Lake Carriers' Association

The Greatest Ships on the Great Lakes

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Via E-Mail: lesages@michigan.gov
Ms. Sarah LeSage
Michigan Department of Environmental Quality
Water Resources Division
P.O. Box 30273
Lansing, MI 48909-7773

Dear Ms. LeSage:

Subject: Draft Section 401 Water Quality Certification For Discharges From Vessels Covered By the USEPA's Vessel General Permit For Discharges Incidental To The Normal Operation Of Vessels

Lake Carriers' Association ("LCA") represents 17 American companies that operate 57 U.S.-flag vessels ("lakers") on the Great Lakes and carry the raw materials that drive the nation's economy. Those include iron ore and fluxstone for the steel industry, aggregate and cement for the construction industry, coal for power generation, as well as salt, sand and grain. Collectively, our members can transport more than 115 million tons of dry-bulk cargo per year. They employ more than 1,600 men and women, all of whom are U.S. citizens or legally admitted aliens, and provide annual wages and benefits of approximately $125 million. In turn, the cargos our members carry generate and sustain more than 103,000 jobs in the United States and have an economic impact of more than $20 billion per year.

We have an extra-strong tie to Michigan - nine of our members are based there: Andrie, Inc. (Muskegon); Inland Lakes Management (Alpena); Lake Michigan Carferry Service (Ludington); Pere Marquette Shipping Company (Ludington); Port City Marine Services and Port City Steamship (Muskegon); Soo Marine Supply (Sault St. Marie); Upper Lakes Towing (Escanaba); and VanEnkevort Tug & Barge (Escanaba).

Importance of Great Lakes Shipping to Michigan

Great Lakes shipping plays an important role in Michigan's economic well-being. A recent study, *The Economic Impacts of the Great Lakes-St. Lawrence Seaway System,* determined that waterborne commerce generates almost 27,000 jobs in Michigan. The vast majority of those jobs – 23,485 – are tied to cargos carried by LCA members.

Michigan can rightfully lay claim to the title of "Capital" of the Great Lakes shipping industry. The state boasts more deep-draft ports than the other seven Great Lakes states combined. (See Attachment A for a complete listing of the state's ports and the volume of cargo moved in 2007, the last full pre-recession year.) Calcite (Rogers City), Stoneport (Presque Isle), Port Inland, Port Dolomite and Drummond Island consistently generate about 70 percent of all the limestone moving on the Lakes in a given year, and in a strong economy, the trade can top 40 million tons.

Alpena and Charlevoix are the hubs of the cement trade. Together they will ship more than 70 percent of the 4 million-plus tons moving on the Lakes each year.

Marquette (Presque Isle) and Escanaba typically load 11 million tons of iron ore, or 20 percent of that trade. Escanaba is doubly important, as it is located below the Soo Locks, which means it can start loading in early March and continue until the end of January.

Limestone (both aggregate and fluxstone), iron ore and cement dominate the cargos our members load in Michigan and coal for power generation is the largest cargo they deliver to Michigan. These cargos have historically been the foundation of Michigan's economy and will play a critical role in the state's recovery from the recession and its future.

Summary of Key Points

1. LCA strongly agrees with MI DEQ's decision to apply the requirements for Ballast Water Exchange and Treatment to oceangoing vessels only. Our members' vessels never leave the Lakes, so have never, and, will never introduce an ANS. While their ballast has the potential to spread AIS introduced by oceangoing vessels, their ballast is but one of at least 64 vectors for introduction and spread.

2. There is presently no ballast water management system (BWMS) capable of being installed on our vessels (commonly referred to as lakers) and we do not foresee a BWMS that can accommodate lakers' volumes, flowrates, temperature range and other considerations during the term of the next VGP. This position is supported by numerous independent studies initiated by the U.S. Coast Guard and EPA. Both agencies acknowledged this fact and therefore required lakers to continue to employ Best Management Practices to limit the potential that their ballast might spread an AIS introduced by an oceangoing vessel. Additionally, the states of Ohio, Wisconsin, New York, Indiana, and Pennsylvania (Illinois has not yet published draft VGP2 regulations or made its intentions known) have also concluded that there are no systems capable of treating the high flowrates common to lakers given the physical constraints of our vessel layouts and operating profiles (short voyages, fresh water, wide temperature range, etc.).

