

**Lake Winnipeg Research Consortium Inc.**  
**Decontamination Procedures**  
**Motor Vessel NAMAQ**  
**Last update – September 12<sup>th</sup>, 2014**

**SUBJECT: Lake Winnipeg Research Consortium’s decontamination procedures for scientific and related equipment used on board Motor Vessel *Namao* during the open water season, aimed to prevent the transport of larval (veliger) and adult zebra mussels within the sampling station network on Lake Winnipeg.**

**INTRODUCTION**

Zebra mussels were first discovered in October 2013 in a number of Lake Winnipeg harbours, including Gimli Harbour, where the MV *Namao* resides. In the spring of 2014, the Province of Manitoba (Conservation and Water Stewardship) in collaboration with ASI Group Ltd, carried out liquid potash treatments in an effort to eradicate the seemingly isolated populations that existed in these harbours. The treatments were considered successful based on the experimental controls (no live adults) and subsequent negative results for veligers in and around the harbours. On August 29<sup>th</sup>, 2014, Manitoba Conservation and Water Stewardship announced that results from increased monitoring show that zebra mussels are reproducing in the south basin, outside of the treated harbours, as evidenced by the presence of veligers and juveniles at five sites. (<http://news.gov.mb.ca/news/index.html?archive=&item=32426>)

The MV *Namao* remained docked in Gimli Harbour during the entire liquid potash treatment period (May 29<sup>th</sup> to June 14<sup>th</sup>, 2014). In addition, divers visually inspected the hull of the ship on June 11<sup>th</sup>, 2014 and no zebra mussels were found. As a result of these measures, the Province of Manitoba deemed the MV *Namao* to be “a low probability risk as a vector for the spread of zebra mussels” at the start of the summer research survey in July 2014. In preparation for the fall research survey, another SCUBA inspection was performed on September 5<sup>th</sup>, 2014. No zebra mussel specimens were found during the inspection; however, due to strong west winds, which held the ship hard fast to the wharf, the starboard side from the chine to the waterline was not inspected. When conditions improved, crew from the MV *Namao* used a snow rake to systematically scrape the starboard hull. No adult specimens were found; however, two juveniles (non-reproducing) were removed from the hull and preserved. Again, the ship is deemed a low risk as a vector for the spread of zebra mussels.

In an ongoing effort to prevent the spread of zebra mussels, the LWRC is developing Decontamination Procedures to be followed during scheduled research surveys and other non-science activities, such as weather buoy deployment, during the open water season on Lake Winnipeg.

## DECONTAMINATION PROCEDURES AND OTHER MEASURES

Following discussions with the Province of Manitoba, the LWRC has opted to use heat and drying (when possible) as the primary means to decontaminate scientific and other equipment that is used during the operation of the MV *Namao*. Heat is the only known means to effectively kill all life stages of both zebra mussels and spiny water flea, another recent aquatic invasive species in Lake Winnipeg.

The following general approach, based on the Provincial cleaning and disinfection methodology, will be used when applicable and feasible: **visually inspect and surface clean** gear to remove plants, animals and sediment; **hot water pressure wash** at very close proximity for a minimum of 10 seconds (at 60°C) to 2 minutes (at 50°C) and at a minimum pressure of 250 psi; **hot water soak** for 10 minutes at 50°C (normal hot water heater is 60°C); **dry for 5 days** once gear has been cleaned and disinfected.

To this end, the LWRC's Science Program acquired a 2.2 HP, 1200 PSI commercial grade hot water pressure washer capable of a 48 to 60°C rise in water temperature. In addition, the decontamination process will initially be carried out prior to leaving every sampling station. This high level of effort will be evaluated on an ongoing basis and revised as needed. There are a few instances when heat treatment with a hot water pressure washer on station is not a suitable option for decontamination and an alternative approach will be taken (included below).

