

July 11, 2019

To: Members
Public Works and Infrastructure Committee

Re: 4th Avenue Pumping Station (4APS)- Issue Request for Proposals and Award
Engineering Services Contract

RECOMMENDATION

1. That the Executive Director of Citizen Services, or designate, be authorized to initiate a public procurement process to engage consulting and professional engineering services for the design and construction of the 4th Avenue Pumping Station.
2. That the Executive Director of Citizen Services, or designate, be authorized to negotiate, award, and enter into a contract with the highest ranked proponent from the public procurement process.
3. That the City Clerk be authorized to execute a contract with the highest ranked proponent upon review and approval of the City Solicitor.
4. That this report be forwarded to the July 29, 2019 meeting of City Council for approval.

CONCLUSION

Administration is planning to issue and award a Request for Proposals (RFP) for engineering services to complete the design for the 4th Avenue Pumping Station (4APS) to be located near the 4th Avenue Reservoir. Constructing the 4APS is recommended as a better alternative than rehabilitating the existing Farrell Pumping Station (FPS), which is located at the northeast corner of Broad Street and Dewdney Avenue. It will bring minimal risk and interruption to the City of Regina water distribution system compared to the rehabilitation of FPS. The new pumping station will operate with less power cost and can provide more flow to meet peak water demands. City Council's authority is required by *The Regina Administration Bylaw No. 2003-69, Schedule D, Section 7* to issue and award the RFP, as the consultant's fees are expected to exceed \$750,000. This project requires professional engineering and consulting services to complete the work.

BACKGROUND

The City of Regina water system, as shown in Figure 1, includes the following major infrastructure:

- Two water supply sources; the primary source being Buffalo Pound Water Treatment Plant (BPWTP) and, the eight groundwater wells as the emergency secondary source.
- 56 kilometres of twinned steel supply pipeline with sizes 1,050 millimetres and 900 millimetres from BPWTP to Regina.

- Three pumping stations (North, Farrell and North Zone).
- Over 1,500 kilometres of water distribution piping.
- Five water storage reservoirs.

The BPWTP pumps treated water to the city through two supply pipelines to the Northwest and Pasqua Reservoirs. From the two reservoirs, water is then pumped to the north area of the city via the North Zone Pumping Station (NZPS) and to the rest of the city via the North Pumping Station (NPS), which is the main pumping station for the city. During normal operations the FPS pumps water to the downtown area of the city during the day. Depending on the demand and pressure in the distribution system, FPS runs to boost and stabilize the flows and pressure throughout the distribution system. When both pumping stations are operating, it is estimated the NPS supplies roughly two thirds of the system demand.

The City has difficulty in using the 4th Avenue Reservoir to supply the FPS by gravity. This is due to the significant distance and small elevation difference between the two locations. As a result, we are not able to fully utilize the volume of water in the 4th Avenue Reservoir. The FPS was built in 1960 and is a critical component of the City's overall waterworks system. The facility is deteriorating, with pumps and motors past their service life that would require significant rehabilitation to remain reliable. Rehabilitating FPS would involve replacing piping integral to the distribution system, including 1.2 kilometres of 750 millimetre suction pipe from 4th Avenue Reservoir. Figure 1 shows a general layout of the water supply system in Regina.

