	39,073	76,110	Lock & Dam 8	52.6	0	517	517
Tennessee River					Lock & Dam 9	62.2	0	0	0
2008 Tonnage					Monongahela River				
Lock	Mile	Upbound	Downbound	Total	2008 Tonnage				
<a href="#">Kentucky</a>	22.4	23,969	8,119	32,088	Lock	Mile	Upbound	Downbound	Total
Pickwick Landing	206.7	10,978	2,672	13,650	<a href="#">Lock &amp; Dam 2</a>	11.2	9,898	9,476	19,374
Wilson	259.4	6,742	2,073	8,815	<a href="#">Lock &amp; Dam 3</a>	23.8	4,080	10,279	14,359
Wheeler	274.9	6,742	2,041	8,783	<a href="#">Lock &amp; Dam 4</a>	41.5	3,329	10,580	13,909
Guntersville	349	3,590	834	4,424	Maxwell	61.2	5,324	7,345	12,669

## Ohio River Basin

Nickajack	424.7	1,470	604	2,074	Grays Landing	82	2,544	2,424	4,968
<a href="#">Chickamauga</a>	471	729	244	973	Point Marion	90.8	2,096	2,041	4,137
Watts Bar	529.9	433	186	619	Morgantown	102	445	388	833
Ft. Loudoun	602.3	348	141	489	Hildebrand	108	413	0	413
<b>Clinch River</b>					Opekiska	115.4	413	0	413
<b>2008 Tonnage</b>					<b>Kentucky River</b>				
Lock	Upbound	Downbound	Total		<b>2008 Tonnage</b>				
Melton Hill	*	*	0		Lock	Mile	Upbound	Downbound	Total
<b>Green River</b>					Lock & Dam 1	4	*	*	*
<b>2008 Tonnage</b>					Lock & Dam 2	31	*	*	*
Lock	Upbound	Downbound	Total		Lock & Dam 3	42	*	*	*
Lock & Dam 1	3,363	4,877	8,240		Lock & Dam 4	65.9	*	*	*
Lock & Dam 2	3,169	1,152	4,321						
<i>* Statistics not collected at the Kentucky River Locks</i>									

Ohio River Basin

