Water Quality Monitoring in the Tantramar River Watershed

Figure 1: Tantramar River (Photo: KN Croucher)

Project Number 180231
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By: Kelli-Nicole Croucher, Watershed Coordinator

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New Nouveau Brunswick
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Atlantic Water Network

The Hillsborough
A Canadian Heritage River

Contents

Acknowledgements

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- The New Brunswick Environmental Trust Fund, which funded this project
- Renaissance Sackville for providing funding to monitor 12 sites in the Tantramar River Watershed
- The Atlantic Water Network and Hillsborough River Association for providing funding towards lab analysis costs
- RPC Laboratory Michael Lawlor, April Boudreau, and support staff for their support in analyzing our water samples
- Members of the Chignecto Watersheds Committee for their expertise
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- Mount Allison University for loaning sampling equipment to assist in our long-term water quality monitoring program
- Port Elgin Regional School, Salem Summer Send-off, Mount A summer camps, Middle Sackville Baptist Church summer camp, and Sackville Beavers who allowed us to teach them about watersheds and water quality monitoring
- Town of Sackville Silver Lake Fun Day for allowing us to set up a citizen science water quality monitoring booth and to teach beach goers about water quality monitoring
- Port Elgin Lupin Fair for providing us with booth space
- Eco-Container Co. for providing 2 rain barrels as prizes for World Water Day Trivia
- And countless others for supporting EOS in establishing the Chignecto Watersheds Committee and starting up a long-term water quality monitoring program

Executive Summary

EOS was awarded a New Brunswick Environmental Trust Fund grant to implement a long-term water quality monitoring program in the Tantramar River Watershed.

The main goals of the project were to:

1. Implement a long-term water quality monitoring program
2. Exploring the creation of a Silver Lake Association
3. Produce an annual water quality report
4. Provide education on water quality & climate change impacts

The key results of this project were:

1. Started a long-term water quality monitoring program in the Tantramar River Watershed
2. Reviewed and assessed data to produce an annual water quality report
3. Educated the public on the importance of a healthy watershed and engaged the public to participate in citizen science
4. Explored the creation of a Silver Lake Association

Overall, EOS had a very successful first year of water quality monitoring. This project provided us with valuable baseline data that was used to produce an annual water quality report. EOS also engaged a wide variety of youth to local community members by teaching them how to collect water quality samples and the importance of water quality through school visits, community events, and citizen science blitzes.

This project was a great first step towards building a long-term water quality monitoring program within the Inner Bay of Fundy and Cape Tormentine Watersheds. EOS recommends that this program should extend to the Cape Tormentine Peninsula Watershed in 2019-2020 to obtain information about the current state of the watershed.

Introduction

Water is a health and natural resource concern for New Brunswickers. Water quality faces ongoing and increasing threats as climate change impacts such as sea level rise, floods, storm surges, droughts, and warmer temperatures are forecasted to increase in frequency and intensity. We are aware of a number of water quality concerns across our watersheds including algal blooms, agriculture, erosion, siltation, pollution, clear cutting, extreme rainfall and runoff, droughts, etc. These issues have varying degrees of impact on waterways and these impacts can be made worse with climate change and the Tantramar region is one of the most vulnerable regions in the province to climate change impacts due to its low-lying, coastal location.

The New Brunswick Water Strategy (2017), as well as local sustainability, climate change adaptation, and emissions reduction plans (all funded by ETF) highlight the growing need to monitor water quality and maintain a healthy aquatic environment within the Tantramar. Water quality and quantity monitoring is essential in managing and protecting out water resources in the face of climate change. Monitoring provides data that can be used to provide benchmarks of water quality that we can strive to maintain and identify problem areas within our watersheds that we can work on improving. No baseline data exists in our region which makes starting a monitoring program vital in enhancing and protecting water quality in our area while adapting to climate changes. Baseline data collection, and ongoing monitoring, is critical to analyze the ongoing impacts on the water quality and quantity within our province. If left unattended, our watershed may face increasing threats from climate change, as well as land use change and other environmental factors.

EOS is a long-trusted resource in climate issues and has formed the Chignecto Watersheds Committee, a committee dedicated to the long-term sustainability and resiliency of our local environment and preparing our communities for the combined impacts of climate and land use change by promoting watershed awareness through public education, conducting long-term inland water monitoring, and performing subsequent restoration and protection activities. Members include representatives of Ducks Unlimited, NatureNB, professors & research groups from Mount Allison University, Chignecto Soil & Crop Association, local Farmers, Fort Folly Habitat Recovery, Petitcodiac Watershed Association, and the local Planning Commission. This wide range of expertise provides the capacity, mentorships, partnerships, networks, and volunteer bases to be successful in establishing a long-term monitoring program. Having a long-term monitoring program will help us maintain healthy, productive aquatic environments that will continue to ensure dependable, safe, high quality water to recreational, agricultural, municipal, and industrial users. Thus, this project will contribute to the overall health of the environment and quality of life of New Brunswickers.

