

Taylor Affidavit – Attachment 2

Chicago Waterway System Ecological Separation:
The Logistics and Transportation Related Cost Impact of Waterway Barriers

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1. Introduction

This research effort provides an assessment of transportation and logistics impacts associated with an ecological separation, in the Chicago area, between the Mississippi River and Great Lakes Basins. An ecological separation, which could involve the construction of physical barriers, would be designed to prevent the inter-basin transfer of invasive aquatic species including the Asian Carp. The construction of these barriers could be disruptive to commercial shipping and recreational boating important to the economy of the region. This study is intended to provide an assessment of additional transportation and logistics costs that would be incurred if these barriers were constructed. This report supplements and replaces a preliminary assessment performed by the authors in December 2009. The intervening time has allowed for an on-site inspection of the Chicago Waterway System (CWS)¹ as well as an opportunity to review materials submitted in response to State of Michigan filings to the Supreme Court.

2. System Overview

The Chicago Waterway System contains six distinct segments comprising about 72 miles² of navigable waterway. This system is shown in Exhibit 1.

- Chicago River, Main and North Branch—7.0 miles (9'-21' draft)

¹ In 2006, the authors inspected the entire CWS from the water aboard a Metropolitan Water Reclamation District of Greater Chicago boat. Detailed notes, observations, and pictures were taken at that time. The 2010 observations were necessarily by land given the January time period for the work. Google aerial photos were also consulted.

² Mileage calculations from US Army Corps of Engineers (USACOE), Illinois Waterway, Navigation Charts. Navigation depth information from USACOE, Waterborne Commerce of the United States, navigation segment data.

- Chicago River, South Branch—4.6 miles (9' draft)
- Chicago Sanitary and Ship Canal—30.1 miles (9' draft)
- Calumet Harbor and River—6.1 miles (27-29' draft)
- Lake Calumet-- 0.4 miles (27'draft)
- Calumet-Sag Canal—23.9 miles (9' draft)

About 62 miles are maintained to minimum depths of 9 feet to accommodate barge traffic. The remaining 10 miles are maintained to depths of 21-29 feet. This includes the Calumet River and Lake Calumet that are maintained to a depth of 27-29 feet to accommodate laker or ocean vessels. There are three locks that handle commercial and recreational traffic

- “Chicago Lock” located near downtown Chicago by the Navy Pier
- “O’Brien Lock” located near Lake Calumet on the Calumet-Sag Canal just south of Lake Calumet
- “Lockport Lock” located about 35 miles southwest of downtown Chicago

3. Research Approach and Assumptions

This research effort assumed that physical barriers would be constructed at two locations; one at the Chicago River Controlling Works (Chicago Lock) near the Navy Pier in downtown Chicago and the other at the O’Brien Lock located south of Lake Calumet. These barriers would preclude water passage of any type of recreational or commercial vessel. Transport of recreational vessels across the barrier on a marine railway or mechanical lifts may be feasible. We assume that it would not be economically feasible to move loaded commercial barges across the barrier but the options could be examined in a more detailed study.³ It is important to state that these barriers are located on waterway segments that carry only barge, recreational and

³ There are examples elsewhere in the world where this does occur. However, the time and cost associated with this does not seem economically feasible. Brammeier et al discuss various vessel transit options in their report (pg 76).

tour boat traffic. Deeper draft ocean or laker vessels would be generally unaffected⁴ and could continue to move freely into Calumet Harbor, Calumet River, and Lake Calumet. Our research assumes that adequate navigation depth will be available on the waterway segments affected by the barriers. Issues such as navigation depth, flood control, access for police, Coast Guard, and fire control boats are outside of the transportation-oriented scope of this research.

4. Traffic Impacts

The proposed barriers would preclude about 7 million tons⁵ of cargo from providing direct water access to existing customers. About 98 percent of this represents traffic passing through the O'Brien Lock.

Table 1
Chicago and O'Brien Lock Tonnage

	2007	2008
Chicago Lock Tons	167,800	105,484
O'Brien Lock Tons	7,294,890	6,822,254
Total	7,462,690	6,927,738

Source: US Army Corps of Engineers, Navigation Data Center, Lock Use, Performance and Characteristics.

a. Chicago Lock Barrier

The Chicago River Controlling Works was constructed in 1938. The lock portion is 800 feet in length and 80 feet wide. It lifts vessels 2 feet.⁶ Table 2 provides lock usage data for 1994, 2007, and 2008.

