



# EDMONTON'S CAPITAL REGION WATER TREATMENT PROCESS

## LOW LIFT PUMPHOUSE

At E.L. Smith Water Treatment Plant, there are two lowlift pumphouses. The lowlift pumps get their name because they pump at a high volume but at “low” pressure. Water is drawn into the plant through intakes located in the deepest part of the North Saskatchewan River and passed through screens to strain out large debris like sticks and leaves. From here, water reaches the lowlift pumps which are approximately 1,000 horsepower and pump at a rate of 20 – 200 million litres per day (MLD).

## CLARIFIERS

Once inside the plant, water moves into the clarifiers where Alum and Ploymer are added to the water. Alum and Polymer encourage fine suspended particles to coagulate – or stick together – to form larger particles. Then, dirt particles attract to one another forming large jelly-like particles, called floc. After the floc is formed, it is then allowed to settle to the bottom of a clarifying basin. This process is called sedimentation. Once the floc settles to the bottom of the basin, it is removed and the clear water is moved into the filters.

## FILTERS

The water is filtered by allowing it to slowly flow down through a layer of anthracite coal (about 50 cm) and a layer of sand (about 30 cm). The filters are regularly cleaned by pumping air and water back up through the sand and anthracite coal to dislodge any accumulated particles.

## UV TREATMENT

After filtration, the treated water passes through Ultraviolet (UV) disinfection. Here, high intensity UV light deactivates parasites and bacteria remaining in the water.

## ON-SITE RESERVOIRS

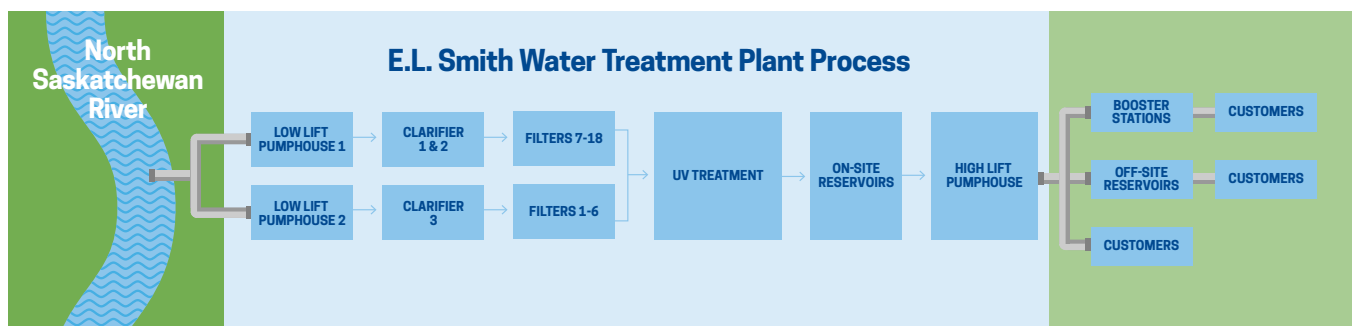
After filtration, the water goes into on-site reservoirs where it is stored until required. The reservoirs provide additional time for disinfection and also allows the treatment plant to handle variations in water demand throughout the day.

## HIGHLIFT PUMPHOUSE

At E.L. Smith Water Treatment Plant, there is one highlift pumphouse containing four individual pumps. Highlift pumps get their name because they are required to pump water at “high” pressure. These pumps range from 2,000 to 4,000 horsepower and pump 90 – 200 MLD at a pressure of about 150 pounds per square inch (psi).

## OFF-SITE FIELD RESERVOIRS, BOOSTER STATIONS AND CUSTOMERS

The high lift pumps push water out of the water treatment plant site and into a network of underground pipes leading to 13 reservoirs that provide additional storage capacity, six booster stations to maintain water pressure and to nearly one million people in Edmonton plus bulk water sales to more than 90 communities and counties in the Edmonton Metropolitan Region



# EDMONTON REGION WATER SERVICE AREA

## Regional Water Service Ownership

- Strathcona County
- CR Northeast WSC
- Highway 14 WSC
- CR Parkland WSC
- West Inter Lake District (WILD) WSC
- Highway 28/63 WSC
- CR Southwest WSC
- John S. Batiuk Regional WSC
- Alberta Central East Corp. (ACE)
- Morinville System
- Camrose County
- Josephburg Water Co-op
- - - - Future