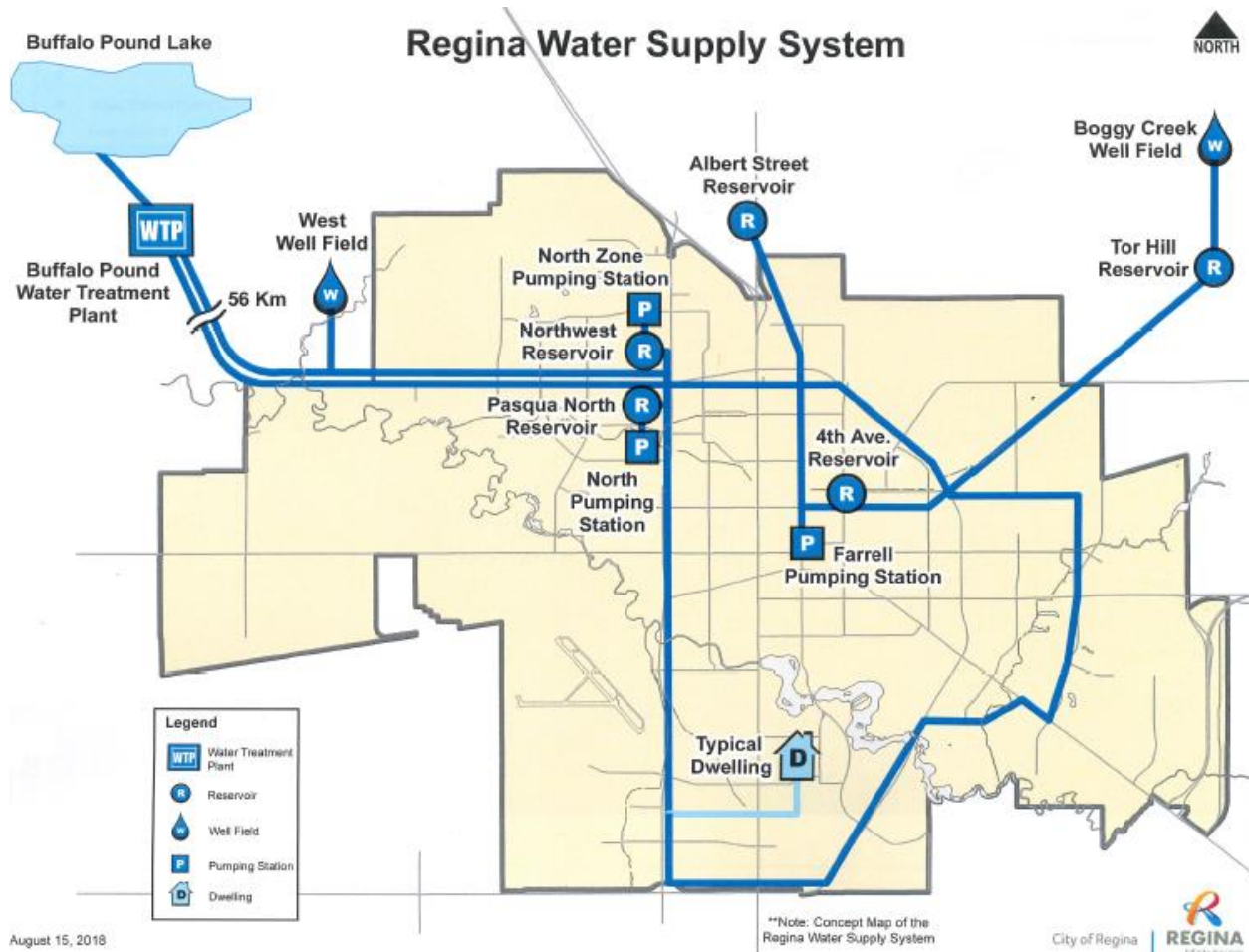


Figure. 1- Water Supply System for Regina

DISCUSSION

The Water Master Plan included a recommendation for a replacement of the FPS with a new pump station near the 4th Avenue Reservoir. The intent of the proposed station is to eliminate operational issues related to FPS and 4th Avenue Reservoir that limit the full usability of the reservoir. The 4APS will also serve as a partial redundancy for the NPS so that if NPS was to fail, flow would be provided from the 4APS, reducing the risk of water shortages.

Constructing the 4APS near the 4th Avenue Reservoir is recommended and is a better alternative to rehabilitating FPS. It will bring minimal risk and interruption to the City's water distribution system compared to the rehabilitation of FPS. Construction of the 4APS will also give the City the opportunity to reconfigure the distribution piping within the vicinity of 4th Avenue to allow direct transfer of water from BPWTP to the 4th Avenue Reservoir. This change has the potential to reduce the power costs for water distribution in the city. Figure 2 provides a visual of two potential locations for the new 4APS. Other locations within the vicinity of the 4th Avenue Reservoir may also be explored.