⁴ Larger vessels could potentially utilize the Chicago River Main and North Branch segments, which are maintained to 21 feet of draft. To our knowledge, this seldom occurs due to the lack of traffic opportunities. Virtually all laker and ocean vessels utilize the Calumet River.

⁵ The authors choose to use 7 million tons to simplify calculations. This value is based on 7,463,000 tons in 2007 and 6,927,000 in 2008 handled at the two locks. It also reflects a possible overstatement of traffic at the O'Brien Lock (see footnote 8)

⁶ Brammeier et al

Table 2
Chicago Lock Usage Statistics

	1994	2007	2008
Barges empty	55	28	14
Barges loaded	228	50	39
Tonnage handled	1,341,595	167,800	105,484
Tons/loaded barge	5,884	3,356	2,705
Recreational vessels	40,974	26,661	23,886
Commercial vessels	15,038	11,199	10,363

Source: US Army Corps of Engineers, Navigation Data Center

All categories of traffic have been declining over the 1994-2008 period shown in this table. Tonnage is down dramatically from 1.3 million tons to about 100 thousand tons. Recreational vessel traffic is also down significantly from peak years of 1994-95 when levels in the 40,000 per year range were experienced. Commercial vessels, which are principally tour boats operating in and around the Chicago downtown area, are down by about a third. Only 39 loaded barges used the Chicago Lock in 2008 carrying 105,000 tons of cargo.

A barrier at the Chicago Lock will have little effect on shippers on the North and South Branches of the Chicago River. The large majority of cargo to these shippers passes through the CSSC and would be unaffected by the closure of either the Chicago or O'Brien locks. Most of the impacts would be experienced by recreational and tour boat operators. Although recreational and commercial volumes are down from their peak years, they are still significant. These numbers suggest that recreational traffic during the boating season may, on average, be between 200-300 boats per day with higher peaks on summer weekends and holidays. It may be possible to accommodate some of these users through a marine railway, lift machines, or other means. However, it is unlikely that all of the demand could be accommodated on peak days.

b. O'Brien Lock Barrier

The Thomas J. O'Brien Lock and Dam was opened in 1960 and is 1,000 feet in length and 110 feet wide. It lifts vessels 4 feet. Table 3 provides lock use statistics for 1994, 2007, and 2008.

Table 3
O'Brien Lock Usage Statistics

	1994	2007	2008
Barges empty	5,687	3,098	2,804
Barges loaded	8,360	4,475	4,259
Tonnage handled	13,291,318	7,294,890	6,822,254
Tons/ loaded barge	1,590	1,630	1,602
Recreational vessels	17,165	18,381	15,184
Commercial vessels	4,267	2,383	2,272

Source: US Army Corps of Engineers, Navigation Data Center

A barrier located at or near the O'Brien Lock has been discussed given the recent detection of Asian Carp in the Calumet-Sag Channel.⁷ This location would affect virtually all of the barge traffic passing through the Calumet-Sag Channel. For example, Corps data indicates that, in 2007, 6,256,000 tons of cargo used the Calumet-Sag Channel and 6,053,000 tons⁸ or 97 percent passed through the entire length. Only 3 percent had an origin or destination on the Calumet-Sag Channel. This route is a very important pathway for traffic moving to and from the Mississippi River and the Chicago region. A significant portion of

⁷ Corps Briefing Paper, December 2009.

⁸ The authors were unable to reconcile the difference between Corps data, which showed 6,053,000 tons of through traffic in 2007 on the Cal-Sag Channel, and O'Brien Lock data, which indicated 7,294,000 tons. This data should be identical or very close. Part of the reason may be that segment data and lock data is obtained from different sources. For purposes of this report, we used the O'Brien Lock data since it presents the greatest amount of impact. The authors were also informed by Corps personnel that some commodities such as petroleum coke might have been misclassified as coal coke at the lock. This accounts for some of the differences in commodity volumes between the segment data and the lock data.

this is traffic relating to coal, coke, and steel products moving long distances. Interviews indicated that some of this traffic includes coke products originating in China, transloaded to barge in New Orleans, moved up the Mississippi and Illinois Rivers, through the Cal-Sag and into Lake Michigan for delivery to steel plants. These barges may return with slag or steel products. It is important to state that a barrier near the O'Brien Lock would not affect the larger deeper draft laker and ocean vessels that can move through the Calumet River into Lake Calumet. These channels are maintained to a minimum draft of 27 feet whereas the Cal-Sag Channel and most other segments of the Chicago Waterway System are maintained to a 9-foot draft to accommodate barge traffic.