### Sampling Equipment and Work Spaces on board MV *Namao*

- 1) Trawls – includes both the forage fish and manta trawls. Decontamination on deck to take place immediately following every use. In addition, two separate forage fish trawls will be used, one dedicated to the south basin and narrows (up to and including station W13) and the other to the north basin.
- 2) Ekman, ponar, heavy buckets – to be heat sprayed on deck and air dried when possible.
- 3) Nets (phytoplankton, zooplankton, zebra mussel veliger, spiny water flea), Secchi disk and sampling bottles – due to the size and/or light weight of these pieces of equipment, they are to be placed in a designated container at the stern of the ship for the decontamination process followed by air drying (nets, lines).
- 4) Seabird – to be decontaminated after every use following established Environment Canada procedures (Appendix A). The outer surface to be gently heat sprayed.
- 5) pCO<sub>2</sub> Monitor and algal on-line analyzer – no decontamination is proposed as these instruments sample, analyze and dispose of whole lake water in real time (as the ship is travelling and while on station) and wastewater is discharged back into the lake with an estimated lag time of 1 minute from collection.
- 6) Primary production/respiration incubator – at 1 to 2 hour intervals, 15 litres of lake water are collected, filtered (70 micron), held for 1 to 2 hours and released.

The lag time between collection and release poses a risk in terms of biota disposal and warrants decontamination measures. Given the large volumes of water associated with this instrument, an automated decontamination system using chlorine after each incubation cycle will be used.

- 7) Satlantic free falling Optical Profiler and Wetlabs ACS – due to the highly sensitive optical sensors on these instruments and o-rings, heat spraying is not a valid option for decontamination. Instead, the instruments were wiped down after each use with a cloth that had been heat sprayed. Additional recommendations from the manufacturer include scrubbing the instruments with a low concentration of acetic acid (household vinegar grade - 10 to 20%) and soaking overnight. Once the instrument/package is soaked, it should be thoroughly rinsed with clean water.
- 8) Boat deck – to be pressure washed with heated water once sample processing is completed.
- 9) Lake water hoses – to be left running to ensure no trapped water remains in the hose. If turned off at the end of the day, must be turned back on at the same location. Alternatively, the contents of the hose can be contained and then heat treated prior to release into the lake.
- 10) Work spaces (labs, stern box) – to be wiped with vinegar after each station.
- 11) Excess or post-processing lake water that is contained – this may include rinse water from Ekman processing, fish sorting water, filtrate etc. If the ship is still on station, the water may be returned back to the lake. If no longer on station, excess water must be heat treated prior to returning to the lake.
- 12) Workboat and inflatable – to be pressure washed inside and out following every use. In addition, hot potable water will be attached to the motor's auto flushing system as a decontamination measure after every use.

### **MV Namao**

As described above, the MV *Namao* was not deemed a high-risk vector for the spread of zebra mussels for the 2014 summer and fall research surveys. (The spring survey was cancelled as a precautionary measure while Gimli Harbour was being treated.)

Additional assurances that the MV *Namao* will continue to remain a low-risk vector for the spread of zebra mussels include the following:

- 1) Anchor, anchor chain, and mooring lines to be pressure washed with hot water at every station;
- 2) Ballast water is treated town water. It is used to rinse the fresh water tanks in the spring and is then transferred to the ballast tanks for the open water season and pumped out in the fall. This prevents the transport of lake water as ballast;