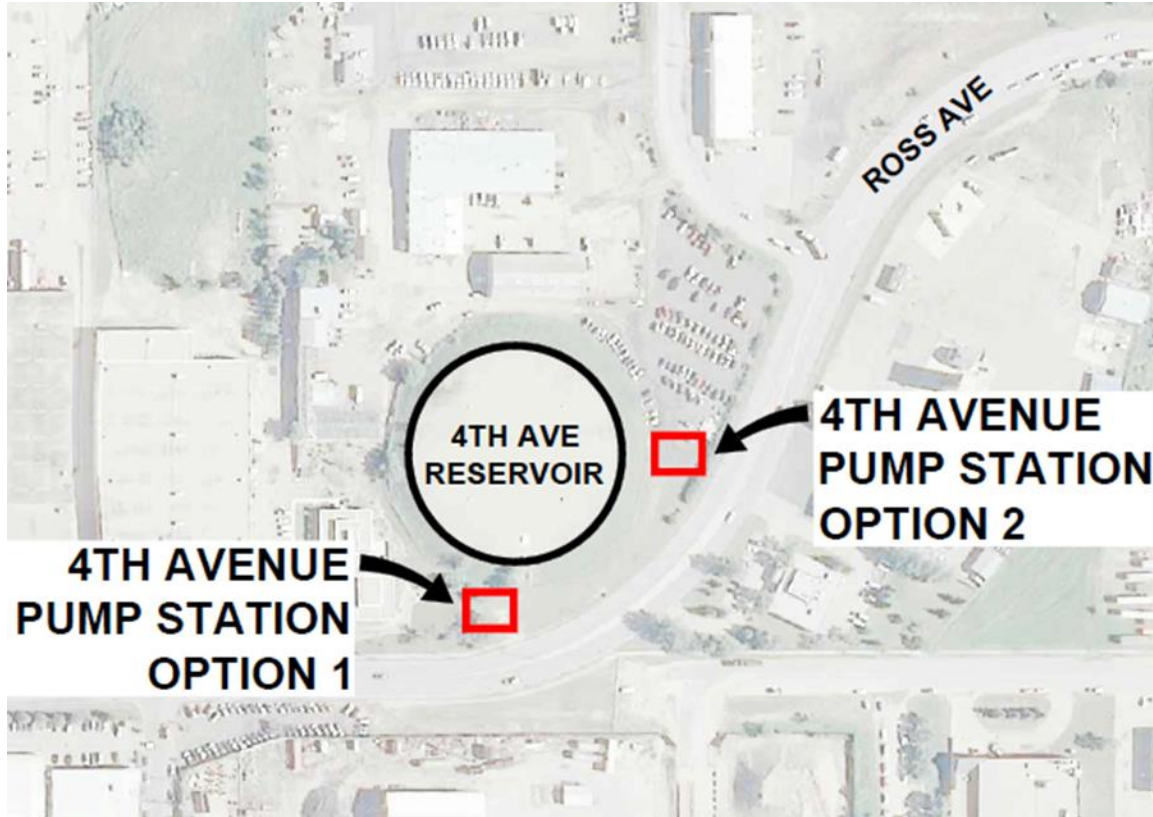


Figure 2: Potential locations of 4th Ave Pumping Station

Additional benefits for the City to construct and operate the 4APS compared to rehabilitating the existing FPS include:

1. Meeting future water demands for the inner city: The existing FPS cannot be expanded due to space limitations. Relocating to the space near the reservoir allows for future expansion.
2. Utilizing the entire volume of the 4th Avenue Reservoir: A rehabilitated FPS would only be able to utilize a portion of the reservoir volume. Constructing the new 4APS would add nine million litres of usable volume to the water distribution system.
3. Increasing system resiliency: This change to the system will allow us to provide a stable supply of the city's average day demand in case the NPS, the City's main pumping station, is totally out of service.
4. Improving energy use: The 4APS will operate with lower power consumption, resulting in lower emissions of carbon dioxide equivalents (CO₂e) and potentially lower cost.
5. Integrating with new infrastructure: The 4APS will be designed to integrate with the future Eastern Pressure solution and will be able to transfer water to a future East reservoir.

Administration requires the services of a consulting engineering firm to carry out the design and construction of the 4th Avenue Pumping Station Project. The successful proponent will be appointed to provide engineering services for all phases of this project, with an initial upset fee

established for design. The commission of subsequent phases of work is dependent on satisfactory performance of the previous phase of work and funding approval. If the appointment is terminated, another public procurement process will be initiated to seek a consulting engineering firm to complete the project.

The Administration requests City Council’s approval to delegate authority to the Executive Director of Citizen Services, to initiate the process to engage consulting and professional engineering services for all phases of the 4th Avenue Pumping Station Project. The Administration also requests City Council’s approval to delegate authority to the Executive Director of Citizen Services to negotiate, award and enter into contract with the highest ranked proponent.

The engineering service fees for this commission are expected to exceed \$750,000. City Council’s approval is required to engage consulting and professional engineering services for this project as required by *The Regina Administration Bylaw No. 2003-69, Schedule D, Section 7*.

RECOMMENDATION IMPLICATIONS

Financial Implications

This project has been submitted as part of the five-year Utility Capital Program for the 2020 Utility Budget process, with funding requested for 2020, 2021 and 2022.

Table 1: Budget Requests

Funding Source	Utility Capital Budget		
	2020	2021	2022
Utility Reserve (\$k)	1,585	5,000	3,000

Funding from the existing Water Pumping Station Upgrades will be utilized, if required, to allow the engineering commission to begin in 2019.

Environmental Implications

The replacement of the FPS with a new 4APS will reduce the long-term power requirements to operate the pumping station. This will reduce the carbon footprint of the water distribution system and produce less carbon dioxide equivalent emissions.

Policy and/or Strategic Implications

The completed 4APS will help achieve the City’s strategic objectives by supporting the goals of:

- Optimizing existing infrastructure, particularly the 4th Avenue Reservoir.
- Providing reliable, cost effective and sustainable infrastructure solutions.
- Flexibility in operating the water distribution system with different operating functions which will improve resiliency.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

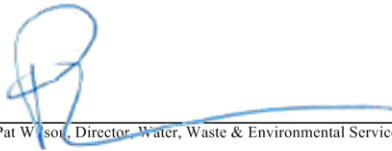
Internal and external stakeholders directly affected by the project will be consulted throughout the process, including the Water Security Agency. A communication plan will be developed to communicate the design and construction activities.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,

Respectfully submitted,



Pat Wilson, Director, Water, Waste & Environmental Services

7/2/2019



Kim Onrao, Executive Director, Citizen Services

7/3/2019

Report prepared by:
Water, Waste and Environmental Services