Safe, Clean and Efficient: Moving Minnesota to Market by Water

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December 2010
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EXECUTIVE SUMMARY

In the Land of 10,000 Lakes and three continental watersheds, marine shipping makes significant contributions to Minnesota’s economy, transportation safety and a cleaner environment. But in the public mind it remains in the shadow of our state’s nation-leading love of recreational boating, struggling for resources, understanding and respect.

Waterways shipping pumps $1 billion into Minnesota’s economy, with about three-quarters of the state’s grain exports traveling by barge or ship. Commercial navigation also provides the mining and forest industries with low-cost, safe, energy-efficient transportation for their products.

When it comes to fuel efficiency, marine transportation clearly outperforms other freight modes. One gallon of diesel fuel moves a ton of freight 576 miles by river barge, 436 miles by railroad and only 155 miles by truck, according to the Texas Transportation Institute. The Army Corps of Engineers estimates that Great Lakes carriers do even better than barges, wringing 607 ton-miles from every gallon of diesel.

Minnesota’s ports also greatly reduce congestion and wear and tear on highway and rail infrastructure. An average year’s tonnage through Minnesota’s ports takes roughly 2.9 million semitrailers off the roads or about 665,000 bulk railroad cars off freight tracks.

In a time when job creation and retention is critical, ports also employ thousands in the state. Nearly 2,000 jobs depend on port operations in Duluth. River navigation in the Twin Cities accounts for nearly 6,000 direct and indirect jobs.

While commercial navigation is down from its high points decades ago, new industries and increased commerce in traditional exports are fueling its resurgence. Many of the wind turbines sprouting on the prairie have components shipped through Duluth’s port. New enterprises in mining, steelmaking and forestry will increase the need for efficient shipping. Minnesota’s bumper crop this year also boosted grain exports via waterways.

The state’s ports are a vital resource that provides tremendous return for Minnesota’s taxpayers. With much of waterways maintenance and infrastructure investments funded by private industry and the federal government via a marine fuel tax, Minnesota’s funding obligation is minimal. Still, MnDOT estimates that nearly $65 million is needed for future projects that will enhance the ports’ viability, including dredging and better ground transportation to access docks on the Mississippi and Lake Superior.
KEY FINDINGS

✓ Commercial navigation brings distant markets within efficient reach of Minnesota farmers and iron miners with an economic impact of more than $1 billion a year. More than 60 percent of Minnesota’s agricultural exports are shipped down the Mississippi River, and more than three-quarters of grain shipments from the state travel by river barge or lake and ocean freighters.

✓ Marine shipping is the most fuel-efficient way to transport low-value-to-weight Minnesota commodities such as grain and iron ore. It is also a key link in the development of Upper Midwest wind energy, bringing giant turbine and transformer components by ocean freighters from Europe and Asia to Duluth for transshipment throughout the region.

✓ Low-cost commercial navigation keeps thousands of trucks and train cars off congested highways and railroad tracks in Minnesota, yielding great fuel and emissions savings, minimal disruption of other activities and an unmatched safety record.

✓ Marine shipping is a significant employment generator, responsible for thousands of jobs and up to 1 percent of the state’s economic activity. Private port terminals pay millions of dollars a year in local property taxes.

✓ Since 1998, the state’s Port Development Assistance Program has invested about $1.5 million a year in bond proceeds to assist local port authorities with dock area dredging, public dock wall reconstruction, safety improvements and road/rail access to the waterfront. But the most recent legislative appropriation to the fund was vetoed in March by Gov. Tim Pawlenty. Yet, his own Department of Transportation had requested $10 million for port development this year. The agency lists $64.9 million in future project needs.

✓ Port facilities strongly support MnDOT’s published objectives for freight transportation to focus on multimodal “efficiency of goods movement” to “support economic growth” and “promote transportation safety, efficiency and productivity.”

✓ Although marine shipping occupies a smaller niche in the Minnesota economy than in peak years decades ago, tonnage is increasing again and new regional mining, manufacturing and energy initiatives promise further strong gains in the future.

