

GRAHAM LAKE IMPROVEMENT DISTRICT 2021 OPERATORS REPORT



3567 EAST ROAD,
DENMAN ISLAND, BC, V0R 1T0,
250 335 2811
WWW.GRAHAMLAKEWATER.COM
Enrico Wauri - Operator
Craig Williams – Operator

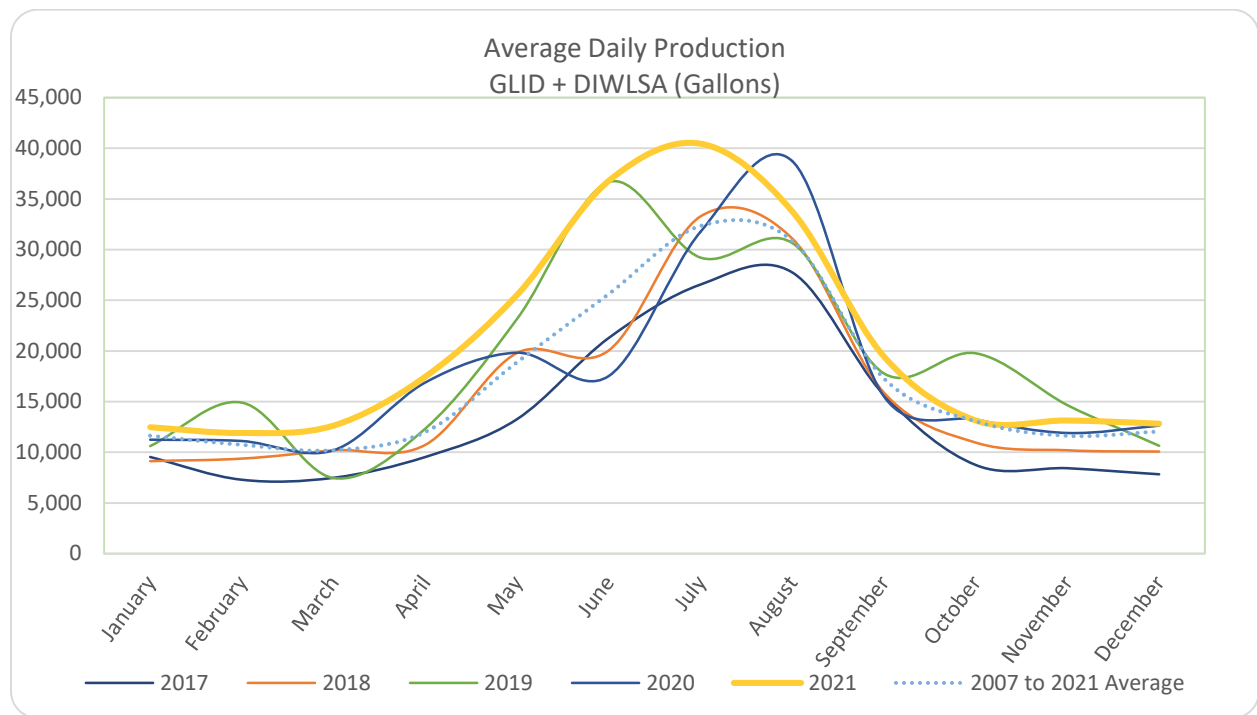
2021 – The Year in Review

For the most part, 2021 was again a typical year for the operators. A failed reservoir level sensor offered some brief excitement, but a short-term fix bought us time while we waited for the delivery of a replacement sensor.

The summer ‘heat dome’ coinciding with elevated algae growth in the lake required twice daily backwashing of the sand filters for more than a month.

2021 Treated Water Production

Graham Lake Improvement District (GLID) treated 7.6 million gallons of water in 2021, which represents an increase of approximately 18% over the volume of water treated in 2020.

