

Minutes

Vermilion River Stewardship

Wednesday, October 16, 2013

7:00-9:30 pm

Beaver Lake Sports and Recreation Club

Present: Linda Heron, Terry Little, Marc Samson, Marte Holouka, Sheri Purdon,
Ron Basso, Byron Basso, Ken Makela, Eija Hietaharju

1. Adoption of Agenda:

Moved by Ken Makela

Seconded by Eija Hietaharju

Adopted

2. Adoption of Minutes of Meeting – 19 June 2013

Moved by Mark Samson

Seconded by Ron Basso

Adopted

3. Reports

a. Executive Report – Attached as Addendum 1 – Highlights below

- The Private Drinking Water Protection Committee of the GSWA will make a presentation to city council to amend the Official Plan to provide for better setbacks for septic systems from waterways
- Erik Emilson, a limnologist and PhD candidate at Laurentian will make comments on Xeneca's Environmental Report for Wabagishik.
- GSWA was involved in a meeting with a developer and the city regarding storm water management for a project that would drain into Ramsey Lake. GSWA worked well in bringing the issue to a successful disposition.

Motion to approve the Report by Sheri Purdon seconded by Eija Hietaharju

Adopted

b. Finance

- We have received \$54,600 of the 103,200 Trillium Grant with the remainder coming in December 2013 and June 2014.
- We have spent \$42,276 mostly on analyses (\$22,483) and technician salaries (\$15,000).
- We are under budget for travel because of the lake partner volunteers.
- We received a \$454 grant for a brochure from the city's Lake Advisory Panel giving us \$1492 in the general account.
- The ORA membership of \$100 was paid.

Motion to approve the Report by Ron Basso seconded by Marc Samson.

Adopted

4. Old Business

a. Lower Vermilion Source Water Quality Monitoring Project – Update

- Water sampling is complete for this year as well as sediment sampling on Wabagishik.
- Interim Report to Trillium is due on 1 November 2013
 - Sheri and Linda will get together to prepare it.
 - Terry will prepare the financial statement to be included in the Interim Report
- Dr. Cumming and his 4th year student, Zara Jennings came out in mid-September to do sediment core sampling on Wabagishik Lake

- There was not enough time to do Simon Lake this year – it will be a priority next year.
- Will provide approximately 200 years of sediment history
- Sampling Notes - Addendum 2
- Dr. Andrea Kirkwood and her Master's student, Carrie Strangway came out in the beginning of September to visit Ella Lake and Simon Lake – to get an overview of the Vermilion River and lake systems.
 - Eurasian Milfoil was confirmed by Dr. Kirkwood in Simon and Ella Lakes.
 - Meeting Notes – Addendum 3

b. Vermilion River Hydroelectric Proposals

- Linda encouraged everyone to write to the MOE regarding their concerns in respect of Xeneca's Wabagishik Environmental Report (ER)
- An option open to the public is to request the Minister elevate the ER to an Individual Environmental Assessment (EA) – which is a much more rigorous EA.
- Al Geregthy, a Vale engineer responsible for repairs at the Lorne Falls dam, sent Linda a hydrograph for Ella Lake for last year.
 - It was difficult to ascertain their operation from the graph that represented an entire year.
 - Vale is increasing the size of the bypass gates in preparation for anticipated extreme rain events due to climate change.
- A major concern is that Wabagishik Lake, other than the rapids above the dam, is being called a "Zone of Influence" rather than a head pond so erosion and wildlife studies have not been done despite the statement that the lake will be raised and lowered 10 centimeters during the daily peaking operation.
- Below the dam the peaking process will raise and lower the river within an operating band of 30 centimeters on a daily basis - alternately drying and flooding of the riverbed and lake.
- Peaking could disturb trapped toxic sediments from over 100 years of Sudbury Mining and send them down to into the North Channel of Lake Huron.
- Increased mercury contamination of fish tissues due to flooding of shorelines and wetlands on Wabagishik Lake and the river was not studied despite fish consumption restrictions already in place due to elevated levels of mercury in fish tissue.
- Dams have been shown to promote the formation of blue green algae as was evidenced on Ella Lake last year.
- Linda will forward a list of concerns shortly to those interested in commenting on the ER

c. Brochure – Linda

The brochure committee will meet in December or January when pressing deadlines let up.

