

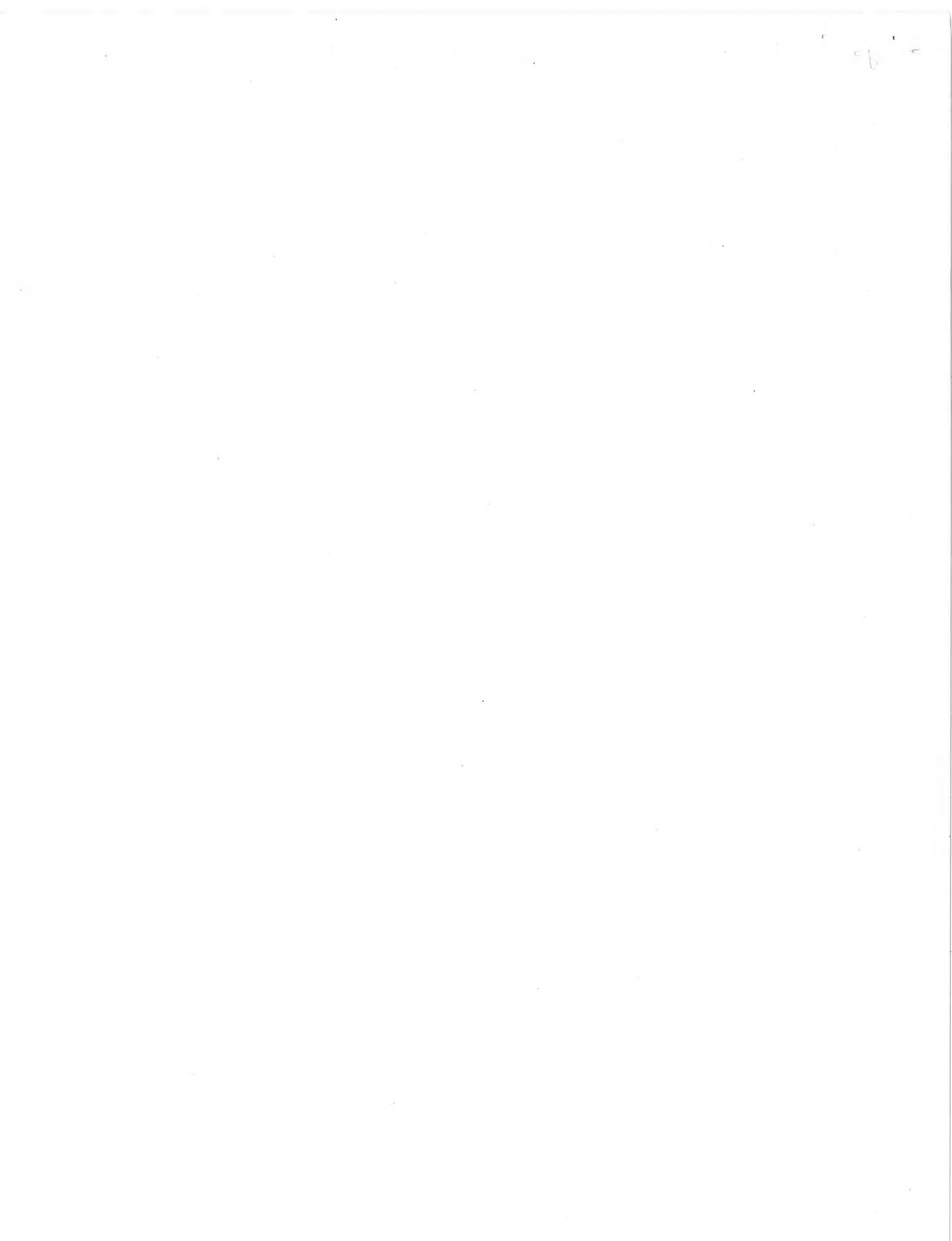
Assessing the Economic Impacts of Expanding the Great Lakes/ St. Lawrence Seaway



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INSTITUTE
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Executive Summary

Expanding the capacity of the Great Lakes/St. Lawrence Seaway (GL/SLS) is often touted as vital for the regional economy. Our farmers and industry are described as dependent on the low-cost export of bulk goods through the GL/SLS, and as the GL/SLS loses competitiveness with transportation modes in other regions, the Great Lakes region's farms and businesses suffer. This decline results in the loss of good paying jobs and the region's entire economy suffers – or so the argument goes.

Any expansion of the Great Lakes/St. Lawrence Seaway will cost billions of dollars and have numerous environmental impacts – these facts are not debated. The issue of contention is whether the economic benefits that accrue from GL/SLS expansion outweigh the economic and environmental costs. Another issue is the structure of those benefits – if an expanded GL/SLS will provide a substantial economic multiplier that will foster good paying manufacturing jobs and farm employment or if it will simply lower the transportation costs for a few export businesses.

From our assessment of available literature, discussions with experts and experience with other waterways, there is no economic justification for an expansion of the Great Lakes/St. Lawrence Seaway. The GL/SLS has been struggling to maintain traffic levels for the past 20 years and the current infrastructure is not nearly used to capacity. This is not to say that the region isn't suffering, but that navigation expansion is not the appropriate cure.

This paper provides a summary of available literature, assesses the various trends impacting the demand for Great Lakes/St. Lawrence Seaway transportation and identifies topics that require more research. It is intended to assist Great Lakes United and other organizations in refining their arguments against expanded navigation and provide possible directions for future research. Our research for this paper indicates that there are very compelling reasons not to expand the GL/SLS, and if opponents can expand the coalition beyond the environmental community, we are confident that the project will not go forward.

General Trends that Impact the Great Lakes/St. Lawrence Seaway

There have been numerous attempts to expand the Great Lakes/St. Lawrence Seaway over the years. Many of the compelling reasons not to expand the Seaway in the past are still valid. Other new reasons have also emerged. This section highlights some of the reasons why expanded navigation is not the appropriate economic cure for the region's ailing economy.

- One of the primary arguments for the cost-effectiveness of the Great Lakes/St. Lawrence Seaway transportation route is the fact that Great Lakes ports are closer to European markets than are East Coast or Gulf ports. Thus, shipping products via the Great Lakes/St. Lawrence Seaway saves both time and money compared to shipping products via the alternative ports. Yet the assumption that products are destined for European markets is not necessarily true. Europe has reduced its consumption of U.S. and Canadian grains dramatically since 1980. The increasingly globalized nature of the world market makes it essential to examine where future demand for agricultural and mined products will occur. Demand for U.S. grain has increasingly shifted toward Asian markets. There is little information available about the cost-effectiveness of shipping products via the GL/SLS to anywhere but Europe.

The GL/SLS cannot effectively compete with West Coast rail for getting these products to Asian markets. And these problems are likely to get worse for the GL/SLS. Facilities are being built throughout the Great Plains for loading grain on 110-car shuttle trains destined for the west coast. These trains are drawing more grain away from the Missouri River, Mississippi River and Great Lakes every year. The GL/SLS is simply not well placed to capture the global growth markets and its traditional markets are waning.

Figure 1. Combined U.S. and Canadian Corn Exports to Europe and Asia

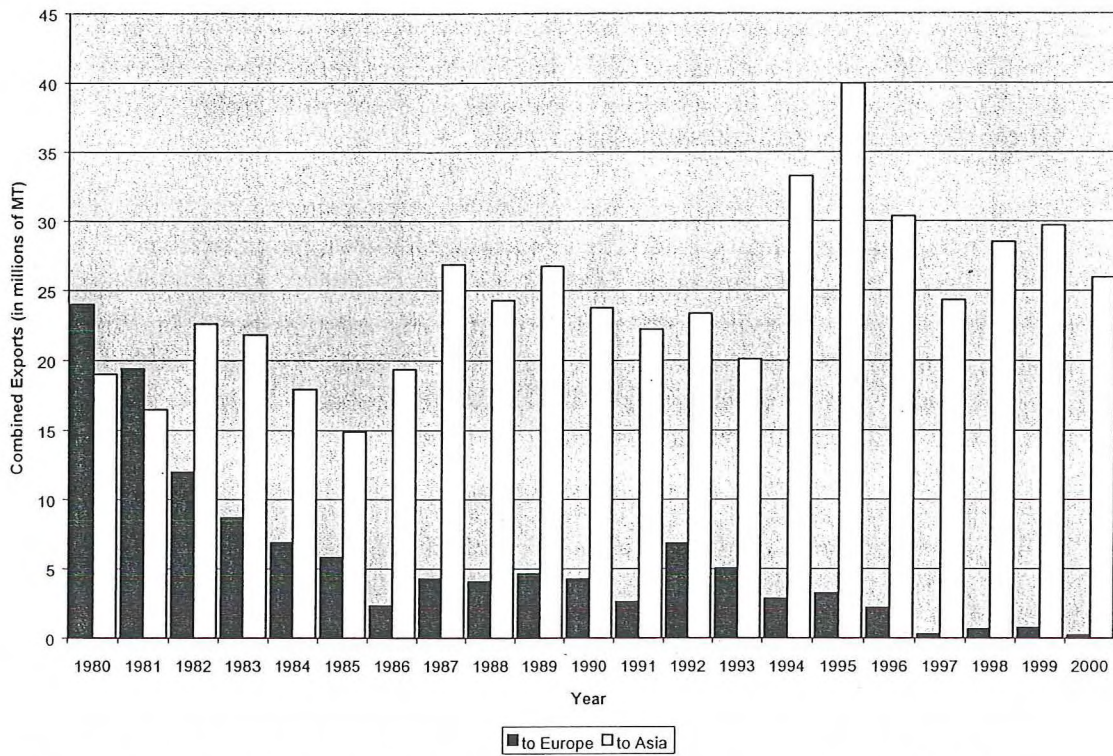
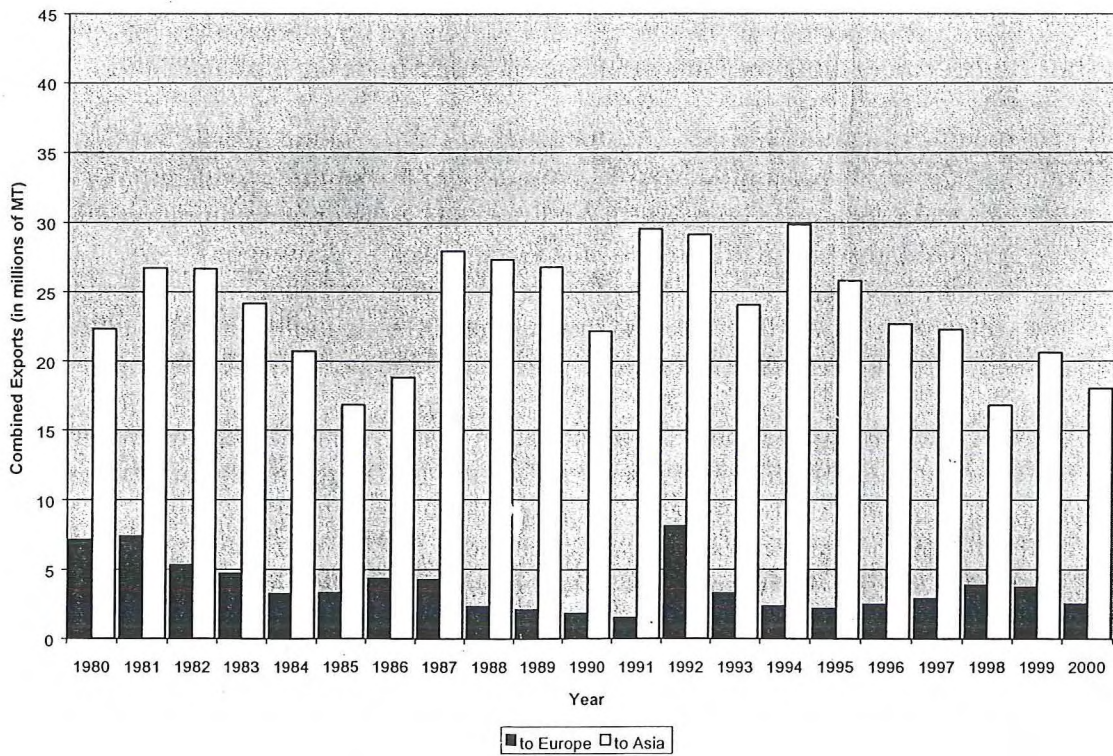


Figure 2. Combined U.S. and Canadian Wheat Exports to Europe and Asia



- It is generally assumed that the Great Lakes/St. Lawrence Seaway will remain one of the most cost-effective transportation routes for getting Midwest products east. However, it is important to look at trends in other transportation sectors, notably the rail industry, to determine whether waterborne transportation will be the most attractive transportation mode for Great Lakes products in the future. The rail industry has significantly reduced its costs in recent years and captured some cargo that has traditionally been transported by water.

