



# Elk Lake Oxygenation System Annual Update

Regional Parks Committee  
July 22, 2026

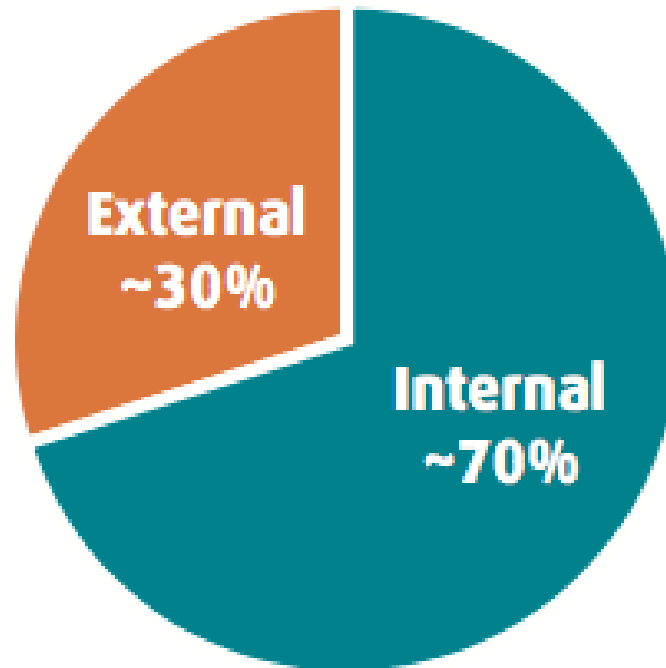
# Agenda

1. Context
2. Oxygenation System Objectives
3. System Operation
4. System Evaluation
5. Operational Challenges
6. 2026 Interim Update
7. Next Steps



