



**US Army Corps
of Engineers**

An Indepth Response to the Ohio River Foundation Publicity
- Prepared by Great Lakes and Ohio River Division, April 2006

Misconception - The Corps of Engineers advocates Ohio River system expansion.

Reality - The Ohio River Mainstem Systems Study (ORMSS) report is about improving navigation system reliability.

The Ohio River navigation structures are aging and lock closures will occur with increasing frequency and unpredictability unless the Corps implements measures to insure system reliability.

Recent unscheduled closures at Greenup, McAlpine, Hannibal and Montgomery locks have cost millions of dollars in additional transportation costs alone. Table 1 shows data related to these closures. The economic impacts are delay costs only. In the present business environment of just-in-time delivery of goods and commodities, any closure interrupts production, forces movements onto other transportation modes, and increases costs, which are then passed along to the consumer.

Recent Ohio River Mainstem Lock Closures

Project	Days of Closure	Number of tows locked	Beginning Date of Closure	End Dates of Closure	Average Delay per Tow (hours)
Greenup	52		9/8/03	10/31/03	
Willow Island	31	367	10/15/02	11/15/02	7.3
Meldahl	42	555	6/17/02	7/28/02	23.3
Montgomery	26	231	6/18/02 & 7/14/02	6/25/02 & 7/31/02	31.4
New Cumberland	54	630	10/17/02	12/9/02	6.7
Myers	24	367	10/9/01	11/1/01	35.6
Emsworth	17	179	11/1/01&11/13/01	11/9/01&11/21/01	17.3
Pike Island	31	429	4/24/00	5/24/00	5.7
Greenup	29	390	11/2/99	11/30/99	21.8
Willow Island	38	420	6/21/99	7/28/99	4.0
Markland	10	119	6/19/99	6/28/99	10.9
McAlpine	16	155	9/13/99	9/28/99	36.5
Greenup	19	285	6/1/98	6/29/98	30.8
McAlpine	29	235	8/1/97	8/29/97	100.0
Markland	40	535	7/18/94	8/27/94	20.3
McAlpine	12	138	11/14/93	11/26/93	55.7
Greenup	32	470	6/10/91	7/12/91	30.9

Lock	Closure Dates	Closure Duration	Delay (hrs)		Number of Tows Delayed	Delay Costs \$
			Max	Avg		
Hannibal	Nov 1 - 15, 2005	15 days	140	58	125	\$ 3,000,000
McAlpine	Aug 8 - 19, 2004	10 days 23.4 hrs	257	77	19	\$ 695,000
Greenup	Sep 8 - Oct 31, 2003	52 days, 8 hrs	93	38	718	\$ 13,200,000
Montgomery	Jun 18 - 28, 2002	10 days, 17 hrs	110	34	130	\$ 1,200,000
Montgomery	Jul 15 - 31, 2002	16 days, 16 hrs	132	33	179	\$ 1,700,000