Research by Louise Comeau (CCNB) shows that the number one concern of New Brunswickers is water quality. Providing educational programming, engaging citizen science, and holding activities within our watershed will help local residents understand water quality and climate change impacts. Citizen science is a great way to increase environmental stewardship and help local citizens gain an appreciation of their local watershed.

This project will benefit both the environment and communities within the Tantramar region through the collection of baseline water quality data for our local watersheds, a more aware, educated and resilient population regarding watershed health in the face of climate change; and enhanced and maintained watershed health. Our monitoring efforts will also be supporting the province in implementing their Climate Change Action Plan, in particular action #97 "Examining the relationship between watershed condition, land use and peak flow events associated with extreme precipitation".

Goals

The project goals were to:
1. Implement a long-term water quality monitoring program
2. Exploring the creation of a Silver Lake Association
3. Produce an annual water quality report
4. Provide education on water quality & climate change impacts

Long-term Water Quality Monitoring Program

Figure 2: Map of Chignecto Watersheds (Credit: Kelli-Nicole Croucher)

Last year our Chignecto Watersheds Committee worked together to choose 12 sample sites throughout the Tantramar River Watershed based off of maps, existing data, and advice given from other watershed groups and the NB department of environment and local government. Initial site visits were conducted in May 2018 to finalize the sample sites. Prior to kicking-off the field season, EOS created a field safety policy (Appendix 2) which was shared with all staff (summer students), volunteers, and citizen scientists; along with the DELG sampling protocols, to ensure safety and consistency when collecting water quality samples.

Water quality samples were collected from 12 sampling sites throughout the Tantramar River Watershed (Figure 3) once a month from June to September 2018. In-situ water quality parameters (pH, temperature, dissolved oxygen (DO), conductivity, salinity, and total dissolved solids (TDS)) were collected using a Hanna HI9829 Multiparameter meter from the 12 sampling sites from May to October 2018. The Hanna Meter was calibrated prior to each field outing. The water sampling was performed according to the New Brunswick Department of Environment and Local Government protocols. Water samples were sent to RPC Laboratory Moncton for surface water quality parameters and *E. Coli* analysis. Sterile sample bottles were provided by RPC prior to sampling to ensure no sample contamination occurred. Collected samples were stored in a cooler at ~ 4°C until they were transported to RPC at the end of the sampling day. The lab analyzed the samples for 58 parameters for each sample resulting in 3016 data points. In addition to the lab water samples, in-situ measurements were collected using a Hanna Multiparameter Meter from the 12 sites from May to October resulting in 432 additional data points, for a total of 3448 data points collected over the course of the field season.