3. We strongly concur with MI DEQ's determination that a Water Quality Based Effluent Limitation (WQBEL) cannot be established at this time. This determination is supported by numerous studies, including the National Research Council of the National Academies of Science report on ballast water which was funded jointly by the EPA and Coast Guard

In-Depth Comments

1. <u>We support Michigan DEQ's decision to apply ballast water exchange and treatment requirements to oceangoing vessels only.</u> U.S.-flag lakers never leave the system, so have never introduced an ANS. Most never sail any farther east than the Ohio/Pennsylvania line in Lake Erie. A few deliver cargo to Erie, Pennsylvania, and Buffalo, New York. There is an occasional trip onto Lake Ontario, but the vast majority of voyages are conducted between Duluth/Superior and Conneaut, Ohio. The ruffe, the zebra mussel, the round goby and other exotics were introduced by oceangoing vessels, unintentionally for sure. Perhaps more importantly, if new non-indigenous species reach the Lakes, they will have hitch-hiked in the ballast tanks of "salties." We recognize that our members' ballast does have the potential to spread ANS introduced by oceangoing vessels. So do the EPA and the U.S. Coast Guard, and as a result, the VGP and the Coast Guard's Final Rule published this past March require our vessels to employ a number of Best Management Practices.

2. <u>No Ballast Water Management Systems presently available for installation onboard lakers.</u> At the Federal level, both agencies which have jurisdiction over ballast water discharges – the U.S. EPA and the U.S. Coast Guard – have determined that there are presently no ballast water management systems available which can be installed and operate satisfactorily on lakers. The states of Wisconsin, Ohio, New York, Indiana, and Pennsylvania have all reached the same conclusion. In fact, except for Minnesota, none of the Great Lakes states have included any requirement for the installation of ballast water management systems onboard lakers in their VGP2 draft 401 Certifications, state permits or implementing regulations.

In addition to the obvious difference in risk associated with vessels which are confined to the Great Lakes versus vessels which can bring non-indigenous species into the Great Lakes, there are several factors which make lakers significantly different from oceangoing vessels. First, even our smallest lakers typically have flowrates which are several times higher than their oceangoing counterparts. In the case of our largest, most efficient and environmentally friendly "thousand footers," they have flowrates approaching 80,000 gallons per minute. To put this in perspective, on an average day, the City of Lansing wastewater treatment plant treats 20 million gallons of waste water which equates to 83,333 gallons per minute, roughly the same flowrate as one of our thousand footers. However, the Lansing treatment plant encompasses approximately 68 acres, contains 6 treatment tanks and miles of piping. Additionally, according to the City of Lansing website, 19 operators are required for round the clock operation; a maintenance staff of 16 employees maintain pumps, chemical feed systems and piping; and a technical maintenance staff of six personnel maintain the electrical, HVAC, instrumentation and computer systems; for a total of 41 employees. Conversely, our thousand footers typically have a crew of about 20 to operate the entire engineering and propulsion plants, conduct routine maintenance, navigate the ship, and load and discharge cargo. Imagine the difficulty – or impossibility – of attempting to squeeze such a system into the confines of a laker, not to mention staffing. There are simply no BWMS presently in production or being designed which have the capability to treat these extremely high flowrates on existing lakers. Vessel ballast rates must match the rate of cargo operations or structural failure is certain. Equally important, we do not anticipate that systems that can accommodate lakers' requirements will exist during the term of VGP2.

Second, our ships' longest voyages are no more than five or six days and most are three days or less. Some voyages are only several hours. Compare these transit times to an oceangoing ship which may have a voyage of several weeks or even months. Many treatment systems which use biocides to kill organisms require hold times of several days to first kill the organisms, then several more days to degrade sufficiently so as not to be harmful to the environment upon discharge. Many BWMS are type approved with this in mind and specifically require holding times of five days or more. The extremely short duration of our voyages, coupled with the extreme cold water experienced throughout much of the navigation system would render such treatment systems ineffective and potentially damaging to the environment.