O'Brien lock commodity data are shown in Table 4 for 2007 and 2008.

Table 4
O'Brien Lock Commodity Data
(Thousands of short tons)

Commodity	2007	2008
10 Coal, lignite, coal coke	1,689	2,426
20 Petroleum products	550	411
30 Chemical products	227	213
40 Crude materials (e.g., sand, slag, scrap)	1,645	1,645
50 Primary manuf. goods (e.g., cement, steel plates, bars, sheets)	2,654	1,754
60 Food and farm products	417	315
70 Manuf. equipment & machinery	74	44
80 Waste material	10	4
90 Unknown or not classified	28	12
Total	7,295	6,822

Source: US Army Corps of Engineers, Navigation Data Center.

5. Barriers will impact the movement of barge traffic

The construction of these barriers will result in seven million tons of barge traffic that will be unable to directly access existing customers by water. This could result in the closure of certain businesses and increased costs associated with the movement of cargo in the Chicago region. Other impacts have been articulated in verified statements and materials submitted as part of the US and State of Illinois responses. We accept that there are negative impacts but believe that they are greatly overstated.

6. Alternative Transportation Options and Cost Impacts

Barriers at the Chicago and O'Brien locks will require alternative transportation approaches so that end-use customers can continue to receive cargo. This may involve new transload facilities or different modes of transportation such as laker vessel, rail, truck, or pipeline. It is also likely that some cargo will shift to other facilities or terminals that still have direct water access. This could include those on the CSSC, the Chicago River or points on the Cal-Sag below the proposed barrier. Origin or destination points for cargo could also change as a result of changes in cost structure.

This research looked at three alternative approaches to meeting new transportation needs associated with the barriers. These are:

- Alternative A. Transload all cargo between barge and truck. All existing cargo passing through the Chicago and O'Brien locks would continue to move by barge. New transload facilities would be built downstream of the barrier. All cargo would be trucked between the transload center and existing customers.

- Alternative B. Transload but some rail. Most cargo would continue to be transferred to and from trucks at the transload facilities. However, some would shift to an all rail movement.
- Alternative C. Transload, rail, pipeline, and use of other terminals. Half of cargo would continue to transfer to and from trucks at the transload facilities. There would be more rail. Some cargo would continue to move by barge via other routes to terminals elsewhere in the region, and some would move by pipeline.

Cargo passing through the Chicago Locks is mainly construction and building materials. A small transload facility could handle the small amount of traffic passing through this lock. The 105,000 tons handled in 2008 amounts to about 15 trucks a day. Another approach would be to use an existing terminal on the Calumet River and truck to and from that location. It is important to state that most of the cargo moving on the North and South Branch of the Chicago River would be unaffected as it passes through the CSSC.

Cargo passing through the O'Brien Lock is moving to and from a wide range of terminals on Lake Calumet, the Calumet River and nearby points on Lake Michigan such as steel mills. A barrier at the O'Brien Lock would require that transload terminals be constructed downstream of the lock to facilitate transloading of cargo to trucks or other modes. Depending on location, such a terminal would be from 2-15 or so miles from existing users. For purposes of this analysis, the authors choose to use 12.5 miles meaning that a 25-mile round trip would be required for a truck move from a new transload terminal to existing users. This distance is longer than the existing water or road distance between the O'Brien Lock and existing shippers on the Calumet River⁹ or in Whiting, Indiana. It is much longer than the distance between the Chicago Lock and shippers on the Chicago River. The generous 12.5-mile estimate was used to reflect the uncertainties associated with actual transload locations.

⁹ It is about 7 miles by river from the O'Brien Lock to Lake Michigan.

We also assumed truck operating costs of \$100 per hour. Handling costs estimated at \$5/ton assumed truck and driver wait time, paperwork time, loading equipment and operator time and other costs. Trucks were assumed to carry 25 tons of cargo. Rail costs were estimated at \$9.40 per ton more than barge. This was based on ton-mile costs of 3.34 cents for rail and 2.4 cents for barge for a thousand mile trip.¹⁰ Capital and operating costs associated with the transload terminal were assumed to be \$1 per ton. For alternative A, this would amount to about \$7 million annually.