# Context

## Current Nutrient Contribution



## Elk/Beaver Lake Watershed Management Plan

- Reduces external nutrient loading

## In-Lake Remediation Plan

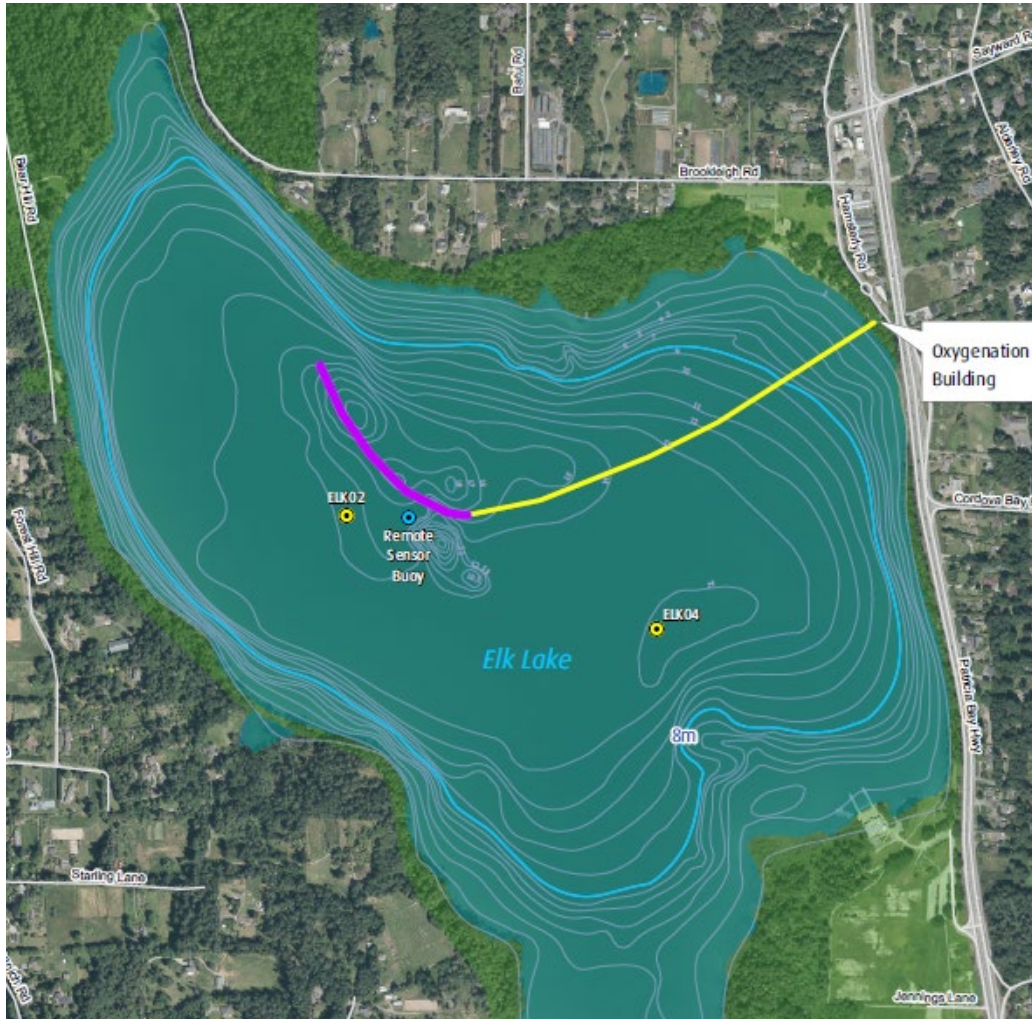
- Reduces internal nutrient loading

# Oxygenation System Objectives

1. **Eliminate deep-water oxygen depletion (anoxia)**
  - Deep water dissolved oxygen should be more than 2mg/L (ideally more than 5mg/L)
2. **Decrease internal phosphorus loading**
  - Deep water total phosphorus should not exceed 50ug/L
3. **Maintain suitable cold-water native fish habitat**
  - Deep water temperature should not exceed 15°C
4. **Reduce frequency and duration of blue-green algae blooms**
  - Reduced park advisories for blooms

