



Richmond Emergency Mobile Water Treatment

Potable water shortages in a community can affect residents quickly. BI Pure Water Canada Inc. has delivered and commissioned a mobile emergency water treatment plant that is mounted in an insulated dual axle cargo trailer.



Figure 1: Exterior of system



Figure 2: Interior of completed system

Key Features:

Water Source: Various

Peak Flow Rate: 60 L/min

Treatment:

1. 1, 5, and 10 micron filters
2. Reverse Osmosis
3. Ultraviolet (UV) disinfection
4. Sodium Hypochlorite disinfection

Dimensions: 20 Ft x 8 Ft x 7 Ft

About the System

The City of Richmond, BC contracted with BIPW to design and manufacture the treatment system for various water sources in the area. The mobile plant will be utilized in the event that water supply to a subdivision is affected for more than a day. All components in contact with the treated water are NSF-61 Certified or compliant for potable water services. The potable water quality meets BC and Canadian Drinking Water Guidelines.

The raw water feed includes a submersible pump, Ministry of Fisheries, Oceans and the Canadian Coast Guard (DFO) complaint screen and flexible hose.

The System

Approximately 60 Liters per minute of raw water is sent through successively finer cartridge filters, from 10 micron, down to 5 micron, and then 1 micron absolute. The cartridges will reduce turbidity in the water. The cartridge filters will vary in volume capacity based on source water, but they can be operated up to 30 psi differential pressure. The flow rates for the system were designed assuming that the river water may be contaminated with seawater, such that the water is now considered “brackish” with a salt content (TDS) of up to 8500 mg/L (roughly ~ 16,000 US). If the raw water TDS is higher than that, the system will produce water at a lower rate.



Figure 3: Ultrafiltration skid at UBC

The RO system consists of the higher pressure booster pump, RO housing, RO membranes, and a flow control valve on the concentrate line. The RO booster pump is VFD controlled and the concentrate valve is a motorized modulating valve.

Activated carbon is used to improve the taste and odour in the water. A storage tank will collect the RO permeate and act as a buffer tank. This buffer tank will also supply water to flush the RO on shutdown. A pump moves the water to storage or to flush mode.

Two UV units (Viqua Pro20) are installed in series to disinfect the water. The Pro20 is certified to NSF 55A, to guarantee a minimum UV dose of 40 mJ/cm². This dose value is sufficient to provide 3-log removal of *Cryptosporidium* and *Giardia*. The UVs will also provide some disinfection of viruses, particularly since they are piped in series. However, no log credits are claimed for virus removal.

BIPW specializes in reviewing water quality test results, analyzing customer needs and then prescribing the most cost-effective solution. Our engineers and staff pilot, design, manufacture, install, start-up and commission package water & wastewater treatment plants. The operators are then trained and the plants can be serviced on a regular basis.

These package water treatment plants are cost-effective because:

- The water treatment plants are custom engineered to a specific water analysis and budget.
- The plant can be built in the Port Kells factory where the trained staff works.
- The completed water treatment plant is quality, leak- and flow- tested at the factory.



#2 - 9790 190th Street
Surrey, BC
Tel: (604) 882-6650
Toll-free: 1 (888) 901-3111