RECOMMENDATIONS

✓ Minnesota leaders should not neglect ongoing maintenance and improvement of our commercial waterways system, especially in the current economic environment of record low bond interest rates and bargain-basement bids from construction contractors.

✓ New state leaders should resume financing MnDOT’s $64.9 million to-do list of port and ground access upgrades.
INTRODUCTION

Shipping by big vessels on the Great Lakes and by barges on the Minnesota and Mississippi Rivers brings distant markets within efficient reach of Minnesota farmers and iron miners. And it allows Minnesotans to share in the bounty of a vast hinterland of north-central states and Canada. The state Department of Transportation estimates the economic impact of commercial waterways in Minnesota at more than $1 billion a year, 0.4 percent of the gross state product. 

If that seems not much, consider that more than 60 percent of Minnesota’s agricultural exports are shipped down the Mississippi, and that more than three-quarters of grain shipments from the state travel by river barge or lake and ocean freighters.

Low-cost commercial navigation keeps thousands of trucks and train cars off congested highways and railroad tracks in Minnesota

Marine shipping is not only the most fuel-efficient way to transport low-value-to-weight Minnesota commodities such as grain and iron ore. It also has become a key link in the development of Upper Midwest wind energy, bringing giant turbine components by ocean freighters from Europe to Duluth for transshipment throughout the region.

“We built Buffalo Ridge,” Adolph Ojard, executive director of the Duluth Seaway Port Authority, boasts about the burgeoning wind farms of southwestern Minnesota.

This year, the Duluth port brought in Siemens turbines from Denmark for Minnesota Power’s Bison I Wind Energy Center, a 76-megawatt project under construction near Salem, N.D. Components are stored on the port’s Clure Public Marine Terminal dock until needed at the project site. The port has also handled components for wind projects in Iowa, Illinois, Minnesota, Colorado, Wyoming, Missouri, Montana, Oklahoma and Manitoba and shipped Upper Midwest-made rotor blades to Spain and South America.

In addition, low-cost commercial navigation keeps thousands of trucks and train cars off congested highways and railroad tracks in Minnesota, yielding great fuel and emissions savings, minimal disruption of other activities and an unmatched safety record.
Waterways shipping is a significant employment generator as well. The Port of Duluth-Superior counts up to 841 direct, on-site jobs at its privately operated terminals and public docks plus a fueling depot and a shipyard spread over 49 miles of protected waterfront. It estimates that 2,000 local jobs in all depend on port operations. A 1992 University of Minnesota study found that river navigation provided 1 percent of Twin Cities economic activity, directly or indirectly inducing 5,939 jobs.

“One of the most out-of-sight methods of hauling cargo is also the most important: marine transportation,” U.S. Transportation Secretary Ray LaHood noted in July as he hailed the Duluth-Superior port’s 16 percent increase in overseas shipments during 2009.

A BARGAIN FOR TAXPAYERS

Minnesota taxpayers reap the benefits of our ports at practically no cost, thanks to federal maintenance of commercial waterways supported by a marine fuel tax. Most port terminal facilities and all cargo vessels are privately owned and financed. Private waterfront facilities at the Duluth port alone have paid more than $2.5 million a year in local property taxes, according to one study.

Since 1998, Minnesota has authorized limited state bonding -- about $1.5 million a year, a 0.01 percent sliver of state spending -- to assist local port authorities with dock area dredging, public dock wall reconstruction, safety improvements and road/rail access to the waterfront.

The most recent legislative appropriation to the state Port Development Assistance Program, however, was vetoed in March by Gov. Tim Pawlenty. The $3 million line item was among more than $300 million in bond authority eliminated by the governor on broad grounds of reducing state spending. In all, he nixed $60 million in transit, rail, airport and other transportation projects with no further policy explanation.

Yet, Pawlenty’s own MnDOT had requested $10 million for port development in 2010. The agency lists $64.9 million in future project needs, including dredging and ground transport access at ports on the Mississippi and Lake Superior.

Meanwhile, American coastal ports are investing billions for expansion in response to projections of a 70 percent increase in U.S. freight movements over the next decade. Long Beach, Calif., is moving forward with a $3 billion, 10-year modernization program despite losing a third of its cargo business in recession-wracked 2009.