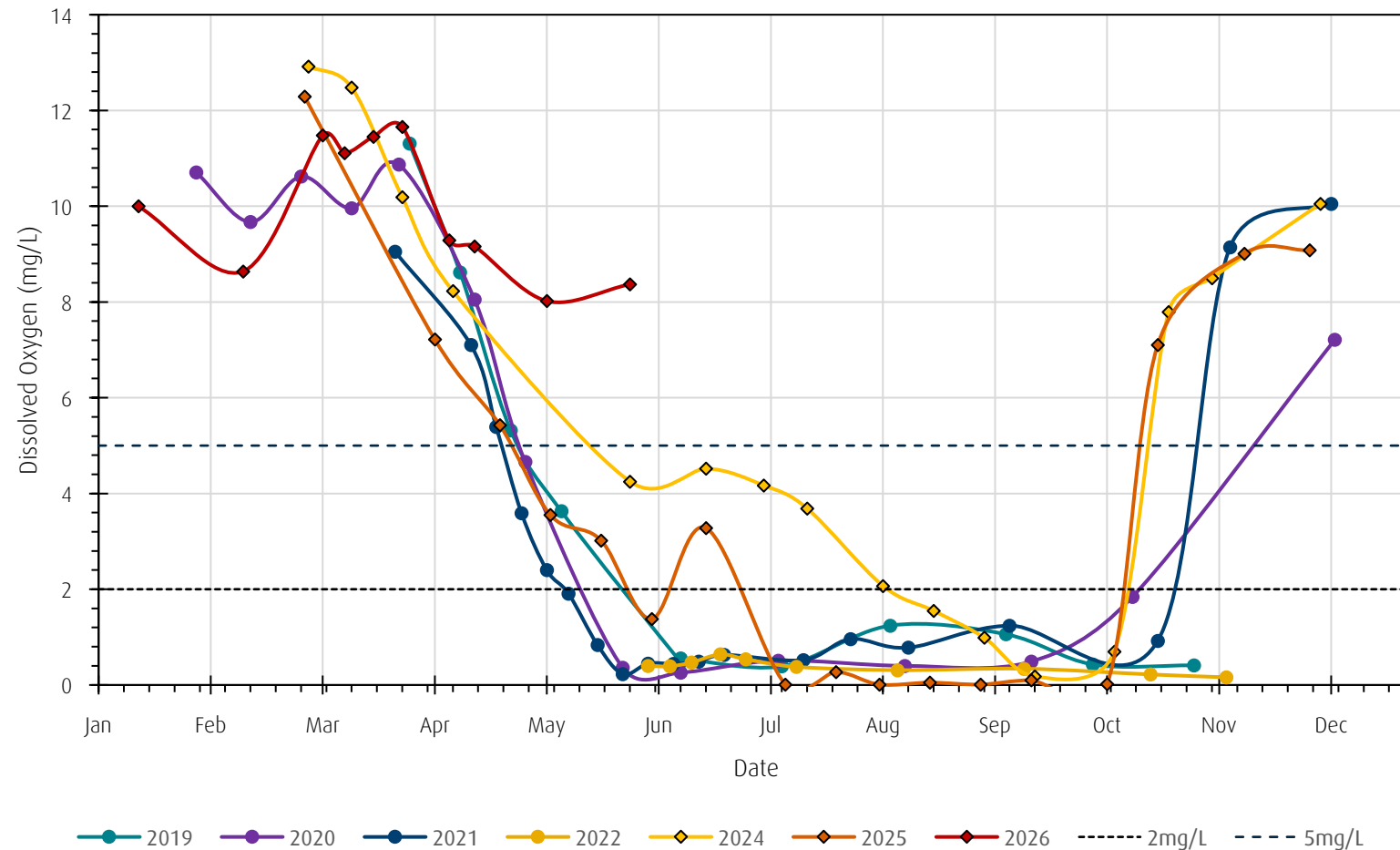


# System Operation



# System Evaluation

Dissolved Oxygen Comparison (16m)