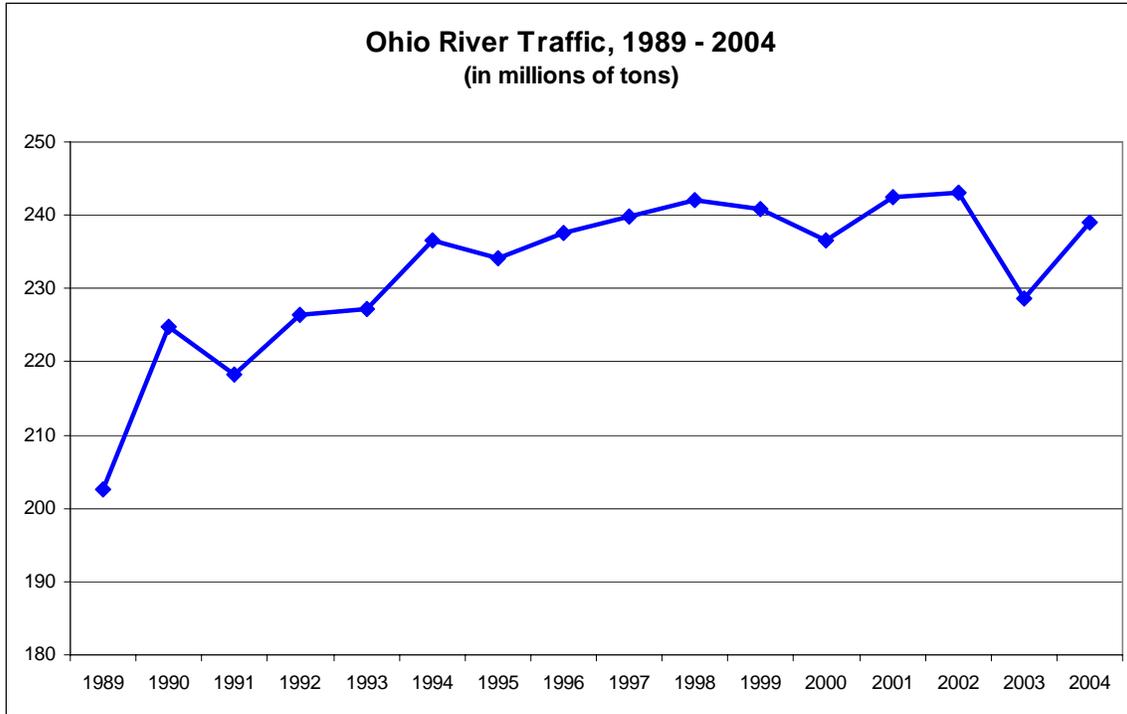
Source: Lock Performance Monitoring System (LPMS) and Institute for Water Resources (IWR) cost data.

The lock closures cited above are symptomatic of an aging infrastructure. Diminished reliability is the major navigation problem that needs to be addressed on the Ohio River mainstem system, not traffic congestion due to insufficient main lock capacity. Alternative solutions to this problem will be addressed in the ORMSS System Investment Plan (SIP). The study process has been transparent and included Federal and state agencies, interested groups and the Ohio River Foundation. The report will be released in early May. The report will be subject to a public review process and Washington level approval before any actions are implemented.

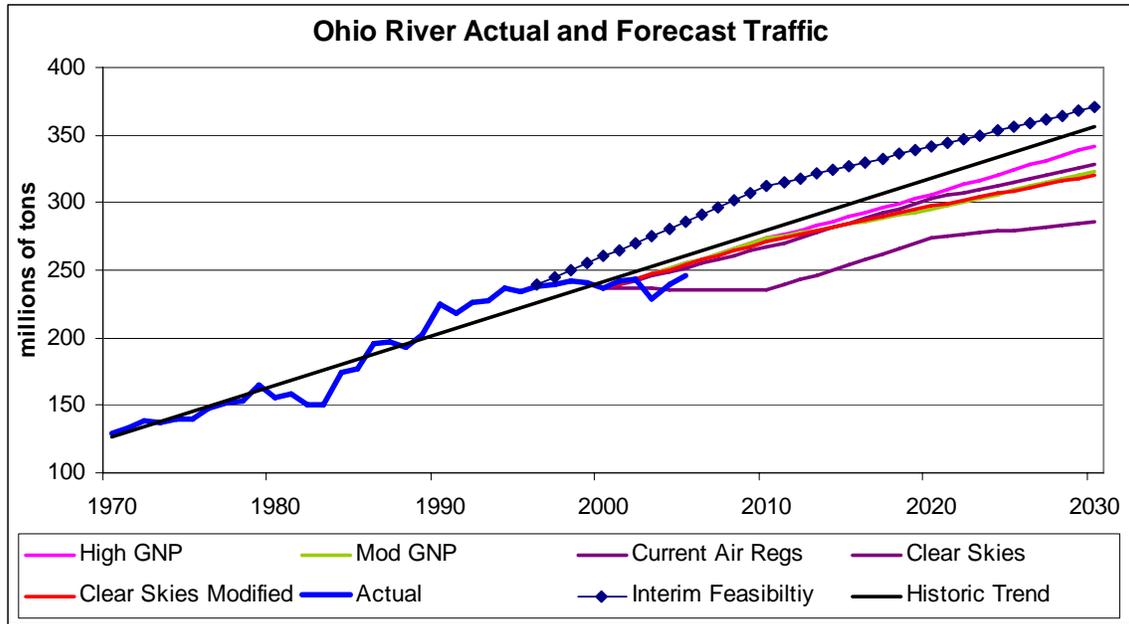
Misconception – The Corps’ traffic growth projections are inaccurate.

