

**NATURAL RESOURCES BOARD AGENDA ITEM**

**SUBJECT:** Briefing on Ballast Water - Preventing Introduction of Aquatic Invasives

**FOR:** FEBRUARY 2008 BOARD MEETING

**TO BE PRESENTED BY:** Secretary Matthew Frank

**SUMMARY:**

The Board requested an informational update on the Department's efforts to limit the introduction of aquatic invasive species that may be present in ballast water that is discharged by Great Lakes shipping.

The Department has worked to develop treatment alternatives for ballast water discharges since the Governor convened a meeting of ballast water stakeholders at the Port of Milwaukee in 2006. The Department retained the services of Brown and Caldwell consulting engineers to study the feasibility of options for onshore treatment of ballast water at the Port of Milwaukee. The study was completed last fall and determined that onshore treatment is feasible using a barge and land based treatment system. Further study is needed to address design and piping connection issues. If a treatment system is viable, the Department intends to pursue funding for the installation of treatment system which would serve as a demonstration project for ballast water control. The Department continues to support the Great Ships Initiative which is a consortium that operates a research facility in Superior to evaluate the effectiveness of ship based ballast water treatment systems.

While Wisconsin advocates comprehensive federal legislation or regulation to address the potential introduction of invasives due to ballast water discharges throughout the Great Lakes, we agree that the Department has legal authority to regulate ballast water discharges under the Wisconsin Pollutant Discharge Elimination System. The Department is evaluating regulatory options to control the introduction of invasives species from ballast water discharges including administrative processes and technical treatment and best management requirements that would be included in any potential permitting system.

**RECOMMENDATION:** Informational Item only. No recommendation.

**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input checked="" type="checkbox"/> | Fiscal Estimate Required                              | Yes | <input type="checkbox"/>            | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/>            | Attached |
| No | <input type="checkbox"/>            | Background Memo                                       | Yes | <input checked="" type="checkbox"/> | Attached |

**APPROVED:**

  
Bureau Director,

2/19/2008  
Date

  
Administrator,

2/19/08  
Date

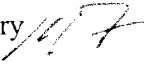
  
Secretary, Matt Frank

2/19/08  
Date

cc: Laurie J. Ross - AD/5

DATE: February 11, 2008

TO: Members of the Natural Resources Board

FROM: Matthew Frank, Secretary 

SUBJECT: Control of the Introduction of Aquatic Invasive Species Associated with Ballast Water

The purpose of the memorandum is to provide the Natural Resources Board with an update on the Department's recent efforts to develop control strategies to prevent the introduction of new exotic species that may be present in ballast water that ships discharge into the Great Lakes.

### SUMMARY

The Department staff has been reviewing management and treatment technologies, advocating strong federal policy, and considering state regulatory options. The Department has worked to develop treatment alternatives for ballast water discharges since the Governor convened a meeting of ballast water stakeholders at the Port of Milwaukee in 2006. The Department retained the services of Brown and Caldwell consulting engineers to study the feasibility of options for onshore treatment of ballast water at the Port of Milwaukee. The study was completed last fall and determined that onshore treatment is feasible using a barge and land based treatment system. Further study is needed to address design and piping connection issues. If a treatment system is viable, the Department intends to pursue funding for the installation of treatment system which would serve as a demonstration project for ballast water control. The Department continues to support the Great Ships Initiative which is a consortium that operates a research facility in Superior to evaluate the effectiveness of ship based ballast water treatment systems. While Wisconsin advocates comprehensive federal legislation or regulation to address the potential introduction of invasives due to ballast water discharges throughout the Great Lakes, we agree that the Department has legal authority to regulate ballast water discharges under the Wisconsin Pollutant Discharge Elimination System. Before proceeding with regulatory actions, the Department needs to develop administrative processes and identify management practices and treatment technologies that would be included in any potential permitting system to achieve discharge goals that protect state waters.

### BALLAST WATER REGULATION AND PERMITTING

Currently the sole federal regulatory authority to control ballast water discharges from international ships is exercised by the US Coast Guard through international maritime agreements. Before entering the Great Lakes, ships from other nations are required to exchange their ballast water with mid ocean seawater. This management practice is intended to destroy freshwater organisms originating in European, Asian or African ports. US Coast Guard staff routinely boards international ships at the Seaway locks; samples ballast water for salinity; and issues orders for no ballast water discharge to the Great Lakes, if salt concentrations in their ballast water are low. Unfortunately these non-technological control measures are not effective because many organisms adapt to and survive in salt water and freshwater environments (e.g., zebra mussels), are protected in the bottom sediment of ballast tanks, or are in tanks that aren't sampled. Also international ships subject to no discharge requirements are allowed to discharge ballast into the Great Lakes to protect life and maintain stability if conditions warrant (e.g., high waves).