## Objective 1



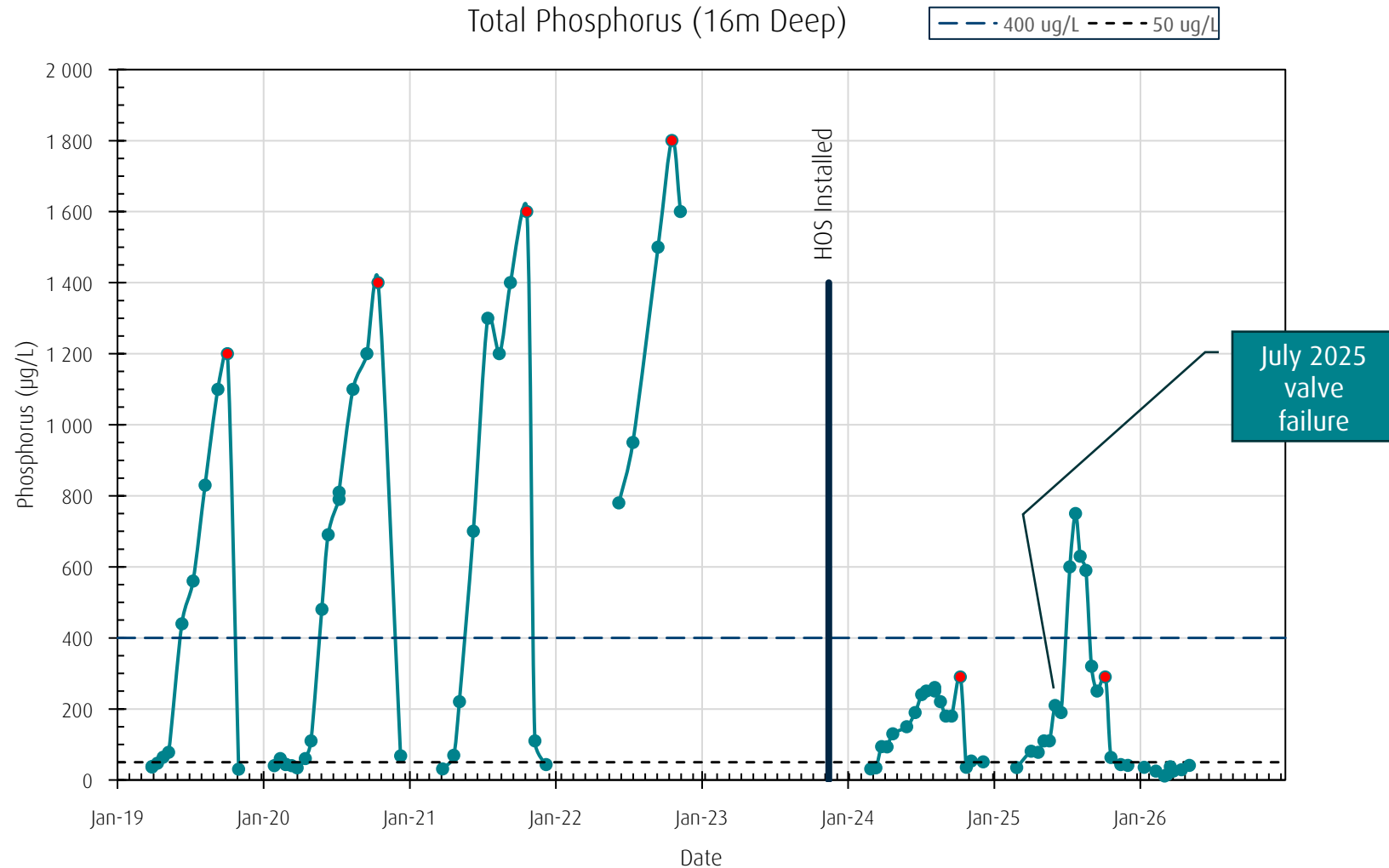
Eliminate deep-water oxygen depletion (anoxia)