Reality - The Corps of Engineers traffic forecasting and modeling methodologies provide a sound basis for decision making.

As seen in the graph below, traffic on the Ohio River has grown over the past 15 years – from 202 million tons in 1989 to 239 million tons in 2004. Preliminary 2005 Ohio River numbers indicate that over the 15 year period between 1990 and 2005 traffic increased from 225 million tons in 1990 to 246 million tons in 2005.



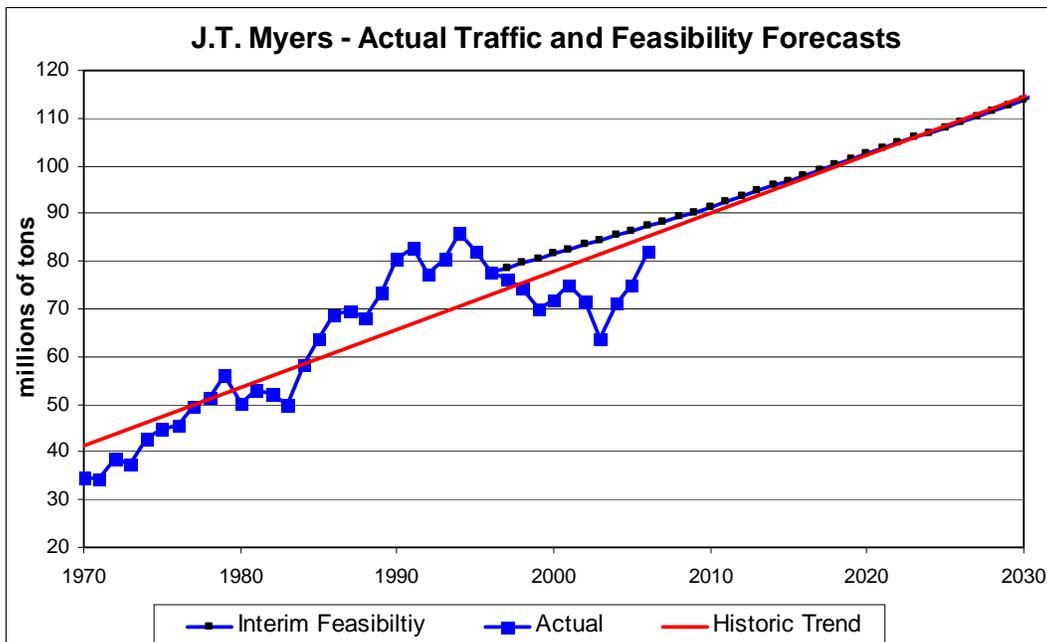
In fact, there has been nearly steady growth of traffic on the Ohio River since canalization of the river was completed in 1929. This trend is reflected in the graph below showing: 1) traffic from 1970 to the present, 2) a trend line based upon this traffic and 3) a range of traffic demand forecasts for the next 30 years. As part of the *J.T. Myers and Greenup Locks Improvement: Interim Feasibility Report* published in 2000, forecasts (Interim Feasibility) were developed using a 1996 traffic base. These Interim Feasibility forecasts are slightly above the 1970 – 2004 historic trend line for the Ohio River. As a part of the ORMSS study, a range of new traffic forecasts were developed starting from a year 2000 traffic base. Two of these forecasts are based upon alternative growth futures (High GNP and Moderate GNP) and three on alternative air emission regulation futures (Current Air Regulations, Clear Skies and Modified Clear Skies). These Ohio River traffic forecasts are generally below the historic trend; however, all indicate future growth. All were independently reviewed by a member of the National Academies of Science.