Detailed cost calculations are shown in Table 7 at the end of this report.

Table 5
Additional Transportation Costs Incurred with Barriers

Alternative A	\$69,270,000
Alternative B	\$68,439,000
Alternative C	\$63,867,000

The authors of this report calculated that the proposed barriers would result in additional annual transportation costs of \$64-69 million. This amounts to additional costs of \$9.12-\$9.90 per ton. This compares with a US Army Corps of Engineers estimate of \$190 million for the O'Brien Lock and \$2 million annually for the Chicago Lock (App72-73a). The Corps estimates are based on "the cost difference between the existing waterway routing and the least cost overland alternative." (App72a). This results in an additional cost of \$27 per ton. By comparison, a recent report done by the Texas Transportation Institute (TTI) for the National Waterways Association and the US Maritime Administrations states:

¹⁰ Calculated from ENO Transportation Foundation, 20th Edition, 2007, pg 46. Association of American Railroads, Railroad Facts, 2009 Edition, pg 31.

"In 2005, inland waterways maintained by the US Army Corps of Engineers (Corps) handled over 624 million tons of freight (274 billion ton miles) valued at over \$70 billion resulting in an average transportation cost savings of \$11/ton (as compared to other modes)." ¹¹ Underline added

The results of our approach were reasonably comparable to the TTI study. We showed about \$9-10/ ton of additional cost while they showed \$11/ton for 2005. It is understood that these are not strictly comparable kinds of assessments. Interestingly, the use of the TTI estimate would result in additional costs of \$77 million which is only slightly higher than our figures.

We believe the Corps approach is faulty. It assumes that since the barge cannot travel the last few miles in a trip the cargo would be shifted in its entirety to the rail or truck mode for the entire distance of a trip. Thus, a cargo of petroleum products from New Orleans to a point on the Calumet River would shift to rail for the entire trip from New Orleans. We do not believe the barge industry would allow that to happen. There are sufficient cost advantages in barge transportation that would allow the barge move to continue to a point below the O'Brien Lock where a transload to truck, pipeline or rail would take place for the few remaining miles (e.g., it is about 1400 miles¹² to the O'Brien Lock from New Orleans and less than 7 additional miles to any point on the Calumet River). Much of the cargo is transloaded in any event so additional costs would be relatively small compared to the overall revenues associated with the move. Thus, most of the economic and environmental advantages of barge transportation would not be lost.

The opponents of the proposed barriers wrongly imply that the cost, energy, air quality and safety benefits of barge transportation would be lost. This is incorrect since, in most cases, the cargo would continue to move most of the distance by

¹¹ A Modal Comparison of Domestic Freight Transportation Effects on the General Public"; Texas Transportation Institute, Center for Ports and Waterways. December 2007, Amended March 2009. Page 1.

¹² USACOE Distance Finding Chart for Mississippi River System. Shows 1408 miles from New Orleans to the S. Damen Street Bridge near downtown Chicago.

barge. The revenues to the barge industry for a long distance move from New Orleans would not be easily given over to some other mode.

As stated elsewhere in this report, a significant portion of barge traffic moves into the Illinois Waterway System from points on the lower Mississippi River.¹³ We can understand how the Corps might come up with such a high estimate if it assumed that a total shift to another mode would occur. We believe their assumption is unrealistic and fails to consider the multi-modal nature of transportation where movements among and between modes are common. For example, a high percentage of the cargo moved by barge also moves by truck, pipeline, or rail for some portion of its trip. Grain, for example, may move by truck to an elevator, by train to a river port, and by barge to an export or consuming location.

The arguments presented in the filings by the AWO and the Illinois Chamber of Commerce that transloading is not feasible flies in the face of what is actually happening. Almost everything is transloaded in some manner. There are long lines of trucks on 100th Boulevard waiting to pick up salt from Calumet River terminals. Other trucks pick up sand for delivery to off water customers. A large volume transload occurs at the Will County Power Generating Station where coal is transloaded from rail to barge for delivery to the Fisk and Crawford power plants. There are examples of petroleum products being offloaded from barge to tank farms for onward movement by truck or pipeline. There are other examples of rail to water transload in the region. There are many examples in the Chicago area of cargo being unloaded from a barge onto a truck for movement to final destination. The reverse also occurs where trucks bring products to a water terminal for onward movement by barge.