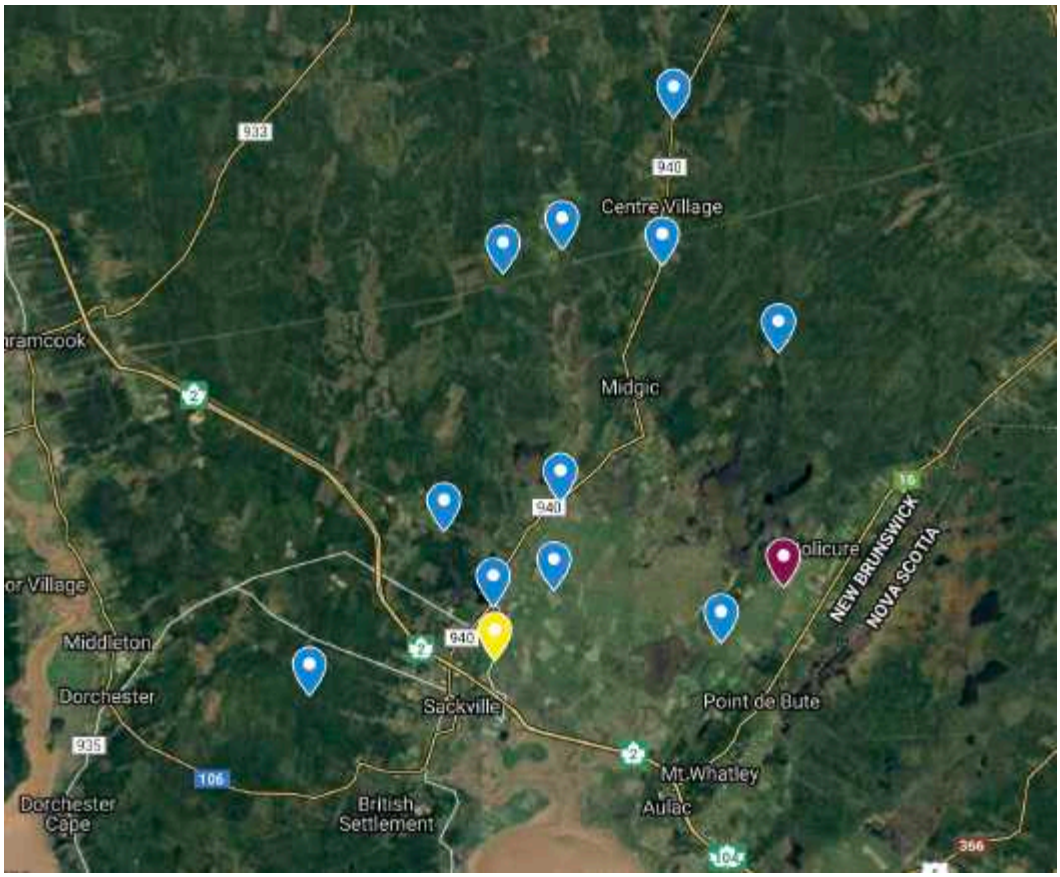

Figure 3: Map of Tantramar River Sample Sites (Note: Purple site was switched to yellow site halfway through sampling season. For more details see Challenges section.)

All data collected was analyzed and summarized into a report providing an overview on the current state of the Tantramar River Watershed: https://eosecoenergy.com/en/projects/chignecto-watersheds-committee/

Figure 4: EOS staff and volunteer taking water quality measurements (Photos: Wei Li)

Exploring Starting a Silver Lake Association

EOS hosted a discussion about starting a Silver Lake Association on April 19th at Open Sky Co-operative. A small but interested group attended. Hal Mersereau, Vice Chair of the New Brunswick Alliance of Lake Association, gave a presentation on lake associations, why they are useful, what they do, how to start one and the history of other associations in the province as well as the Alliance. Citizens discussed concerns and possible issues that could arise with the lake water quality. No lake association has been formed, but there have been discussions about placing Clean, Drain, Dry signage at the main boat launch at the lake and EOS hosted a citizen science monitoring booth at Silver Lake Fun day.

Figure 5: Poster for exploring starting a Silver Lake Association

Outreach and Education

Educating the public on the importance of watershed health in the face of climate change is key to enhancing not only watershed health, but also sustainable communities across Tantramar. We aim to reach as much of the public as possible through a variety of mediums including engaging information booths, participating in community events, interactive educational programs for local schools and summer camps, attending beavers and girl guides meetings, social media postings, world water day events, citizen science monitoring blitzes, and encouraging volunteers to come out sampling with us for our long-term water quality monitoring program.

Figure 6: EOS Staff at Port Elgin Lupin Festival (Photo: A. Marlin)

Silver Lake Citizen Monitoring

Silver Lake Fun Day was a fun-filled day that lived up to its name! The number of people out paddling or taking a swim to cool off on the hot day really shows what a great asset Silver Lake is within our community. EOS set up a booth near the beach equipped with bottles for citizen scientists to grab samples around the lake to be tested for E. coli afterwards at the Campbell laboratory at Mount Allison. We also had many visitors intrigued by our solar oven that was set-up to bake cookies, and kids tent fully equipped with a variety of water themed storybooks and colouring sheets. The Town of Sackville set up a booth nearby to answer any questions people had regarding the town's testing and the water quality of the beach area.

Thanks to our citizen scientist volunteers we were able to get samples from around the lake giving us a better understanding of the water quality. Some Silver Lake residents were kind enough to offer backyard access for volunteers to grab samples. We even had someone generously offer to take us out on their sailboat to grab samples from all the branches of the lake and from the deepest point of the lake! Following analysis at the Campbell lab, all of the samples came out well and below the E. Coli limit for recreational use of 400 MPN/100mL for a one time grab sample (Table 1).