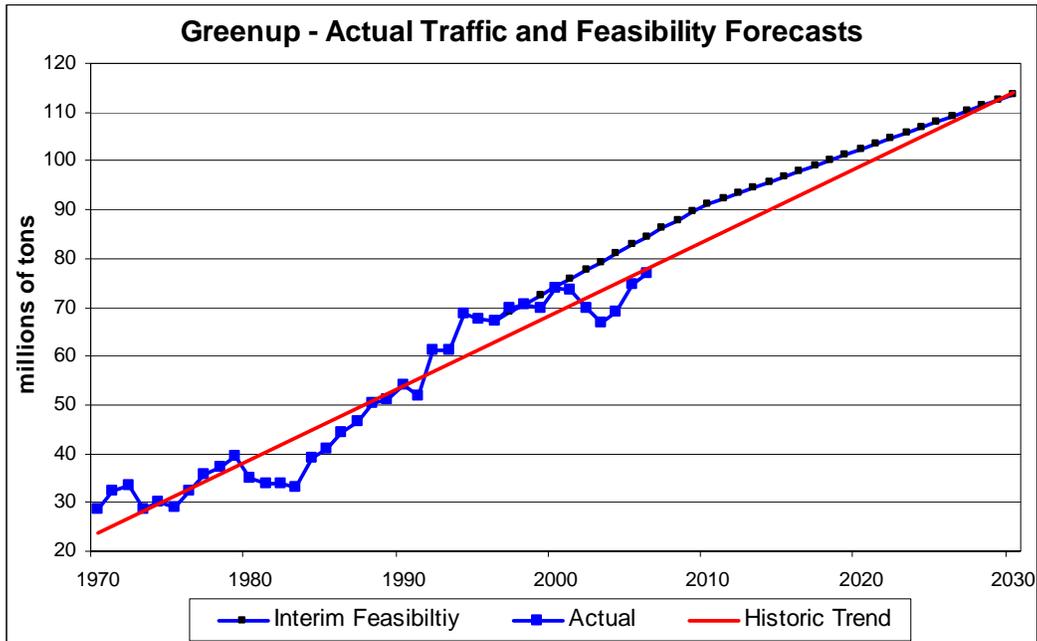
Misconception – The Corps overestimated traffic on J.T. Myers locks and coal traffic is going down at this location.

Reality - J.T. Myers has shared in the growth occurring on the Ohio River.

While the growth has not always been smooth, note that traffic has grown between 2003 and 2005. The 2005 traffic and estimated 2006 traffic are on a path back toward both historic trends and the Interim Feasibility forecast.