The Corps' Upper Mississippi River navigation study provides an excellent example of how these issues can be ignored. The Corps sought to compare the cost-effectiveness of transporting Midwestern agricultural products for export via barge, rail and truck. The Corps did so by comparing the cost of shipping agricultural products between various Midwest cities and New Orleans. This method led the Corps to conclude that barge transportation was the most cost-effective way of transporting Midwest agricultural products for export.

The Corps' approach in the Upper Mississippi River navigation study ignored the fundamental economic concept of elasticity. It failed to acknowledge that producers might choose to ship their products to locations other than New Orleans and might choose other transport modes if they proved more cost-effective. Studies have since shown that Midwestern agricultural products bound for Asian markets often can be transported more cost-effectively via rail to the West Coast of the United States than they can via barge to New Orleans.

If Great Lakes/St. Lawrence Seaway expansion proponents are allowed to define economic benefits by comparing the costs of transporting cargo from Duluth to Toledo via ship or rail, for example, they can make a strong case for expanding the GL/SLS. It is important to emphasize that Great Lakes ports are not the only option for Duluth cargo; numerous other options via rail or truck are also available.

- Great Lakes agriculture is diverse, with numerous dairy, grain, oilseed, pork, poultry, fruit and vegetable operations. The vast majority of the region's production is processed and consumed domestically. Of the wide array of agricultural products, only exported grains and oilseeds use the Great Lakes/St. Lawrence Seaway to a significant degree now or will in the foreseeable future. Investing in infrastructure for low-value grain production for export rather than investing in the infrastructure for high-value, value-added produce crops is not a good use of taxpayer money.

The subsidization of agricultural transportation can have unforeseen consequences. For decades, the Canadian government subsidized the transportation of grains from the Great Plains to export ports. For reasons of costs and compliance with international trade agreements, that practice ended in 1995 and grain transportation prices rose sharply. Revoking these subsidies has resulted in – or unmasked – numerous concerns, particularly the lack of competition in the rail industry. But it has also promoted more value-added processing of grains in the Plains.

Expanding the Great Lakes/St. Lawrence Seaway can be seen in a similar fashion. More important than a subsidized transportation route is for farmers to have numerous buyer and transporter options available. The rapid consolidation in the food processing, trading and transportation industries is hindering this competition that helps maintain fair prices for farmers. Expanding the GL/SLS promotes the production of low-value grains for export rather than local value-added processing. If job creation is a key concern, then promoting the export of unprocessed goods is the wrong approach.

- Large economic forces have hurt the Great Lakes region's economy. Globalization and the trend toward third world manufacturing, less labor requirements in manufacturing, a sustained farm crisis, U.S. population migration toward the sun belt and West Coast and many other issues have collectively hit the Great Lakes region harder than most other regions. There are no signs that these trends are abating and expanded navigation cannot reverse these developments. Like trying to halt a rising flood with a bucket, expanded navigation is an inadequate tool for addressing the problem.

Interestingly, the proponents' arguments for expanding navigation have changed as the economic situation has changed. Twenty years ago it was argued that the rate of growth would push traffic on the GL/SLS beyond capacity. That growth in traffic never emerged and in fact it has dropped substantially. Now, instead of claiming that it is a capacity issue, advocates claim that expanded capacity will induce more economic development, effectively reversing the problem and the solution.

- Duluth-Superior, the largest port on the Seaway, had a 2000 annual trade of 41 million short tons, about 1/5 of the tonnage in South Louisiana, the largest U.S. port. Furthermore, Duluth-Superior ships predominantly low-value commodities like ore, coal and wheat. The interest of Great Lakes ports to break into the lucrative, high-volume containerized shipping business is understandable.

What needs to be better quantified are the national economic benefits of containerized shipping in the Great Lakes Basin. The significant expense of expanding the GL/SLS will likely result in simply shifting some of the traffic from the Port of New York/New Jersey and other East Coast ports to Great Lakes ports, perhaps providing some economic development to the Great Lakes region but at the expense of the East Coast. The Corps of Engineers has even stated the shifting activity from East Coast to Great Lakes ports results in a net negative national economic return.¹ This subsidized competition between regional ports does little to benefit the U.S. or Canada while burdening taxpayers and damaging the environment.

Figure 3. Economic Impacts of Shift-of-Port Activity

	Production (\$1000 dollars)	Income (\$1000 dollars)	Employment
Direct Impact	0	N/A	N/A
Direct and Indirect Impacts			
U.S. Great Lakes	180,862	30476	672
Ontario	9,678	2115	39
Quebec	-17,360	-2948	-75
Total GL/SLS	173,180	29643	636
Eastern U.S.	-114,484	-19440	-419
Western U.S.	-5,663	-1170	-21
Central U.S.	-113,311	-19050	-419
Eastern Canada	-8,702	-1465	-32
Western Canada	27,631	4981	128
Total US and Canada (includes GL/SLS)	-41,349	-6501	-127

Data Source: U.S. Army Corps of Engineers. *Information Paper: Great Lakes Navigation System Review, Economics Appendix, Attachment 5.* June 2002.

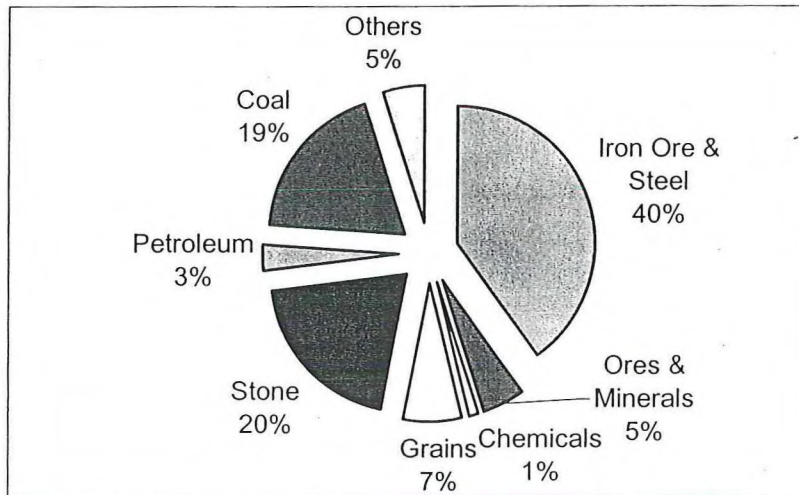
- Mined products, the primary products transported via the Great Lakes/St. Lawrence Seaway, are generally not destined for international ports. Instead they are traded regionally, such as Minnesota iron ore shipped to manufacturing facilities in Ohio. Expanding the GL/SLS may slightly reduce the costs of these domestic shipments. But the U.S. and Canada will likely never experience a dramatic increase in the international export of coal, iron ore, salt and other mined products, no matter what improvements are conducted on the GL/SLS.

Instead of providing benefits to these industries, expanded navigation could very well induce greater imports of these products. Minnesota's iron range has already been devastated by the growth of steel imports into the U.S. An expanded Great Lakes/St. Lawrence Seaway would make it even cheaper for these imports to reach the manufacturing regions of Michigan, Ohio, Pennsylvania and Ontario. This may slightly reduce costs for manufacturers, but come at the expense of the U.S. and Canadian mining industry and the jobs they support. And as we have seen previously in numerous other industries, the transfer of U.S. and Canadian jobs to other countries with less stringent labor and environmental laws provides little benefit for either economy.

This same threat has also emerged in the grain industry. The enormous expansion of Brazilian soybean production in recent years has resulted in a new competitor with very low costs of production. Some farmers are now expressing concern that expanded Mississippi River navigation, which was supposed to keep the Midwest

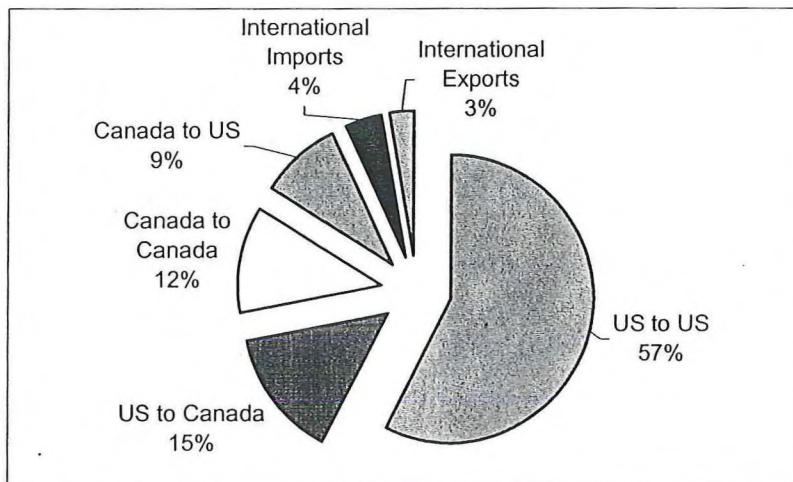
competitive with Brazilian soybeans, may now facilitate Brazilian soybeans going up the Mississippi River.

Figure 4. Commodities Transported on the Great Lakes/St. Lawrence Seaway



Data Source: U.S. Army Corps of Engineers. *Information Paper: Great Lakes Navigation System Review, Economics Appendix 4.* June 2002.

Figure 5. Great Lakes/St. Lawrence Seaway Traffic by Origin and Destination (All Commodities)



Data Source: U.S. Army Corps of Engineers. *Information Paper: Great Lakes Navigation System Review, Economics Appendix 4.* June 2002.

- As society's values and needs change so does the demand for certain products. Just as navigation expansion proponents have identified several products that may require increased GL/SLS transportation, others may require less. For example, coal is one of the primary products shipped on the Great Lakes/St. Lawrence Seaway. Given the increasing environmental concerns surrounding the use of coal, Canada's potential ratification of the Kyoto Protocol and the increasing use of renewable energy sources, future demand may very well decline. On the other hand, the development of low-sulfur coal might make coal a more acceptable energy source and contribute to a positive demand for coal. Any study examining the feasibility of expanding the GL/SLS must objectively examine the future demand for the products being shipped.
- It appears that nearly every port and transportation industry has plans for significant expansion in the future. The same products that are envisioned to use the GL/SLS in future years are also forecasted to use an expanded Upper Mississippi River navigation system. West Coast shuttle trains, the Ohio River and the Canadian port at Churchill are also eyeing the same grain, coal and other products. Yet the Corps appears to view each river and port expansion in isolation of the other changes occurring in the transportation industry. This myopic view is part of the reason why the Corps' traffic forecasts are consistently overly optimistic.

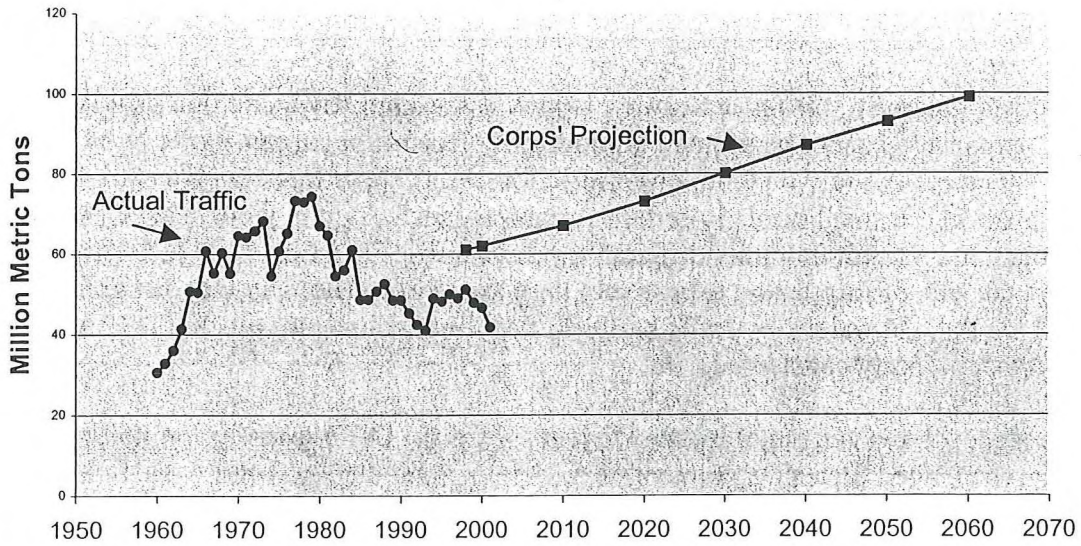
Forecasts

In the Great Lakes/St. Lawrence Seaway, Upper Mississippi River and other navigation studies, expansion cannot be deemed economically feasible at current traffic rates. Proponents therefore rely on long-term traffic forecasts. These forecasts are extremely unreliable because small errors in certain variables – such as grain yield, elasticity and export demand – result in wildly different levels of traffic. The Corps has historically erred on the side of forecasting excessively high levels of traffic. The fact that grain exports are flat and waterway traffic has been flat or in decline throughout the United States is not properly considered.

