

ENSURING PUBLIC HEALTH PROTECTION AND MINIMIZING ENVIRONMENTAL RISKS

Environmental Management System (EMS)

EPCOR's E.L. Smith and Rossdale Water Treatment Plants (including the system reservoirs) were first registered in February 2015 under both ISO 14001:2004 and OHSAS 18001:2007. These are two international standards for managing facility environmental and worker safety (Occupational Health & Safety Management System) requirements, respectively. Collectively, these are referred to as the Edmonton Water Treatment Plants integrated Management System (EWTPiMS).

The EMS was originally certified under ISO 14001:2004 by the registrar SAI Global in early 2015. In November 2017, the EMS was registered to the updated ISO 14001:2015 Standard. An internal audit of the EWTPiMS was also completed in August 2016. All audit findings are tracked in a formal Audit Tracker worksheet to facilitate managing corrective actions to address audit findings. The EWTPiMS conforms to the EPCOR enterprise-wide HSE-MS, which provides an overarching set of high-level standards and procedures that support operational activities. At the Edmonton WTPs and reservoirs, site-specific standard operating procedures (SOPs) address environmental risks and significant aspects and related worker hazards in each operational functional area.

In addition to the WTPs and reservoirs, the Edmonton Waterworks System also includes a large network of pipes and transmission mains – collectively known as the Water Distribution & Transmission (D&T) system; this infrastructure delivers potable water from the WTPs to the reservoirs, and from the reservoirs to customers. The EMS and OH&S-MS for Water D&T, referred to as the EWDTiMS, was registered in June 2017 under the ISO 14001:2015 and OHSAS 18001:2007 standards. With the EMS for both the WTPs and Water D&T accredited, the EnviroVista commitment to have the complete Edmonton Waterworks System certified under ISO 14001 has been fulfilled.

Operations Program

The Operations Program comprises plans, operational philosophies and procedures used by staff to manage the Edmonton Waterworks System. This ensures consistent production and reliable delivery of high quality drinking water while reducing environmental impacts. The comprehensive Operations program document is a requirement of the EnviroVista Approval and is an integral component of the Edmonton Waterworks' Environmental Management System accredited under ISO 14001. A team of subject matter experts from across EPCOR collaborate throughout the year to keep the Operations program up to date and changes to the Operations program are reviewed annually by EPCOR management. The first Operations program was released on December 31, 2012. The most recent revisions to the Operations program were completed on February 28, 2018 and included the following:

- EPCOR's Water Distribution operations are also now registered to the ISO14001 and OHSAS 18001 Standards. This is in addition to the WTPs and reservoirs registrations.
- For 2018, EPCOR brought in a new internal reporting system to manage Health, Safety and Environmental events (incidents) and to track corrective actions within our ISO and OHSAS management systems.
- EPCOR assumed operation of the City of Edmonton Drainage infrastructure in September 2017. This is reflected in references throughout the document.
- Under Edmonton's Source Water Protection Plan, EPCOR is partnering with AEP to complete a comprehensive monitoring program for the North Saskatchewan River basin. Beginning this year, EPCOR will contribute \$1 million through water rates for four years.
- In 2017, EPCOR refurbished and added a third chemical spill storage tank at Rossdale WTP. This will allow our operations to better manage onsite spills and wasted chemicals.

- A new tool is being developed in 2018 called the Water Quality Situational Awareness Map. This tool will help collect water quality concerns from across the city on a graphical interface that will help EPCOR identify trends in water quality sooner and help troubleshoot and solve issues in a more efficient manner.
- EPCOR added monitoring for Perfluorooctanoic Acid and Perfluorooctane Sulfonate to the monitoring program (raw, treated, random distribution) as we expect Health Canada to introduce new drinking water guidelines for these compounds of emerging concern sometime in 2018.
- In the 2018 review of the Drinking Water Safety Plan, seven new action plans were identified and added to the Key Risk Action Plan register and five were removed as complete. There are currently 38 risks with action plans on the register.
- As the City of Edmonton continues to grow, EPCOR will begin notifying AEP of extensions to our water distribution and transmission network. The first notification was in March 2018 and will occur annually at the same time in future years.

Drinking Water Safety Plan

EPCOR is committed to maintaining a source-to-tap, multi barrier approach to provide safe drinking water to its customers. The Drinking Water Safety Plan (DWSP) addresses environmental considerations related to public health risks associated with the supply of drinking water. Over 40 EPCOR employees were involved in identifying and assessing these risks to the water system and public health. The risks were broken down into five “Source-to-Tap” areas: Source Risk, Treatment Risks, Reservoir Risks, Pipeline Risks and Customer Risks. The DWSP risk assessment was first completed for the Edmonton Waterworks System in 2012 and an action plan was developed in 2013 to address eight key risks that were determined to require further action.

The DWSP process is based on the concept of continuous improvement and the Plan-Do-Check-Act cycle that is inherent to the ISO14001 Environmental Management System. This system requires us to regularly review and re-evaluate the DWSP risks, and update as necessary. The DWSP is reviewed and updated each year. In early 2017, EPCOR convened a team of subject matter experts once again to review the entire DWSP in depth. The team was asked to re-assess all of the existing risks and action plans and identify any new or emerging risks, or risks that required re-evaluation. When assessing risks, the team looked at developing trends and issues in water treatment and supply and incidents that have occurred at EPCOR and in the industry in general. In 2017, the team took a deeper look at how we move water within the system, the inherent redundancy levels and potential modes of failure. This in-depth review resulted in the addition of seven new risks to the 36 risks that were on the 2017 key risk registry. These new risks included:

- Failure of a critical transmission line during a pump station/reservoir outage for maintenance or upgrade that might result in inability to supply water to an area.
- Failure of a critical pump station when another pump station is off line for maintenance or an upgrade that might result in inability to supply water to an area.
- Shutdown of a pump station at the same time that a critical water line is under repair that might result in an inability to supply water to an area.
- Failure to meet demand due to an inability to operate valves as required or as a result of insufficient valves to isolate area affected by a large water main break.
- Failure to meet demand and supply an area as a result of failure of pipe suspended from a bridge.
- Potential of regional water customer demand impacting EPCOR's ability to service customers and for us to provide service to a regional group.
- Contamination of drinking water in a main due to leaking air relief valves.

Action plans and programs will be developed in 2018 to mitigate these key risks. Five of the action plans for the 36 risks on the 2017 key risk registry were considered complete. There are now 38 risks remaining on the key risk registry with action plans that are in progress.