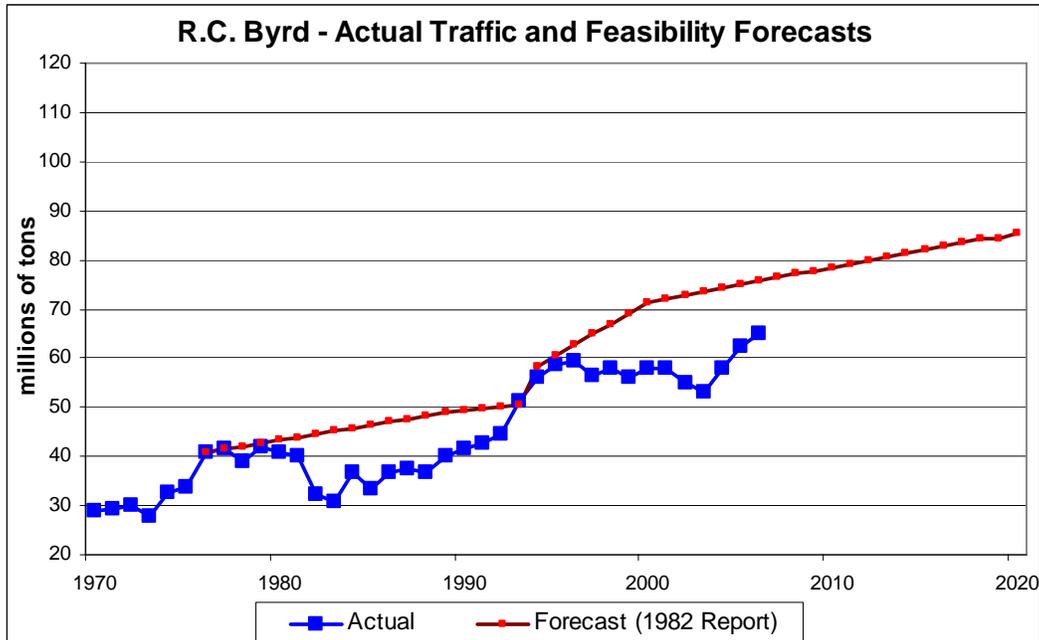


Greenup reveals a similar trend to that of J.T. Myers. As seen in the graph below, there has been persistent growth at Greenup for the past 36 years. Growth has not always been smooth, but it has been steady. Traffic has grown from a recent low in 2003, to what is expected to be a record level in 2006.



Misconception – Traffic at Gallipolis (Robert C. Byrd Locks) is on a downward trend.

Reality - R.C. Byrd Locks and Dam reached record traffic levels in 2005, with traffic expected to exceed 2005 levels in 2006. Nevertheless, it is important to recognize that traffic demand forecasts are not the sole determinant of project feasibility or infeasibility. Construction of a new 1200’ x 110’ main chamber and a new 600’ x 110’ auxiliary chamber, the predominate lock configuration on the Ohio River, was recommended in the *Gallipolis Locks and Dam Replacement, Ohio River* feasibility report dated 1981. The recommended plan called for these two new chambers to be placed in a short canal. This canal eliminated a severe river bend that contributed to numerous towing accidents and slowed approaches to the small locks (600’ x 110’ and 360’ x 56’ chambers) that abutted the dam. Slow approaches and locks too small to handle traffic resulted in chronic congestion, with average delays typically ranging from three to five hours per tow.



With the opening of the new 1200' x 110' main lock in 1993, delays were reduced to less than an hour per tow and traffic increased by almost 7 million tons in one year – as had been forecast by the model used in the study. But as can be seen in the graph above, traffic has not kept pace with forecasts through the 1990s, though it has showed strong growth toward forecast levels since 2003. An *ex post* examination of the project's fiscal performance was conducted in 2003 - the tenth anniversary of the opening of the new locks. This examination indicated that R.C. Byrd had generated estimated transportation savings of \$351 million, greatly in excess of the \$264 million incremental cost necessary to construct the project. Despite actual traffic falling short of forecast traffic, the Byrd project paid for itself within eight years of opening. As traffic forecasts are not the sole indicator of feasibility, nor are forecasts' performance relative to actual traffic the sole indicator of the soundness of an investment decision.

Ohio River Foundation contends that ...“Methodologies and data used in the Corps estimates of the benefits of J.T Myers and Greenup lock improvements were reviewed and found to be inconsistent with industry practices and economic theory... The Corps neglects to consider the impact and availability of rail, trucks and other forms of transportation.”

Corps of Engineers responds that estimated benefits in both the Greenup and J.T. Myers Interim Feasibility Report and the current ORMSS Study are consistent with current Corps of Engineers practices and guidance.

Furthermore, both studies relied upon nationally recognized transportation rate specialists at the Tennessee Valley Authority (TVA) to do the transportation rate analysis. TVA conducts extensive surveys of waterway users, applies rail and barge costing models that

are the industry standard, and uses the Surface Transportation Board waybill data for point-to-point information on railroad movements and prices. With these models and data bases, TVA is able to estimate the cost of using the current water route and then identify the least cost alternative overland route.

Misconception – The Corps of Engineers models are outdated.

Reality – The ORMSS Study uses the Ohio River Navigation Investment Model (ORNIM), a state of the art waterway system economic model.

Oak Ridge National Laboratory, Oak Ridge, Tennessee, developed ORNIM in collaboration with the USACE National Planning Center of Expertise for Inland Navigation specifically for the evaluation of alternative waterway improvements for the Ohio River Navigation System. ORNIM integrates economic, engineering and environmental considerations into one suite of models.

Engineering considerations are linked through the Lock Risk Module (LRM), economics through the Waterway Supply and Demand Module (WSDM), and environmental considerations through the Navigation Predictive Analysis Technique module (NAVPAT). Finally, the Optimizer module in ORNIM assists in finding the best plan across our 19 lock sites and across time.