Third, all of our vessels have uncoated ballast tanks. Due to the fresh water operating environment, many of our ships have been in safe operation for 75 years or more with very little internal corrosion. (The ship that loads cement in Charlevoix, Michigan, is now in its 106th year of safe and efficient operation.) Introducing a biocide, particularly one of the many oxidizers such as chlorine or ozone, would quickly cause the deterioration of these tanks. The existing condition of the tanks, welding techniques used and structural limitations make coating the tanks ineffective.

Many of the systems which might receive Coast Guard type approval are not practicable for use on Great Lakes vessels. For example, many electrolytic chlorination systems are being developed which might be able to treat at flowrates which approach those of our smallest vessels. However, those systems require salt water, hence they are suitable for oceangoing vessels, but not lakers. In order for our vessels to use such systems, a brine tank would be necessary to supply the required ionic constituents for the system to work properly. A brine tank would be highly corrosive to the uncoated ballast tanks. Those electrolytic chlorination systems have very high power requirements which would exceed the power generation and distribution capability of our ships, particularly given the fact that they would need to be operated simultaneously with the self-unloading equipment.

Lake Carriers' Association agrees with the conclusions drawn by the Science Advisory Board, the U.S. Coast Guard, the EPA and several Great Lakes states that there are no ballast water management systems presently available or foreseeable during the term of the VGP2 that can be fitted on board our existing fleet of lakers. We applaud MI DEQ for recognizing this fact and limiting the applicability for installation of BWMS to oceangoing vessels only.

3. <u>Water-Quality Based Effluent Limits</u>

We strongly support MI DEQ's conclusion that a Water-Quality Based Effluent Limit cannot be determined at this time and that a Technology Based Effluent Limit (TBEL) should be adopted for oceangoing vessels. This conclusion echoes the determination made by the National Research Council of the National Academies of

Science which stated "the existing data are not sufficient to characterize a biologically meaningful relationship, much less estimate the associated uncertainty, to be able to identify with confidence the invasion probabilities associated with particular discharge standards."

We agree with MI DEQ that additional data is required before a water-quality based standard is developed in the future. We believe that a robust scientific effort must be undertaken before such a WQBEL standard can be developed. It is our understanding that based on the conclusions drawn by the NAS, the EPA and the Coast Guard have initiated such a study. Other research organizations and institutions are undertaking similar studies, including Canada's Department of Fisheries and Oceans and the Great Lakes Ballast Water Collaborative, of which LCA and several of its members are active participants.

Responses to MI DEQ's Request for Information

1. <u>How could the certification be improved to provide greater predictability for industry?</u>
Requirement 7 allows the MI DEQ to require non-oceangoing vessels covered by the VGP to install and operate BWMS if such treatment systems are necessary, available and cost effective. As we have stated previously, and MI DEQ has concurred, there are presently no BWMS which are appropriate or available for installation on our vessels, and it is highly unlikely any such systems will be available for the duration of this permit. It will take several years for such systems to be developed, then another 2½ to 3 years before such systems will be type approved by the Coast Guard. Thus, even if a BWMS developer or manufacturer began the research and development process today, systems would not be available until mid-2018 at the earliest, after the expiration of the proposed VGP2. Given these constraints, adding this requirement creates unnecessary uncertainty to our industry.

Both the EPA and the U.S. Coast Guard have undertaken studies to determine if it is feasible to install BWMS on lakers. Both agencies have stated their intent to initiate permitting and regulatory requirements, respectively, when BWMS become available which are practicable, biologically effective, environmentally safe, and cost effective for use on lakers. Therefore, we recommend that Requirement 7 be removed from this iteration of the 401 Certification, acknowledging the work done by the Federal government. When the Federal government adopts additional requirements for lakers through either the Coast Guard's regulatory process or the EPA's permitting process, the MI DEQ Director can make a more informed decision regarding BWMS which "are necessary, available, and cost effective."

