

BALLAST WATER TREATMENT METHODS

Fact Sheet 4

Ballast Water Management *Clean and Recycled Ballast Water*

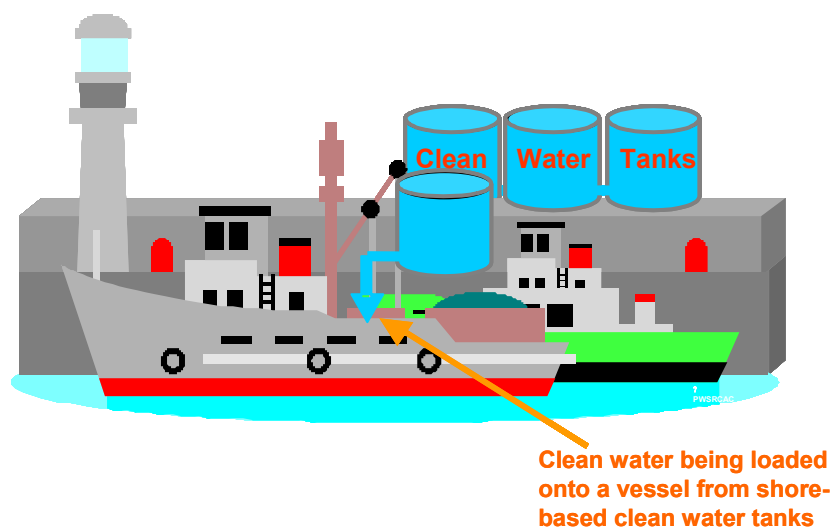
Purpose

The use of shore-based storage tanks to supply clean or recycled ballast water to vessels is a ballast water management option being explored by ports on the West Coast of the United States. Shore-based storage and subsequent ballasting with certified “clean” or recycled ballast water could cost-effectively prevent the spread of nonindigenous species (NIS) to Prince William Sound, Alaska.

Technology Description

Two options for ballast water management include: (1) the use of clean water to ballast a vessel, or (2) the use of recycled ballast water to ballast a vessel. The use of clean water to ballast a vessel involves pumping clean water from onshore holding tanks to the vessel docked at that port. The use of clean water for ballast has been used in a limited fashion throughout the world, but may gain in popularity as a relatively simple, proven method for addressing the NIS concern. Use of clean ballast would be most efficiently managed by a licensed operator under an approved program at participating ports. Clean water sources could include municipal water supplies, imported open-ocean water, or treated wastewater that meet ocean discharge water quality criteria. Clean ballast could be loaded onto ships as Alaska crude is offloaded at a port on the West Coast of the United States.

The use of recycled ballast water is a ballast water management technique in which ballast water is moved from one tank to another without ever being discharged into a port and creating a potential NIS invasion concern. A system could be developed where onshore facilities include temporary storage tanks to store ballast water after it is offloaded from a vessel, rather than discharging the ballast water into the port. The recycled water could then be treated with a basic filtration system to remove rust, debris, and sediments before pumping the ballast onto another vessel. Recycled water offers a less expensive and environmentally benign option where use of municipal water, imported open-ocean water, or treated wastewater is costly or technical unfeasible.



Technology Advantages

Shore-based treatment facilities are potentially attractive because onboard systems would not be required, compliance monitoring would be easy and cost effective, the technology is simple and proven, and the shore-based systems could be maintained and operated by a small, consistent team of trained professionals. Onshore storage facilities can also be designed without the time and space restrictions necessary for shipboard treatment applications.

Technology Challenges

Onshore storage of clean water can present challenges. Existing ports may not have the capacity or room to install clean or recycled water storage tanks to dedicate to ballast water management. In addition, this method requires a piping system to be installed to load the clean ballast. Because ballasting configurations aboard ships vary depending on the size and requirements of the ship and on the complexity of its pumping and piping systems, any onshore storage facility would have to provide adaptable connectivity. Pumping rates present additional challenge, and any shore-based clean water storage facility would be required to meet and maintain ballasting rates to ensure the safety of the ship and crew as well as avoid costly in-port delays.

Cost

Shore-based storage of clean or recycled ballast water has not been studied enough to provide reliable cost data. The viability of shore-based storage depends primarily on the availability of land and accessibility. Also see the fact sheet titled “*Shore-based Treatment - Options for Prince William Sound, Alaska.*”

United States Regulatory Requirements

The United States does not require shore-based storage of clean or recycled ballast water at this time.

Clean and Recycled Ballast Water: Rating as a Viable NIS Treatment Method¹

NIS Treatment Rating System For PWS	Rating for Clean and Recycled Ballast Water	Rating Description
Safety	***	No incremental safety risk
Environmental	***	Technology removes NIS and has no negative impact on the environment
Efficacy	**	Technology is effective, but may not be effective for all NIS of concern
Cost	**	Technology can be adapted at a reasonable cost
Practicality	**	Slight impact on current operations, technology requires some training

Rating is based on a three star system; three stars is the highest rating, one star is the lowest rating.

Status of Technology for Port Valdez & Alaska Crude Oil Tanker Trade

Oil tankers that deliver ballast water to Valdez Marine Terminal in Port Valdez, Alaska do not carry clean or recycled ballast water. Further research is required to evaluate the availability of “clean” ballast water supplies at the various refinery ports on the West Coast of the United States served by the Alaska crude oil tanker trade where ballast water is taken aboard after unloading the crude oil at the refinery.

¹ See PWSRCAC “Technology Viability Rating System” FACT SHEET for an explanation of the rating system.