



Association Lac St- François-Xavier Lake Association

Summary REPORT - Water Sampling in 2021

Introduction

The 'Annual Water Quality Testing' of Lac St- François-Xavier continues to be the responsibility of the Lake Association.

As part of the Lake Environmental Plan, the Lake Association continues to carry out a water testing program, the objective of which is to provide a baseline of the water quality of the lake and to monitor changes over time of that quality so as to provide definitive information on its deterioration and for corrective action if applicable.

In 2021 as part of this plan, 11 sites were tested, as compared to the 9 done in 2020. This was in addition to those usual tests for the two sites for RSVL. As before, tests were carried out for both Phosphorus and Nitrogen.

The following table shows the identification of the individual testing sites and the rationale for selecting them:

Testing site	Year/frequency tested		
	<u>2018</u>	<u>2020</u>	<u>2021</u>
1. RSVL site307A: A sample from the eastern part of the lake. Tested regularly by the RSVL. A useful baseline to compare with results from streams		1*	5
2. RSVL site307B: A sample from the western part of the lake. Tested regularly by the RSVL. A useful baseline to compare with results from streams		1*	4
3. Miroir Lake stream - Major stream near a housing development	1	3	2
4. Thurston Lake stream - Major stream. Upcoming development (housing)	1	2	1
5. Stream from Lac à la Croix Lake - This is a crucial inlet into the Lake. It is a mature area with a lot of sediment	1	2	1
6. Stream from the Hunter Road Extension Culvert - Construction (2019) of the Hunter Road extension led to significant drainage issues. The inlet is coming into the lake through a quiet bay		1	1
7. Stream from the Hunter Road Extension Pipe -New construction (2019) of the Hunter Road extension has led to important drainage issues. The inlet is draining into the lake via a pipe		1	1
8. Stream Gate Corridor - a medium-volume stream		1	
9. Stream Bridge Monfort - Medium to High-volume stream		1	

10. Village Monfort stream High-volume stream		1	2
11. Beach Monfort stream High-volume stream	1	1	
12. Small bay West Low-volume stream	1		
13. Second small bay West Low-volume stream	1		1
14. Large bay West Medium-volume stream. Big Bay Newaygo. North West opposite side from Thurston Lake; Extensive wetlands; Slow water stream but permanent; Not really having housing	1		1
15. Chupeh Hill West High-volume stream	1		1
Mount Road stream			1
Road 850 stream			1

🏠 *Because of COVID-19, the RSVL did not conduct any tests in 2020 on Lac St- François-Xavier. From raw data provided by the water testing group there are 2 errors in Annex 1, the Data Column shows 2020 should read 2021.

Aid to the interpretation of the testing results:

In order to assess whether the concentrations of these elements were high or low, we looked through the literature to see if there was an objective assessment available. The Service de l'environnement of the Municipality of Sainte Anne des Lacs has published their "Statistiques 2020 : Analyses physico-chimiques des eaux de surface" in the following format:

Concentration limits			
	Low	Medium	High
Nitrites/nitrates	<0.5 mg/l	0.5 to 1.0 mg/l	>1.0 mg/l
Total nitrogen kjeldahl	<0.5 mg/l	0.5 to 1.0 mg/l	>1.0 mg/l
Total trace phosphorous	4 to 10 µg/l	10 to 30 µg/l	>30 µg/l

This document used the following sources:

- 🏠 Centre d'expertise en analyse environnemental du Québec, Détermination de l'azote total Kjeldahl et du phosphore total : digestion acide - méthode colométrique automatisée MA. 300 - NTPT 2.0, Rev. 2, Ministère de Développement durable, de l'Environnement et de la Lutte contre les changements climatiques
- 🏠 Conseil Canadien des ministères de l'environnement 2004. Recommandations canadiennes pour la qualité des eaux : protection de la vie aquatique. Le phosphore cadre canadien d'orientation pour la gestion des réseaux hydriques

Review of Testing Results:

The testing results are shown in Annex 1 at the end of this report. In that Annex, the recorded results are highlighted in green for low concentration levels, yellow for medium or red for high concentration levels

With one exception all the results show the concentration of nitrogen and phosphorus to be wither low or medium on 2020 and low in 2021. The exception is Hunter Road where the concentrations were very high in 2020 but had dropped down to medium in 2021.

Note that the Lake Association had the environmental biologist in to look at this project in the beginning and he predicted that the water run off results would be very high in terms of phosphorus and Nitrogen levels into the lake. The Lake Association notified the Municipality in 2020 of the exceptionally high concentrations of nitrogen and phosphorus in that area of the lake.