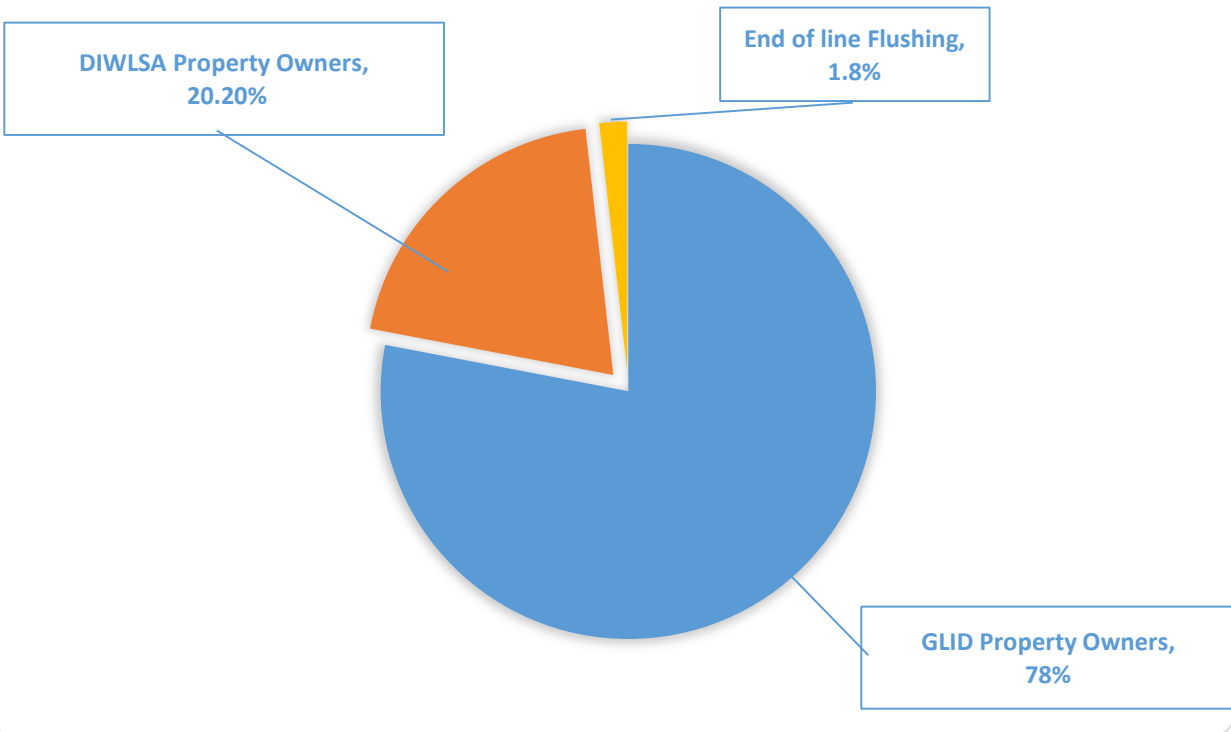


Higher occupancy and a summer ‘heat dome’ contributed to higher water consumption.

Of the 7.6 million gallons produced, approximately:

- 78 % was consumed by GLID property owners.
- 20.2% was consumed by DIWLSA property owners.
- the remaining 1.8% was flushed at the south end of the DIWLSA line to help prevent stagnation and maintain disinfection residuals.

2021 WATER USAGE BREAKDOWN



The 7.6 million gallons of treated water produced in 2021 represents approximately 49.3 % of GLID + CVRD’s annual aggregate allowable withdrawal against water licenses of 15.4 million gallons.

Water Safety and Quality

Bacteria Sampling

Schedule B of the Drinking Water Protection Regulation requires that we submit 4 water samples per month to VIHA for bacteriological analysis. Each week, two samples of treated water are taken from our sampling points at 4356 East Road, and 5326 East Road and delivered to the VIHA office in Courtenay.

99 drinking water samples were submitted to VIHA in 2021 and all but one was free of coliform bacteria. In August one sample produced a total coliform count of 1 however no action was required by our Drinking Water Officer.

Algae

In 2020 we implemented the provincial draft protocol for Cyanobacteria Evaluation.

