

GRAHAM LAKE IMPROVEMENT DISTRICT 2017 OPERATORS REPORT



3567 EAST ROAD,
DENMAN ISLAND, BC, V0R 1T0,
250 335 2559
WWW.GRAHAMLAKEWATER.COM

Regulatory

Annually, water system operators are required to provide VIHA a Drinking Water System Annual Report, and make it available to the public. Our drinking water system annual report for 2017 has been filed with VIHA and a copy is available on our web site.

We were in compliance with all the terms and conditions of our operating permit with these exceptions:

- An update to our emergency response plan was not filed in 2017.
- The appropriate annual chemical analysis of our drinking water was not completed in 2017 so we have submitted comprehensive analysis of our raw water for 2017 and a 2018 drinking water analysis.

In 2017 29 treated water samples were taken from various location through out our distribution system and submitted to VIHA for bacteriological analysis. In July one coliform was detected in one sample.

Of the 18 raw water samples collected from the pump house, 16 had positive results for coliform bacteria and 6 were positive for e. Coli.

Graham Lake Improvement District

Consolidated VIHA Water Sample Report for 2017

TREATED WATER

Sample Date	3891 East Rd		4356 East Rd		5326 East Rd	
	Total Coliform	E. Coli	Total Coliform	E. Coli	Total Coliform	E. Coli
2017-01-18	L1	L1				
2017-02-06	L1	L1				
2017-02-15	L1	L1				
2017-03-01	L1	L1				
2017-03-15	L1	L1				
2017-04-05	L1	L1				
2017-04-18	L1	L1				
2017-05-02	L1	L1				
2017-05-16	L1	L1				
2017-06-06	L1	L1				
2017-06-14	L1	L1				
2017-07-05	1	L1				
2017-07-31	L1	L1				
2017-08-14	L1	L1				
2017-09-13	¹				L1	L1
2017-09-25	¹				L1	L1
2017-10-11	¹				L1	L1
2017-10-18	¹		L1	L1	L1	L1
2017-10-24	¹				L1	L1
2017-11-01					L1	L1
2017-11-07					A	0
2017-11-15					A	0
2017-11-21					L1	L1
2017-11-21					L1	L1
2017-11-28			L1	L1	L1	L1
2017-12-06			L1	L1	L1	L1
2017-12-13			L1	L1	L1	L1

	Count	% of Total
Total Number of Tested Samples	29	
Samples that contain coliform	1	3.45%
Samples that contain E. Coli	0	0.00%

¹ VIHA Records Indicate that these samples were collected at 3891 East Rd. They were in fact sampled from 5326 East Rd, or 4356 East Rd.

Graham Lake Improvement District

Consolidated VIHA Raw Water Sample Report for 2017

UNTREATED WATER AT PUMPHOUSE

Sample Date	Total Coliform	E. Coli
2017-01-18	47.1	9.8
2017-02-06	9	L1
2017-03-01	18	L1
2017-04-05	16	L1
2017-05-02	12	L1
2017-06-05	25	L1
2017-07-05	EST 150	L1
2017-07-17	EST 190	L1
2017-07-31	EST 200	EST 2
2017-10-24	51.2	1
2017-11-01	8.5	L1
2017-11-08	25.6	2
2017-11-21	83.3	1
2017-11-28	L1	L1
2017-11-28	34.5	1
2017-12-06	32.3	L1
2017-12-06	L1	L1
2017-12-13	25.9	L1
Total Positive Samples	16	6
	89%	33%

In VIHA, the results of drinking water sampling are reported using the following coding system:

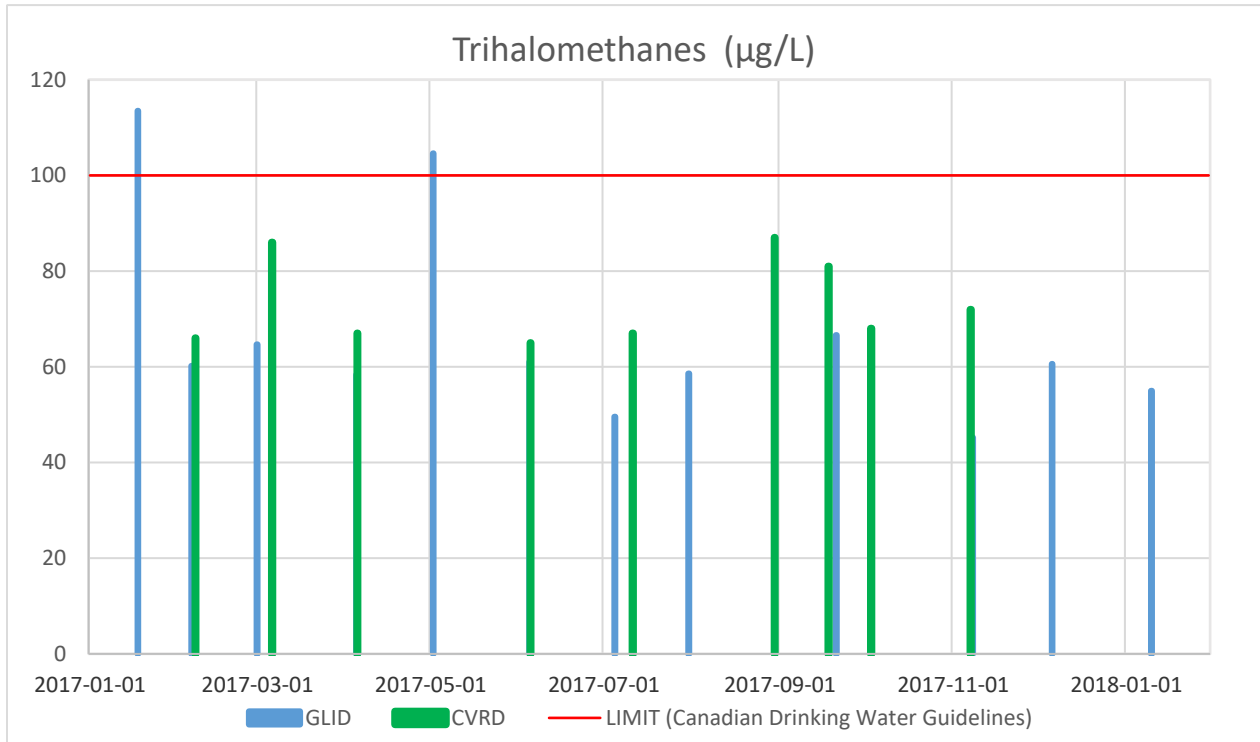
- L1 Less than 1 (no detectable bacteria) – Meaning: No bacteria present
- OG Overgrown – Meaning: Too many background bacteria to give an accurate count
- EST Estimated Count
- A Sample not tested; Too long in transit
- C Sample leaked/broken in transit
- D Sample not tested; No collection date given.

Links

- [VIHA Inspection and water testing range reports](#)
- [VIHA Water test results](#)

THMs

Trihalomethanes (THMs) are disinfection by-products that can be created when organic materials are exposed to chlorine. With the exception of January and May, all of our THM readings were well below the 100 µg/L limit specified by the Canadian Drinking Water Guidelines. This would indicate that chloramination is having the desired effect. The EPA's maximum contamination level for THMs is 80 µg/L based on a rolling annual average. Our rolling annual average for 2017 was 68.8 µg/L.