The Port of Savannah, Ga., will spend $500 million to nearly double its capacity; Gulfport, Miss., has undertaken a $570 million expansion and Mobile, Ala., is building a new container terminal and turning basin costing $600 million. Those southeastern ports are bulking up for the opening of a widened Panama Canal that will serve more and bigger ships beginning in 2014.
Minnesota’s port modernization needs don’t approach that order of magnitude, partly because they already handle the largest vessels that can pass through existing locks on the Mississippi River and along the Great Lakes and St. Lawrence Seaway. More than half of the 240 U.S. Army Corps of Engineers locks are more than 50 years old and have exceeded their economic design lives. But efforts to finance their replacement and upgrade with costs equally shared by the federal government and the shipping industry have been slow to get off the ground.

Fortunately, the modest needs of Minnesota freight waterways are well understood by the state’s transportation leadership, if not always by Governor Pawlenty.

“The Port of Duluth-Superior is an example of hundreds of freight-related projects in desperate need of greater investment,” said Minnesota Transportation Commissioner Tom Sorel. “It’s one of the largest inland seaports in the world … Yet the infrastructure is currently deficient in terms of capacity, physical condition and safety.”

MnDOT’s published objectives for freight transportation focus on multimodal “efficiency of goods movement” to “support economic growth” and “promote transportation safety, efficiency and productivity.” For the industries and regions they serve, Minnesota’s ports meet those goals better than any other mode of freight transport.

Going forward, Minnesota leaders should not neglect maintenance and improvement of our commercial waterways system, especially in the current economic environment of record low bond interest rates and bargain-basement bids from construction contractors.

**AN ANCIENT, EVER-NEW RESOURCE**

Many forces have reduced the role of commercial waterways in the Minnesota economy from peak times decades ago. Oil pipelines have replaced petroleum barges. Low-sulfur western coal is transported by rail to Minnesota power plants that used to burn dirtier coal floated upriver from the South. Minnesota’s ethanol industry consumes huge quantities of corn once exported by water. The Great Recession took a big bite out of shipments, too.

At the same time, 21st century initiatives in wind energy, Canadian oil production and Minnesota steelmaking, nonferrous mining and wood pellet fuel are spurring different demands for marine shipping. Higher export totals and tonnage figures at Minnesota ports this year point to a rebound from 2008-09 recession lows for this basic mode of cargo movement.
The Port of Duluth-Superior, for example, recently projected a 25 percent increase this year over 2009 in total tonnage, including an 89 percent leap in grain shipments, much of it to markets usually served by drought-plagued Russia. “During a single week last month we had 17 ships loading grain and/or at anchor waiting for a berth to open,” Ojard said in October. “Grain from farmers’ fields in the Dakotas and Minnesota feeds people around the world.” Through September of this year, ship arrivals at the port had increased 34 percent, to 656. xvi

But ebb and flow has been a constant over centuries of water transportation in Minnesota, dating back to birch-bark canoe fur trading by Native Americans and by Europeans beginning in the mid-1600s. The sternwheel steamer Virginia was the first fuel-powered boat to reach Minnesota, putting in at Fort Snelling in 1823.

“Even before Minnesota became a territory in 1849, a remarkable range of water craft entered its borders,” says the Minnesota Historical Society. Included were “York boats from Hudson Bay, large canoes, mackinac boats, schooners and sloops via Lake Superior, and pirogues (dugouts), felucca, bateaux and steamboats on the Mississippi.” xvii

Historian Theodore Blegen noted that “supplies were brought in, furs sent out, in canoes, barges, boats, steamboats. Water linked frontier Minnesota with nation and world and … within the region. On the rivers, logs were floated to mills in a great lumber industry. Lakes and streams, easy of access, had much to do with the location of cities and towns and the exploitation of the soil.” xviii

They still do. By standard analysis, Minnesota lies “at the end of the road” in the U.S. economy, far from the central regions best suited for manufacturing and efficient distribution across the country. But a simple glance at a map of U.S. commercial waterways reveals a great comparative advantage enjoyed by our state when it comes to bulk transportation: We are at the headwaters of both of North America’s great inland freight waterways, the Great Lakes/St. Lawrence Seaway and the Mississippi River. For much of the mid-continent, the most accessible entrance ramps to marine highways are in Minnesota.

