

Mosaic Potash

Esterhazy, SK

August 2012

BI Pure Water (Canada) Inc. has completed a water treatment plant for Mosaic Potash at Esterhazy. Located approximately 40 km north of the capital city of Regina, the plant supplies potable water to the K2 mine and camp. For over 50 years, Esterhazy has affectionately been referred to as the center of “Potashville” in Saskatchewan.



The package water treatment system has ultrafiltration membranes before the RO.

This BIPW water treatment plant has been designed to treat and deliver a maximum of 60 USGPM (327 m³/day) of creek water, using coarse filtration, ultrafiltration, reverse osmosis and chlorine disinfection technologies in order to meet Canadian drinking water quality standards with respect to levels of suspended/dissolved solids, turbidity and microbiological safety (exceeding 3-log reduction of pathogenic cysts and 4-log reduction of viruses). The facility needed to meet the potable water requirements of Alberta Environment.

Treatment methodology in more detail:

- Provision for injection of poly-aluminum chloride (PAC) to facilitate coagulation of sediments.
- Entrapment of larger particles by a 50 micron mesh basket filter.
- Ultrafiltration (UF) by eight parallel hollow fiber membrane units in order to remove suspended solids, substantially reduce dissolved matter and at the same time protect against pathogenic cysts, bacteria and viruses.
- Reverse osmosis (RO) membrane filtration (eighteen membranes) for removal of salts, dissolved organics, heavy metals, nitrates, residual inorganic chemicals and further suppression of microscopic parasites, bacteria and viruses.
- Restoration of the pH level of the RO-treated water by means of caustic soda (sodium hydroxide) injection.

CASE STUDY

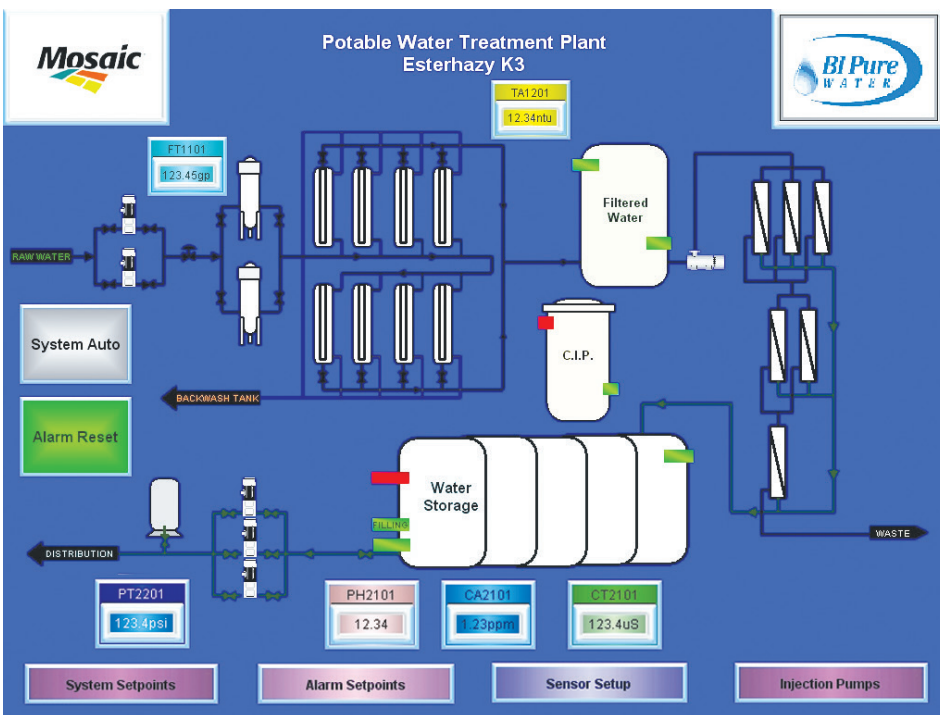


View of the reverse osmosis system with high pressure stainless steel lines.

- Further disinfection by injection of a sodium hypochlorite solution at a level of 0.3 to 0.9 mg/L prior to the storage tanks in order to establish and maintain a minimum chlorine residual of 0.2 mg/L (corresponding to 0.2 parts per million [ppm]) in the distribution system.
- This check of minimum chlorine level is particularly important if the water has resided in the reservoir for some time due to low demand. The residual will be manually checked at the end of the distribution system by a hand held chlorine analyzer.

Energy saving items were included in this plant including structural insulated panel ceilings and walls, energy efficient lighting, high efficiency electrical motors and VFDs installed for efficient flow control.

The package plant was built in BI Pure Water's Port Kells, BC facility where it was thoroughly tested before shipment. This allowed for a quick "plumb and play" approach once the buildings reached site.



The main HMI screen with intake pumps, cartridge filters, ultrafiltration, reverse osmosis, CIP unit, ultraviolet units, storage tanks and distribution pumps

BI Pure Water (BIPW) specializes in reviewing water quality test results, analyzing customer needs and then prescribing the most cost-effective solution. BIPW engineers pilot, design, manufacture, install, start-up and commission package water treatment plants. The operators are then trained and the plants can be serviced on a regular basis. BIPW focuses on small and medium-sized water treatment plants to meet the needs of Federal, Provincial and Municipal Governments, Industrial Process, Construction Camps, Private Water Systems, Resorts and First Nations communities.



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