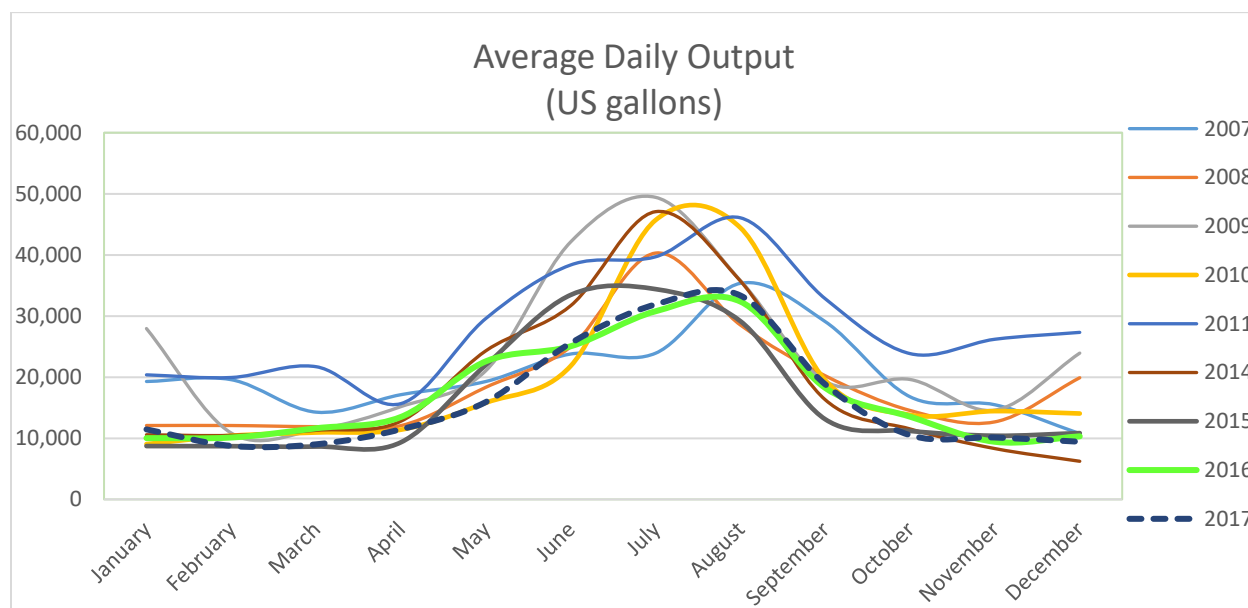


2017 Water Consumption

In 2017 water demand was down 5% compared with 2016 and down 18% compared with our 9-year average. In June, July and August our demand was up marginally over the previous year. Overall pump house output was just shy of 6 million US gallons with the highest demand occurring in August at 1,035,000 US gallons. For 2016 and 2017 the consumption numbers include water used by the customers in the Denman Island Local Water Service Area. (DIWLSA)

The 6 million US gallons used amounts to 32% of our allowable withdrawals of 15.4 million gallons.

Of the 6 million gallons produced 642,730 gallons, or 11%, were flushed at the south end of the DIWLSA line to help prevent stagnation and improve chlorine residues. While this might seem like a considerable amount it is an improvement over the 1.4 million gallons I'm told that were historically flushed at hydrant 5.



With the DIWLSA now on a flat rate we are expecting our overall consumption for 2018 to increase.

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
---------	-------------	------------	-------------	-----------	--------

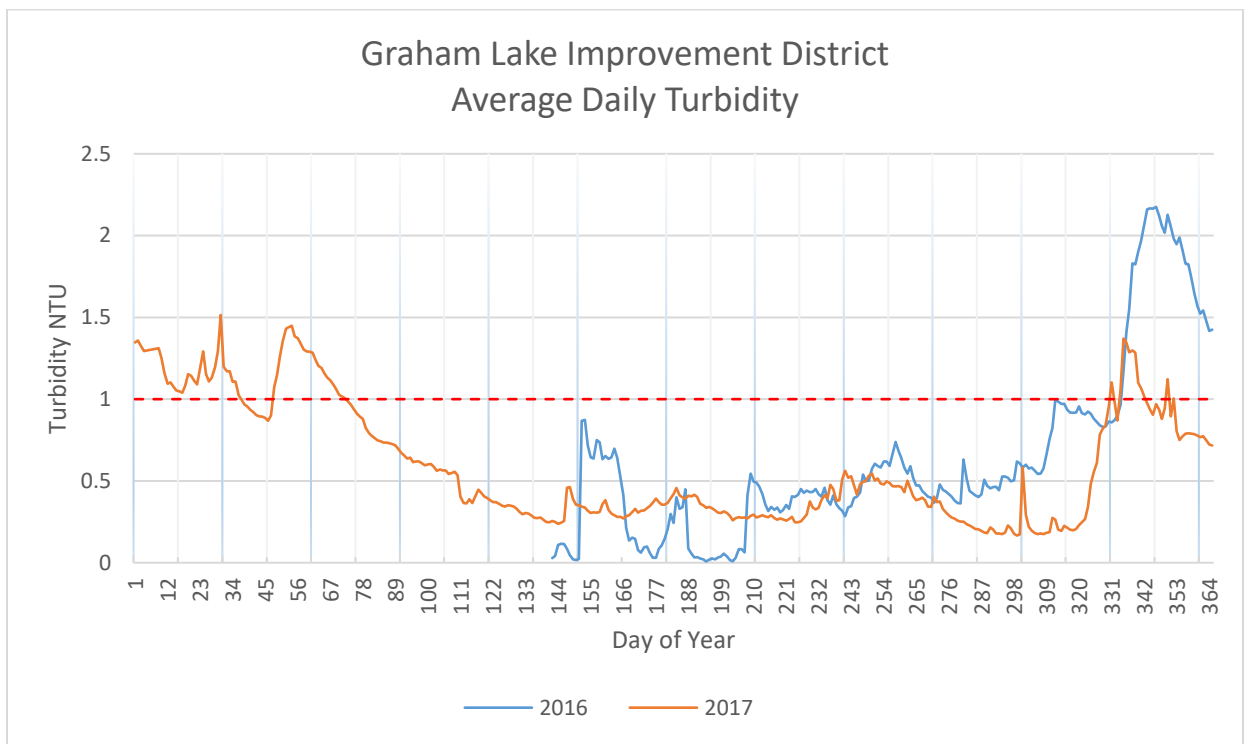
Total Available Withdrawals 15,421,528 70,108

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. Lacking an alternate source of water and undocumented efficacy of our treatment system’s ability to disinfect turbid water, a water quality advisory may be issued at the discretion of the operator and our Drinking Water Officer.

In 2017 our turbidity exceeded 1 NTU for 69 days. Our average daily turbidity for 2017 was 0.59 NTU



Craig Williams

Interim Operator