Until 2007, the US Environmental Protection Agency (USEPA) operated under the legal principle that ballast water discharges were exempt from discharge permit requirements under the Clean Water Act. In 2005, EPA was sued in federal court in California and the court ordered USEPA to develop a nationally consistent ballast water permit program by 2008. USEPA is moving slowly, will probably not achieve this deadline, and is adding unneeded complexity to the development of regulations. For example, USEPA has suggested that very small discharges from private recreational vessels may need to be covered under the permitting requirements.

In the past year, legislation has been introduced into both the US House of Representatives and the US Senate to implement ballast water permitting independent of the Clean Water Act. The Council of Great Lakes Governors and Governor Doyle support a federal legislative solution to ballast water management. The Governor has worked through the Council of Great Lakes Governors to expedite passage and influence the substance of the legislation because it represents the best overall control system for the Great Lakes that will be uniformly implemented across all states. Unfortunately, it is unlikely that enactment of this legislation will occur before 2009 due to other priority legislation before Congress. Without adequate control strategies, the introduction of additional aquatic invasive species becomes more and more likely and further threatens Great Lakes and inland habitat and fisheries.

Prior to the final decision regarding the federal law suit against EPA, the Department did not move forward with a discharge permit program because of legal constraints (litigation against EPA for their regulatory exemption of ballast water permitting and against Michigan for their state permitting program), technological capabilities (i.e., what technologies are available to reliably and safely kill exotic species) and economic concerns raised by the shipping industry over the cost of treatment facilities. To address these issues, Governor Doyle convened a group of stakeholders from across the Great Lakes basin to discuss aquatic invasive prevention strategies in June 2006. At the stakeholder meeting, the Department proposed a system of shore-based ballast treatment to prevent introduction of future aquatic invasive species from ballast water. This approach had earlier been proposed in New York but was discouraged by the US Coast Guard due to security concerns while the ships were in the Seaway. After much debate at the June 2006 meeting, there was agreement to conduct a feasibility study for the Port of Milwaukee to answer the technical and economic questions needed to issue permits. The Department agreed to organize and fund the feasibility study which was conducted in 2007.

## **OTHER STATE EXPERIENCES**

The Michigan Ballast Water Discharge Permit and recent federal court decisions provide a template for the development of a state permit process. The Michigan permit program was specifically authorized by state statute which provided a strong mandate from their legislature and a road map for development of a permit program. A general permit for ballast water discharges was issued by Michigan in early 2007. Permit coverage has been authorized for 92 ocean going vessels but ballast water discharges have not actually occurred because cargo is unloaded at Michigan ports and ballast water is taken on rather than discharged. At this point no treatment measures have been necessary even though the permit outlines several treatment systems that would be effective to prevent the spread of invasives. The technological or best management practices that are outlined in the permit could be adapted in a Wisconsin permit, however we believe that on shore treatment should be included because in many situations it may well be a cost effective alternative that could provide better treatment than other alternatives.

Ohio and New York are also considering development of ballast water permitting requirements. Minnesota convened a meeting in November 2007 to announce an initiative to develop a general permit for ballast water discharges sometime in 2008. Department staff are working closely with Minnesota to assure that regulatory requirements are developed on a consistent basis.

### **PORT OF MILWAUKEE ONSHORE BALLAST WATER TREATMENT STUDY**

In July 2007, the Department retained the services of Milwaukee-based environmental engineering consultants, Brown and Caldwell, to study the feasibility of options for onshore treatment of ballast water that is discharged from international ships arriving at the Port of Milwaukee. The Brown and Caldwell study concluded that onshore treatment of ballast water is economically and environmentally feasible at the Port of Milwaukee. The most cost effective option calls for a barge to pull up alongside a ship, connect to the ballast water ports with piping, and pump the ballast water discharge into the barge. The barge would convey ballast water to a shore based treatment system or would contain treatment equipment to treat the ballast water. In either case, coarse to very fine screens would be used to separate organisms from the water. Ultraviolet light systems, often used for conventional wastewater treatment, would be installed to destroy living organisms in the ballast water. Such a conveyance and treatment system is estimated to cost \$1.5 million at the Port of Milwaukee. Other more advanced systems such as screens with hydrodynamic cavitation could cost as much as \$3.3 million. Both of these technologies would have the ability to remove or destroy a wide range of aquatic invasive species, from large, visible fish species down to microscopic viruses and pathogens. It is also possible that the Milwaukee Metropolitan Sewerage District's facilities could be used for treatment of the ballast water.