This tendency, however, is not isolated to just the Corps. IATP recently commissioned a study on the United States Department of Agriculture and the Food and Agriculture Policy Research Institute's forecasts of U.S. grain exports. These forecasts are also consistently overly optimistic. A recurring problem in all of the forecasts is that positive trends are considered permanent and negative trends are considered temporary.

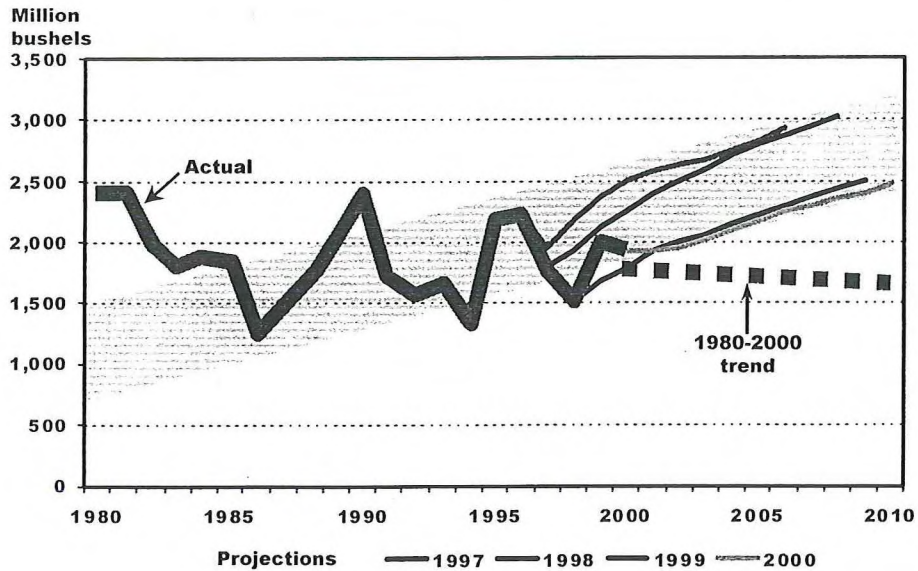
The tendency for overly optimistic forecasts can partly be attributed to an inherent conflict of interest by the agencies conducting the forecasts. It is in the interest of the Corps of Engineers to expand waterway navigation, just as it is in the interest of the Department of Agriculture to expand export markets. These agencies do not have the ability to consider the data and trends objectively. The environmental community should demand that these forecasts be conducted by an independent research organization.

Figure 6. Actual and Corps' Projected St. Lawrence Seaway Navigation Traffic



Data Sources: *The St. Lawrence Seaway Traffic Report Historical Tables 1959 - 1992*, St. Lawrence Seaway Authority and St. Lawrence Seaway Development Corporation. No date listed; *The St. Lawrence Seaway Traffic Report 2001*. St. Lawrence Seaway Management Corporation and St. Lawrence Seaway Development Corporation; *Information Paper: Great Lakes Navigation System Review Study., Economics Appendix 4*. U.S. Army Corps of Engineers. June 2002.

Figure 7. Actual and USDA Projected U.S. Corn Exports



Graph from: Baumel, C. Phillip. *How U.S. Export Projections from Large Scale Agricultural Sector Models Compare with Reality*. May 2001.

who oppose the expansion hail from the East Coast. Some Canadians have expressed concern that expanding the GL/SLS will shift business from Canadian ports such as Montreal and Halifax to ports in the United States. As noted above, such a shift benefits the Great Lakes region at the expense of other regions and even results in a net negative national impactⁱⁱⁱ Spending billions of dollars on a project that will produce no net benefits is not a logical course of action.

Opportunity Costs: Sacrificing Jobs and Revenue in Other Sectors

Proponents of expanding the Great Lakes/St. Lawrence Seaway have used the data in the SLSDC study to argue for expansion of the GL/SLS, claiming that expansion will increase jobs and revenue. However, the SLSDC study fails to consider whether expanding the GL/SLS might result in the loss of jobs or revenue in other sectors. A number of jobs and much revenue in the Great Lakes region are directly dependent on the Great Lakes and St. Lawrence River ecosystems. Expanding the Great Lakes/St. Lawrence Seaway will have a number of negative environmental impacts and will thus threaten the jobs and revenues that are dependent upon a healthy environment.

These numbers are not trivial. For example, recreational and commercial fishing in the Great Lakes region generates over four billion dollars a year and supports 81,000 jobs.^{iv} Recreational fishing on Lake Superior alone contributed \$9.74 million in direct expenditures to the state of Minnesota in 1990, and the total economic impact of this activity has been estimated to be two to four times the amount of the direct expenditures.^v It is estimated that nearly one million registered boats operate on the Great Lakes each year and that direct spending by boaters is more than two billion dollars per year.^{vi} Other industries including tourism, recreation and hydropower produce many economic benefits as well. Although it is difficult to put a monetary value on them, the value of ecosystem services such as clean drinking water must also be considered.

In determining the feasibility of expanding the Great Lakes/St. Lawrence Seaway, it is important not to overlook the many economic benefits created by the above activities. Any actions that decrease the health and resilience of the Great Lakes and St. Lawrence River ecosystems not only threaten to eliminate current jobs and revenues, but also limit future opportunities for these industries. The economic benefits realized by expanding the GL/SLS could very well be outweighed by the costs of losing these other benefits.

A recent study evaluating the many economic impacts of the Upper Mississippi River system found that activities such as tourism and recreation produce much more revenue and support many more jobs than does commercial navigation.^{vii} While no studies have been done to determine the economic impacts of industries that depend on a healthy Great Lakes and St. Lawrence River ecosystem, it is likely that the findings would be similar to those in the Upper Mississippi River system study. Such a study would be very valuable in the ongoing debate about whether to expand the GL/SLS.

Distribution and Equity Issues

The SLSDC study and those who cite the national or even regional economic benefits of the Great Lakes/St. Lawrence Seaway ignore important issues of distribution and equity. When measuring the economic benefits of the system, it is important to determine to whom these benefits accrue. Do the benefits accrue to a few people at the expense of many, or are they more evenly distributed?

In calculating the indirect impacts of the Great Lakes/St. Lawrence Seaway, the SLSDC study considers purchases made by firms involved in shipping, concluding that “the firms providing the cargo handling and transportation services spent \$1.3 billion on purchases for supplies, business services and maintenance and repair services, utilities, etc. These local purchases supported 26,757 jobs.” But are these really *local* purchases? Are the businesses at which the firms are spending their money local businesses, regional businesses or big multinational corporations? While the purchases may support local jobs, they do not necessarily result in the highest possible local revenues. To determine what amount of “local” expenditures benefit the local economy, one must examine the types of businesses where these purchases were made.

The case of grain transportation on the Upper Mississippi River provides a good illustration of this issue. Vertical integration of the Midwest agricultural sector results in very few companies controlling most of the production chain. One agribusiness company may buy inputs such as seeds or fertilizers, but it is likely that same company that makes and sells these inputs. The stores selling the seeds and fertilizers may employ a small number of people, but most of the money spent on purchasing the inputs does not accrue to the local businesses or communities. Rather, it accrues to the agribusiness company’s headquarters and shareholders. These expenditures may be cited as a national economic benefit, but they do not benefit the majority of the people in the area. In the case of Midwest grain production, such national “benefits” have put many small farmers and local business owners out of business. In the case of Upper Mississippi River transportation, the multinational agribusiness companies benefit at the expense of those who actually live in the Mississippi River Basin.

Impact of the Great Lakes/St. Lawrence Seaway on the Economy and Jobs

Proponents of expanding the Great Lakes/St. Lawrence Seaway often cite the vast numbers of jobs and amounts of revenues that the system generates. While the GL/SLS does produce economic benefits in the form of jobs and revenue, it is important to look at the source of these numbers and to examine in more detail to whom these benefits accrue. Examining the source of these numbers reveals that many of the supposed benefits would exist independent of the GL/SLS navigation system. Furthermore, the Great Lakes and St. Lawrence River ecosystems generate many economic benefits that could decrease if the navigation system is expanded. There are also important distribution and equity issues that must be considered when determining the economic benefits of any system.

Number of Jobs Supported by the Great Lakes/St. Lawrence Seaway

The *Economic Impact Study of the Great Lakes St. Lawrence Seaway System*,ⁱⁱ undertaken for the St. Lawrence Seaway Development Corporation (SLSDC), illustrates in detail the number of jobs and the amount of revenue created in the United States by the Great Lakes/St. Lawrence Seaway. According to this report, more than 150,000 jobs were “in some way related to the cargo moving on the U.S. Great Lakes/St. Lawrence Seaway in 2000.” Of these, more than 40,000 jobs “are directly created as the result of Great Lakes/St. Lawrence Seaway activity.” Maritime activity on the GL/SLS is also said to generate \$3.4 billion in business revenues.

The SLSDC study breaks the jobs created by the Great Lakes/St. Lawrence Seaway into four categories: direct jobs, induced jobs, indirect jobs and related jobs.

Direct jobs are “jobs directly generated by port activity...if such activities should cease, these jobs would be discontinued.” These jobs include such positions as terminal operators, longshoremen and vessel agents. According to the report, the number of direct jobs created by the Great Lakes/St. Lawrence Seaway is 43,968.

Induced jobs are those “created due to the purchase of goods and services by those individuals directly dependent upon port activity...includ[ing] jobs involved with the production of consumer good to supply the demand of those directly employed.” These jobs include positions in service industries, retail trade and housing construction. The number of induced jobs supported by the GL/SLS is said to be 27,392.

Indirect jobs are similar to induced jobs, but are created due to purchases by firms, not individuals. These jobs include positions with suppliers of parts and equipment, business service providers and utilities. Indirect jobs supported by the GL/SLS number 26,757.

Related jobs are “jobs with users of the Great Lakes/St. Lawrence Seaway.” These include jobs with firms involved in shipping and exporting international and domestic

cargo, such as those in iron ore and coal mines and in the agricultural sector. The SLSDC report says the GL/SLS supports 54,391 related jobs.

It is obvious that not all of these jobs are directly dependent on the Great Lakes/St. Lawrence Seaway. The study admits that related jobs do not directly rely on the Great Lakes/St. Lawrence Seaway, as firms and individuals involved in shipping and exporting could use other ports for sending and receiving their cargo. Yet many of the jobs in other categories are inaccurately attributed to the Great Lakes/St. Lawrence Seaway. For example, the SLSDC report includes jobs in the rail and trucking sectors in the “direct job” category, reasoning that rail and trucks transport products to the GL/SLS for further transport. In fact, a full 29% of the jobs in the direct jobs category are in the surface transportation sector. As stated above, direct jobs are those that would disappear without the GL/SLS. While some rail and trucking jobs might shift out of the Great Lakes region if shipping on the GL/SLS was to decline, on a national level such jobs would likely increase, as products would have to be shipped via other modes.

In considering indirect jobs, the SLSDC report states, “if maritime activity on the Great Lakes/St. Lawrence Seaway were to cease, these indirect jobs would be lost as well.” Indirect jobs include business services for the companies involved in GL/SLS shipping. While some of these jobs do depend on the Great Lakes/St. Lawrence Seaway (e.g. suppliers of ship parts), others would probably exist regardless, even if in a slightly different capacity (such as financial services).

Induced jobs are especially suspect. Regardless of their sector of employment, people will still spend money on items such as food, housing, health care and other services. While some people might leave the Great Lakes area if they were laid off from their jobs in the maritime industry, many others would presumably find other jobs in the area and thus continue to support the induced jobs that the SLSDC study attributes to the GL/SLS.

Revenue Created by the Great Lakes/St. Lawrence Seaway

The SLSDC study takes a similar approach to estimate the revenue impacts of the Great Lakes/St. Lawrence Seaway. While it does not include the revenue impacts produced by jobs in the “related jobs” category, it does calculate both income and spending for those who hold direct, indirect and induced jobs. Because not all of these jobs are directly dependent on the GL/SLS, it follows that not all of the stated revenues are either.

Net Economic Benefits or Just a Reallocation?

While expanding the capacity of the Great Lakes/St. Lawrence Seaway will create jobs and revenues in some places, it will likely decrease jobs and revenues in other places. For example, allowing ocean-going ships access to places such as Duluth and Chicago means ships will no longer have to stop in New York, causing a decline in activity and therefore jobs and revenue in New York. Not surprisingly, many of the supporters of GL/SLS expansion hail from areas that could see increased traffic, claiming that increasing activity is key to revitalizing their ports and their economies. Many of those

overall dollar contribution from agricultural exports (Illinois, Minnesota, Indiana, Ohio) show some of the greatest decreases.