d. KGHM International – Victoria Mine Project – Public Meeting

- KGHM presented their plans for the Victoria Mine project at a Public meeting in August.
- Will begin construction next spring.
- Do not have to do an EA because they redeveloping an existing mining property although it is a new area being developed on the southern edge of the property.
- The treated effluent will be released into the Vermilion watershed

- There still could be a decision to release effluent into the Spanish watershed as part of the site is on the Spanish watershed.
- Stockpile sites are to be lined and ditched to capture runoff.
- Endangered wildlife studies have been done but there was no mention of Banding Turtles.
- Wells have been drilled to monitor groundwater flows.

e. AGM

A date will be set for our AGM at our next meeting in November.

Action Items:

- Sheri will contact KGHM to request an update presentation for the VRS on the Victoria project.
- Linda will contact Vale to request a tour of Totten Mine for the VRS in January

5. New Business

a. ORA Meeting with Minister of Energy

- ORA met with the Honourable Bob Chiarelli, Minister of Energy
- MOE Minister and expressed a desire to work with the ORA.

a. 2013 Ecojustice Sewage Report

- The 2013 Ecojustice Sewage Report report that Sudbury was the 5th worst for releasing untreated and untreated effluent into the watershed
- Up one rung from the 2009 Ecojustice Report.
- The City will publish sewage bypasses monthly on their website, starting in 2014.

b. Protection of our Private Drinking Water Intakes

- The Private Drinking Water Committee is a subcommittee of the GSWA.
- Exploring options for protection of our private drinking water intakes.
- Looking at all options, one of which is requesting an amendment to the City's Official Plan to increase setbacks for private septic systems from waterways.
- Looking at systems that remove phosphates as well.

c. VRS Monthly Meeting Dates

- The Club is now available for our normal 2nd Wednesday of the month.

6. Next Meeting: Wednesday, 13 November, 7pm at the Beaver Lake Sports & Cultural Centre

Addendum 1
Vermilion River Stewardship
EXECUTIVE REPORT
16 October 2013

Report from Chair

Meetings:

- 20 June 2013 – Meeting with Rick Herman, Cambrian College – discuss watershed study and possible Master’s thesis.
- 20 June 2013 – GSAP Meeting
- 8 July 2013 – Private Drinking Water Protection Committee Meeting
- 1 August 2013 – Private Drinking Water Protection Committee & SDHU Meeting
- 6 August 2013 – Fund Raising - Webinar
- 7 August 2013 – Large Renewable Energy Procurement – Webinar
- 13 August 2013 – Large Renewable Energy Procurement – Public Meeting
- 14 August 2013 – Private Drinking Water Committee Meeting
- 3, 4 & 5 September 2013 – Hosted Dr. Andrea Kirkwood & Andrea Strangway’s Visit
- 4 September 2013 – Accompanied Andrea & Carrie – Visited Ella and Simon Lakes
- 9 September 2013 – Accompanied Brian Cumming & Zara Jennings – Wabagishik & Lake – sediment core sampling & hosted their crew.
- 16 September 2013 – Private Drinking Water Protection Committee Meeting
- 18 September 2013 – Meeting with Xeneca – Jeremy’s
- 19 September 2013 – Erik Emilson – Limnologist
- 19 September 2013 – Green Space Advisory Panel
- 20 September 2013 – 7th Annual Anishnaabe Kwe Water Walkers – GSWA
- 20 September 2013 – Stormwater Management Committee - GSWA
- 30 September 2013 – Private Drinking Water Protection Committee Meeting
- 2 October 2013 – Giigdownin “Having a Talk” – Laurentian University – Presentation
- 10 October 2013 – ORA Meeting with Bob Chiarelli, Minister of Energy – Toronto

Correspondence:

- EBR 011-9040 – ORA - [Ontario’s Long Term Energy Plan](#)
- EBR 011-9614 – ORA - [Conservation First](#)
- 25 July 2013 – ORA to OWA - [Proposed Amendments to the Class EA for Waterpower](#)

- 30 July 2013 – ORA to OPA - [Ontario Dialogue on Regional Planning & Siting of Large Energy Infrastructure](#)
- 21 August 2013 – [Feedback on Large Renewable Competitive Procurement Process – ORA to OPA](#)
- 19 September 2013 – ORA to OPA - [FIT Program Review – Draft FIT 3](#)
- 3 October 2013 – VRS/ORA to Xeneca – [Comments on Wabagishik Environmental Report](#)

Linda Heron

Addendum 2

Sampling Notes

Queen's University Sampling Team & Linda Heron
Monday, September 9th, 2013
Wabagishik Lake

PRESENT:

VRS: Linda Heron

Queen's: Brian Cumming, Zara Jennings, Moumita Karmakar, Donya Danesh,
Queen's University.

