

Raw Water Park Irrigation – Frequently Asked Questions

Does raw water for park irrigation result in environmental benefits?

The use of raw water for park irrigation does not save water. The volume of water used to irrigate a park is determined by the City's service level, which is not impacted by the source of water.

Instead, the practice of raw water irrigation changes the source of water from a potable (drinking) water source to a non-potable (raw water) source. Possible environmental benefits of raw water include water quality that may be more favourable to soil organism activity, and fewer chemicals may be added to soils. The treatment and delivery of potable water is energy and resource intensive. Every raw water park irrigation system is different depending on the type of raw water, the proximity of the source, the pumps required, the treatment required, and the irrigation requirements of a park. Therefore, each potential system would need to be assessed to determine whether an environmental benefit would result.

The most significant potential environmental benefit may be the reduction of greenhouse gases (GHGs) associated with park irrigation. The 2014 Saskatoon Greenhouse Gas Inventory reported that 31% of the City's corporate emissions were from energy consumption related to treating and distributing water and wastewater. A raw water source that is close to a park and does not require significant energy for treatment or pumping has the potential to reduce GHGs.

Does raw water for park irrigation result in financial savings?

The use of raw water for park irrigation may result in financial savings depending on the specific water source, infrastructure requirements, and operating requirements. The full lifecycle of different irrigation options would need to be compared, since raw water irrigation systems may have higher infrastructure costs, such as a pump house, but operation costs may be lower by eliminating the need to purchase potable water. Additional operating costs would need to be factored in and may include electricity for the pumps, maintenance and graffiti removal on the pump house, maintenance of filtration and water intakes, additional staff or contract costs to conduct any additional monitoring or maintenance, and safety procedures for servicing in ground pumps. It is anticipated that economies of scale would influence feasibility (i.e. a large park with a close water source would be more economically feasible than a small park with a distant water source).

The implications on the City operated water utility would also need to be considered, since demand for water would be reduced, which may assist in deferring costs to increase plant capacity. At the same time there would be a corresponding reduction in revenue.

The Pacific Institute compared the levelized costs of water (including the full capital costs and the operating costs of a project or measure over its useful life) of urban water conservation and efficiency measures in California. It found that storm water capture as an alternative water supply had a slightly higher cost per acre to converting a conventional

lawn to a low-water use landscape, however both of those options cost significantly more than installing a new low-water landscape, such as would be required in a new development. This finding suggests that depending on the context, more cost savings could be realized through eliminating the need for irrigation rather than finding alternative water sources to potable water.

Is there a public health concern when using raw water for park irrigation?

When appropriate measures are taken there is not a public health concern with using raw water (rain water, storm water, ground water, river water or lake water) for park irrigation.

Measures must be taken to prevent consumption of water that is not treated to a potable standard and eliminate exposure to pathogens or impurities that may be present in raw water sources. This can be done by:

- Developing a water quality standard for raw water that will be used for park irrigation.
- Monitoring water quality to ensure that it meets the standard and transparent reporting of water quality results.
- When required, treating water to meet the water quality standard.
- Taking measures to improve water quality and mitigate contamination (such as for a rain water system, a first-flush bypass or filtration at a raw water intake).
- An inspection and maintenance schedule for treatment and irrigation systems.
- Health and safety training for parks operation staff.
- Signage, labeling and system design to alert the public of non-potable water use and prevent consumption of or exposure to raw water.
- Minimize daytime application by scheduling regular application during the overnight and early morning hours.

Will the public support using raw water for park irrigation?

A study of the public opinion of Saskatoon residents on the use of raw water for park irrigation has not been conducted.

As part of the City of Calgary's strategy to irrigate parks using storm water from retention ponds, 500 questionnaires were mailed out to residents living around a park where a storm water irrigation system was proposed. Calgary found that there was little resistance to the use of storm water for irrigation but there was the public expectation that storm water quality would be monitored and the public would notified of health risks. The survey found that the public was not well aware of the specific health risks that might be posed by degraded water quality, but were not willing to accept much risk with regards to their health. The study concluded that as long as the projects was technically and economically sound and that there was no serious public health risk, that a storm water irrigation system would be supported.