Soybeans and corn are the dominant export crops from the Great Lakes states. Dairy production, the primary agricultural industry, is not one of the leading agricultural exports. Soybeans and soybean products lead agricultural exports from the region, representing the top export from five of the eight Great Lakes States (Illinois, Minnesota, Indiana, Ohio and Michigan). These states also had the greatest decline in agricultural exports value since 1996.

Figure 11: Agricultural Exports from Great Lakes States* and Provinces
1996-2001**

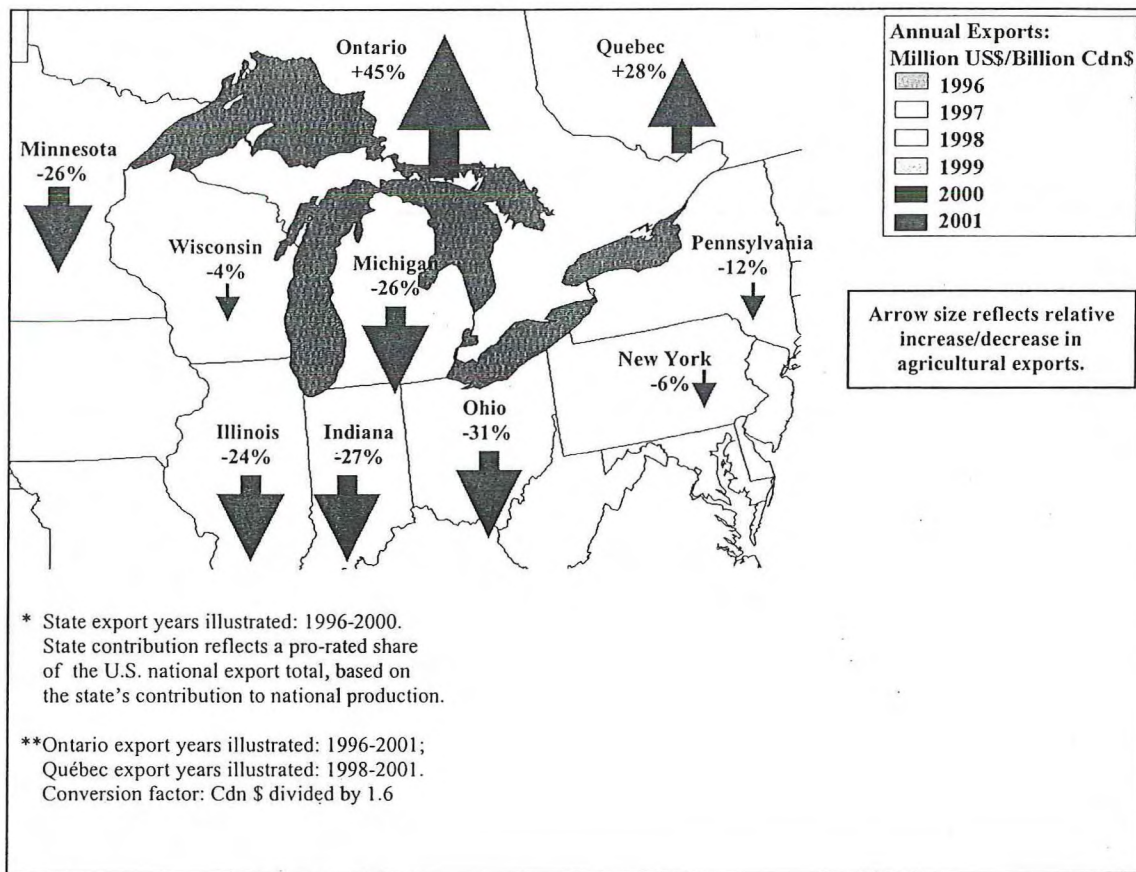
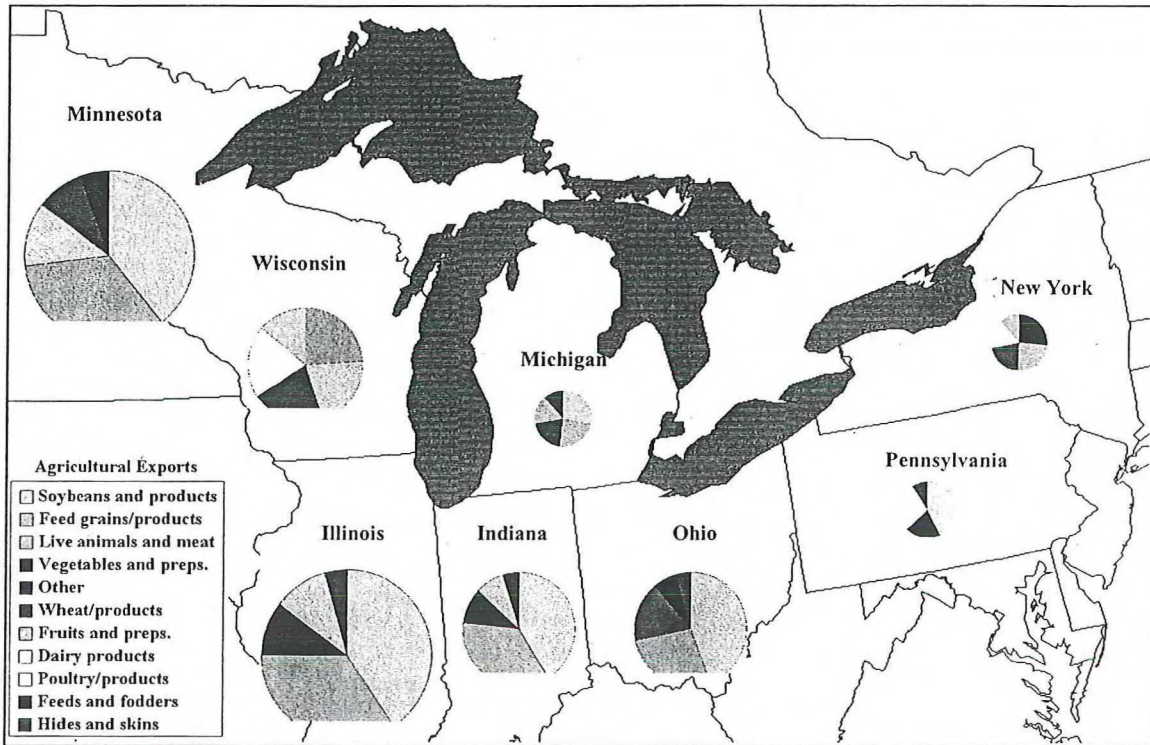


Figure from: Institute for Agriculture and Trade Policy. *Impacts of Agriculture on Water Quantity in the Great Lakes Basin*. November 2002. Data Sources: USDA, ERS; Ministry of Agriculture and Food, Agricultural Statistics for Ontario, 2001; Institut de la Statistique du Québec, Statistique Canada.

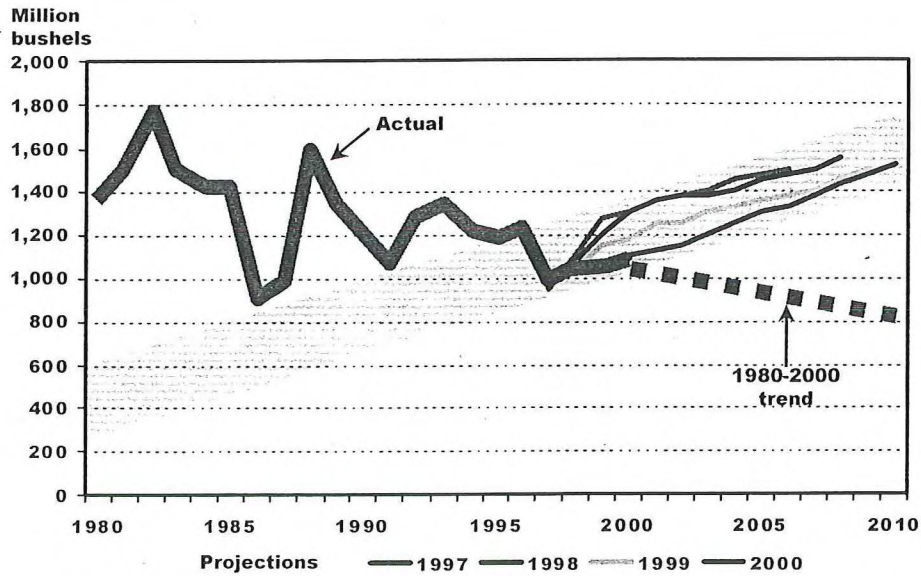
Figure 12: Leading Agricultural Exports from Each of the Great Lakes States, 2000 Snapshot



Note: Size of pie chart reflects relative regional contribution to agricultural exports in million U.S. dollars (large: \$1,800-\$2,800; medium: \$900-\$1,400; small: \$300-\$700);

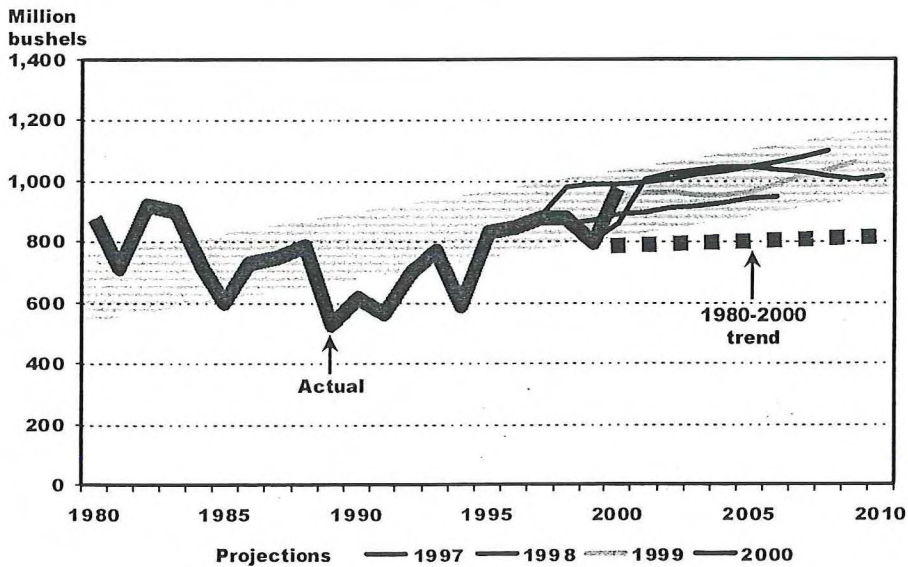
Figure from: Institute for Agriculture and Trade Policy. *Impacts of Agriculture on Water Quantity in the Great Lakes Basin*. November 2002. Data Sources: USDA, ERS;

Figure 8. Actual and USDA Projected U.S. Wheat Exports



Graph from: Baumel, C. Phillip. *How U.S. Export Projections from Large Scale Agricultural Sector Models Compare with Reality*. May 2001.

Figure 9. Actual and USDA Projected U.S. Soybean Exports

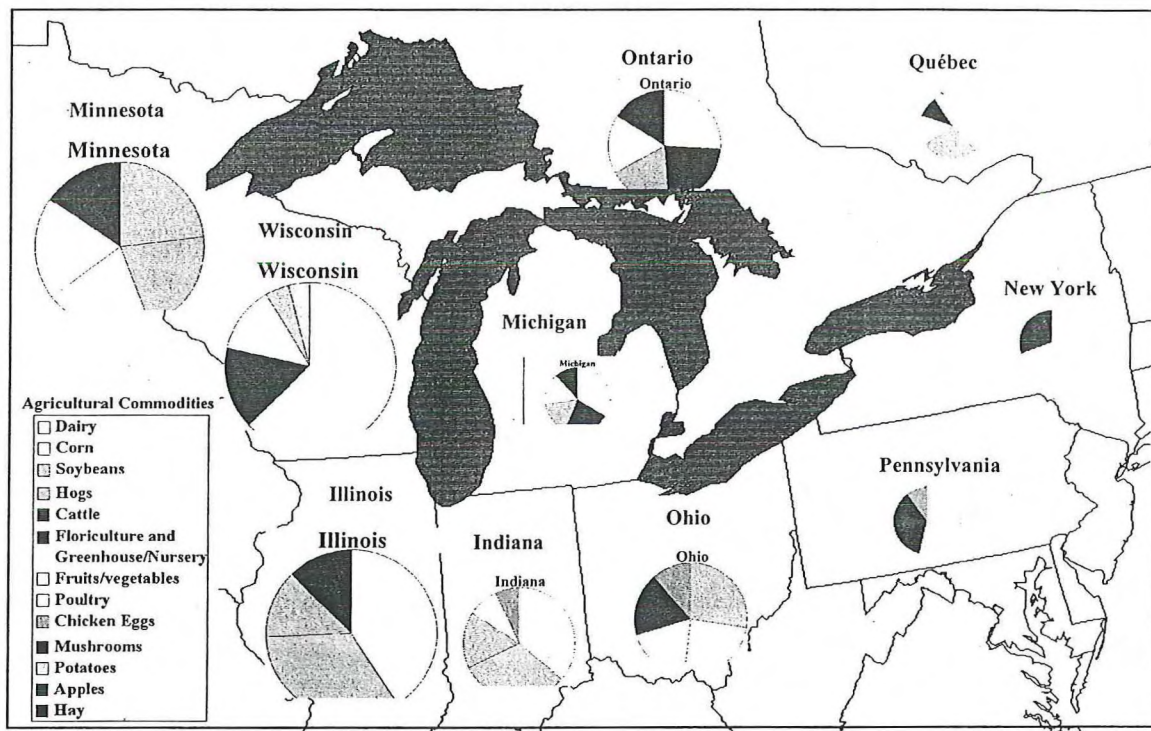


Graph from: Baumel, C. Phillip. *How U.S. Export Projections from Large Scale Agricultural Sector Models Compare with Reality*. May 2001.