Status: ON TRACK



Deep water dissolved oxygen of greater than 5mg/L was not achieved in 2025, but as of May 28, 2026, has not dropped below 8mg/L.

# System Evaluation



## Objective 2

🎯 Decrease internal phosphorus loading

✅ Status: **ACHIEVED**

80% reduction in deep water phosphorus levels at fall turnover (red dots).

# System Evaluation

|                                  | Average Hypolimnion Temperature<br>(°C, below 10m) | Maximum Hypolimnion Temperature<br>(°C, below 10m) |
|----------------------------------|----------------------------------------------------|----------------------------------------------------|
| May - October 2020               | 7.5                                                | 10.9                                               |
| May - October 2021               | 7.8                                                | 11.4                                               |
| June - October 2022 <sup>1</sup> | 8.9                                                | 10.5                                               |
| May - October 2024               | 11.5                                               | 14.6                                               |
| May - October 2025               | 10.5                                               | 13.9                                               |

<sup>1</sup> - No data available from 2023

## Objective 3



Maintain suitable cold-water native fish habitat

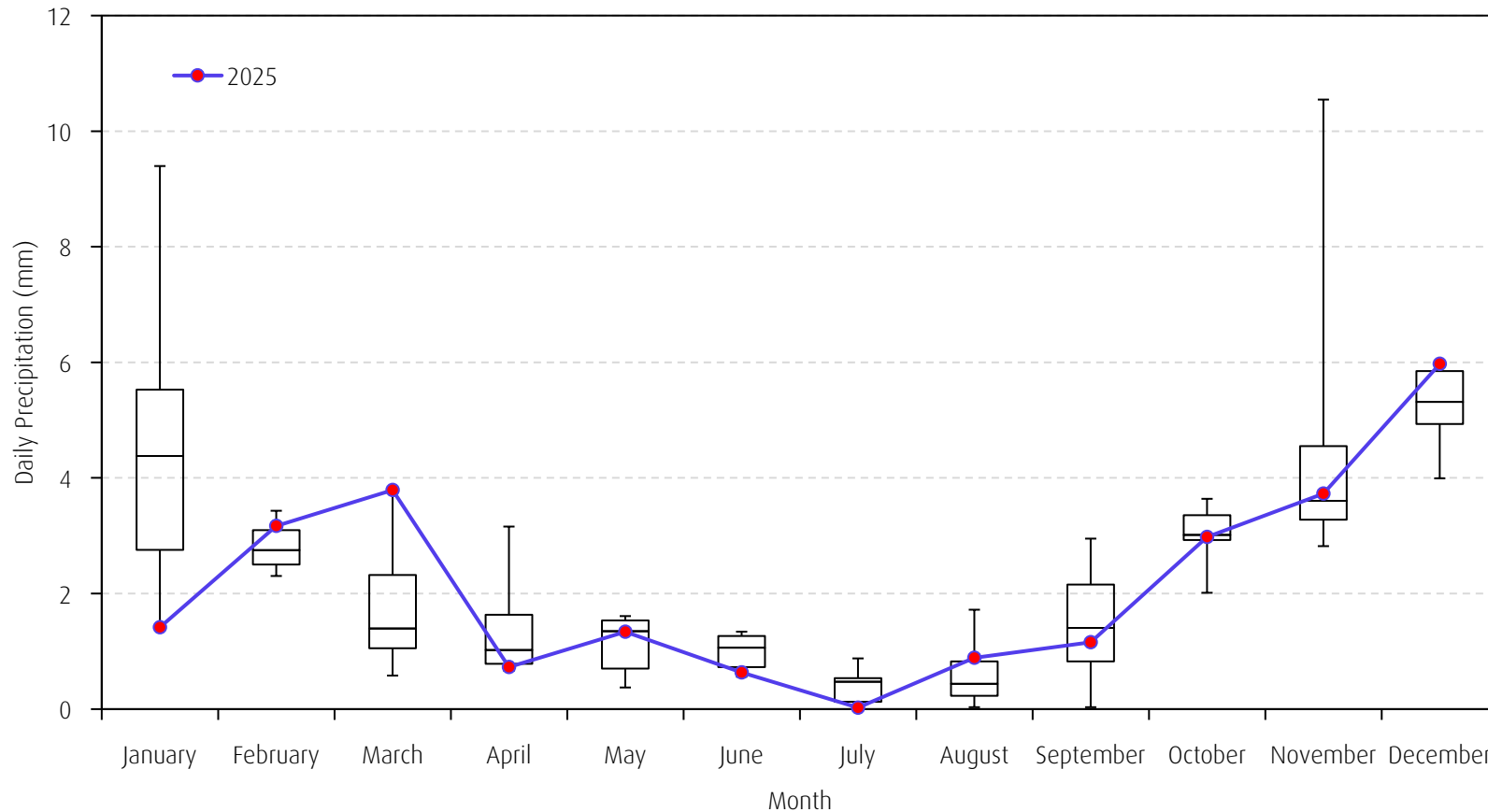


Status: **ACHIEVED**

Average temperature through summer 2024 was 12.5°C.

# System Evaluation

Elk Lake 2020 - 2025 Average Daily Precipitation



## Objective 4



Reduce frequency and duration of blue-green algae blooms



Status: ON TRACK

A large bloom in April significantly impacted recreation in the lake; however, blooms were reportedly much smaller or more isolated for the remainder of the year.

# Operational Challenges



- Valve failure in July.
- Valve was replaced in August.
- System returned DO and P levels before fall turnover.

# 2026 Interim Update

- As of early June 2026:
  - Deep-water DO concentrations above 8mg/L
  - Deep-water phosphorus levels below 50µg/L
  - Deep-water temperatures are below 11°C
- Spring bloom occurred in April 2026 and receded in early May and did not impact the IRONMAN 70.3 event.



# Next Steps

**Overall, 2025 was a success. In 2026, we can expect:**

- Planned system upgrades.
- Continued water quality monitoring.
- CRD is partnering with the University of Victoria to improve lake-wide bloom detection and tracking.
- Annual report on system performance and water quality progress.
- Ongoing implementation of actions identified in the Elk/Beaver Lake Watershed Management Plan, with an update to be provided in 2030.





# Thank you!

## Questions?



Capital Regional District



CRDVictoria



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