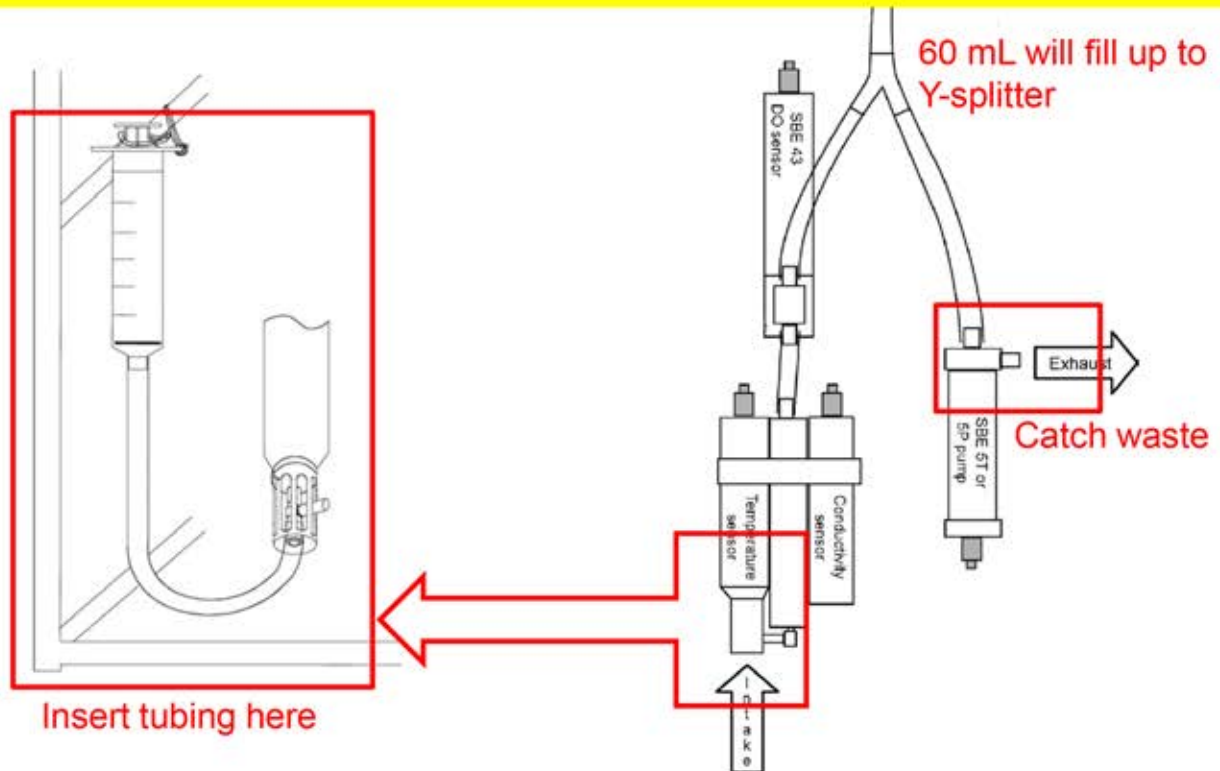
- 3) Lake water intake associated with the engines is continuous and therefore released on site. This water also becomes heated, creating a lethal environment to veligers;
- 4) Intake strainers will be thoroughly cleaned and decontaminated at scheduled locations. Samples of strainer debris will be periodically collected and preserved for veliger analysis; and
- 5) During the MV *Namao*'s refit in 2015, anti-fouling paint will be applied to the hull to further minimize the risk as a transport vector.

## APPENDIX A - Seabird Cleaning Procedures

### SeaBird25plus Clean DO sensor

1. Fill the provided syringe with **60 mL of Triton-X 1% solution** (provided in a labelled white nalgene bottle – shake the bottle first). Attach the tubing to the bottom inlet on the SeaBird, press the solution through gently, and suck it back with the syringe. Flush the sensor in this manner for one minute. Ensure to catch any waste on the side outlet (at the white pump) and empty the used solution in a labelled waste container to be disposed of appropriately at CCIW.

**NOTE: Concentrated Triton-X is hazardous to your health and the environment. While it is safe to use as a diluted solution, do not ingest, inhale, or get it in your eyes. See the MSDS sheet for first aid measures. Ensure all used Triton-X is disposed of in a labelled waste container to be brought back to CCIW. DO NOT MIX WITH BLEACH.**



2. Drain and flush the sensor with warm (not hot) clean water for five minutes.
3. Soak the sensor for one minute in **diluted bleach** (15 mL bleach in 1 L of water).
4. Drain and flush the sensor with warm (not hot) clean water for five minutes.

**NOTE: Do not use a high pressure flow to pump any water or solution through. When you run low on any solution, contact Sarah (905.315.5232) or Joe (905.630.9660)**

## APPENDIX A - Seabird Cleaning Procedures continued

### **SeaBird25plus** Prepare 1 L Triton-X Dilute solution (1%)

1. Add 10 mL concentrated Triton-X to 990 mL of Milli-Q or deionized water.
2. Mix and store in a labelled Nalgene bottle.

**NOTE: Concentrated Triton-X is hazardous to your health and the environment. While it is safe to use as a diluted solution, do not ingest, inhale, or get it in your eyes. See the MSDS sheet for first aid measures. Ensure all used Triton-X is disposed of in a labelled waste container to be brought back to CCIW.**  
**DO NOT MIX WITH BLEACH.**