Further study is needed including ballast water constituent and treatability analyses, design criteria development; and preparation of design drawings for the conveyance and treatment system that was identified in the original study. However, the most important study involves the identification and workability of connection fittings for ballast water tanks. The original feasibility study recommended working with an engineer with extensive experience in ship design to determine what piping and pumping configurations are needed to remove water from the ballast tanks while a ship is being loaded and safely transfer the water to the barge facility. The new study would explore whether this can be accomplished with a minimum of impact to cargo loading and unloading operations.

In addition to the development of onshore treatment technology, Wisconsin strongly supports the "Great Ships Initiative". The Initiative's mission is to "end the problem of ship-mediated invasive species in the Great Lakes-St. Lawrence Seaway System through independent research and demonstration of environmental technology, financial incentives and consistent basin-wide harbor monitoring."\* They operate a research and testing facility in the Duluth-Superior harbor that tests the effectiveness of proposed ballast water treatment technologies; serve as a clearing house for certification of these technologies if they are proven effective; and publicly and, in some cases financially; encourage the installation of treatment technologies for ship based ballast water treatment. The Initiative has received financial support from the federal government, Canadian and US Great Lakes ports, the Great Lakes/St. Lawrence Seaway System, and the Great Lakes Maritime Research Institute and in-kind assistance from the University of Wisconsin – Superior, the University of Minnesota – Duluth and Great Lakes carrier companies.

\*Source: Great Ships Initiative Website.

## FUTURE STEPS

1. The Department will continue strong support of the Great Ships Initiative.
2. The Department will continue to encourage Congress to pass a law to implement a nationwide ballast water permit program. National legislation represents the best overall ballast water control system for the Great Lakes that will be uniformly implemented across all states. However I recognize that the Department can not wait for Congress and must take action to prevent the introduction of additional aquatic invasives.
3. The Department will continue to investigate the viability of a shore treatment system for the Port of Milwaukee during 2008 and 2009. The Governor has asked the Department to pursue funding to install a treatment and conveyance system at the Port of Milwaukee along the lines of the system that was identified in the Brown and Caldwell feasibility study. The Department will continue to exchange information and accept recommendations from the Port Authority in Milwaukee regarding ballast water treatment technology issues. The Milwaukee treatment system would serve as a demonstration project to answer the following important questions:
  - What is the capability and performance level that can be expected from a full scale treatment system?
  - What operational constraints exist for the conveyance and treatment system and how can these be overcome?
  - What efficiencies are available to improve the performance of the conveyance and treatment systems?
  - What is capital cost of the system and most important, what recurring costs are necessary to operate the system?
  - What lessons can be carried over to installation of similar systems in other ports in Wisconsin and on the Great Lakes?
  - What strategies will improve the Department's ballast water control programs?
4. Concurrently, the Department will review regulatory options and the ability of management practices and treatment technologies to achieve discharge goals that protect state waters and proceed with an implementation program that provides the greatest level of protection to the Great Lakes. With respect to permitting, the Department will evaluate what reporting, sampling, and monitoring requirements are needed. The Department will also evaluate implementation of control systems (treatment) and whether or not compliance schedules should be included to allow permittees time to implement control systems or strategies. The Department will work closely with other states and with the US Coast Guard to avoid inconsistent approaches and encourage uniform regulatory processes. The Department will work closely with the shipping industry and with the port authorities to ensure compliance capability. The Department will also consult with scientists, engineers, and members of conservation and environmental groups during the permit development process.

Before closing, I want to personally thank Milwaukee Port Authority staff for their consultation and assistance in completing the original feasibility study. It would not have been possible to complete the 2007 Feasibility Study without the contributions and close working relationship of Eric Reinelt, Executive Director, and Larry Sullivan, Chief Engineer, for the Port of Milwaukee.