2. <u>What is the best way to incentivize better/improved ballast water treatment technology or management practices?</u>
Regarding Best Management Practices (BMPs), LCA, in conjunction with other trade associations and regulatory bodies, first developed BMPs for lakers in 1993. Our initial effort focused on containing the ruffe to western Lake Superior. We then partnered with the Northeast Midwest Institute to test a ballast water filtration system that could be used on oceangoing vessels. Then came BMPs that addressed operations Lakes-wide, and specific measures to address an outbreak of Viral Hemorrhagic Septicemia (which thankfully was never needed).

Additionally, the Great Lakes Ballast Water Collaborative ("GLBWC") is evaluating the efficacy of these BMPs, as well as other practices, which might further reduce the risk of invasion and spread of AIS. LCA and its members have been active participants in the GLBWC and we will continue to explore alternatives and new BMPs to help reduce that risk. Our members have voluntarily participated in scientific studies initiated by Canada's Department of Fisheries and Oceans and the Great Ships Initiative in an effort to advance these research initiatives, and we will continue to do so.

We believe the best way to improve the Best Management Practices already in place and being used by our members' vessels to effectively reduce the risk of translocation of AIS, as well as the BMPs used by the oceangoing vessels, is through government/industry collaboration such as the Great Lakes Ballast Water Collaborative.

While the Great Lakes maritime industry is critical to the welfare and economy of all of the Great Lakes states and their inhabitants, it is important to remember that vessels operating in or visiting the Great Lakes represent

a minute percentage of the global shipping population. Most sources estimate that between 60,000 and 75,000 vessels will have to install BWMS in the coming years, totaling between 75,000 and 100,000 total systems. Conversely, the total number of vessels operating in the Great Lakes – lakers and salties – does not exceed 500 individual vessels annually and in some years may not exceed 300 individual vessels. This comprises less than ½ of one percent of the total number of vessels globally. The idea that a BWMS developer would spend the necessary research and development capital to capture 0.5% of the global market is simply not reasonable. Therefore, the concept that the Great Lakes region – through more stringent ballast water standards – could drive global ballast water treatment research is difficult to embrace.

Many believe that BWMS manufacturers and researchers have targeted the IMO D-2 standard for their systems. In fact, BWMS manufacturers and researchers are not targeting 10 organisms/m^3, rather, they are attempting to kill **all** organisms. However, the best systems developed to date have only been **able** to achieve the IMO D-2 Standard. BWMS developers will continue to strive to make their systems more energy efficient, less harmful to the environment, safer, and – most importantly – more lethal to organisms. This will be driven by the shipping market which seeks all of these criteria when evaluating BWMS. Establishing a more stringent – and regional – standard will not drive developers and manufacturers nearly as effectively – if at all – as the global shipping market.

3. What other science is needed to demonstrate invasion risks posed to the Great Lakes by ballast water?

While LCA is not primarily a research organization, our members and we have participated in various studies conducted by academia, as well as Canadian and U.S. Federal agencies, in the past and will continue to do so. It is our understanding that, in response to the National Academies of Science report, the EPA has embarked on a study to develop data upon which they can determine the feasibility of a WQBEL. In the past, the Coast Guard has invested tens of millions of dollars conducting various studies and experiments to inform their rulemakings and supporting Environmental Impact Statements. LCA and its members have voluntarily participated in these studies and we will continue to do so. Given the limited resources of the states and region devoted to ballast water and AIS research, we recommend the Great Lakes states closely follow the EPA, Coast Guard and Canadian DFO studies and provide input into the development of targeted, scientific experiments to identify risks posed by not only ballast water, but the 60+ other invasion vectors identified by U.S. Geological Survey.

4. What type of information does industry need in order to comply with this 401 Certification?

We have no input or recommendations on this topic.

