



**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MARCH 20, 2024**

**SUBJECT Bylaw No. 4604 – Capital Regional District Water Conservation
Bylaw No. 1, 2016, Amendment Bylaw No. 4, 2024**

ISSUE SUMMARY

Amendments to Bylaw No. 4099 Capital Regional District Water Conservation Bylaw No.1, 2016 are required to support efforts to reduce peak and instantaneous water demand during summer morning periods.

BACKGROUND

Operations staff highlighted concerns regarding increasing stress on drinking water infrastructure caused by an instantaneous increase in peak demand during the summer overlap of indoor and outdoor morning water demands. On residential watering days, particularly at 4:00, 5:00 and 6:00 a.m., water demand can double with instantaneous increases that occur on the hour and are associated with the programmed timing of irrigation systems, and then the start of day for households.

High and instantaneous peak demands can impact the ability to supply the necessary water where and when it's needed, achieve complete disinfection, maintain adequate pressure in the system, as well as reduce hydraulic performance and increase water velocity and scouring, leading to turbidity excursions and potential water quality concerns. High instantaneous demands also have the potential to cause a decrease in pressure in the water conveyance system, which could lead to back-siphoning, cross connections or compromise the requirement to maintain adequate pressure for firefighting.

These issues are being exacerbated with climate change and increasing heat events. With regional climate projections forecasting hotter, drier summers, staff expect summer outdoor demand to increase beyond the expected trajectory from population increase alone.

Staff investigated peak demands during summer outdoor watering times and specific conditions that stress the water conveyance system and infrastructure. Staff also consulted other water utilities to determine if they were experiencing similar issues. As a result, staff recommend a coordinated approach to reducing the instantaneous and peak demands. A significant component are amendments to [Bylaw No. 4099](#), direct engagement with irrigation and landscape professionals, and an extensive public outreach campaign to engage the public in understanding the problem and participating in the solution.

Water Conservation Bylaw No. 4099 regulates the use of water in the region and defines specified times for lawn watering from May to September each year. Bylaw No. 4604 "Capital Regional District Water Conservation Bylaw No. 1, 2016, Amendment Bylaw No. 4, 2024" (Appendix A), amends the Water Conservation Bylaw by inserting a new overnight lawn watering schedule for timed irrigation systems only and changes the public authority watering day for public, institutional and community playing fields from Wednesday to any day other than Wednesday to eliminate overlap with residential lawn watering days where the largest peak demands are seen.

These amendments will be supported by an outreach campaign to inform the public about a

revised watering schedule for timed irrigation and to encourage irrigation system owners/operators to stagger the start times off the hour to reduce the instantaneous demand. Water conservation outreach staff will also utilize direct engagement with residents, irrigation and landscape professionals, municipalities, industrial, commercial and institutional users that have large, irrigated areas.

On February 27, 2024, the Water Advisory Committee was presented with this proposed amendment and its rationale. The committee supported the proposed Bylaw amendment.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission recommends to the Capital Regional District Board:

1. That Bylaw No. 4604, “Capital Regional District Water Conservation Bylaw No. 1, 2016, Amendment Bylaw No. 4, 2024”, be introduced and read a first, second and third time; and
2. That Bylaw No. 4604 be adopted.

Alternative 2

That Bylaw No. 4604, “Capital Regional District Water Conservation Bylaw No. 1, 2016, Amendment Bylaw No. 4, 2024” be referred to staff for revision.

IMPLICATIONS

Climate Action and Environmental

Recently updated regional climate projections to 2050 forecast that there will be on average 32 summer days with temperatures above 25⁰C, that the length of heat waves will increase from 2.5 days to 4 days, and that summer droughts will be even longer. This, in turn, will increase the CRD’s summer water demand.

During recent extreme heat events, higher than normal drawdown of water from some balancing reservoirs in the water distribution system were observed. There are a limited number of balancing reservoirs, and this has the potential to impact the delivery of water when and where it’s needed and can cause a decrease in system pressure when demands are high.

Water quality may also be impacted by peak and instantaneous demands. Sudden high flows and pressure surges due to instantaneous and peak demands can cause deposited sediments in the pipes upstream of the Goldstream Treatment Plant to resuspend, leading to short duration turbidity events. Turbidity lowers the efficacy of ultraviolet and chlorine disinfection, which may compromise the ability to achieve complete disinfection of the drinking water prior to distribution to the community.

Adding an overnight watering window under the Bylaw and encouraging landowners and residents to switch timed irrigation systems for lawns to evening and overnight watering times will help to better manage peak morning flows and instantaneous demands, reduce the possibility of turbidity events and help alleviate impacts related to high demand due to heat events.

Service Delivery

Sudden changes in flow can cause decreased pressure in the water conveyance system, requiring infrastructure valves to throttle quickly to accommodate the new flow. Multiple pulses of instantaneous increases to demand at specific times on designated lawn water days are placing

preventable strain on water infrastructure. Sustained overnight low flows also create operational challenges. Therefore, it is important to manage periods of both high and low flows. The Capital Regional District will work with local government staff to inform on the issue, seek collaborative actions and promote the new strategy across the regional service area.

Bylaw No. 4099 currently enables public authorities to water public, institutional and community playing fields on Wednesdays only, further intensifying the instantaneous peak demands due to programmed irrigation systems. The proposed changes in the bylaw will enable public authorities to water between the hours of 1:00 a.m. to 10 a.m. or 7:00 p.m. to 10:00 p.m. on any day except Wednesdays to again avoid overlap with residential lawn watering days where the largest peak demands are observed.

Amending the bylaw to add an overnight watering window, changing the public authority watering day from Wednesday to any day other than Wednesday, and encouraging landowners and residents to switch timed irrigation systems for lawns to evening and overnight watering times, should start to balance both peak morning flows and low overnight flows.

CONCLUSION

High and instantaneous demand for water in the summer during scheduled watering days is causing stress to the Capital Regional District’s drinking water supply infrastructure. Amending the bylaw to add an overnight watering window, changing the public authority watering day from Wednesday to any day other than Wednesday, engaging directly with irrigation and landscape professionals and encouraging landowners and residents to switch timed irrigation systems for lawns to evening and overnight watering times will help to reduce peak morning, instantaneous and low overnight flows.

RECOMMENDATION

- The Regional Water Supply Commission recommends to the Capital Regional District Board:
1. That Bylaw No. 4604, “Capital Regional District Water Conservation Bylaw No. 1, 2016, Amendment Bylaw No. 4, 2024”, be introduced and read a first, second, and third time; and
 2. That Bylaw No. 4604 be adopted.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., Acting General Manager, Parks & Environmental Services
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENTS

- Appendix A: Bylaw No. 4604 – A Bylaw to Amend Water Conservation Bylaw No. 4099
- Appendix A: Blacklined version of Bylaw No. 4099, Schedule A