This positions Minnesota as the main export center for a huge international heartland of farms, mines and forests. For example, 90 percent of the cargo handled at the Duluth-Superior port, the largest by tonnage on the entire Great Lakes/St. Lawrence system, is outbound to steel mills and power plants on the lower lakes, to grain-hungry Europe and to other destinations around the globe. Twin Cities and downriver ports in Minnesota fill barges with millions of tons of corn and soybeans annually for trips down the Mississippi and beyond.

While bulk commodities for export such as grain and iron ore are the mainstays of Minnesota ports, they also handle a broad array of other materials headed outbound, inbound, through and within the state. xix
Lake Superior Ports

**Duluth-Superior:** Iron ore, coal, grain, limestone, salt, cement, scrap metal, asphalt, aggregate, wind-energy components, electrical transformers, finished steel, forest products, fuel, petroleum coke.

- 2009 tonnage: 31,210,918.
- Five-year average: 43,577,456.

**Two Harbors:** Iron ore.

- 2009 tonnage: 6,222,014.
- Five-year average: 12,184,185.

**Silver Bay:** Iron ore and taconite pellets.

- 2009 tonnage: 3,348,622.
- Five-year average: 5,338,487.

**Taconite Harbor:** Iron ore, coal, fluxstone.

- Five-year average: 838,320.


Mississippi River Ports

**St. Paul (including South St. Paul, Rosemount and Grey Cloud Island):** Liquid caustic soda, cement, steel, scrap metal, pig iron, grain, feed, fertilizer, phosphate, anhydrous ammonia, ammonium nitrate solution, petroleum products, coal, feed, potash, salt, ore, twine, molasses, vegetable oil, biodiesel, propylene glycol, asphalt, sand, aggregates, crushed stone.

- 2009 tonnage: 5,071,864.
- Five-year average: 4,928,445.

**Minneapolis Upper Harbor:** Aggregate, sand, crushed stone, recycled metals, fertilizer, salt, coal, steel, twine, pipe.

- 2009 tonnage: 545,840.
- Five-year average: 843,296.
Red Wing: Grain, slag, coke, sunflower meal pellets, linseed meal pellets, crude sunflower oil, crude canola oil, refined linseed oil.

2009 tonnage: 735,417.
Five-year average: 785,494.

Winona: Corn, soybeans, grain, cottonseed, salt, coal, fertilizer.

2009 tonnage: 1,672,630.
Five-year average: 1,911,604.

Minnesota River Port

Savage: Aggregate, salt, cottonseed, corn, grain, fertilizer.

2009 tonnage: 2,777,677.
Five-year average: 2,783,539.

2009 rivers total: 10,803,428. Five-year average: 11,252,179.

GOING GREEN

These numbers represent major diversions of freight from roads and rails. For example, it would take more than 2.9 million semitrailer loads or at least 665,000 bulk railroad cars to replace an average year’s tonnage through Minnesota ports. Calculating the full economic and environmental costs of such a broad shift would be problematical, but a recent MnDOT study of the effects of a proposed shutdown of the Minneapolis Upper Harbor Terminal is instructive.

Minneapolis barge traffic accounts for barely 1 percent of Minnesota’s total waterways shipments by weight—much of it aggregate mined on Grey Cloud Island in Cottage Grove and barged up the Mississippi River for processing into concrete and distribution farther north and west.

Without the waterway, the Twin Cities would see an increase of 648 heavy truck trips per weekday during the 32-week barge season, 512 of them on Interstate Hwy. 94 between St. Paul and Minneapolis. This would increase fuel costs and harmful air emissions tenfold, cause an additional $601,000 a year in roadway damage and impose $488,000 in negative externalities such as congestion, crashes and noise.
The Twin Cities got a taste of this mode shift when the Interstate Hwy. 35W bridge collapsed into the Mississippi on Aug. 1, 2007, killing 13 and closing access to the Minneapolis Upper Harbor. Excellent coordination with salvage, recovery and reconstruction efforts limited the shutdown to just five weeks. xx