ORNIM has been technically reviewed by outside experts, including a member of the National Academies of Science. These experts have found the model acceptable and consistent with existing Corps planning regulations.

Throughout the process, outside agencies have assisted or participated in ORMSS. These include each state’s agency with jurisdiction over fisheries, U.S. Fish and Wildlife Service, U.S. EPA, U.S.G.S., area universities, contractors, The Nature Conservancy and the Ohio River Foundation.

Misconception - The Corps hasn’t considered non-structural options.

Reality - The Corps’ planning team evaluates non-structural solutions to lock congestion problems and uses models that incorporate detailed spatial considerations

The ORMSS Study looks at both non-structural and structural ways to address future needs. In fact, the towing industry initiates non-structural measures upon notification of planned outages. Industry adjusts to lock closures by re-scheduling tows around the outage, reducing the number of empty barges, and adjusting equipment above and below the outage. In addition to re-scheduling, helper boats, mooring cells, best lockage policies and tow haulage units are included as part of the “without-project” condition in the study against which any structural alternative are compared. It is estimated that these measures increase the capacity of the projects during a main chamber closure by 33 percent.

Congestion fees are also evaluated for their effectiveness relative to “without project” conditions.

Misconception – The Corps should develop and implement realistic price spatial equilibrium models.

Reality - The ORMSS study incorporates multi-scenario traffic demand forecasts and relies on a spatially-detailed equilibrium model of the electric generating and fuel supply sectors developed by Hill and Associates.

This world-class model is used by electric utilities, the U.S. Environmental Protection Agency, the U.S. Department of Energy and others to test the effect of alternative fuel prices and policy futures on the electric utility, natural gas, coal, and related markets.

Hill and Associates prepares steam coal forecasts on the basis of the interaction of two linear programming models: the National Power Model and the Utility Fuel Economics Model. The NPM dispatches all electric generating plants in the United States producing forecasts of generation by fuel type. The UFEM makes use of highly detailed coal supply data to allocate fuels among plants and transportation modes. These two models develop forecasts of coal demand for electricity generation by type of coal, which are mapped by Hill and Associates and the Corps to the waterway.

(See: Transportation Research Record; Journal of the Transportation Research Board, 1909, Transportation Research Board of the National Academies, Washington, DC, 2005, pp 39-46, *Multiscenario, Spatially Detailed Forecasting of Utility Steam Coal for the Ohio River Navigation System*, Jeff Watkins and Dale Kelz).

Misconception - The navigation system contributes to annual flooding on the river.

Reality - There is no basis in the science of river hydraulics to support the allegation that the navigation system contributes to annual flooding on the river.

In fact, during seasonal high flows the navigation dams are simply passing high water through the structures without any effect on the level of the river above the dams. The dams exist to preserve a minimum navigable depth during periods of low flow. Without the dams, there were, historically, periods of time when one could literally walk across the Ohio River. Without the navigation pools the Ohio River would periodically consist of a series of stagnant pools and sandbars. In the absence of the navigation pools, citizens of the Ohio valley might find themselves without a source for their drinking water supplies. This incidental benefit is not even taken into account by the Corps when calculating the benefits of the navigation system and yet it is real and appreciated by many municipalities including Cincinnati, Louisville and Evansville that depend on the large quantity of pooled water in the seasonal low flow period of August, September and October to provide a dependable source for their water intakes.

Misconception - The Ohio River Navigation System is a leading cause of habitat loss.

Reality - It is widely recognized that the leading cause of impacts to environmental resources is human settlement and development.

For example, according to a U.S. Fish and Wildlife Service analysis from 2000, slightly more than 50 percent of all types of riparian habitat along the Ohio River have been lost since 1800. This habitat loss is consistent with historic patterns of settlement and development. The ORMSS SIP identifies the need for high priority ecosystem sustainability measures. These measures include habitat protection and restoration, control of exotic species, reintroduction of native species, improved connectivity of habitats, and reduction or management of sources of degradation. Many of these needs can be addressed by the Ohio River Ecosystem Restoration Program, authorized in 2000 and the ORMSS SIP indicates the need for funding this valuable program.