7. Cost Impacts Ignore Inland Waterway Subsidies

¹³ Origin-destination data from Corps reports indicate that 57% of Illinois Waterway System traffic origins are destined to points below Baton Rouge on the Mississippi River or on the Gulf of Mexico. About 39% of IW originating traffic has destinations in this same area.

The inland waterway system receives considerable support from the federal government for the construction, maintenance, and operation of navigation locks and channels. The 1986 Water Resources Development Act requires the nation's barge companies to contribute 50 percent of the costs of new construction or major rehabilitation of inland waterway locks, dams, and channels. Taxpayers pay the entire cost of operations and maintenance of the inland waterways.¹⁴ In 2008, the barge companies contributed only \$92 million out of total expenditures of \$930 million.¹⁵ A 1992 Congressional Budget Office Study found that "on a percentage basis, the inland waterway system is the most heavily subsidized of the three modes of transportation, although aviation is more heavily subsidized in absolute terms."¹⁶ The issue of support levels for inland waterways has been a major issue for many years with railroads and environmental groups especially opposed to the level of federal support. Railroads claim government funded competition whereas environmental groups are concerned that the locks, dams, and channels are disruptive to the natural environment. It is nonetheless clear that on a per ton basis inland waterways receive a disproportionate share of federal government support. This tends to disrupt market forces and results in lower costs for water transportation than would be the case if they paid a larger share of their costs.

8. Traffic Impacts Need to be Placed in Perspective

The traffic passing through the Chicago Lock and the O'Brien Lock amounts to about 7 million tons annually. We estimate that there is from 790 million to one billion tons of freight that has an origin or a destination in the Chicago region.

¹⁴ Operation and maintenance in this context refers to dredging, navigation devices, lock operation etc. The actual ownership and operation of the towboat including vessels, barges, crew wages, fuel, etc is paid entirely by the barge company. They also pay a fuel tax that amounts to slightly less than \$100 million annually.

¹⁵ Prairie Rivers Network Action Alert dated February 6, 2009. They are the Illinois Affiliate of the National Wildlife Federation.

¹⁶ Congressional Budget Office, May 1992. Paying for Highways, Airways, and Waterways: How can users be charged? Pg.2.

This is based on a review of several different sources including the CREATE project, the Illinois Railroad Association, the US Census 2007 Commodity Flow Survey, and the Chicago Metropolis 2020 Report published in December 2004. The 2007 Commodity Flow Survey indicated 790,000 tons in the region¹⁷. The Chicago Metropolis 2020¹⁸ study provided a modal estimate for 2002 and a 2010 forecast for the State of Illinois¹⁹. This indicated a total of 1.289 billion tons for all freight modes in 2002 and 1.589 billion tons for 2010 for the State of Illinois. Given that Chicago is the transportation and commercial center for the State of Illinois and contains 74% of its population²⁰ the one billion ton value represents a reasonable upper value for the 2007-08 period used in this analysis.

Thus, the seven million tons affected by the barriers represents only .70 -.88% of all traffic in the region—less than one percent of all traffic originating or terminating in the Chicago region. For simplicity and to acknowledge the uncertainties associated with the regional numbers we assume that a full one percent is affected.

It is also important to note that the seven million tons represents only about 30 percent of Port of Chicago traffic and only 18 percent of Illinois Waterway traffic.

If all seven million tons were transported by truck it would mean an additional 1000 daily truck trips²¹ on a system that has several hundred thousand daily truck trips. The portion of I-80/I-94 south of Chicago carries 30,000-40,000 daily trucks. Many of the other Interstate Highways carry 10,000-20,000 daily trucks.²²

¹⁷ 2007 Commodity Flow Survey for Chicago-Naperville-Michigan City area. US Census American Fact Finder.

¹⁸ The Metropolitan Freight Plan: Delivering the Goods; Chicago Metropolis 2020; December 2004, pg 8.

¹⁹ The source of the forecast was the Freight Analysis Framework, Federal Highway Administration, Office of Freight Management and Operations.

²⁰ Chicago-Naperville-Joliet Metropolitan Statistical Area in 2007 estimated by US Census at 9,524,673 population. State of Illinois estimated by US Census in 2007 at 12,852,548.

²¹ 7,000,000/25 tons per truck=280,000 annually/275 equivalent (less truck traffic on weekends etc.) days=1,018 daily trucks.

²² Illinois Department of Transportation website, Statewide Traffic Maps, Truck Count. www.gettingaroundillinois.com/default.aspx.