In a permanent closure, however, private hauling costs would multiply nearly sevenfold, to $4.1 million per year, adding $4.60 per yard to the cost of concrete in the Minneapolis area and reducing payments from American Iron to scrap metal suppliers by $4.50 per ton. xxi

It is doubtful that any environmental benefits to the river itself would outweigh these costs. Trucks are at least 36 times more accident-prone per ton-mile than the double-skinned barges of the Upper Mississippi, xxii and roadway spills of pollutants in urban areas can easily reach waterways via storm sewers. Furthermore, spills of hazardous materials from trucks and trains on land often pose an immediate threat to human health. Most waterborne spills present no direct danger to humans.

And no other transportation mode can match the environmentally friendly fuel efficiency of marine shipping. According to the Texas Transportation Institute, one gallon of diesel fuel moves a ton of freight 576 miles by river barge, 436 miles by railroad and only 155 miles by truck. xxiii The Army Corps of Engineers estimates that Great Lakes carriers do even better than barges, wringing 607 ton-miles from every gallon of diesel.

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Miles per Gallon Carrying One Ton of Cargo

Data: Center for Ports and Waterway, Texas Transportation Institute

![Graph showing miles per gallon for different modes of transportation. Truck Freight: 155, Railroads: 413, Inland Towing: 576.](image-url)
Freight waterways even save lives. According to preliminary estimates from the National Transportation Safety Board, moving cargo by rail and truck led to more than 1,000 U.S. accidental deaths in 2009, 245 of them at grade crossings. The marine shipping toll was 19 fatalities, less than 2 percent of on-land freight transport’s. By comparison, there were 736 recreational boating deaths nationwide last year.

**LOOKING AHEAD**

MnDOT has documented nearly $65 million in needed improvements for public port authority facilities in Minnesota, supporting a renewed request for $10 million in bonding next year. Included are $41.3 million in what it labels “priority projects” and another $23.6 million in future needs.

Since the state’s Port Development Assistance Program’s first grants in 1998, however, it has released just $18.8 million for 29 individual projects in Duluth, Red Wing, St. Paul, Winona and the lower Minnesota River. This investment has joined with nearly $13 million in local and federal contributions to clear harbors and port channels, rehabilitate docks and loading equipment and provide land transport access.

For example, in October workers finished reconstructing more than a mile of the wall at Duluth’s Clure Public Marine Terminal dock with 403 steel plates to guard it from corrosion. With a $3 million grant from the American Recovery and Reinvestment Act and a local Port Authority commitment, state funds provided just over $1 million for the $4.5 million project. It ensures continued operations for many private companies that operate on the publicly owned terminal.

Many of the top-rated port projects now being planned also are aimed at readying Minnesota’s waterways giant, the Duluth Seaway Port Authority, for major economic initiatives in its hinterlands. These include proposed nonferrous mining and a state-of-the-art slab steel mill in northern Minnesota, plus continued shipments of giant wind turbines and electrical transformers throughout the region and equipment needed for Canadian oil production, the source of most of Minnesota’s petroleum fuel. In November, the port teamed with Canadian Pacific Railroad to bring in from Germany two 300-ton transformer components and send them 1,200 miles northwest to Lethbridge, Alberta, on huge new 16- and 20-axle railcars. The transformer is part of the first cross-border transmission line in North America, connecting electricity markets in Alberta and Montana.

In addition to the CP, three other Class I freight railroads converge on the Duluth harbor. They bring 90 percent of the port’s outbound cargo from the north, west and south. Interstate Hwy. 35 provides nearby truck access for the rest.
“This is a regional asset,” port director Ojard said. “We ship grain from Montana, North Dakota and South Dakota, sugar beet pulp from the Red River Valley for cattle feed in Europe. We’ve shipped 30,000 tons of dry distillers grain [a co-product of ethanol production used for livestock fodder] from central Minnesota, but there’s a potential for half a million tons.”

Reaching that potential market and many more will require investments by all who benefit from Minnesota ports, including businesses, local authorities and state government. Port development assistance should be a continuing high priority for policymakers assembling state capital investment programs in the coming years.