PURPOSE:

The purpose of this visit was to undertake sediment core sampling at Wabagishik Lake, and if time permitted Simon Lake as well. Linda Heron accompanied the sampling crew to the deepest portion of Wabagishik, guided by a Wabagishik Bathymetric Map supplied by MNR (attached).

Observations made by Brian & Zara:

- Wabagishik Lake is “anoxic” – oxygen depletes within several meters of bottom sediments
- The temperature is well mixed – only varies by a few degrees
- A quick survey of the sediment core sample
 - Extremely black sediment – looks like crude oil
 - Appears to have been anoxic for quite some time
 - A good core which should yield 200 to 300 year history



- Crew came back to Linda's home to section and prepare the core for analysis

- This core will be the basis of Zara's 4th year thesis, and an important addition to the Vermilion River Source Water Quality Monitoring Project.

Zara wrote up a short summary of her visit and what she hopes to achieve:

Sediment cores were obtained from Lake Wabagashik on September 9th, 2013 and sectioned on site. They are currently in queue to be radioisotopically dated, a process that will determine the naturally occurring levels of lead. This will give us a timeline through the Wabagishik's history over the last 200 years or so. From this, I will analyze the concentration of heavy metals over the legacy of mining through to the present day. This will give us a picture of how contaminated the lake was and any remediation that has occurred since. Following the contamination analyses, I will link metal concentrations to their biological impact.

I have decided to use chironomids as a proxy indicator, because they are abundant, sensitive to pollutants, and have fossilizable head capsules. The species of chironomid can be identified from their head capsule and since we are insightful on the conditions at which certain chironomid species exist, this information can be used to work backwards to determine the condition of the lake in the past. I will also be examining the fossilized chironomids for deformities, indicating severe toxicities that very likely can be extrapolated to higher food chain effects.

My thesis deadline is March 31st 2014, however, it will take some time after that date for publication.

Field crew were all Brian's students from Queen's University:

- Brian Cumming, PhD
- Zara Jennings, BSc (Hons) (candidate)
- Donya Danesh, PhD (candidate)
- Moumita Karmakar, PhD (candidate)

By Linda Heron



Addendum 3

Meeting Notes

Strategic Planning Committee & UOIT Phytoplankton Team
Wednesday, September 4th, 2013
9:00am-11:00 am
379 Ronka Road

PRESENT:

VRS: Linda Heron, Al Stanley, Terry Little, Dale Kilbey, Leslie Flowers
CS: Anoop Naik
UOIT: Dr. Andrea Kirkwood, Carrie Strangway

PURPOSE:

An informal meeting of our Strategic Planning team and Dr. Andrea Kirkwood, University of Ontario Institute of Technology (UOIT), and her Master's student, Carrie Strangway. This was an opportunity to familiarize Andrea and Carrie with our team and the Vermilion River system, and to discuss its unique characteristics to try to sort out what may be some of the contributing factors to our recurring blue-green algae challenges. It was also a great opportunity for everyone to get an update on the current status of the project and discuss any future improvements or adjustments.

1. Samples collected so far were given to Andrea and Carrie for phytoplankton assessment. This phytoplankton data will be analysed against the water quality data in a master's thesis to determine the link between water quality and algae.
2. Al stated that one of the missing elements in the study was comprehensive flow data. There are only two stations that measure flow
3. Anoop mentioned that many of the lakes along the Vermilion had very little stratification with less than one degree difference from top to bottom.
4. The summer's weather was noted to have been wetter than last year with two very heavy rainfall events, and a tornado. Andrea explained that with global warming weather is expected to bring more extreme rain and drought conditions and hotter and colder temperatures.
5. The role of sediment was discussed
 - Andrea explained that excess nutrients from human activity in lakes and rivers are often trapped in a cycle of plant +/- algal growth that dies and falls into the sediment and is returned by anaerobic bacterial action to nutrients (phosphates) that are picked up by plants/algae for the next cycle. Harvesting plants is an effective way to remove excess nutrients.
 - Suggested that some water sampling could be done in the meter above where sediment sampling is to be done in order to get more information on the nutrient cycle.
 - Phosphorus is normally bound to the sediment in oxygenated water, but internal phosphorus loading can occur as a result of oxygen depletion (anoxia) near the bottom waters. In the late fall, when that cool water flips to the surface, phosphorus that has been confined to the deep cool