5. What other science is needed to demonstrate efficacy of ballast water treatment technology?

Due to the unique nature of the fragile Great Lakes ecosystem, any BWMS which is used in the Great Lakes must be tested in pure fresh water, preferably at the Great Ships Initiative facility in Superior, WI. Since effective and accurate sampling of ballast water discharges is extremely challenging due to the extremely high volumes of water and incredibly low concentration of organisms required by the IMO D-2 standard, vessel owners – and regulatory bodies – must rely on a robust and rigorous type approval process so they can have a high degree of confidence that the BWMS will actually work under the challenging environmental conditions of the Great Lakes. The Environmental Technology Verification program adopted by the Coast Guard in its Final Rule provides such a robust and rigorous type approval process. Furthermore, it establishes a lower threshold for the definition of fresh water testing. The IMO Guidelines for type approval testing allow a salinity of up to 3 PSU (parts per thousand) whereas the Coast Guard's requirements allow a maximum of less than 1 PSU in order for a BWMS to be approved for use in fresh water. Additionally, the Coast Guard's requirements for scaling (i.e., extending type approval to models which have a higher flowrate) are more rigorous, thus ensuring that higher capacity systems will provide the same level of protection as lower flow rate systems which have undergone type approval.

Because the ballast water treatment industry is comparatively new, there have been no long term tests to evaluate the efficacy of BWMS over the lifetime of the systems. Once BWMS have been installed on a large number of vessels, and the Coast Guard has developed an enforcement and compliance program, the EPA and Coast Guard will be in a better position to scientifically evaluate the long term performance of these systems. Therefore, we recommend that MI DEQ actively participate in the development of U.S. and Canadian

Federal enforcement regimes and closely monitor data which will be collected by the Smithsonian Environmental Research Center to evaluate the efficacy of BWMS in both the short and long term.

6. What can state or Federal governments do to provide leadership (including funding) that will advance the development of technology?

As stated in response to Question 2, improvements in ballast water management technology are not likely to occur as a result of local or regional regulations within the Great Lakes. There is simply not a large enough market in the Great Lakes, when compared to the global maritime shipping industry, to drive technological advances which would result in systems capable of treating to a higher standard. Moreover, since BWMS developers are already targeting a zero discharge, but the best they can presently achieve is the IMO-D2 Standard, no amount of additional Federal or state incentives or inducements will likely result in a new breakthrough technology capable of achieving a significantly more stringent standard.

When Treatment Systems Are Available For Lakers

As we have stated repeatedly, there are no BWMS that can accommodate lakers' operational requirements. Nor do we expect any will be available during the term of VGP2. However, both the Coast Guard and EPA have positively stated that when ballast water treatment systems become available for use on lakers, the Federal agencies will draft regulations to require their use.

Technology will continue to advance, and the day may come when a BWMS will be available that can handle 16 million gallons of frigid water being pumped in at 80,000 gallons per minute. We respectfully submit that a requirement that lakers install such a system must be preceded by a thorough review of all the facts. As we have stressed, U.S.-flag lakers never leave the system; most never sail any farther east than Conneaut, Ohio.

We must also acknowledge that once an ANS has taken root, it can and will migrate independent of commercial navigation. Take for example the ruffe. Since 1993, it has been migrating along the southern shore of Lake Superior at a rate of about 25 miles per year. Once the ruffe reaches the St. Marys River, the rest of the Great Lakes lies before them.

Another critical factor to consider is that lakers' ballast is but one of many means of introducing and spreading ANS. The U.S. Geological Survey has identified 64 and ballast is but one. (See Attachment B.) Our members implemented Best Management Practices to address the spread of ANS introduced by oceangoing vessels long before there was any requirement to do so, and they may voluntarily take additional measures, but installing ballast water treatment systems on lakers will have no impact on future introductions, and, at best, will have a very minimal impact on the spread of invasives introduced by vessels entering from overseas.