Agricultural Production

The majority of agricultural exports utilizing the Great Lakes/St. Lawrence Seaway emanate from the eight Great Lakes basin states and two basin provinces. Compared to other regions of the U.S. and Canada, this region is much more diverse. The leading agricultural commodities are dairy, corn, soybeans, hogs and cattle.

Figure 10: Leading Agricultural Commodities Produced in Great Lakes States (2000 Snapshot) and Provinces (2001 Snapshot).



Note: Size of pie chart reflects relative regional contribution to agricultural production in million U.S. dollars (large: \$4,000-\$6,400; medium: \$3,000-\$3,600; small: \$2,000-\$3,000).

Figure from: Institute for Agriculture and Trade Policy. *Impacts of Agriculture on Water Quantity in the Great Lakes Basin*. November 2002. Data Sources: USDA, ERS; Ministry of Agriculture and Food, Agricultural Statistics for Ontario, 2001; Institut de la Statistique du Québec, Statistique Canada.

Although national agricultural exports by the U.S and Canada have increased in total over the last decade, in the Great Lakes region, the value of agricultural exports have been decreasing overall since 1996. Exports from all Great Lakes States are on the decline, whereas exports from Ontario and Québec are increasing. The states with the largest

Manufacturing

About one-fifth of U.S. manufacturing and half of Canadian manufacturing are based in the Great Lakes region. Automotive parts manufacturing and assembly, pulp and paper, high tech and chemical industries and other light manufacturing are the main components of manufacturing in the region.

With the exception of New York and Illinois, the U.S. states in the Great Lakes basin derive a significantly larger percentage of their gross state produce (GSP) from manufacturing than does the nation as a whole. (New York derives less and Illinois about the same percentage of its GSP from manufacturing than the US as a whole.)

Between 1986 and 2000, overall economic growth in the U.S. was outpaced by growth in the manufacturing sector. In the states of the Great Lakes basin, however, growth in the manufacturing sector lagged behind GSP in New York, Minnesota, Michigan, and Ohio, and only Indiana and Wisconsin saw the growth of their manufacturing sectors outpace the national rate of manufacturing growth.

Figure 13. Primary Manufacturing Industries in the States of the Great Lakes Basin

STATE	MAIN MANUFACTURING PRODUCTS
New York	<ul style="list-style-type: none"> • Chemicals (especially pharmaceuticals) • Machinery (especially commercial and service industry machinery) • Computer and electronics products (especially semiconductors and other electronic components)
Pennsylvania	<ul style="list-style-type: none"> • Chemicals (especially pharmaceuticals) • Food (including ketchups, sauces, bakery good and candy) • Computer and electronics products (especially semiconductors and other electronic components)
Illinois	<ul style="list-style-type: none"> • Food (especially grain and oilseed milling) • Machinery (especially machinery for agriculture, construction and mining) • Chemicals (especially pharmaceuticals)
Indiana	<ul style="list-style-type: none"> • Transportation equipment (especially auto parts) • Chemicals (especially pharmaceuticals) • Primary metals (especially iron and steel mill production)
Minnesota	<ul style="list-style-type: none"> • Computer and electronics products (especially medical, measuring, control and navigational instruments) • Food (especially meat products, grain and oilseed milling and dairy products) • Fabricated metal
Michigan	<ul style="list-style-type: none"> • Transportation equipment (especially auto parts and car and truck production) • Machinery (especially metalworking machinery) • Fabricated metal
Ohio	<ul style="list-style-type: none"> • Transportation equipment (especially auto parts and car and truck production) • Fabricated metal

	<ul style="list-style-type: none"> • Chemicals (especially soap, cleaning compounds and toilet preparation products)
Wisconsin	<ul style="list-style-type: none"> • Machinery (especially engines, turbines and power transmission equipment) • Transportation equipment (especially the auto industry) • Food (especially dairy products)
Ontario	<ul style="list-style-type: none"> • Paper • Lumber • Furniture

Data Source: Kane, Matt and Olwen Huxley. *Manufacturing in the Northeast-Midwest*. Northeast-Midwest Institute, October 2002.

Literature Review

A number of documents were reviewed regarding navigation on the Great Lakes/St. Lawrence Seaway. Efforts focused on the economic aspects of Great Lakes/St. Lawrence Seaway navigation, as the environmental aspects have been researched in depth by other organizations. The documents listed below include those that are most relevant to the current Corps of Engineers' Great Lakes navigation study and that raise the most concern due their flawed methodologies and assumptions.

Information Paper: Great Lakes Navigation System Review Study (Draft Reconnaissance Study). U.S. Army Corps of Engineers. June 2002.

This information paper (draft reconnaissance study) is the most current Corps publication regarding the Great Lakes navigation study. It was developed to assess whether there is Federal interest in expanding the Great Lakes/St. Lawrence Seaway and will help determine whether the Great Lakes navigation study should proceed to the feasibility study phase.

This is not the first time the issue of expanding the GL/SLS has been raised. In fact, GL/SLS expansion has been rejected by the Corps several times in the past. The current study provides no explanation of what has changed that would make expanding the GL/SLS economically justifiable today.

The draft reconnaissance study concludes that expanding the GL/SLS will provide over \$1.4 billion in economic benefits to the Great Lakes region. As with previous Corps navigation studies, it relies on overly optimistic traffic forecasts and simplistic and incorrect assumptions to reach this conclusion. Michael Douglas' *Analysis: Great Lakes Navigation System Review* (see below) provides a good summary of many of the study's shortcomings. Additional shortcomings are discussed here. Based on the many problems inherent in this study, a thorough review of the Corps' final reconnaissance study, due out in early 2003, is highly recommended.

The whole premise for a study on the expansion of the GL/SLS is based on the concerns of a limited and biased group of stakeholders. The draft reconnaissance study states that "to identify problems, opportunities and potential improvements to the navigation system, a survey was conducted which included international, federal, public and private stakeholders of the Great Lakes/St. Lawrence Seaway navigation system." The study thus did not include stakeholders in the Great Lakes Basin who do not directly depend on the navigation system. This is further evident in the list of concerns raised by the stakeholders: "Primary concerns among stakeholders were limitations on vessel drafts and restrictive channel and port depths, narrow channels, restrictive lock sizes and channel depths on the St. Lawrence Seaway, and the future reliability of lock structures on the Welland Canal and Montreal-Lake Ontario section of the Seaway." Not surprisingly, many of the concerns that have led to the rejection

of GL/SLS expansion in the past and are still important concerns today were not raised.

The Corps' study presents five alternatives for updating the GL/SLS. All five of these include major construction and dredging. Nonstructural alternatives are given only brief mention and are not included as one of the five project options. There is no mention of navigation in the context of the environment of the Great Lakes Basin or of other activities that occur in the basin. This is not surprising given that "the [project] alternatives were formulated using input from surveys and discussions with stakeholders." Given the numerous objections from the general public to expanding the GL/SLS in the past, it is questionable why the Corps is once again engaging in a narrowly focused study that caters only to navigation interests.

The Corps lists prior studies and reports that were reviewed during the development of the current study. Many of these documents are the Corps' own documents, and many of them are at least a decade, if not two or three decades, old. One interesting point of note is that the Corps lists the 1982 *St. Lawrence Seaway Additional Locks Study, Preliminary Feasibility Report*, but does not list the 1985 final feasibility report. Significant changes were made between the preliminary and final feasibility reports, based on actual traffic levels that were much lower than those projected in the original study. The final feasibility report concluded that no upgrades to the St. Lawrence Seaway were economically justifiable (see below).

Despite that fact that traffic on the GL/SLS has not increased in over 20 years and the inherent problems of long-term forecasts, the draft reconnaissance study includes a 62-year traffic projection that shows increasing traffic levels from 1998 onward.

The goal of expanding the GL/SLS is to provide access to world markets. The Corps' study notes that only a small percentage of the world fleet can access the GL/SLS and that the region is therefore losing its competitive advantage. While the study claims that expanding the capacity of the GL/SLS could increase international shipping, it does not provide any support for the assertion that such an increase would actually occur. (See Michael Douglas' *Analysis* for a discussion of this issue).

The draft reconnaissance study concludes that expanding the GL/SLS will provide over \$1.4 billion in regional economic benefits. However, these are not net benefits. The Corps' study fails to estimate the many costs of expanding the GL/SLS, stating that "owing to time constraints, only a limited set of cost estimates were developed for the with-project alternatives."

The cost estimates the Corps does include are only for project option one, the option requiring the least amount of construction and dredging. Yet examining the report's economic appendices reveals that the Corps' benefits estimates are based on option five, the most ambitious of the project alternatives. Furthermore, the Corps' cost estimates include only construction costs. There is no mention of costs to the environment or to industries other than shipping. Accounting for all of the costs

associated with GL/SLS expansion will likely make expanding the GL/SLS economically unjustifiable (again).

The methodology that the Corps uses to calculate the direct and indirect economic benefits of GL/SLS expansion is highly flawed and greatly overstates the benefits. The Corps study breaks the direct benefits of GL/SLS expansion into four categories: waterway savings, shift-of-mode savings, economic development benefits of capacity expansion, and economic development benefits of port activity relocations. The calculations of all of these categories of benefits are highly flawed and make large and inaccurate assumptions. However, it is these direct benefits that are in turn used to estimate the indirect benefits of expanding the GL/SLS.

Waterway savings refer to the savings current traffic levels would produce if the GL/SLS were expanded. These savings occur due to factors such as the ability of ships to carry heavier loads and therefore reduce the number of vessel transits required to transport products. These savings were estimated by Martin Associates. Given the problems inherent in other Martin Associates studies (see below), these waterways savings estimates are questionable. Waterway savings attributed to imported traffic are “treated as a direct income benefit to consumers in the port areas.” It is then assumed that these income benefits result in increased spending in the GL/SLS port areas.

As we have seen with Midwest grain transport on the Upper Mississippi River, however, transportation savings are not necessarily passed down to the consumer, nor do they necessarily accrue in the local community. In the case of exports, the study assumes that the waterway savings benefits accrue to consumers overseas, and thus leave the Great Lakes region. However, it claims that user fees could recapture some of these “exported benefits.” According to the study, “it is assumed that Canada can apply a user tax that captures half of savings.” This is seen as general income “windfall” to all Canadians. User fees raise a host of issues, one being that they increase the cost of shipping. In addition, it is unlikely that the benefits of user fees will accrue to all Canadian consumers, who will then spend their “income windfall” in the port areas.

Shift-of-mode savings refer to savings that could be realized if products that currently travel via alternative transportation modes instead shifted to traveling via the GL/SLS. The shift-of-mode savings were calculated separately for container and bulk commodity shipping but similar methods were used for both sets of calculations. Container shipping savings were estimated by the Tennessee Valley Authority (TVA). In its study, the TVA estimates transportation costs of overland traffic that currently travels to and from the Great Lakes ports via rail or truck and then estimates the cost of transporting this same traffic through an improved GL/SLS. The difference between these costs represents the cost savings of using the GL/SLS over alternative modes. This is not a legitimate comparison because it compares the current cost of rail and truck transportation with the future cost of maritime

transportation. Such a comparison does not consider future improvements in other transportation sectors that will likely decrease costs in these sectors as well.