Table 1:Results of Silver Lake Citizen Science Monitoring at Silver Lake Fun Day

Sample Location	E. Coli (MPN/100mL)
45.9368, - 64.3563	1.0
45.9408, -64.3561	2.0
45.93914, -64.3616	2.0
45.9291, -64.3668	< 1
45.9256, -64.3737	< 1
45.9403, -64.37302	4.1
45.9275, -64.3569	8.6
45.9285, -64.3658	28.1
45.9269, -64.3569	4.1
45.9270, -64.3574	30.9
45.9273, -64.3580	12.1
45.9279, -64.3552	< 1
45.9269,-64.3563	3.1
45.9368, - 64.3563	1.0

Citizen science helps us to cover a larger spatial area when water sampling, leading to the collection of more data and a stronger baseline of information on our watershed. Educating citizens how to sample water quality helps give them a better understanding of water quality and water issues. Citizen science also leads to a stronger connection to our watershed and the community, ultimately leading to better protection of our watershed.

Figure 7: Citizen scientist grabs a sample at Silver Lake and EOS' citizen science booth at Silver Lake Fun Day (Photo: E. Snowdon)

School Visits

EOS visited Port Elgin Regional School on June 14th for a morning of presentations on invasive species by summer student Emma Snowdon, and on water quality within our watersheds by our watershed coordinator Kelli-Nicole Croucher. In the afternoon we took the classes out to experience hands-on water quality sampling of the Gaspereau River using our handheld Oakton multiparameter probes. The day ended off with a discussion of the data we collected back at the school.

Figure 8: Students at Port Elgin Regional School test the water quality of the Gaspereau River

At the Salem Elementary Schools annual summer send-off kids enjoyed playing with our watershed table and also learned about testing water quality with a display of water samples we collected and our handheld Oakton multiparameter probes.

Figure 9: Handheld Oakton Multiparameter probe used for testing water samples and our interactive watershed table

EOS partnered with Port Elgin Regional School to plant over 100 trees with kids from kindergarten, grade 6, 7 and 8 through the Branch Out, Make Waves program through NBEN.

Figure 10: Port Elgin Regional School students plant trees

Summer Camps

EOS visited the Mount Allison Science summer camp, which was at full capacity, with 100 kids signed up. We also visited the Middle Sackville Baptist Church, with a summer camp of over 70 kids. We had a fun filled afternoon, with kids participating in hands-on water sampling at Silver Lake.

Figure 11: Water sampling equipment used by summer camp youth to test water quality

World Water Day Trivia

Due to a snow storm cancellation on World Water Day (March 22), EOS and NatureNB rescheduled World Water Day Trivia to the fall semester. 7 teams competed answering trivia questions related to water, ecosystem services, and flooding awareness for prizes including rain barrels for water conservation and gift certificate for native plants that could be used to plant rain gardens.

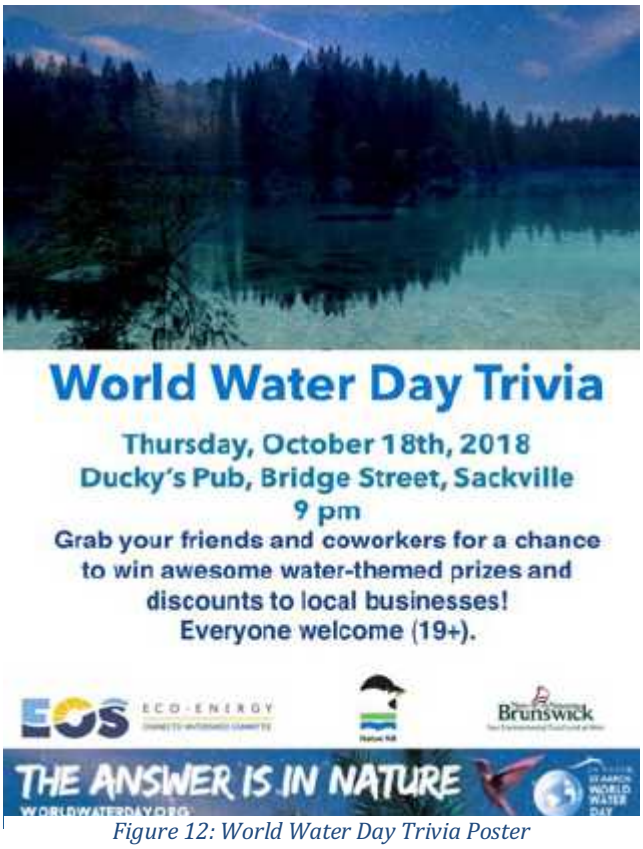

Figure 12: World Water Day Trivia Poster

Monitoring Plan for Cape Tormentine Watershed

During this past year, EOS staff and the Chignecto Watershed Committee also planned the long-term water quality monitoring program for the Cape Tormentine Peninsula Watershed. Together we selected sample sites based off of data collected from our 2018 citizen science monitoring blitzes, land-use maps, site accessibility, and advice from other watershed groups. Similar to the Tantramar River Watershed, we plan to collect monthly water quality samples for the same suite of water quality parameters from June to September within the Cape Tormentine Peninsula Watershed.