Annex 1 - Water Testing Results - Raw Data

ID	Detailed Identification	Date	Phosphorus total trace (µg/L)	Nitrogen Total Kjeldal (mg/L)	Nitrogen Nitrites Nitrates (mg/L)	Carbon organic (C.O.D) (mg/L)	Chlorophyll a (µg/L)
1	307A RSVL Lake	2021-10-11	4.4	< 0.30	< 0.02	-	-
1	307A RSVL Lake	2021-09-19	5.5	0.24	< 0.02	4.2	2.4
1	307A RSVL Lake	2021-08-18	6.1	0.39	< 0.02	3.2	2.4
1	307A RSVL Lake	2021-08-18	-	-	-	-	-
1	307A RSVL Lake	2021-07-19	4.4	1.4	< 0.02	3.5	3.5
1	307A RSVL Lake	2021-06-13	6.9	0.53	0.08	3.2	1.7
1	307A RSVL Lake	2020-10-07	5.7	0.38	< 0.02	4.7	4.1
2	307B RSVL Lake	2021-10-11	7.4	< 0.30	< 0.02	-	-
2	307B RSVL Lake	2021-08-18	4.9	0.77	< 0.02	3.2	1.6
2	307B RSVL Lake	2021-07-19	6.7	0.63	< 0.02	3.7	4.2
2	307B RSVL Lake	2021-06-13	6.8	0.67	0.06	-	-
2	307B RSVL Lake	2020-10-07	5.9	< 0.30	< 0.02	4.9	3.0
3	Miroir Lake stream	2021-10-11	3.8	< 0.30	< 0.02	-	-
3	Miroir Lake stream	2021-10-17	1.4	0.87	0.09	-	-
3	Miroir Lake stream	2020-10-20	7.7	0.67	0.14	-	-
3	Miroir Lake stream	2020-10-07	16.0	0.54	0.28	-	-
3	Miroir Lake stream	2020-10-07	20.0	-	-	-	-
3	Miroir Lake stream (s-seven, Joly's stream)	2018-09-23	6.3	-	-	-	-
4	Thurston Lake stream	2021-10-17	6.4	0.97	0.05	-	-
4	Thurston Lake stream	2020-10-07	22.0	0.74	0.43	-	-
4	Thurston Lake stream	2020-10-07	22.1	-	-	-	-
4	Thurston Lake stream (s-five, Didus stream)	2018-09-23	5.9	-	-	-	-
5	À la Croix Lake stream	2021-10-17	1.1	0.83	0.03	-	-
5	À la Croix Lake stream	2020-10-07	16.0	0.76	0.05	-	-
5	À la Croix Lake stream	2020-10-07	< 20.0	-	-	-	-
5	À la Croix Lake stream (s-one, Top Swap Stream)	2018-09-23	23.0	-	-	-	-
6	Hunter Rd Ext Culvert stream	2021-10-31	19.0	< 0.40	0.45	-	-
6	Hunter Rd Ext Culvert stream	2020-10-10	230.0	0.88	0.23	-	-
7	Hunter Rd Ext Pipe stream	2021-10-31	19.0	< 0.40	0.25	-	-
7	Hunter Rd Ext Pipe stream	2020-10-10	130.0	1.20	0.33	-	-
8	Gate Corridor stream	2020-10-20	9.0	0.81	0.06	-	-
9	Bridge Monfort stream	2020-10-20	9.1	0.40	< 0.02	-	-
10	Village Monfort stream	2021-10-11	3.6	< 0.30	0.37	-	-
10	Village Monfort stream	2021-10-17	1.2	0.70	0.11	-	-
10	Village Monfort stream	2020-10-20	9.0	0.51	0.04	-	-
11	Beach Monfort stream	2020-10-20	10.0	0.58	0.07	-	-
11	Beach Monfort stream (s-eight, Beach stream)	2018-09-23	16.0	-	-	-	-
12	Small bay West (s-two, Patenaud stream)	2018-09-23	16.0	-	-	-	-
13	Second small bay West (s-three, Noël's Bay stream)	2021-10-22	18.0	0.65	0.02	-	-
13	Second small bay West (s-three, Noël's Bay stream)	2018-09-23	9.8	-	-	-	-
14	Large bay West (s-four, Canty's Bay stream)	2021-10-22	6.1	0.67	0.08	-	-
14	Large bay West (s-four, Canty's Bay stream)	2018-09-23	8.6	-	-	-	-
15	Chupeh Hill West (s-six, Poland's stream)	2021-10-22	10.0	0.65	0.02	-	-
15	Chupeh Hill West (s-six, Poland's stream)	2018-09-23	11.0	-	-	-	-
-	Mount Road stream	2021-10-31	15.0	< 0.40	0.18	-	-
-	Road 850 stream	2021-10-31	8.4	< 0.40	0.09	-	-
-	Church Bay - STL1 Lake	2021-08-18	8.0	0.26	< 0.02	-	-
-	Principal Road Bridge Bay - STL2 Lake	2021-08-18	3.0	0.25	< 0.02	-	-
-	Chupeh Hill Bay - STL4 Lake	2021-08-18	4.8	0.20	< 0.02	-	-
-	Canty's Bay - STL5 Lake	2021-08-18	4.9	3.0	< 0.02	-	-
-	À la Croix Bay - STL7 Lake	2021-08-18	5.6	0.16	< 0.02	-	-