

AGENDA ITEM NO: 7.6

MEETING DATE: March 19, 2024

STAFF REPORT – COVER SHEET

SUBJECT: Overview of 2023 Watering Restrictions and Water Conservation Plan Update DATE: March 12, 2024

DEPARTMENT: Engineering PREPARED BY: Chikezie Nwaoha

1. SUMMARY OF ISSUE:

Overview of the 2023 watering restrictions is provided as an update. Amendments to the City's Water Conservation Plan are proposed, including starting the watering restrictions on May 1st instead of June 1st, as well as revising the watering restriction Stages with the four-stage system.

2. RECOMMENDATION:

Recommendation that the 2023 watering restrictions overview be received for information, and the updated Water Conservation Plan be adopted by Council as presented in this staff report.



Kara Jefford, Director of Engineering

3. FINANCE COMMENTS:

The 2024 Water Conservation Plan contains funding allocated towards planned initiatives through the Water Fund.



Glen Savard, Director of Finance

4. CHIEF ADMINISTRATIVE OFFICER'S RECOMMENDATION/COMMENTS:

Supports recommendation.



David Blain, CAO

**STAFF REPORT ON
OVERVIEW OF 2023 WATERING RESTRICTIONS AND WATER CONSERVATION PLAN UPDATE**

PREPARED BY: Chikezie Nwaoha DATE: March 12, 2024
POSITION: Manager of Utilities DEPARTMENT: Engineering

1. DEFINITION OF ISSUE:

Overview of the 2023 watering restrictions is provided as an update. Amendments to the City's Water Conservation Plan are proposed, including starting the watering restrictions on May 1st instead of June 1st, as well as revising the number of stages.

2. FACTORS:

2.1 The City first developed the Water Conservation Plan in 2005 and subsequently updated it in 2008, and 2011, and most recently it was endorsed by Council in 2018 to plan for water conservation initiatives to reduce peak water use.

Overview of 2023 Watering Restrictions:

- 2.2 On July 18th, 2023, Council approved an extension of the watering restrictions period to October 15th (previously the restrictions were in place from May 1st to September 30th), as well as new triggers for implementing each stage of summer watering restrictions. The triggers were based on the aquifer conditions and available data (Provincial Groundwater Observation Well Network (PGOWN #406)) and are evaluated periodically for effectiveness, based on new data as it becomes available and as City water demand increases.
- 2.3 On August 29th, 2023 the City received a letter from the BC Ministry of Forests South Coast Water Resource Management branch informing staff that the South Coast region had been elevated to Drought level 5 and requesting all existing groundwater users voluntarily reduce water use by 50% or more for the remainder of the drought season. In response, the City of Chilliwack implemented stage 4 water restrictions on September 5, 2023. In stage 4 water restrictions, lawn watering and the use of automatic sprinkler systems are prohibited.
- 2.4 During the implementation of stage 3 water restrictions, residential water consumption went down approximately 20% from the peak summer water consumption, and stage 4 restrictions reduced consumption by an additional 10% (although precipitation and cooler temperatures in September likely also contributed to the reduced water consumption).

Water Conservation Plan Update:

- 2.5 Hatfield Consultants was retained to review the City's Water Conservation Plan, historical groundwater aquifer level data, and to provide recommendations for continuous improvements of the City's Water Conservation Plan. The recommendations are highlighted below.