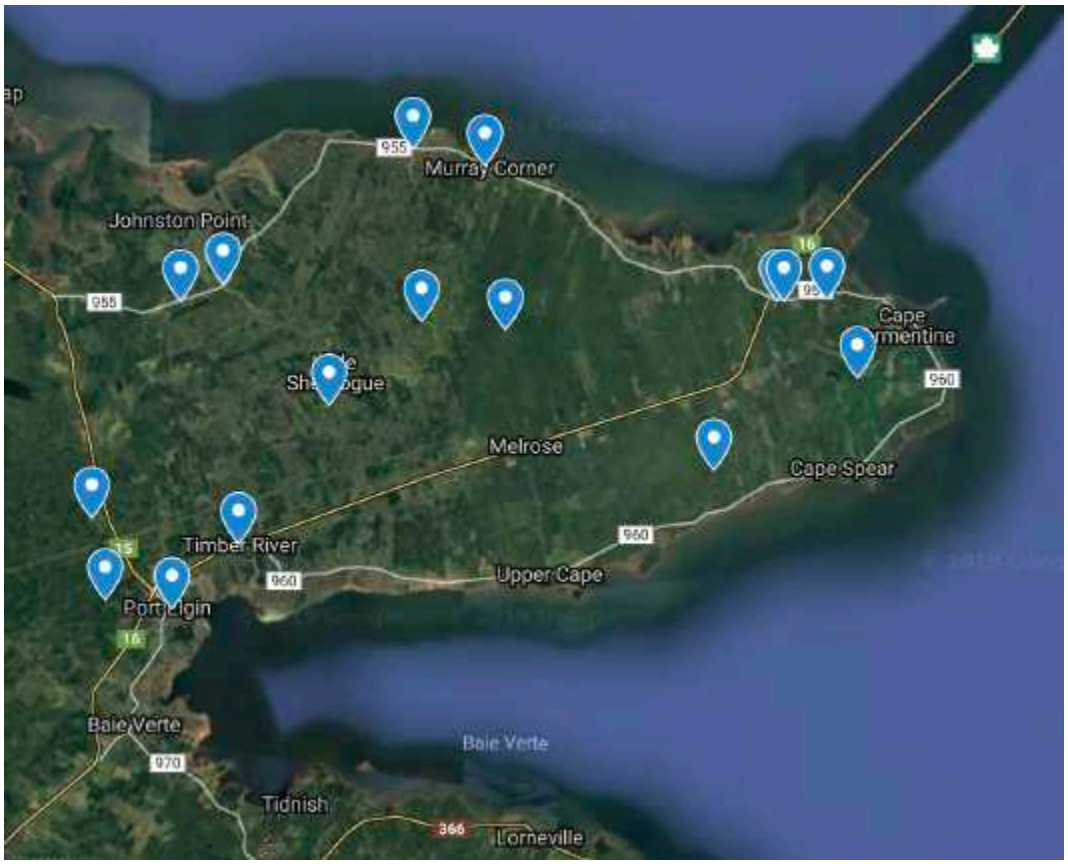

Figure 13: Potential Sample Sites for Cape Tormentine Peninsula Watershed Water Quality Monitoring

Workshops/Conferences Attended & Training Completed

During the past year EOS staff took part in numerous training, networking and professional development opportunities in order to build capacity for our long-term water monitoring work. We learned more about adaptation, open standards, first aid, woodland birds, invasive plants, and networked with experts across New Brunswick, the Maritimes and Canada. The information received has been invaluable to our work on local watersheds. Below is a list of the events that were attended:

Rain as a Resource Community of Practice (monthly meetings)

NBEN Water Caucus (monthly meetings)

April 23, 2018 – Northumberland Strait Conference

April 24, 2018 – Climate Change Adaptation Workshop

May 2, 2018 – Open Standards Workshops

May 15, 2018 – EOS AGM (presented on the watershed work)

May 17, 2018 – First Aid Training

June 5-6, 2018 – Atlantic DataStream Kickoff

June 7, 2018 – Woodland Birds Training through GDDPC

June 18, 2018 – Chignecto Watersheds Committee meeting

June 21, 2018 – Chignecto Climate Change Collaborative working group meeting

July 30, 2018 – NBALA Invasive Plant Patrol Training

September 10, 2018 – Chignecto Watersheds Committee meeting

September 11-21, 2018 – Waterlution Global Water Leaders Training (including the Art of Hosting Facilitation Training) and Water Innovation Lab

