

Water Treatment Long Term Capital Strategy

ISSUE

As the City of Saskatoon (City) and surrounding region continues to grow, a strategy is required to increase the water treatment capacity to 450 Million Litres per day (MLD), which will provide safe and reliable drinking water for approximately 500,000 people.

BACKGROUND

The City's Water Treatment Plant (WTP) has been a cornerstone of the community since 1906, providing reliable and safe drinking water to support growth in the city and the surrounding region. The current WTP, as of 2021, has a firm treatment capacity of approximately 250 MLD and has two remote reservoirs with pump stations which service the city and region, and a third reservoir currently under construction.

Since 1980, the City has utilized a capital planning process to identify expansion and upgrade needs for the WTP and provide a schedule for the development. In 2009, City Council approved the commission of CH2M Hill to complete an update to the Long-Term Strategy (Strategy) which has driven expansion to date and was dependent on significant water conservation, which has largely been realized. An update to the Strategy is now required to ensure that the growing demands of the city and region are met while maintaining levels of service. The Strategy will inform project and financial planning including capital expenditures, cash flows, borrowing, and customer utility rates.

AECOM was commissioned by the City in November 2019, to complete the update of the Strategy. The goal of this update was to identify the best approach to increase the City's water treatment capacity to 450 MLD. AECOM delivered the Final Report to the City, which included options for the City's consideration, and can be found in Appendix 1.

On March 7, 2022, an information report was presented to the Standing Policy Committee on Environment, Utilities and Corporate Services outlining the history of capital planning at the WTP and the need for an updated Strategy.

DISCUSSION/ANALYSIS

Alternatives

As part of their update of the Strategy, AECOM developed four Alternatives for the City's consideration to mitigate the performance and regulatory requirements at the existing WTP, and to provide a roadmap for increasing the City's water treatment capacity.

Alternative A involves a retrofit of the existing WTP to expand the capacity of the existing facility to 450 MLD, resulting in an increased footprint of the facility.

Alternative B requires a number of upgrades at the existing WTP and the development of a smaller second WTP to bring the City's total treatment capacity between the two WTP's to 450 MLD. This option would also result in an increased footprint of the existing WTP facility.

Alternative C requires a smaller number of upgrades at the existing WTP and the staged development of a second WTP to bring the City's total treatment capacity between the two WTP's to 450 MLD.

Alternative D involves the development of a new WTP. The existing WTP would be decommissioned once the available capacity of the new WTP meets the demand of the City and surrounding region.

Due to the magnitude, level of complexity, and strategic nature of the decision evaluated, a Decision Quality (DQ) Review of the Strategy was undertaken utilizing internal resources to determine the best approach to increase the City's water treatment capacity. A summary of the DQ Review of the Strategy can be found in Appendix 2.

Long-Term Strategy

The highest-ranking strategy, Alternative C, will focus on investments at the existing WTP to support reliability and staged development of a second WTP to support growth to bring the City's total treatment capacity between the two WTP's to 450 MLD.

Alternative C is aligned with previous direction and reaffirms the past planning decisions and actions the City has taken which include the construction of a separate Raw Water intake, current water allocation agreements, and land purchased at a location upstream of the existing WTP. The work done by AECOM and the Administration has effectively re-confirmed the overall Strategy already in place and added clarity on specifics such as timing and phasing. This planning is the foundation which will support a new WTP and efforts to increase resiliency and redundancy in the Strategy to reach an ultimate planned treatment capacity.

The following capital work will be undertaken to increase reliability at the existing WTP as part of the Strategy:

- Residuals Pumping and Storage Upgrades
- Power Upgrades
- Chemical Storage and Dosing Upgrades

To support further development of the planning and design efforts for a second WTP, the following activities will occur over the next two years:

- Explore available funding opportunities with Federal and Provincial programs.
- Work with the Water Security Agency on construction permitting and operational requirements.
 - Evaluate distribution and reservoir storage requirements in alignment with the proposed Strategy.

- Work with Supply Chain Management, City Solicitors Office, and industry partners to plan and prepare the Contracting strategy for major capital works.

FINANCIAL IMPLICATIONS

The chosen Strategy is expected to have various financial impacts. The Administration will report further to outline funding options for this Strategy.

OTHER IMPLICATIONS

Sustainability Implications

The previous strategies resulting from the capital planning process were dependent on significant water conservation initiatives, much of which has been realized over the past 15 years. The Strategy identifies that there is a risk that capacity expansion will be required sooner if further water conservation measures are not implemented and indicates that peak demand reductions may be required to reduce the pressure on the existing WTP until the new facility is in place. The City's current Water Conservation Strategy helps address this risk and outlines potential actions to reduce peak summer use, to ease demands on capacity-limited infrastructure, and to meet the community's many goals.

Per-capita water consumption has consistently trended downward over the past 10 years. This is due, in part, to an inclining-block rate structure for residential properties that was implemented starting in 2006.

Extensive communication and education programs have been utilized to enhance awareness of water conservation, as have various programs like the rain barrel subsidy program. The Automated Meter Infrastructure initiative is used to transmit electrical and water consumption data directly from individual meters to the utilities. Consumers are able to see actual usage and benefit from having their monthly bill based on actual consumption rather than estimates. Another significant factor in this per capita decline in water use has been the ongoing switch to low-flow appliances.

Offsetting the reduced residential per capita demand is growing commercial water demand. Saskatoon's position as a service provider for business, including food industries, drives up per capita use calculations. The Water Conservation Strategy includes initiatives to support the Industrial, Commercial and Institutional sectors in reducing water demand.

Public Engagement

No public, community, or stakeholder engagement has taken place to date. However, an Engagement Plan is currently being prepared and will focus on identifying major stakeholders, concerns, and opportunities for proactive communication as planning work continues.

Legal, social, and environmental implications of the capital work included within the Strategy will be reviewed and addressed as each project is brought forward for implementation.

NEXT STEPS

1. Develop and execute an appropriate Engagement Plan that focuses on the surrounding community and regional partners.
2. Utilize the Strategy to further define the staging of capital work required at the existing and new WTPs.
3. Prepare a report to City Council on options to fund the Strategy.
4. Update the Capital Budget prior to 2024/2025 budget deliberations.

APPENDICES

1. AECOM's Capital Development and Expansion Plan (2020 – 2050) Executive Summary
2. WTP Long Term Capital Strategy Decision Quality Review Executive Summary

Report Approval

Written by: Kelsea Doll, Senior Project Management Engineer, Saskatoon Water

Reviewed by: Pamela Hamoline, Engineering Services Manager, Saskatoon Water
Russ Munro, Director of Saskatoon Water

Approved by: Angela Gardiner, General Manager, Utilities and Environment

Admin Report - Water Treatment Long Term Capital Strategy.docx