This comparison also ignores the fact that shippers may choose to send their products to other locations for which even an expanded GL/SLS may not be an attractive transportation option. In addition, the TVA study assumes “the most aggressive scenario...in which all container traffic that currently goes by rail is shifted to the Seaway,” a scenario which is highly unlikely. The shift-of-mode savings for bulk commodities are estimated in a similar way by Martin Associates (see *the Transportation Cost Savings* study above for a summary of the Martin Associates study’s shortcomings). Both of these studies used flawed methodology to determine the savings that *could* be realized if overland traffic shifted to the GL/SLS. However, neither study demonstrates that such a shift would actually occur. According to the Corps study, “in order to realize these [shift-of-mode] shipper benefits, harbors and docks would need to be upgraded to project depths capable of accommodating the appropriate container vessels. Port facilities would need to be upgraded to handle and store waterborne containers, locks and channels would need to be sized for container operations, and the Seaway shipping season lengthened significantly.” Such conditions make it even less likely that a significant shift-of-mode will occur. In particular, the extension of the Seaway shipping season into the winter months has been rejected several times in the past due to the many problems inherent in winter navigation, (see, for example, Richard Spencer’s winter navigation study below), and there is no reason to believe it would be any more economically justifiable today.

The economic benefits of capacity expansion refer to the ability of producers to increase production capacity, and therefore use of the GL/SLS, due to decreased transportation costs. In the draft reconnaissance study, “it is assumed the decrease in water transportation cost of the GL/SLS improvement increases the economic capacity for producers adjacent to the Great Lakes. It is also assumed that the increase in capacity is utilized by producers, consequently generating an increase in direct and indirect spending in local areas.” It is further assumed that decreased transportation costs will increase demand for transportation via the GL/SLS. Yet as previous navigation on the Missouri and Tombigbee Rivers expanded navigation often does not facilitate increased traffic and economic development.

Perhaps the most important finds of the Corps’ study are those regarding the economic development benefits of port activity relocations. These benefits refer to those that would arise due to shifting traffic from east coast ports to Great Lakes ports. According to the TVA container study, expanding the GL/SLS would “shift port activity from the Atlantic coast ports Charleston, Norfolk, New York/New Jersey, Baltimore/Philadelphia, Boston, Halifax, Montreal and Toronto to the Great Lakes ports of Buffalo, Chicago, Detroit/Flint, Toledo and Syracuse.” The study finds that benefits from the shift-of-port activity result in “no net gain to the nation, only a transfer of benefits to the Great Lakes ports.” In fact, the numbers show that the shift of port activity actually has “a slight negative national impact.”

The direct benefits estimated by the Corps are input into the Corps Maritime Input Output (MIO) model to estimate the indirect benefits of expanding the GL/SLS in terms of regional production, income and employment. While an explanation of the indirect benefits calculations is beyond the scope of this study, the fact that they are based on inappropriate calculations of direct benefits estimates makes them inappropriate as well.

The fact that shifting port activity has no net benefit to the nation means that the Corps is basing its national economic benefits solely on imports, export taxes, transportation mode shifts and capacity expansion, all of which are difficult to predict and will not necessarily occur to nearly the extent claimed by the Corps. Furthermore, potential benefits would accrue to the Great Lakes only at the expense of other regions.

Economic Impact Study of the Great Lakes St. Lawrence Seaway System. Martin Associates. August 1, 2001. Prepared for the U.S. Saint Lawrence Seaway Development Corporation.

This study determined the economic impacts generated by the Great Lakes/St. Lawrence Seaway in terms of jobs and revenues. According to the study, more than 150,000 jobs were "in some way related to the cargo moving on the U.S. Great Lakes St. Lawrence Seaway in 2000." Of these, more than 40,000 jobs "are directly created as the result of Great Lakes St. Lawrence Seaway activity." Maritime activity on the Great Lakes St. Lawrence Seaway is also said to generate \$3.4 billion in business revenues.

This study has numerous flaws and greatly overstates the benefits of the Great Lakes St. Lawrence Seaway by attributing to it benefits that do not directly depend on the Seaway. For a more detailed description of some of the shortcomings of this study, please see the "Impact of the Great Lakes/St. Lawrence Seaway on the Economy and Jobs" section of this paper.

The data in this report are frequently cited by the SLSDC and other GL/SLS expansion proponents as an example of the importance of the GL/SLS to the regional economy. This in turn is used as a primary argument to support expansion. More importantly, the Corps' draft reconnaissance study uses studies by Martin Associates as a primary source of data for its calculation of the economic benefits of expanding the GL/SLS. Although the Corps does not specify which Martin Associates studies it uses, the flaws in this study and Martin Associates' *Transportation Cost Savings* addendum (see below) raise serious questions about the validity of any Martin Associates study.

There are several problems with the methodology used this study. First, the study is narrowly focused on the economic benefits that accrue to navigation interests. Data are gathered only from interviews with firms that provide maritime services. This ignores the economic impacts that the GL/SLS has on the environment, on other uses

of the Great Lakes and on other industries. Interviews should have been conducted with other stakeholders as well. Second, economic benefits are calculated to very precise numbers, (for example, the number of people directly employed by the Great Lakes/St. Lawrence Seaway is said to be 43,968), with no margin of error. In addition, nowhere is it explained in detail how these numbers were calculated.

A number of the economic benefits that this study credits to the Great Lakes/St. Lawrence Seaway do not actually depend on the GL/SLS. For example, the study considers rail and trucking jobs to be directly dependent on the GL/SLS. On a regional level, a decline in GL/SLS shipping could shift some rail and trucking jobs out of the Great Lakes area as products are transported elsewhere. On a national level, however, it is likely that rail and trucking jobs would increase if shipping declined, as products would have to be shipped via other modes. Rail and trucking jobs account for a full 29% of the study's estimated "direct jobs."

The study ignores the economic benefits of activities that depend on a healthy Great Lakes ecosystem, including those created by recreation, tourism and hydropower. These activities produce significant economic benefits that will likely decline if the GL/SLS is expanded. The loss of these economic benefits could easily outweigh the gains realized by expanding the GL/SLS.

The study also does not consider many of the costs of expanding the GL/SLS. For example, GL/SLS shipping causes much environmental harm, but these costs are not figured into the economic impacts. It also ignores opportunity costs of GL/SLS expansion, such as the loss of future jobs and revenues in industries dependent on a healthy Great Lakes ecosystem.

The study ignores important issues of distribution of benefits. It cites economic benefits as totals and averages, but does not identify to whom these benefits accrue.

Finally, the study does not consider how an increase in international shipping, the goal of expanding the GL/SLS might impact jobs and revenues in the Great Lakes region. Shipping to and from countries outside of the U.S. and Canada currently comprises only a small percentage (7%) of the movement on the GL/SLS. Increasing international shipping thus represents a major change in the structure of the Great Lakes economy. The economic impacts cited in the study are based upon the current economic structure and cargo. International shipping could have very different impacts in terms of jobs and revenue, and thus extrapolating future economic impacts from current ones may not be accurate.

***Economic Impact Study of the Great Lakes St. Lawrence Seaway System:
Transportation Cost Savings.*** Martin Associates. August 1, 2001. Prepared for the U.S.
Saint Lawrence Seaway Development Corporation.

This report is an addendum to the *Economic Impacts Study* listed above. This study calculates the transportation cost savings that are realized by using the Great Lakes/St. Lawrence Seaway instead of other transportation modes for commodities including iron ore, coal, stone and aggregates, grain, cement, salt, and iron and steel products. While the Corps' draft reconnaissance study does not cite this study in particular, it does use transportation cost savings as determined by Martin Associates as a primary source of data in its calculations of the economic benefits of expanding the GL/SLS. It is likely that the methodology used in other Martin Associates calculations of transportation cost savings is similar to those employed in this study.

As with the other Martin Associates study, this study is narrowly focused on navigation interests, relying only on interviews with terminal operators, shippers and consignees to determine the costs of shipping products via the GL/SLS and alternative modes. It also assumes a static cost for other transportation modes, ignoring the elasticity of these products and the cost reductions that would surely occur if these modes became the primary transporters for these routes.

To determine the cost savings of using the GL/SLS, the study calculates the cost of using the next most attractive shipping mode and multiplies it times the amount of the commodity that uses the GL/SLS. For example, based on interviews with steel mills, the study determines that shipping iron ore via the GL/SLS saves \$12 per ton compared to shipping it via coastal ports. Given that 55.1 million tons of ore were consumed by steel mills in 2000, the study calculates the cost savings to be \$661.2 million (55.1 million tons * \$12 per ton cost savings). The study calculates the savings in this way for each of the above industries, concluding that the GL/SLS provides \$1.2 billion of transportation cost savings to industries in the Great Lakes region.

The problem with this methodology is that it ignores options that the industries have to ship their products to other locations if the GL/SLS was not a transportation option. It also ignores the long-term changes that would take place in other transportation sectors. For example, a decline in the attractiveness in the GL/SLS might lead to more manufacturing near the mining regions, or to the construction of a new rail line. If it is no longer cost-effective to ship grain east via the GL/SLS, a shipper might choose instead to ship it to the west coast (as is occurring more often anyway). In this case, rail transport would be the most cost-effective option.

The study also bases its cost savings estimates on 100% of the amount of the various commodities that are shipped via the GL/SLS. It is highly unlikely that 100% of products transported via the GL/SLS would shift to alternative modes if the cost of shipping increased. Conversely, it is highly unlikely that 100% of the products that

are currently shipped via alternative modes would shift to the GL/SLS if shipping costs declined.

In the case of grain, the study states, "if the Great Lakes St. Lawrence Seaway System ceased to exist, rates would increase by \$.15-\$.30 per bushel, since rail would no longer have a competitive alternative transportation system. It has been demonstrated in the Mississippi and Missouri Rivers, however, that water-compelled rates do not play an important role in reducing rail rates except for grain very close to the navigable waters^{viii}. This statement also ignores the Upper Mississippi River and Ohio River navigation system as a competitive alternative transportation system for much of the Great Lakes grain.

St. Lawrence Seaway Additional Locks and Other Navigation Improvements: Final Feasibility Report. U.S. Army Corps of Engineers. No date listed. (At least 1986, as the report contains data through 1985.)

The purpose of this study was to "determine the adequacy of the existing locks and channels in the U.S. portion of the St. Lawrence River section of the Seaway in light of present and future needs, and the advisability of their enlargement or augmentation." This final feasibility study followed a preliminary feasibility study that was released in July 1982. Despite its flawed methodology, which included overly optimistic traffic forecasts and ignored many costs, the study still concluded that no "upgrades" to the navigation system were economically justifiable. This study leads one to question how upgrades might be justifiable now.

As with many Corps studies, this study relied on overly optimistic traffic forecasts to determine the need to upgrade the navigation system on the St. Lawrence Seaway. For the 1982 preliminary feasibility study, the Corps used 1978 waterborne commerce statistics as a baseline to create a 50-year traffic forecast. The many problems inherent in long-term forecasts have called into question the validity of any 50-year traffic forecast. The 50 years the Corps used, however, were those between 2000 and 2050. The reasoning behind this was that it would be at least 10-15 years before any construction would occur, and thus the traffic levels that should be considered were those beginning after upgrades to the system had been made. Therefore, the Corps's 50-year forecast is actually a forecast of at least 60 years.

The final feasibility study notes, "since the opening of the St. Lawrence River portion of the Great Lakes St. Lawrence Seaway System to deep-draft navigation in 1959, the total tonnage transiting the Seaway has shown a long-term upward trend. If this trend continues until the traffic approaches the throughput capacity of the Seaway, substantial delays will be encountered." Despite its claim of an upward trend, the study did acknowledge that "since 1980 tonnage has generally been declining." Yet it still predicted that the Seaway would reach 90% capacity by 2030. In fact, traffic levels on the St. Lawrence Seaway peaked in 1977 and have trended downward ever since.

The economic benefits of upgrading the St. Lawrence Seaway determined in this study are based on these overly optimistic traffic projections: “preliminary economic justification for the various measures analyzed was determined by comparing the estimated average annual costs to estimated average annual benefits over a 50-year period of analysis.” For example, vessel delay savings are based on the delays that would occur with the projected levels of traffic traveling the St. Lawrence Seaway. Because the traffic forecasts are overly optimistic, the economic benefits are as well. In addition, all nonstructural options were eliminated from the study because it was determined that they would not be adequate for accommodating the projected amount of traffic.

In addition to overestimating the benefits of upgrading the St. Lawrence Seaway, this study underestimates the costs. The only costs determined are those of constructing and maintaining two locks and the connecting channels. Environmental costs are ignored, as are those to other industries in the Great Lakes region.