October 2-3, 2018 – Living Waters Rally

November 3, 2018 – NBALA AGM

November 17, 2018 – NBEN AGM Eco-Confluence (presented on Citizen Science Approach to Watershed Monitoring)

November 19, 2018 – Chignecto Watersheds Committee meeting

December 11, 2018 – Chignecto Climate Change Collaborative working group meeting

January 15, 2019 – Chignecto Climate Change Collaborative working group meeting

January 12, 2019 – Infrastructure, Adaptation and Risk Management - Chignecto Climate Change Collaborative Technical Session

March 13, 2019 – NBEN Conference Nurturing Connections with Nature - The Role of Educators (Presenting on the benefits of citizen science for experiential learning)

Key Results

The key results of this project:

1. Started a long-term water quality monitoring program in the Tantramar River Watershed
2. Reviewed and assessed data to produce an annual water quality report
3. Educated the public on the importance of a healthy watershed and engaged the public to participate in citizen science
4. Explored the creation of a Silver Lake Association

The success of the results was determined in the following ways:

- Water samples were collected from 12 sites across the Tantramar River Watershed from June to September which resulted in 52 samples being collected. Samples were analyzed at the RPC Laboratory in Moncton. The lab analyzed the samples for 58 parameters for each sample resulting in 3016 data points. In addition to the lab water samples, in-situ measurements were collected using a Hanna Multiparameter Meter from the 12 sites from May to October resulting in 432 additional data points, for a total of 3448 data points collected over the course of the field season.
- An annual water quality report of the Tantramar River Watershed was created from data collected from our long-term water quality monitoring. It will be available at: https://eosecoenergy.com/en/projects/chignecto-watersheds-committee/
- Through our citizen science program, 16 freshwater samples were analyzed for E. Coli around Silver Lake. All samples were below the Canadian Water Quality Guideline for Recreational Use.
- 12 active Chignecto Watersheds Committee members during 2018-2019
- EOS created a safety policy for fieldwork (Appendix 2).
- Increased knowledge of water quality among the public from 100s of people who visited information booths at community events and participated in citizen science sampling.
- Educated ~670 youth on watershed science and provided hands-on water quality sampling though school visits, summer camps, information booths, community events, and local beavers & girl guides groups.
- In addition to the 500+ people who read our quarterly newsletters that include articles on our watershed projects, there was also a variety of media coverage on our water work this year including newspaper articles, radio interviews, and blog posts (Appendix 1).
- Participated in a number of capacity building and watershed training through workshops and conferences.
- Hosted a meeting with Hal Mersereau of the NBALA to explore starting a Silver Lake Association which had 13 homeowners from around the lake in attendance.

Challenges

Due to not receiving as much funding as requested and high lab analysis costs, we had to decrease the scope of our project a bit (e.g. not being able to sample all of the sites of interest we had indicated, fewer sample sites, less sampling frequency). Thankfully we received addition funding for our water sampling through Renaissance Sackville and the Atlantic Water Network. and look for additional funding.

As this was our first year of monitoring, we learned many lessons along the way. Mid-way through our field season, one of our sample sites had very low water levels and had become a watering hole for livestock which would have not given us consistent conditions for comparing our results. Thus, we started sampling another site of interest that was indicated during the planning phase, but cut out due to lack of sufficient funding. We now know for next year's monitoring to try our best to do initial site research to ensure that water levels are sufficient for testing all season long and that there are no projected land-use changes during our sampling season.

We were also presented with the challenge of learning to manage all of our data in the first year of monitoring and how to plan ahead for future organization and storage of our long-term dataset.

Conclusions and Recommendations

Overall, EOS had a very successful first year of water quality monitoring. This project provided us with valuable baseline data that can be used to ensure the health of our watershed. This project was a great first step towards building a long-term water quality monitoring program within the Inner Bay of Fundy and Cape Tormentine Watersheds. EOS believes that this program should extend to the Cape Tormentine Peninsula Watershed in 2019-2020 to obtain information about the current state of water quality within the watershed. The Chignecto Watersheds Committee have selected sample sites to collect monthly water quality samples from June to September within the Cape Tormentine Peninsula Watershed based off of data collected from our 2018 citizen science monitoring blitzes, land-use maps, site accessibility, and advice from other watershed groups.