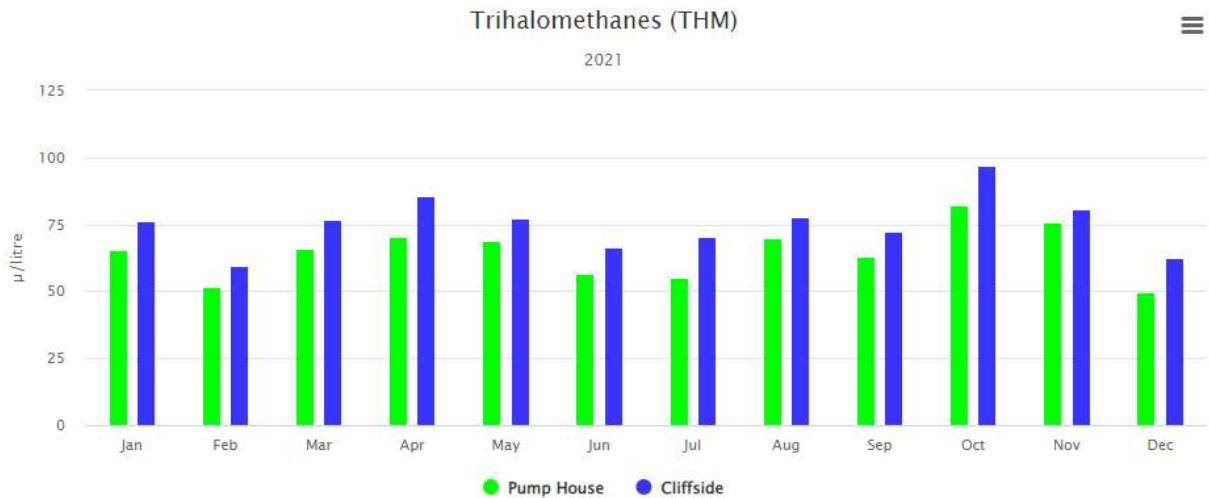
https://www2.gov.bc.ca/assets/gov/health/keeping-bc-healthy-safe/healthy-communities/decision_protocol_for_cyanobacteria.pdf

From May to September 2021, we sampled weekly for the prescribed nutrient indicators. No samples indicated a need for microcystin sampling.

THMs

Trihalomethanes (THMs) are disinfection by-products that can be created when organic materials in raw water are exposed to chlorine in our water treatment plant. Monthly water samples are taken from both the pump house and the CVRD's sampling hydrant at 5326 East Road (Cliffside), and analyzed by Bureau Veritas Laboratory in Courtenay. The maximum acceptable concentration for THMs in drinking water is 100 µg/L based on a running annual average of samples taken at the point in the distribution system with the highest potential THM levels. In 2021 no samples exceed 100 µg/l. Quarterly averages, and our running annual averages are well below the 100 µg/L guideline and are as follows:

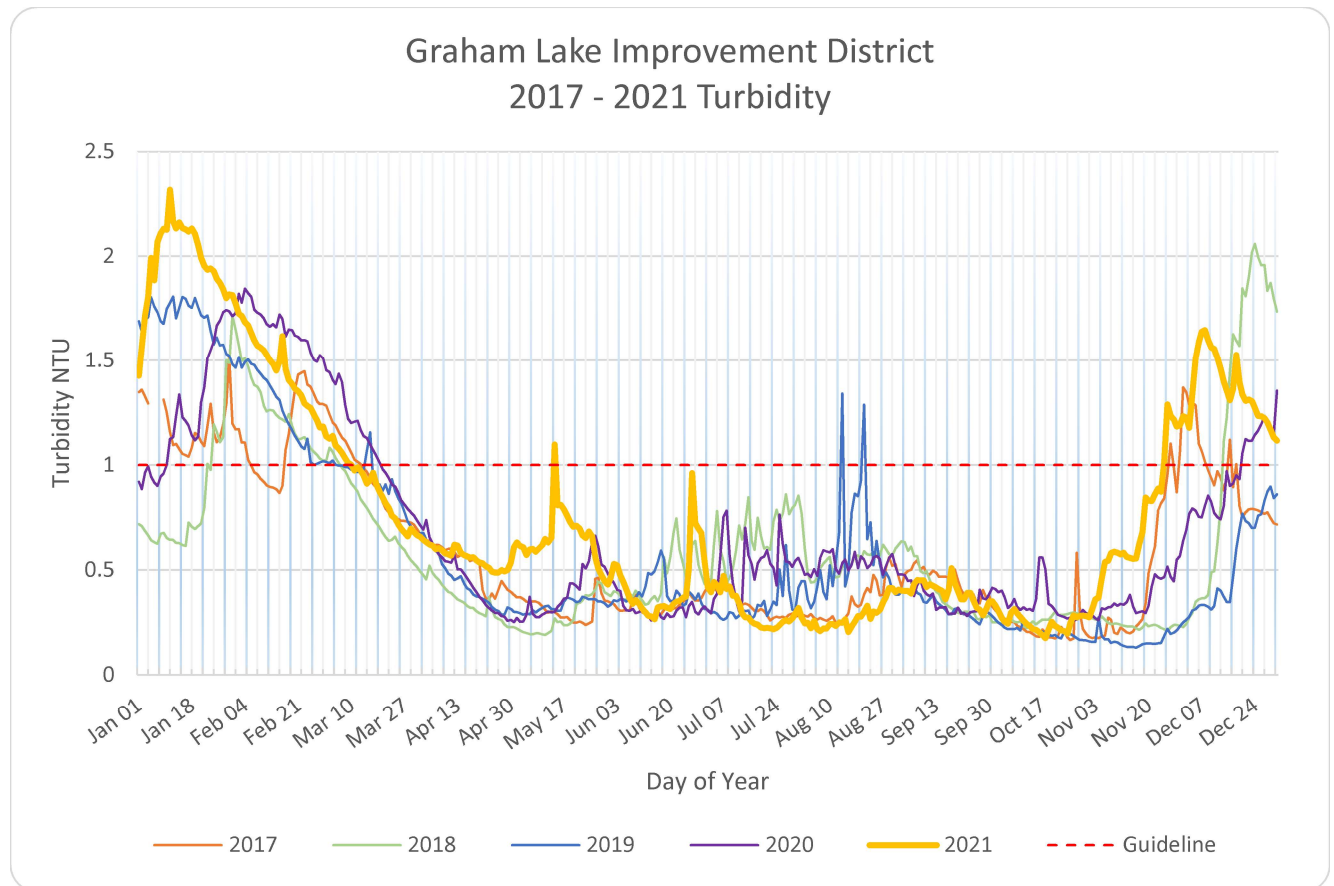
- 64.6 µg/l 3567 East Rd (Pump House)
- 75.2 µg/l 5326 East Road (Cliffside)



Turbidity

“High turbidity can interfere with the disinfection of drinking water by causing ultraviolet light and/or chlorination processes to become ineffective in destroying pathogens. Turbidity events can also be linked to an increase of disease-causing micro-organisms in the source water. The turbidity objective for drinking water from surface water supplies is less than 1.0 NTU.” – VIHA

Turbidity exceeding 1.0 NTU is common for the Graham Lake Improvement District during the fall and winter months. In 2021, turbidity exceeded 1 NTU for 107 days.



Reservoir Cleaning

In February we hired Orca Health and Safety to prepare the required confined space hazard assessment and confined space entry procedure in anticipation of a long overdue reservoir cleaning and inspection.

In May of 2021 we had our reservoir cleaned and inspected by WorkSafeBC qualified operators. The reservoir was found to be easy to clean and in good condition. We took this opportunity to document and refurbish some of the in- reservoir plumbing.

APPENDICES

Water Licenses

GRAHAM LAKE IMPROVEMENT DISTRICT WATER LICENSES

License	Issued	Purpose	Precedence Date	G/Year	M ³ /Year
C67571	1988 Mar 31	Waterworks	1970 Mar 19	10,950,000	49,780
C67572	1988 Mar 31	Waterworks	1985 Feb 21	1,095,000	4,978
C67573	1988 Mar 31	Storage	1983 Mar 25	10,310,462	46,872

COMOX VALLEY REGIONAL DISTRICT (DIWLSA Addition)

C124755	2009 Nov 17	Waterworks	2009 Apr 17	3,376,528	15,350
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Total Available Withdrawals				15,421,528	70,108
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Vancouver Island Health Authority Links

- VIHA Water test results [\(GLID\)](#) [\(DIWLSA\)](#)