Conclusion

Lake Carriers' Association's first effort to limit the spread of an ANS introduced to the Lakes by oceangoing vessels dates back to 1993 and dealt with trying to contain the ruffe to western Lake Superior. But despite everyone's efforts, the problem of ballast water transport and spread of ANS persists, worldwide. We hope the ballast water treatment systems that will be installed on oceangoing vessels will permanently end new introductions of ANS to the Great Lakes. We will continue to do our best to minimize the potential that our members' ballast might spread an ANS. We know very well that recreational uses of the Great Lakes are a vital part of Michigan's economy and quality of life and always operate our vessels in a manner that respects the Great Lakes environment.

Very Respectfully,

James H. I. Weakley
President

Cc: LCA Board of Directors
Bruce Bowie, Canadian Shipowners Association

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Attachment A

Cargo Movement Through Michigan Ports in 2007
(Net Tons)

Port	Total Tonnage
Presque Isle (Upper Peninsula)	8,792,000
Rouge River	8,374,000
Stoneport (Presque Isle, Lower Peninsula)	6,670,000
Calcite (Rogers City)	6,622,000
Escanaba	5,861,000
Detroit	5,812,000
Port Inland (Gulliver)	4,972,000
Saginaw River (includes Saginaw, Essexville and Carrollton)	4,335,000
Marine City (includes St. Clair)	4,100,000
Alpena	3,477,000
Port Dolomite	2,529,000
Muskegon	2,086,000
Drummond Island	1,533,000
Charlevoix	1,476,000
Marquette	1,136,000
Grand Haven	1,128,000
Monroe	1,038,000
Marysville	887,000
St. Joseph	637,000
Ludington	601,000
Ecorse	531,000
Manistee	510,000
Ontonagon	412,000
Holland	392,000
Menominee	308,000
Port Gypsum	301,000
Gladstone	207,000
Cheboygan	189,000
Wyandotte	170,000
Traverse City	122,000
Trenton	76,000
Harbor Beach	50,000
St. James (Beaver Island)	18,000
Mackinac Harbor	12,000
Total	**75,364,000**
Percent of 2007 Great Lakes Commerce	**46.8**

Source: Waterborne Commerce of the United States, Part 3, Waterways and Harbors Great Lakes.

Attachment B

Vectors for Introduction and Spread of Non-Indigenous Species Identified by U.S. Geological Survey

Accidental	Hitchhiker - Plants	Released – Packing Material
Canal	Hitchhiker - Platforms	Released - Pet
Dispersed	Hitchhiker - Scuba Gear	Shipping
Dispersed - Flood	Hitchhiker - Oysters	**Shipping - Ballast Water**
Dispersed - Ocean Current	Hitchhiker - Stocked Fish	Shipping - Hull Fouling
Dispersed - Waterfowl	Hitchhiker With Tunicates	Shipping - Solid Ballast
Escaped Captivity	Hybridized	Stocked
Escaped Captivity - Aquaculture	Ocean Currents	Stocked - Aquaculture
Escaped Captivity - Farm	Planted	Stocked - Aquarium
Escaped Captivity - Fur Farm	Planted - Erosion Control	Stocked - Escaped
Escaped Captivity - Pet	Planted - Food	Stocked - For Biocontrol
Escaped Captivity - Pond	Planted - Forage	Stocked - For Conservation
Escaped Captivity - Research	Planted - Ornamental	Stocked - For Exhibit
Escaped Captivity - Zoo	Planted - Restoration/Mitigation	Stocked - For Food
Gulf Stream Drift	Planted - Wildlife Habitat	Stocked - For Forage
Hitchhiker	Released	Stocked - For Research
Hitchhiker - Fishing, Boating	Released – Aquarium	Stocked - For Sport
Hitchhiker - Aquaculture	Released - Bait	Stocked - Illegally
Hitchhiker - Aquatic Plants	Released - Fish Food	Stocked - Misidentified
Hitchhiker - Imported Logs	Released - Biocontrol	Stream Capture
Hitchhiker - Imported Plants	Released - Food	Unknown
Hitchhiker - Packing Material	Released - Lab Animals	

Source: U. S. Geological Survey database Great Lakes Aquatic Non-Indigenous Species Information System