CONCLUSION

The 2010 Twin Cities barge shipping season ended on Thanksgiving Day as the last tow cleared the Hastings lock ahead of gathering river ice. The 2011 season is expected to open late in March, although a warming climate has been shortening winter closures in recent years.

If climate change persists as predicted, Minnesota waterways will become even more important players in the state and global economy. Already the end of the Duluth port season has advanced by 2½ weeks in just the past 10 years, Ojard said. With help from Canadian and U.S. Coast Guard icebreakers, Great Lakes shipping remains open until the Soo Locks connecting Lakes Superior, Michigan and Huron close on Jan. 15. They will reopen in late March as well.

“This year we opened international shipping on March 23,” Ojard said. “It used to be in April.”

With a bumper crop of Upper Midwest grain, reinvigorated demand for Iron Range ore and new enterprises in steelmaking, mining, forest products, energy production and livestock feed ramping up, Minnesota’s ports are poised to log sharply increased shipments in 2010 and for years to come.

State government should be an aggressive partner in the investments that will get the best return for Minnesotans from this age-old, ever-changing water resource.
# MINNESOTA PORT DEVELOPMENT ASSISTANCE PROGRAM

Priority list of projects to support a 2011 Minnesota Legislative request of $10 million

*September 15, 2010*

<table>
<thead>
<tr>
<th>Port Authority</th>
<th>Project Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Wing Port Authority</td>
<td>Bulkhead Wall Rehabilitation</td>
<td>$ 300,000.00</td>
</tr>
<tr>
<td>St Paul Port Authority</td>
<td>BT#1—Rehab dock wall</td>
<td>$ 3,000,000.00</td>
</tr>
<tr>
<td></td>
<td>Rehab Port Authority buildings</td>
<td>$ 3,000,000.00</td>
</tr>
<tr>
<td></td>
<td>Stormwater Management</td>
<td>$ 1,000,000.00</td>
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<tr>
<td></td>
<td>Replace Railroad crossing</td>
<td>$ 100,000.00</td>
</tr>
<tr>
<td></td>
<td>Red Rock &amp; Southport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rehab dock walls at both locations</td>
<td>$ 2,000,000.00</td>
</tr>
<tr>
<td>Winona Port Authority</td>
<td>Salt Storage Warehouse</td>
<td>$ 1,100,000.00</td>
</tr>
<tr>
<td>Duluth Seaway Port Authority</td>
<td>Replace dock timbers at berths 4, 5, 6 and 7</td>
<td>$ 500,000.00</td>
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<tr>
<td></td>
<td>Transit Shed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modernize to code Electric service</td>
<td>$ 250,000.00</td>
</tr>
<tr>
<td></td>
<td>Replace or update Fork Lifts</td>
<td>$ 250,000.00</td>
</tr>
<tr>
<td></td>
<td>Repave storage yard and access roadways</td>
<td>$ 750,000.00</td>
</tr>
<tr>
<td></td>
<td>Construct Security Guard Houses</td>
<td>$ 50,000.00</td>
</tr>
<tr>
<td></td>
<td>Replace roof over Section 4</td>
<td>$ 450,000.00</td>
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<tr>
<td></td>
<td>East Warehouse Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construct additional 100,000 sq ft warehouse</td>
<td>$ 6,000,000.00</td>
</tr>
<tr>
<td></td>
<td>Maintenance Building 51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rehabilitate roof</td>
<td>$ 50,000.00</td>
</tr>
<tr>
<td></td>
<td>Garfield Dock C and D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace retaining wall around both areas, close off and Fill slip C.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Install Rail and truck access, gantry cranes, security fencing, ship tie offs,</td>
<td>$ 22,500,000.00</td>
</tr>
<tr>
<td></td>
<td>roll on dock and dredge berths</td>
<td></td>
</tr>
</tbody>
</table>