A further review of truck vehicle miles of travel (VMT) indicates that overall truck traffic in the region would increase by only 1/10 of one percent.²³ The reason for this small increase is that the truck trips to and from a transload facility are only a few miles in length whereas the Chicago region contains tens of thousands of trucks moving to and from points in the region as well as tens of thousands of trucks passing through the region.

The seven million tons of traffic represents about two rail unit trains²⁴ on a daily basis. This compares to many rail lines in the Chicago area that handle 50-100 daily freight trains. The CREATE project estimates that there are 500 daily freight trains in the Chicago area handling 37,500 rail carloads.²⁵ More significantly perhaps is the fact that two daily unit trains represents about the amount that a single 2,000 MW electric generating plant would receive on a daily basis. For example, the J.H. Campbell generating plant in West Olive, Michigan (on Lake Michigan south of Muskegon) is rated at 1,440 MW and uses 5 million tons of coal annually. All of this is delivered by rail in 1-2 daily unit trains.²⁶ The Will County Generating Station in Romeoville, IL is rated at 1,269 MW and also receives all of its coal by rail. It is used on-site at the plant and some is transloaded to barge to serve the Fisk (326 MW) and Crawford (542 MW) generating stations.²⁷

Opponents of the barriers, among other claims, suggest that the regional economy would be devastated, costs would make the region uncompetitive and the region would be overwhelmed with truck traffic. The facts are the following:

- Only about one percent of overall freight traffic in the region would be affected and some would experience only minor inconvenience.

²³ Truck vehicle miles of travel (VMT) would increase by .0009% and truck ton-miles would increase by .0010%. Regional data from 2007 US Census Commodity Flow Survey.

²⁴ Per TTI Report: 108 cars @ 110 tons/car=11,880 tons train x 300 days=3,564,000 tons/year x two trains =7,128,000 tons/year.

²⁵ Source: Chicago Region Environmental and Transportation Project (CREATE). USDOT, Federal Railroad Administration Issue Brief dated May 17, 2009.

²⁶ Consumers Energy Brochure on J.H. Campbell power plant.

²⁷ Midwest Generation Fact Sheets and other information.

- Overall transportation costs would increase by less than \$70 million annually in a Chicago metropolitan area economy of \$521 billion.²⁸
- Truck traffic would increase by about a thousand trucks a day in the worse case (alternative A).
- Regional truck traffic would increase by 1/10 of one percent or less (VMT and ton-miles)
- Affected traffic is the equivalent of only two daily rail unit trains—about the amount needed to supply coal to a single large power plant. There are over 500 daily freight trains in the Chicago region.

Our conclusion is that seven million tons of cargo, whether carried by truck, barge or rail represents a very small portion of Chicago's freight transportation traffic.

8. Waterway traffic has been declining

Statistics provided by the US Army Corps of Engineers show that overall water traffic in the region is declining and barge traffic has declined more rapidly than overall traffic.

Table 6
Trends in Waterborne Traffic
1994-2007
(000's of tons)

	1994	2007	% Change
Cal-Sag Channel	12,874	6,256	-51.4%
O'Brien Lock	13,291	7,295	-45.1%
Chicago Lock	1,341	167	-87.5%
Port of Chicago	29,422	24,482	-16.8%

²⁸ Bureau of Economic Analysis, US Department of Commerce. 2008 GDP for Chicago-Naperville-Joliet MSA.

Source: U.S. Army Corps of Engineers, Waterborne Commerce Data, and Lock Usage Data

These declines occurred during a time when other modes of transportation such as rail and truck traffic were growing rapidly. For example, in the 1994-2007 period, US railroad revenue ton-miles grew by 49.0 percent; truck ton-miles grew by 33.3 percent and inland waterway ton-miles declined by 8.8 percent. ²⁹

The nationwide decline in domestic water transportation was evident on the component parts of the CWS and especially so on the Cal-Sag Channel and the O'Brien Lock where respectively traffic declined by 51 percent and 45 percent between 1994 and 2007. The actual number of loaded barges (see Table 3) handled at the O'Brien Lock declined from 8,360 in 1994 to 4,259 in 2008—only about half of the number handled in 1994.