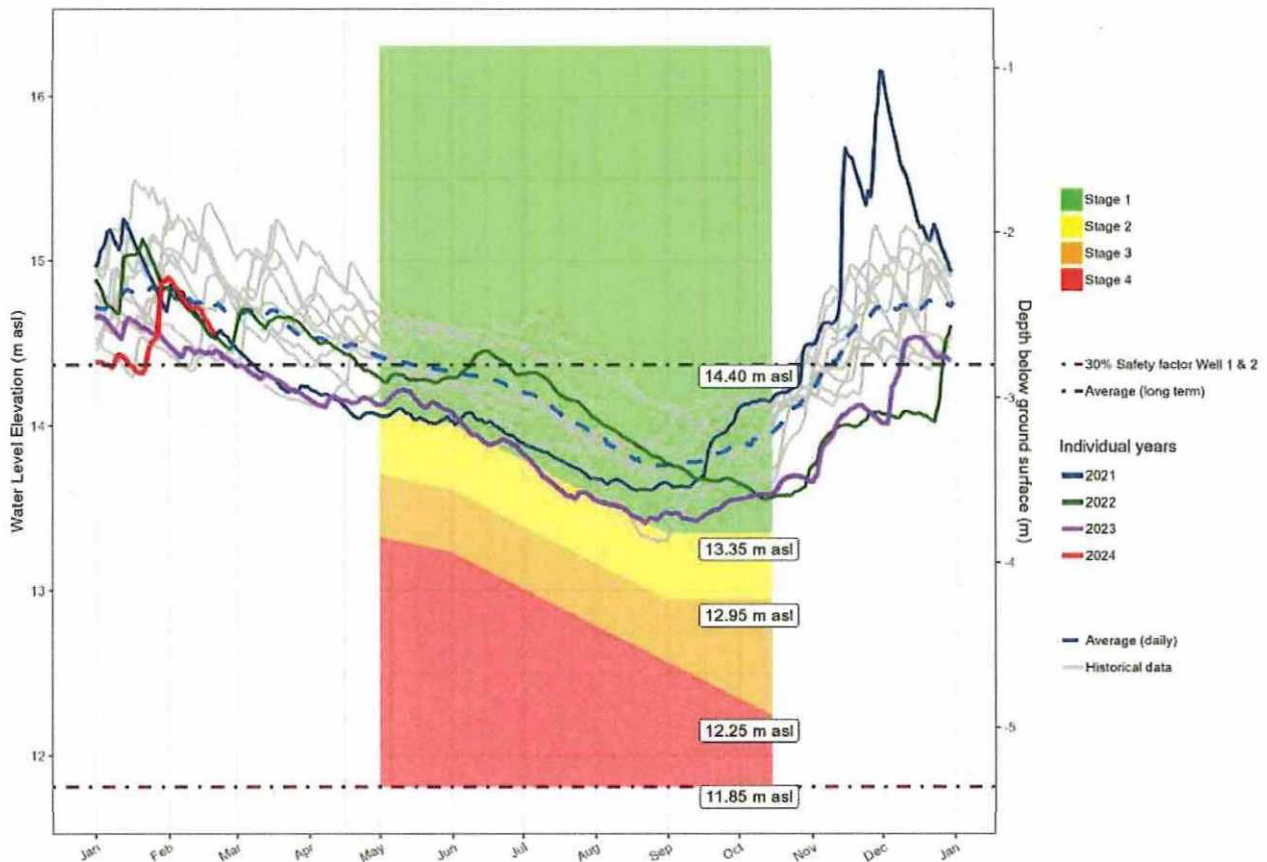
- 2.6 Begin the water restriction period on May 1st as a proactive strategy that aligns with efforts to mitigate the increasing risk of drought.
- 2.7 For consistency and simplicity, it would be beneficial for the City to align its watering restriction stages with the four-stage system (instead of a five-stage system) of Metro Vancouver, Abbotsford and Mission.

Table A1.1 Proposed water conservation stages based on groundwater triggers.

Stage	Applicable Date Range	Overview
No restriction	October 16 th – April 30 th	Applies automatically
Stage 1	May 1 st – October 15 th	Standard watering restrictions, applies automatically
Stage 2		Trigger for Stage 2 is based on historical average winter levels (50 th percentile of 14.77 m asl) and historical average recovery over winter period (1.42 m). Minimum targeted groundwater level by September 1 st is 13.35 m asl. (i.e., 14.77 m asl minus 1.42 m).
Stage 3		Set based on historical lower 5 th percentile of winter water levels (14.37 m asl) and average recovery over winter period. Minimum targeted groundwater level is 12.95 m asl (i.e., 14.37 m asl minus 1.42 m).
Stage 4		Set based on historical average winter level and maximum historical recovery over winter period (2.54 m). Minimum targeted groundwater level at end of dry season is 12.25 m asl (i.e., 14.77 m asl minus 2.54 m). This target still incorporates a slight safety factor (40 cm) above the Safe Available Drawdown level of 11.85 m asl.

- 2.8 The triggers graph has been updated to reflect aquifer recovery in 2023 and current aquifer levels for proactive decision making for the 2024 watering restrictions. The City reviews aquifer level data as it becomes available and as City water demand increases.
- 2.9 Water conservation stages (2 to 4), the triggers are based on provincial well OW406 monitoring data and elevations relative to meters above sea level (m asl), as shown in Figure 1.

Figure 1: Proposed groundwater drought stages and historical water levels at OW406



* The colour scheme indicates entering of drought response triggers, a 20 cm buffer above the stage triggers should be applied to determine when to remove stage restrictions.

2.10 The City may lift stage restrictions when groundwater levels in the aquifer recover 20 cm above a stage trigger threshold. Even under the most adverse historical conditions, this threshold provided at least one month of lifted restrictions before there is a possibility of needing to re-trigger them in a season.

3. RECOMMENDATION & SUBSTANTIATION:

Recommendation:

Recommendation that the 2023 watering restrictions overview be received for information, and the seasonal water restriction period be revised to May 1st to October 15th, watering restriction Stages be revised to a four-stage system, and the updated restriction triggers graph be adopted.