**Total all Port Priority needs** $ 41,300,000.00
MINNESOTA PORT DEVELOPMENT ASSISTANCE PROGRAM

Future project list beyond 2011

September 15, 2010

Red Wing

Dredge upper half of Little River Barge access  $350,000.00

St Paul Port Authority

Southport
Secondary road access to channel site  $1,300,000.00

Red Rock
Reclalm fleeting area #14 near Red Rock  $1,500,000.00

Duluth

Extend loop track 600 feet adjacent to East Warehouse  $200,000.00
Replace stormwater sewer system  $125,000.00
Repave Berth 1 concrete apron  $500,000.00
Phase 4 of fork lift replacement or update  $250,000.00
Upgrade Transit Shed ventilation to OSHA code  $200,000.00
Install truck scale in Transit Shed  $100,000.00
Repaint exterior of Transit Shed  $240,000.00
Replace transit shed Pedestrian and overhead doors  $150,000.00
Replace East Warehouse roof  $200,000.00
Construct Cruise Ship facility  $7,000,000.00

Garfield Docks C and D
Dredge berths, build gantry crane runway and
Office/maintenance facility  $8,000,000.00

Hallett 7 Dock
Drive new piling across end of dock and stabilize
Dock end cap along entire wall  $3,500,000.00

Total all Ports- Future needs  $23,615,000.00

Total all Ports- Priority and Future needs  $64,915,000.00
<table>
<thead>
<tr>
<th>Port</th>
<th>Fiscal Year</th>
<th>Project Description</th>
<th>Total Cost</th>
<th>State Participation</th>
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<tbody>
<tr>
<td>Winona</td>
<td>1999</td>
<td>Remove sunken barge in channel</td>
<td>$ 31,250</td>
<td>$ 24,925</td>
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<tr>
<td>Winona</td>
<td>2004</td>
<td>Phase 1 - Dredge harbor</td>
<td>1,100,000</td>
<td>880,000</td>
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<td>Winona</td>
<td>2006</td>
<td>Phase 2 - Dredge harbor</td>
<td>500,000</td>
<td>339,157</td>
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<td>Lower Mn Rvr Watershed</td>
<td>2010</td>
<td>Roadway culvert-access to dredge disposal site</td>
<td>50,000</td>
<td>37,831</td>
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<tr>
<td>Duluth</td>
<td>1998</td>
<td>Enclose docks-Transit shed and East Warehouse &amp; rehab floors</td>
<td>1,595,000</td>
<td>1,235,162</td>
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<tr>
<td>Duluth</td>
<td>1998</td>
<td>Install Sprinkler System in East Warehouse, Bollards on Dock and dredge dock #3</td>
<td>255,000</td>
<td>167,000</td>
</tr>
<tr>
<td>Duluth</td>
<td>1999</td>
<td>Replace sic fork lift trucks</td>
<td>668,700</td>
<td>491,368</td>
</tr>
<tr>
<td>Duluth</td>
<td>1999</td>
<td>Rehabilitate Port Terminal Drive and lighting</td>
<td>338,000</td>
<td>94,275</td>
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<tr>
<td>Duluth</td>
<td>1999</td>
<td>Dredge and fill three berthing areas</td>
<td>130,500</td>
<td>104,400</td>
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<tr>
<td>Duluth</td>
<td>2000</td>
<td>Install Sprinkler system in Transit shed. Rehab floors and RR crossings</td>
<td>605,000</td>
<td>448,174</td>
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<tr>
<td>Duluth</td>
<td>2001</td>
<td>Construct East Warehouse Annex</td>
<td>3,800,000</td>
<td>2,945,128</td>
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<td>Duluth</td>
<td>2002</td>
<td>Final Engineering on Arthur Ave</td>
<td>200,000</td>
<td>160,000</td>
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<td>Duluth</td>
<td>2003</td>
<td>Replace 3 forklifts. Pave road to East Warehouse. Rehab C &amp; D docks</td>
<td>365,000</td>
<td>292,000</td>
</tr>
<tr>
<td>Duluth</td>
<td>2004</td>
<td>Construct Arthur Ave.</td>
<td>4,650,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Duluth</td>