9. The decline is evident in a survey of the system

The authors undertook a land based survey of the CWS on January 9-10, 2010. Because of time limitations, most of the effort was expended on the Cal-Sag Channel, Lake Calumet, and the Calumet River. We also looked at the Chicago North and South Branches and portions of the CSSC. We utilized 1998 charts of the Illinois Waterway System published by the US Army Corps of Engineers. Publicly available aerial photos were also used. One striking observation was the fact that many of the 1998 shippers listed as receiving cargo on the waterway were no longer in business. Many former shipping sites were now vacant lots or converted to other non-industrial uses. This was especially evident on the North Branch of the Chicago River where only 3-5 active shippers remain. The North Chicago area is becoming gentrified and the long-term future for heavy industrial use is questionable. Other portions of the waterway similarly contained vacant

²⁹ Source: National Transportation Statistics 2009, Table 1-46b, updated September 2009; Bureau of Transportation Statistics, US Department of Transportation.

plots of land where there were former shippers, or large vacant or abandoned steel mills, elevators or other industrial structures. The effects of the deindustrialization of America are very evident in a visit to these areas. Various sources including the Federal Reserve Bank of Chicago mention "...Chicago's economy shifting toward high-value service production and away from freight – laden manufacturing."³⁰

10. Other issues

a. Relocation Compensation. The construction of the proposed barriers would adversely affect certain businesses that would lose the direct water transportation option. In some cases, this would have little affect on the overall business since transportation cost may be a small part of their overall operating costs. In other cases, especially for a marine terminal business, it may be infeasible to continue. There are significant legal and political issues that need to be explored as to what compensation, if any, is owed to these businesses.

b. Job Impacts. The Illinois International Port District indicates that, in 2002, there were 3,367 direct jobs generated by activities at the port. These jobs are with terminal operators, stevedores, International Longshoreman's Association trucking firms, railroads, steamship agents, freight forwarders and customhouse brokers, warehousemen, federal government agencies, towing companies, pilot organizations, and marine construction companies.³¹ The American Waterways Association indicates, "over 400 jobs would be put in jeopardy by lack of access to waterways"³² if portions of the waterway were blocked.

The authors believe that the closure of portions of the Chicago Waterway System to commercial navigation would result in increased employment in the

³⁰ Federal Reserve Bank of Chicago Newsletter. 12-4-2006.

³¹ Illinois International Port District web site Executive Summary.

³² AWO website: Chicago Asian Carp Impact Fact Sheet; dated December 18, 2009. AWO notes this is based on responses from less than 50% of towing companies in the region.

transportation sector. There will, however, be a dislocation of jobs from areas where navigation is reduced to areas where it continues. There will likely be some loss of jobs associated with the barge industry and for some terminals. However, there is still cargo to be loaded and unloaded even though the location may change somewhat. Jobs in certain sectors such as trucking and cargo handling should increase given the need to move cargo to and from areas that have lost direct barge service. Much of the estimated \$64-69 million in additional costs associated with the barriers will be expended on wages for new truck driver and material handling jobs. There may also be additional railroad jobs.

c. New Transload Terminals. The barriers would require the construction of one or more transload terminals downstream of the blockage points. These could be funded by either the public or private sector. The public sector could conceivably purchase land, develop the terminal, and sublease it to private operators. There are numerous approaches and options that could be considered. The authors recognize the need but costs cannot be determined since they are dependent on location and development approach. A \$1/ton cost was built into the costing estimate to reflect the need for this expenditure. In alternative A, this would amount to an income stream of about \$7 million annually. This flow of funds could provide either the public or private sector monies for land acquisition, construction, and operation of a transload terminal.

11. Summary and conclusions

This analysis assumes that physical barriers would be constructed at or near the Chicago Lock and the O'Brien Lock. These barriers would preclude the waterborne passage of barges and require alternative approaches to continue to service end-user customers. It was assumed that new transload terminals would be constructed downstream of the barriers. Some or all of existing cargo movements would be offloaded at these locations and moved by truck, rail, or

pipeline to the customer. This would entail terminal, handling and transportation costs that are estimated at \$64-\$69 million or approximately \$9-10 per ton.

The claims that “even a temporary closure of the locks will devastate the local economy and Illinois’ role in the regional, national, and global economies, endanger public safety and cause serious environmental harm” (Ill. Pg 10 and App.50a) cannot reasonably be supported. This analysis shows that freight traffic affected by the barriers represents less than one percent of freight traffic in the region and some of this would be inconvenienced in only a minimal way.

END OF REPORT