The study also includes a transportation rate analysis, which “compares alternative transportation modes to determine the least expensive means of delivering cargoes within the Great Lakes region and for overseas trade. . . . Quantification of benefits [of the GL/SLS] was determined by: reduction in the cost of waterborne commerce; or measures to increase the capacity of a constrained navigation system in the future, so that commerce could continue to be serviced by water transportation instead of being forced to shift to more expensive transportation alternatives.” As in future Corps studies, calculations were made by comparing the current costs of transporting products via alternative modes with the future cost of transporting products via an expanded St. Lawrence Seaway. Such comparisons do not consider future improvements in other transportation sectors that will likely decrease costs in these sectors as well.

Despite the many flaws that led this study to overestimate the benefits and underestimate the costs of upgrading the St. Lawrence Seaway, the study still concluded that upgrades to the Seaway did not make economic sense. The study notes that between 1978 and 1985 traffic levels on the St. Lawrence Seaway were lower than predicted. The data and models used in the 1982 preliminary feasibility study were updated to reflect these differences. While the final feasibility study still overestimated benefits and underestimated costs, it did not do so quite as much as did the preliminary study.

In the end, the study concluded, “the results of this study have shown that there is no economically feasible plan which needs to be implemented in the U.S. portion of the St. Lawrence River at this time. . . . Any actions by the U.S. to modify the existing facilities in the St. Lawrence River would be premature and could be incompatible with future Canadian actions. Given the relatively small financial stake (i.e., 2 locks vs. 13 Canadian locks) the U.S. has in the Seaway, it would be far wiser to wait until

such time as capacity is approaching....The "NO ACTION" plan is the logical plan to select."

Given the fact that traffic on the St. Lawrence Seaway has continued to decline since this study was published, one has to question how upgrading the Seaway could be justifiable today. Accounting for the many costs this study overlooked will surely make the project even less justifiable.

The study states that "a recommendation for future updating of the study is advisable because of the very limited reliability of traffic forecasts over long periods of time." Yet the Corps continues to use long-term traffic forecasts in its current Great Lakes navigation study. The study also notes that the conclusion to take no action was "qualified with a recommendation for updating of this study when future conditions warrant using tools and methodologies developed in this study." Yet the methodologies used in this study are highly flawed and continuing to use them will only lead to more flawed studies and inaccurate assessments of the feasibility of upgrading the St. Lawrence Seaway.

Analysis: Great Lakes Navigation System Review. Michael Douglas, Eastern Projects Coordinator, Lake Ontario Keeper. July 15, 2002. Prepared for Marc Fortin, Director, Seaway and Domestic Shipping Policy, Transport Canada.

This report analyzes the Corps of Engineers' draft reconnaissance study, focusing on flaws with the study itself. It makes a number of important points and raises serious questions about the Corps' methodology and credibility. An additional discussion of the shortcomings of the Corps' report can be found above.

The report questions the credibility of the Corps and therefore the validity of the study, stating that "the Great Lakes Navigation Study was conducted by an entity whose independence has been called into question by its own government."

It also questions the goal of expanding the GL/SLS, noting that "the Army Corps argues that shipping on the GL/SLS needs to be expanded because the Seaway can only handle 13% of the world fleet by vessel capacity and 5% of the world container traffic by tonnage, and that these numbers are dropping as ever-larger ships are built. The Corps however, never explain what percentage of the world fleet we should be able to handle. Ontario and Quebec represent approximately 1.2% of the world's economy, much of which are non-water based knowledge industries. Is it necessary for the regional or national economy to be able to get 90% of the world's tonnage into the Great Lakes?...The Great Lakes will never be able to compete for the bulk of the world water-borne commerce against the oceans, and fortunately the economy of the Great Lakes has developed so as to not be dependent on water based shipping, and they shouldn't have to compete against ocean ports in order to realize economic growth.... North American trade accounts for 93% of commercial shipping on the GL/SLS. When determining an economic policy for the Great Lakes we should be

focusing on domestic trade. It is the 93% of the shipping that we have, and can cultivate, that we should be focusing on, not the 7% that the Great Lakes will never be able to attract or handle.”

The report also questions the Corps’ use of long-term traffic forecasts and the conclusion that traffic on the GL/SLS will increase in the future despite the downward trend experienced over the past two decades. It compares the Corps’ traffic forecasts with actual traffic levels through 1998, noting that since the Corps’ forecasts were so far off in the short term, it is unlikely they will be accurate for the long term. In the case of grain, the report notes that “the Corps cite the primary causes of weakened grain shipments as: the collapse of the USSR, the closing off of the European Union to non-EU grains, and the growth of rail shipments to the west coast ports for grain destined for Asia. None of these demand drivers are expected to reverse in the near future.”

The report emphasizes the Corp’s lack of cost data and notes, “of the economic analysis that was completed, much of it was done using flawed models, strong assumptions, and leading analysis.” It calls into question the logic of spending billions of dollars to shift port activity from east coast to Great Lakes ports when such a move will have no net national benefits. It also questions the likelihood of such a shift occurring, stating that “the likelihood of major commercial centers such as New York/New Jersey and Boston allowing business to be taken away from their ports when no value is created is extremely low.” In addition, it notes that ocean ships will only continue to get bigger and outgrow even an expanded GL/SLS and that “if the largest of ocean going ships still have to offload on the Atlantic coast ports then the industry and transportation industries will still cluster around these ports where infrastructure has already been developed.”

The report also questions the Corps’ data and models, stating, “There are examples of flawed economics in nearly every attachment to this report. In one instance, the Corps create an entire industry to show the “benefits” that would accrue if shipping was expanded. At the present time no coal is exported via the Great Lakes, however the Corps took the liberty and a scenario was assumed. The US coal industry is a mature industry that is over 200 years old, and if no international exports have developed over the last 200 years, it is unlikely that larger locks will create this mythical market....By choosing to display this data one has to wonder whether the goal of the study was to represent the most accurate and likely scenario, or to display the data that would make the benefits appear the highest to someone who was not going to read the paper critically.”

Winter Navigation on the Great Lakes and St. Lawrence Seaway: A Study in Congressional Decision Making. Richard M. Spencer. August 1992. Master's Degree Thesis, Cornell University.

This study traces "the long and complex story of winter navigation's descent and eventual defeat" between the early 1960's and the mid 1980's. The benefits of expanding the Great Lakes/St. Lawrence Seaway as found by the Corps depend in part on extending the navigation system through the winter. In addition to describing the problems inherent in winter navigation, this study uses winter navigation as a case study in Congressional decision making, drawing conclusions about the decision process that are very applicable in the continuing debate about the future of the Great Lakes/St. Lawrence Seaway.

The study concludes that "winter navigation was defeated because the program suffered from unsolvable economic, engineering and environmental flaws that were exposed by a well organized and effective grassroots campaign. Those factors still exist today." The study sets forth several reasons why future efforts to establish winter navigation on the Great Lakes/St. Lawrence Seaway are unlikely to succeed, but at the same time illustrates that the issue of winter navigation has not gone away, despite the many challenges it continues to face.

At the time of the study's publication (1992), efforts to authorize winter navigation had (temporarily) ceased. The study notes, however, "paradoxically, if [an effort to authorize the program does happen again], it will likely take place during a recession, when demand for steel and raw materials is low... Winter navigation served as a simple solution for politicians whose constituents were hurting from complex economic forces. After all, support for the original St. Lawrence Seaway was founded on the belief that once the Great Lakes becomes America's 'Fourth Coast,' the region would flourish. When those promises failed to materialize, then a longer navigation system, larger locks, and other large construction solutions were proposed." This is essentially what is happening today. The study continues, "but... winter navigation was a placebo, not a cure for the economic problems of the Midwest."

Based on the history of winter navigation and the Congressional decision making process regarding this issue in the past, the author draws several conclusions that are very applicable to those people opposing the new efforts to initiate winter navigation. These conclusions include:

"The history of winter navigation clearly demonstrates that Congress, or at least the authorization committees, will ignore the Corps' recommendations when a Congressman wants a project... Although Congressmen often quoted studies that substantiated their positions, in point of fact there does not seem to have been any instance where Great Lakes Congressmen based their decisions on objective scientific or economic data. Rather, their behavior was determined by the intensive lobby from Great Lakes shipping interests."

“The role of the citizens’ group is crucial. The Congressional and bureaucratic process can be compared to the law of inertia. Once a project gets initial approval, even the evaporation of need does not guarantee that a project will die. Rather, unless a countervailing force appears to bring attention to the shortcomings of a project, Congress and other decision makers will automatically support the program. Without the massive grassroots campaign by the environmental community, winter navigation in some form would have been approved in 1983. This facet of water resources decision-making is understandable. Each year, Congress deals with hundreds, if not thousands, of projects. It is unrealistic to expect any one member to keep track of all these projects. Out of necessity, politicians and their staffs must rely on the input of government agencies and private interests. If, as in the case of winter navigation, the only interests informing Congress are from industry, one cannot blame Congressmen for approving the program.”

“The support of key government decision makers is essential to support a water project. If the Great Lakes states and their Congressional delegation had continued to support winter navigation, the project would have likely gone through, notwithstanding the flaws of winter navigation.”

Ice and Power. Power Authority of the State of New York. No date listed.

This report discusses the negative impacts that winter navigation would have on the hydropower industry, particularly on the Power Authority of New York. It goes into detail regarding the importance of ice control and the many problems that would arise if the St. Lawrence Seaway were open to navigation during the winter. It does not mention the environmental effects of winter navigation but instead focuses on economic issues.

According to the report, “control of ice for the protection of all interest requires maintenance of a stable ice cover over the St. Lawrence throughout the winter. This prevents the formation of additional ice in quantities that will result in jamming and flooding upstream of the jam.” Opening the Seaway to winter navigation would destroy any stable ice cover, increasing the likelihood of ice jams. Such jams “would stop movement of ships for the rest of the winter,” thus defeating the entire purpose of winter navigation. In addition, low water flows caused by ice jams would compromise hydropower generation and flooding upstream of the jams would have negative consequences for property owners.

The report notes that the Power Authority “does not object to extension of the navigation system if this can be accomplished without disrupting ice control measures that protect property owners and power production.... However, the Authority sees no substitute for current ice control procedures along the St. Lawrence River.”

The report continues, “Navigation representatives have suggested that power entities look for alternative methods of controlling ice movement. If alternative methods were

known, the Authority would be only too willing to discuss them. Actually the Authority and its partner, Ontario Hydro, know of no feasible method other than surface booms for controlling ice in the St. Lawrence. Whatever the method, the objective must be to maintain in place a stable ice cover over the river throughout the winter. This is our directive from IJC.”

The report also mentions political issues that could arise with the extension of the navigation season: “Proposals for changes in ice control procedures, which would appear to involve extraordinarily high costs and questionable benefits to navigation interests, would have adverse – possibly disastrous – effects on power production, the economy of upstate New York and Canada and upon riverfront and lakefront property owners, including public water supplies. These proposals, if carried out, would seriously interfere with the adopted plan promulgated by the IJC for the regulation of the St. Lawrence River and Lake Ontario. They could create serious international problems among government agencies in the United States and Canada.”

In response to studies regarding winter navigation on other waterways, the report notes, “Conclusions inapplicable to the St. Lawrence have seemingly been drawn from experience and experiments in ice breaking in the Arctic and in the Baltic Sea. Such experience may have some relevance in the Great Lakes, but not on the St. Lawrence. In addition, there are obvious differences between the saltwater Baltic and freshwater Great Lakes.”

A Changing Great Lakes Economy: Economic and Environmental Linkages. David R. Allardice and Steve Thorp. August 1995. SOLEC Working Paper presented at State of the Lakes Ecosystem Conference. EPA 905-R-95-017.

This report provides an overview of the state of the Great Lakes region, illustrating both the economic and the environmental benefits and the links between them. Topics include population demographics and sectors of employment; trade between the U.S. and Canada; and economic profiles of the manufacturing, transportation, agriculture, energy, communications and travel, tourism and outdoor recreation sectors; infrastructure issues. The report concludes with a discussion of sustainable development, emphasizing the dependence of economic activity on the health of the environment.

Potential Research Institutions

IATP contacted numerous research institutions and individuals who may be qualified to conduct a study on the multiple economic impacts of an expanded GL/SLS. We stressed the need to maintain a holistic perspective and account for the potential adverse impacts on recreation and other industries. Surprisingly few researchers felt comfortable addressing these issues, many citing the complexity involved in addressing these multiple impacts. Most transportation institutes emphasize very narrowly defined research projects. Below are listed potential researchers, with those that could be most helpful listed first.

Center for Transportation Studies at the University of Missouri-St. Louis

IATP has contracted with CTS to conduct a literature review of nonstructural navigation alternatives that could potentially be implemented on the Mississippi River. They have an expertise in traffic asset utilization – in other words, maximizing the efficiency of the present transportation infrastructure.