EOS Eco-Energy recommends that the knowledge gaps in our watersheds continue to be addressed through our long-term water quality monitoring plan. We would also like to expand our knowledge of our watersheds through the collection of CABIN data, hydrological data, riparian health data, and fish & habitat data.

General public outreach and education needs to continue as it is key to increasing peoples' understanding of the risks associated with poor watershed health and low preparedness for climate change. EOS will continue to educate the public about watershed health and intend to continue to grow our citizen science program. EOS will also continue inviting community members to volunteer with our long-term water quality monitoring program.

Appendix 1 – Media Coverage

CONSERVATION

EOS hosting talk to explore starting Silver Lake Association

SACKVILLE, N.B.

Silver Lake and Lillas Fawcett Park provide many recreational activities such as swimming, fishing, and boating. Maintaining the water quality of the lake ensures water that is safe for residents, fish and wildlife.

Lake associations are groups of people, typically property owners and users of the lake, who are interested in protecting the long-term water quality of a lake.

EOS Eco-Energy will be exploring interest in setting up a lake association for Silver Lake by bringing Hal Mersereau, vice chair of the New Brunswick Alliance of Lake Associations, to Sackville to discuss the benefits of lake associations and the process of forming one. All are welcome to attend.

The event will take place 6:30-8:30 p.m. on Thursday, April 19, 2018, at Open Sky Co-operative Ltd., which is located near Silver Lake at 12 Folkins Dr., Sackville, N.B. The event is free and there no need to register. Light refreshments will be served. For more information, contact Kelli-Nicole Croucher, EOS watershed coordinator, at 506-536-4487 or water.eos@nb.aibn.com.

Sackville Tribune Post April 13/18

Here is a link to a few of our articles available online:

https://www.sackvilletribunepost.com/news/local/sackville-based-eos-eco-energy-using-citizen-science-to-better-understand-local-watersheds-232305/

EOS Eco-Energy using citizen science to better understand local watersheds

BY SCOTT DOHERTY
MANAGING EDITOR

SACKVILLE, N.B.

Sackville-based EOS Eco-Energy is turning to citizen science to gain a better understanding of the region's watersheds and, if required, undertake any necessary restoration or protection initiatives in the future.

And EOS watershed coordinator Kelli-Nicole Croucher said their first endeavor was truly a success.

On Thursday, July 19, EOS set up a table during the Town of Sackville's Silver Lake Fun Day, supplying volunteers with water sampling equipment, which was used to collect samples from various points around the lake.

She noted that the Town of Sackville does collect samples from the public beach area of Silver Lake, but EOS was looking for a more complete analysis.

"We also had someone generous enough to take us out on their sailboat," she added, "so we were able to actually go take samples from all around the lake and in the middle of the lake at the deepest point. That was really valuable. It gave us that wider picture we were looking for."

In addition to volunteers taking water samples, Croucher added, several property owners around the lake had contacted them prior to the event offering access to their properties so the samples could be taken.

Croucher noted many of those who offered access to their land were interested in the initiative as they had attended a meeting in April about the potential for starting a Silver Lake Association.

"We had somebody from the New Brunswick Alliance of Lake Associations come and give a talk and we had a number of residents from around the lake attend that meeting."

As well, Town of Sackville staff were on hand during the July 19 event to answer any questions the public might have about their own water sampling procedures at the lake.

EOS-Eco-Energy partnered with Doug Campbell's lab at Mount Allison University to have the Silver Lake water samples analyzed using a new piece of equipment the lab was able to purchase thanks to a New Brunswick Environmental Trust Fund grant.

"All of our samples from Silver Lake came out well and below the E. Coli limit for recreational use," Croucher noted.

The planning stages

Croucher has worked with EOS as their watershed coordinator since July 2017, and she said a considerable amount of work has been completed since then.

"I was hired on last year to start planning a long-term water quality monitoring program within the Chignecto watershed, so along the New Brunswick and Nova Scotia border. Last year we started up the Chignecto Watersheds Committee, an advisory committee of experts in the area, and picked out sample sites and kind of planned out how we were going to do our monitoring program, and all the equipment and sites and everything, and then this year is our first year of monitoring.

"So we've been going out to collect samples monthly and in addition to our sampling that we do we're trying to get some citizen sampling going."

The value of citizen science

With a staff of only three, Croucher said citizen volunteers play an especially important role in the work EOS is doing, adding there are other benefits, as well.

"Citizen science is very popular as of late and it really helps in terms of collecting data. A lot of biologists use it but it's also (useful) for water quality because you can get a larger spatial picture of the area.