<td>2006</td>
<td>Rehabilitate two Gantry cranes</td>
<td>1,500,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Duluth</td>
<td>2007</td>
<td>Stabilize Berth #3. Complete Arthur Ave. Rehab rail trackage</td>
<td>1,300,000</td>
<td>891,712</td>
</tr>
<tr>
<td>Duluth</td>
<td>2010</td>
<td>Rehab 6,000 feet of corroded seawall</td>
<td>4,500,000</td>
<td>1,058,809</td>
</tr>
<tr>
<td>Red Wing</td>
<td>1999</td>
<td>Move terminal to NSP dock</td>
<td>650,000</td>
<td>470,473</td>
</tr>
<tr>
<td>Red Wing</td>
<td>2001</td>
<td>Rehabilitate dock underpinnings</td>
<td>167,238</td>
<td>133,790</td>
</tr>
<tr>
<td>St Paul</td>
<td>1998</td>
<td>Barge terminal #1 and Red Rock dock wall rehab. Reroof Bt #1 terminal bldg.</td>
<td>1,206,262</td>
<td>965,010</td>
</tr>
<tr>
<td>St Paul</td>
<td>1999</td>
<td>Rip-Rap upper dike at Red Rock terminal</td>
<td>236,000</td>
<td>188,800</td>
</tr>
<tr>
<td>St. Paul</td>
<td>2001</td>
<td>Rebuild Barge Terminal Road</td>
<td>1,060,478</td>
<td>848,382</td>
</tr>
<tr>
<td>St. Paul</td>
<td>2000</td>
<td>Rehab mooring at Hawkins Dock</td>
<td>95,000</td>
<td>76,000</td>
</tr>
<tr>
<td>Location</td>
<td>Year</td>
<td>Project Description</td>
<td>Cost</td>
<td>Amount</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>-------------------------------------------------------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>St Paul</td>
<td>2000</td>
<td>Rehab RR tracks and warehouse roof at PV Red Rock</td>
<td>1,490,000</td>
<td>1,172,188</td>
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<tr>
<td>St Paul</td>
<td>2002</td>
<td>Rehab Upper end of dock wall at Barge Terminal #1</td>
<td>450,000</td>
<td>325,098</td>
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<tr>
<td>St Paul</td>
<td>2003</td>
<td>Rehab seawall at PV Red Rock</td>
<td>350,000</td>
<td>134,883</td>
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<tr>
<td>St. Paul</td>
<td>2004</td>
<td>Dredge and install mooring in Southport Slip</td>
<td>350,000</td>
<td>280,000</td>
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<tr>
<td>St Paul</td>
<td>2005</td>
<td>Complete rehab of Barge terminal #1 seawall</td>
<td>43,627</td>
<td>12,000</td>
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<tr>
<td>St. Paul</td>
<td>2007</td>
<td>Construct dock wall on north side of Southport Slip</td>
<td>3,847,899</td>
<td>2,801,749</td>
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<td><strong>Totals to Date (11/30/10)</strong></td>
<td></td>
<td></td>
<td><strong>$31,534,954</strong></td>
<td><strong>$18,778,314</strong></td>
</tr>
</tbody>
</table>
One 1,000 foot Laker = Seven, 100 Car Trains with a 10,000 ton capacity = 3,000 Large Trucks of 25 ton capacity each
REFERENCES

i. Richard Lambert, Minnesota Department of Transportation ports and waterways director. In-person interview September 2010.


iii. Adolph Ojard, Duluth Seaway Port Authority, in-person interview, Sept. 27, 2010.


Minnesota Department of Transportation, annual port tonnage figures. http://www.dot.state.mn.us/ofrw/waterways.html;


Minnesota’s Lake Superior Terminals directory, March 2008 http://www.dot.state.mn.us/ofrw/PDF/lakesuperior08.pdf

Richard Lambert interview, op. cit.


Minnesota Department of Transportation, Ports and Waterways Section, “Monetary Cost of a Modal Shift,” March 1997, Appendix D. http://www.dot.state.mn.us/ofrw/PDF/Monetary_Modal_Shift.pdf


Richard Lambert interview, op. cit.


Duluth Seaway Port Authority, North Star Port magazine, Fall 2010. “Dock wall reconstruction completed months ahead of schedule.”


Burlington Northern Santa Fe, Canadian National, Canadian Pacific and Union Pacific.

Adolph Ojard, op. cit.

Adolph Ojard, ibid.