CTS is about two years old. Their director, Dr. Ray Mundy, is a well-respected transportation economist who retired from the University of Tennessee to start CTS. But the big draw to CTS is Dr. Don Sweeney, a visiting scholar on leave from the Corps of Engineers. Dr. Sweeney is the economist who managed the Corps of Engineers' Upper Mississippi River navigation study until he "blew the whistle" on the inappropriate economic data and assumptions that the Corps used in the study. Dr. Sweeney's assertions have been corroborated by an investigation by the Department of Defense and a study by the National Academy of Science.

Dr. Sweeney is a brilliant economist with an incredible knowledge about the Corps models and studies. His insights have already been very helpful compiling this report. If nothing else, Dr. Sweeney could play a valuable role as an advisor and consultant on these issues.

Dr. Phil Baumel, Iowa State University

IATP has worked with Dr. Baumel for several years. Next to Dr. Sweeney, Dr. Baumel has probably been the economist most critical of the Corps' Mississippi River navigation study.

Dr. Baumel has produced several studies on elasticity, fuel efficiency, traffic forecasts and other issues pertinent to navigation. He has little interest in environmental issues, but rather in making sure that studies are based on sound economics. His work has been an enormous help to the Mississippi River environmental community.

Dr. Baumel would probably not be the best person to look at the GL/SLS holistically, but could provide some valuable expertise assessing trends and economic benefits and costs. Also, he is willing to work as an independent contractor rather than with the University,

thereby significantly reducing the costs of a contract. He will be retiring from Iowa State University in June and very interested in contract work at that point.

Volpe National Transportation Systems Center

Mike Moroney leads the Volpe Center's Automatic Identification System project on the GL/SLS. This is a recently implemented system that provides all vessels on the system with real-time information on traffic, weather, safety issues and other concerns. The system will be mandatory for all commercial vessels on the GL/SLS next year.

The Volpe Center is a research organization within the U.S. Department of Transportation. They have a history of developing practical solutions to transportation problems. Their strength would be in identifying nonstructural alternatives to expanding infrastructure on the GL/SLS.

In a recent conference call with Mr. Moroney and several of his colleagues, they expressed a lot of interest in working on these issues, but indicated that financing the Center may be difficult. Initiating a project with them would probably require at least \$50,000

Rudin Center for Transportation Policy and Management, New York University

The Rudin Center has conducted a study looking at social justice issues in transportation. However, Dr. Allison de Cerreño, co-director of the Rudin Center, said that the GL/SLS issue does not fit into their research priorities at this point. She did want to remain in touch about the work and offered to review or advise on the project.

Center for Transportation Studies, University of Minnesota

Dr. Robert Johns, the director of the Center is very interested in the GL/SLS but could not find any researchers at the University with an appropriate expertise in these issues. Dr. Richard Levins, an economist at the University, did provide the names of two independent consultants who could conduct this type of study, but they probably do not have the desired prestige.

Conclusion

We suggest that Great Lakes United and the environmental community consider the following research topics and recommendations:

Stress the multiple options for economic development. Navigation proponents frame the debate as between spending billions of federal dollars to benefit the regional economy or spending no money and letting the economy unravel. Given only this choice, it is not surprising that people choose to have the region take the money. But other options exist. The federal government could spend that money in many other ways that provide a much greater return while also protecting the environment. Promoting small-scale rural enterprises, for example, would provide more return and a much bigger multiplier effect. This is not an issue of the economy vs. the environment, but instead of bad economics vs. sound economics.

Likewise, it may not be the best use of GLU money to commission a study that simply looks at the impact that an expanded GL/SLS has on good paying jobs. Our informal conversations with several economists indicate that most economists do not feel comfortable trying to quantify navigation impacts on recreational jobs, and those that may be willing to conduct a study would probably require significantly more money than available. Rather, we recommend that GLU commission a report that assesses the impact of several different options for spending a large sum of federal money. For example, what impact would \$1 billion investment in the Great Lakes economy have on jobs if it was spent on:

- Deepening the navigation channel and extending locks.
- Developing enterprise zones that promote small-scale value-added processing of local natural resources.
- Expanding boating, fishing, birding, hunting and other recreational opportunities in the region.
- Developing renewable energy sources to offset the transportation and burning of coal.

These research questions would likely provide a dramatically different investment on returns and a compelling media story.

Expand the coalition. Many businesses and organizations could be adversely impacted by expanded navigation. Subsidizing the export of grains, for example, may very well increase the local price of grains. Dairy farmers and other livestock farmers – who receive almost no benefit from the GL/SLS – could actually suffer as a result of higher grain prices. These subsidies could also distort the price of land, lowering the economic return for non-grain farmers. These arguments should be further refined and then presented to various Great Lakes commodity organizations.

Outreach should also be conducted to community organizations throughout the region. If the Corps forecasts ever came to fruition there would be a substantial increase in truck traffic to the Great Lakes ports, causing safety concerns, increasing road damage and contributing to air pollution. Other points of outreach could include taxpayer groups, sportsmen's associations and those who use the Great Lakes and St. Lawrence River for things other than navigation.

Stress the need for a change in thinking from “old economy” commodity traffic to “new economy” quality of life. In years past, mining, grain production and manufacturing allowed the Great Lakes region to thrive. That has all changed. These industries provide only a fraction of the jobs and economic development that they did previously. They should and will remain an important component of the Great Lakes economy, but these industries cannot come at the expense of other opportunities. The Great Lakes region has an increasingly valuable asset – clean, abundant freshwater. The economic and recreational benefits provided by this natural resource should be quantified and touted as the primary benefit. As Great Lakes cities increasingly rediscover their coastline, fishing, boating, swimming and other recreational opportunities will be the principal economic draw, not ports.

Emphasize the fact that there are two GL/SLS. There is the system that fosters regional trade between US and Canada, has much less environmental impact and more economic benefits. Then there is the much smaller system for international export that has introduced a scourge of exotic species and is playing a very little role in regional economic development. The Corps has a history of merging agendas that don't necessarily need to be, such as linking Mississippi River and Illinois River expansion together. They have similarly muddled the issues of Mississippi River lock renovation and lock expansion. The Corps should not be allowed to limit the options such as increasing the capacity for inter-lake trade while placing further restrictions on international trade.

Follow the traffic forecasting, elasticity, and model developments closely. These are the issues that have raised the most questions regarding Mississippi River navigation. Part of the problem is that so few people have the ability and time to really understand the importance of these issues. Small tweaks to forecasts and elasticity can easily shift a project from a negative to a positive benefit/cost ratio.

Using an inappropriate economic model has probably been the most egregious error in the Corps' Mississippi River navigation study. The National Academy of Sciences recommended that the Corps use a spatial equilibrium model. The Corps has ignored that recommendation and instead is using their tow cost model, a linear model that ignores elasticity and essentially assumes that all grain exported from within the region will be transported down the river no matter what the cost. It is crucial that the environmental community has a representative that can attend any of the forthcoming GL/SLS economic meetings and watchdog the Corps activities.

Develop friendships within the Corps of Engineers. Although many of us continue to be baffled by some of the actions of the Corps, several employees have been extremely helpful and forthright. Having inside “sources” that feel comfortable describing the real situation is incredibly valuable, while also providing an avenue for getting the environmental community voice heard.

End Notes

ⁱ U.S. Army Corps of Engineers. June 2002. *Information Paper: Great Lakes Navigation System Review, Economics Appendix, Attachment 5*. Available at http://www.lre.usace.army.mil/index.cfm?chn_id=1483

ⁱⁱ Martin Associates. August 1, 2001. *Economic Impact Study of the Great Lakes St. Lawrence Seaway System*. Prepared for the U.S. Saint Lawrence Seaway Development Corporation. Available at http://www.greatlakes-seaway.com/en/pdf/impact_costanalysis_en.pdf

ⁱⁱⁱ U.S. Army Corps of Engineers. *Information Paper: Great Lakes Navigation System Review, Economics Appendix, Attachment 5*.

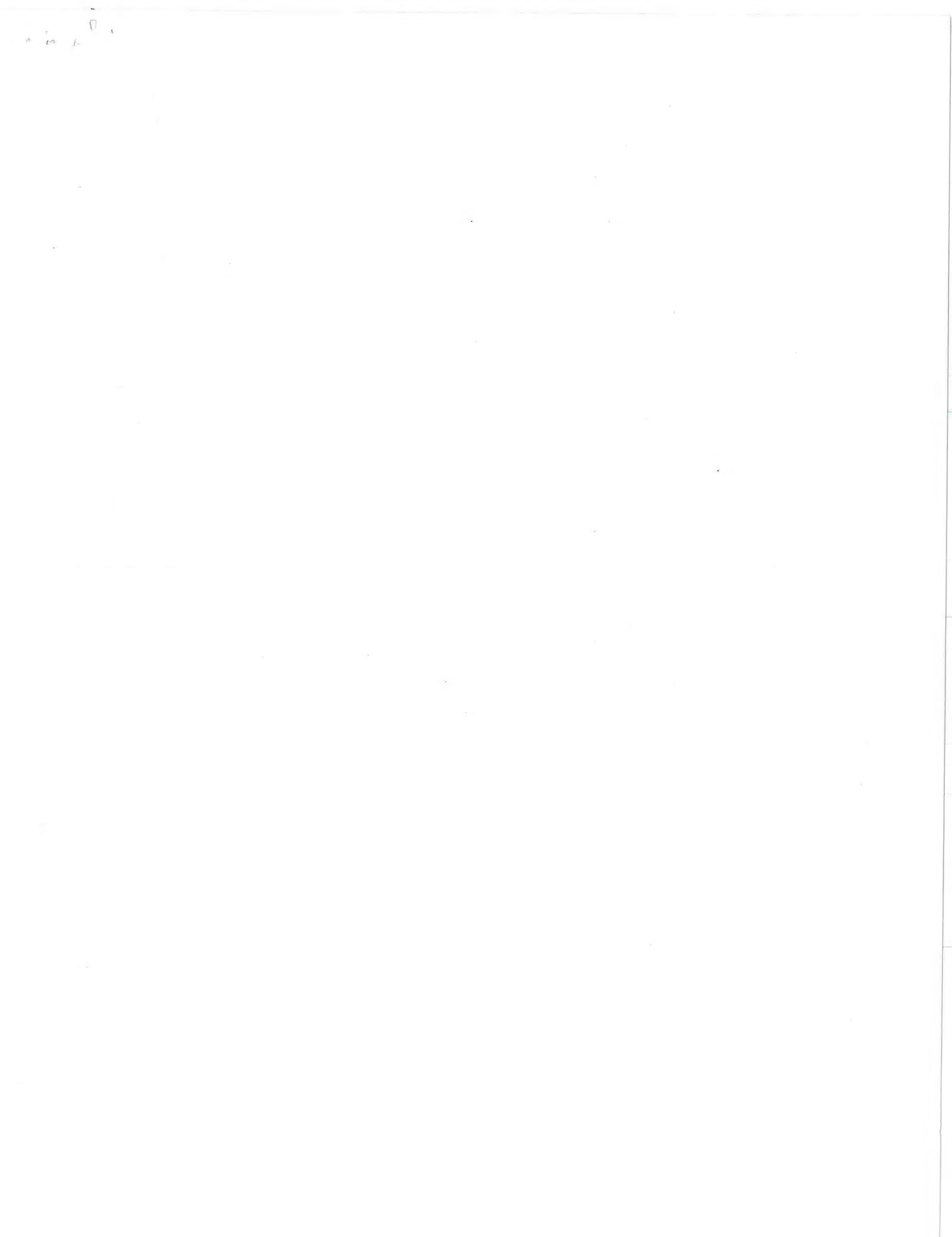
^{iv} The Toledo Blade. October 24, 2002. *Reports Cite Economic Perils of Lake Invaders*. Available at http://www.greatlakesdirectory.org/zarticles/102402_great_lakes4.htm

^v Gunderson, J. and G. Kreag. No Date listed. *Estimated Economic Impact of Recreational Fishing on Minnesota Waters of Lake Superior*. Available at <http://www.seagrant.umn.edu/tourism/impact.html>

^{vi} Allardice, D.R. and S. Thorp. August 1995. *A Changing Great Lakes Economy: Economic and Environmental Linkages*. SOLEC Working Paper presented at State of the Lakes Ecosystem Conference. EPA 905-R-95-017. Available at <http://www.epa.gov/glnpo/solec/94/economic/index.html>

^{vii} Industrial Economics, Incorporated. March 1999. *Economic Profile of the Upper Mississippi River Region*. Prepared for Division of Economics, U.S. Fish and Wildlife Service, U.S. Department of the Interior. Available at <http://midwest.fws.gov/pdf/umr.pdf>

^{viii} For example, Baumel, C. Philip. September 1997. *Rail Rates and the Availability of Water Transportation: The Upper Mississippi River Basin Interim Report*.



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