"Getting volunteers to go out and collect samples helps with that but it also increases stewardship. People understand water quality more and feel more connected to our watershed and then in turn adopt better practices to keep it protected and in the state that it's in."

The next step

EOS is planning a second water-sampling day on Saturday, Aug. 18, in the Cape Tormentine Peninsula area, Croucher said.

"We have four areas that we're going to be setting up in throughout the say," she explained, "and it'll be the same kind of idea where we'll be there with bottles and a map and have people going out to collect samples for us and then coming back and marking on the map where they got the samples. That will give us a better understanding of the watershed up in the Cape Tormentine area and those will be fresh water and salt water samples."

While EOS is mainly concentrating on the Tantramar River watershed this summer, the data collected from the Cape Tormentine area will help them plan work for next year, Croucher said.

"From this data, we might be able to identify areas of concern or areas of interest from residents . . . like where they might use it recreationally."

For more on EOS Eco-Energy, visit https://eoseconergy.com/en

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EOS was highlighted on the Atlantic Water Network's blog on October 16, 2018:

https://atlwaternetwork.ca/our-community-partnerships-eos-eco-energy/

Appendix 2 – Safety Policy

Policy Name	10.0 Safety Procedures
Approved by the Board of Directors	
Last updated	May 2018

Policy Background

EOS is committed to providing a safe and healthy work environment for our employees and volunteers.

Policy Details

Part 1 – At the Office

1. All staff will record their emergency contact information and post it in the safety orientation closet in the EOS office. This will also include any allergies or safety-related medical conditions.

2. Staff and volunteers will be made familiar with instructions, equipment, and procedures before starting work and going out into the field. All new staff will go over an *EOS Safety Orientation Check List* with the Executive Director on their first day at work. This form will be signed by both the ED and staff person and kept in the staff person's file in the ED desk. The orientation will include location of fire exits and extinguishers, first aid kit, other safety materials in the office, and it will also go over the WorkSafeNB Guide for employees including how and when to report any accidents.

Part 2 – For Field Work Related to Watershed Monitoring, Etc.

3. Never go in the field alone – field work should always be done in a buddy system to ensure safety. It is preferred that at least one buddy has current First Aid/CPR training.

4. Prior to leaving the office, staff should ensure they are appropriately equipped to safely work in the field. Check the weather and wear appropriate clothing and footwear. Make sure you have all necessary safety gear (e.g. First Aid kit, reflective vests, gloves, GPS, sunscreen, water & snacks, insect repellent, PFD if going on the water, information sheet with emergency contacts/site location information, etc.). EOS provides all of these materials except sunscreen, bug repellent, snacks and water bottles, which staff are to bring. There is a Brita in the fridge to fill up water bottles.

5. Notify someone of where you are going and when you intend to be back (inform another staff member or write on the office whiteboard) and always travel with a cellphone. Let your contact know when you have returned safely or let them know if you are running late.

6. Be sure to park in a safe location that does not put you or other drivers at risk. Confirm that you are at the proper site by checking GPS, site description, or map.

7. Always conduct a site risk assessment to identify any risks or hazards associated with the site. Adjust your plans if necessary and document any changes. If at any time you feel unsafe, stop what you are doing and leave the site.

8. Keep phones, keys, and wallets somewhere safe (floatable, waterproof bag if working near water).

9. Always exercise caution when working near water. Do not step on unstable stream/river banks. Be careful when stepping on wet rocks/wading in streams. Do not go into water that has a swift current.

For Work Sites Related to Draft-Proofing

10. Prior to leaving the office, staff should ensure they are appropriately equipped to safely perform draft-proofing work. Make sure you have all necessary safety gear (e.g. First Aid kit, information sheet with emergency contacts/site location information, gloves, dust masks, safety glasses, etc. which can all be found in the draft proofing project bins). EOS provides all of these materials. Staff are expected to bring their own water bottles if needed, and old clothes, warm layers and closed toed shoes.

11. Notify someone of where you are going and when you intend to be back (inform another staff member or write on the office whiteboard) and always travel with a cellphone. Let your contact know when you have returned safely or let them know if you are running late.

12. Always conduct a site risk assessment to identify any risks or hazards associated with the site. Adjust your plans if necessary and document any changes. If at any time you feel unsafe, stop what you are doing and leave the site.

Part 3 - Volunteers

13. If a volunteer is participating in a field activity (watershed, draft parties, etc.) they are required to sign a waiver. Any important medical conditions of volunteers will also be noted (e.g. allergies) by the lead staff person on the field or off-site project.