layer can be released into the water column. This can result in a blue-green algae bloom.

6. The meeting was followed by a tour of Ella lake on Jim Pomerleau's pontoon boat – Andrea, Carrie, Linda, Terry and Dale:
 - The lake consists of two parts - a smaller stretch along the Vermilion, and a larger portion connected by a shallow narrow channel.
 - A bay of the larger portion, away from the channel, is where blue-green algae was found under the ice last year – it lasted from November 2012 until ice break-up in the Spring of 2013.
 - Andrea hypothesized that algae growth occurred late into the year and did not have a chance to die off before ice formed.
 - It is unlikely that suspended nutrients could be reaching this bay from the river but dissolved nutrients from the sediment are a possibility.
 - Jim mentioned that there has been significant growth of a milfoil like plant in shallower portions of the lake - Andrea took a sample for identification.
 - Water sampling is being done in both portions of the lake.
 - Andrea suggested that sediment sampling originally slated for Vermilion Lake could be done here to try to explain the algal bloom.
 - The Lorne falls dam controls water levels in this area.

7. David Furino took Andrea, Carrie, and Linda out onto Simon Lake in the afternoon:
 - The smell of sewer was noticeable just off the shore of the public beach
 - Inspected two areas where blue-green algae was found in 2011, but no sign of it on this visit.
 - Andrea took samples of milfoil from Simon and Ella Lakes to identify the species – she later confirmed that both samples were Eurasian Milfoil.
 - Andrea identified Hydrodictyon filamentous algae – commonly called “water net” - it is considered a nuisance invasive species in eutrophic systems. Therefore, it is a good bioindicator of high nutrient status or pollution.
 - Hydrodictyon Filamentous Algae



- Also saw a population boom of "water fleas", also known as *Daphnia* sp. (a type of zooplankton). *Daphnia* are very effective grazers of phytoplankton in lakes, but cannot eat filamentous or colonial algae very well (perhaps one reason why *Hydrodictyon* and *Microcystis* bloom in Simon Lake).
- *Daphnia* – Water Fleas



Andrea Kirkwood's comments:
UOIT's objectives for the site visit, what we learned, and what we plan to do moving forward:

- In order to place the water quality data and phytoplankton samples in context, it was very important for Carrie and I to physically see the lower vermillion river watershed and connecting lakes.
- Visiting Ella and Simon Lake provided an excellent opportunity to visualize surface hydrology, morphometry and water quality features such as colour, macrophyte coverage and shoreline development.
- I was quite amazed at the amount of primary productivity (macrophytes and algae) visible in both lakes. For example, although considerable macrophyte growth was apparent in some littoral areas of Ella Lake, other littoral regions (such as the beach where we docked) were devoid of macrophytes. However, this same location, which appeared pristine, was inundated with Blue-Green algae last fall. In Simon Lake, primary production was extremely high in most parts of the lake, likely due to the dominance of a littoral zone throughout the lake.
- Based on a preliminary assessment, it is quite likely the algal bloom problems are the result of “legacy phosphorus” loadings, though current shoreline development in Simon Lake and sewage effluent (including bypasses) are likely contributing factors.
- Both Carrie and I are very interested to see if any blue-green algae blooms occur in the VRW this fall, hopefully during the time of lake sampling.
- Carrie will be processing the phytoplankton samples this fall and winter as well as learning Geographic Information Systems (GIS) to eventually analyse water quality and phytoplankton data using spatial analysis techniques. This type of analysis should shed light on possible “hot spots” for impacted sites with the VRW and how water quality varies along the river continuum.

Next Meeting: Wednesday, October 10th, 7PM at the Beaver Lake Sports & Cultural Centre