

Soil & Water Conservation Society of Metro Halifax (SWCSMH)

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Ref.: RegionalCouncil_Lake sampling reinstatement (3 pages)

To: **Mayor Mike Savage and Members of Halifax Regional Council**

From: S. M. Mandaville Post-Grad Dip., Professional Lake Manage.
Chairman and Scientific Director

Date: August 08, 2013

Subject: Your discussions on reinstatement of lake sampling of 2006-2011

Please feel free to ask me any questions, and I will endeavour my level best to respond either via emails and/or in person at one of your meetings, if invited to do so. Towards the end, I touch upon my dealings with the former 3 watershed advisory boards. Among numerous stakeholders who contact me, I had provided brief scientific info to Mr. Walter Regan on lakes in the Sackville River watershed on his email request a few years back. I mention Walter here since some of you councillors including yourself, Mr. Mayor, referred him in a very positive manner, and yes, I was watching your discussions on Eastlink. I also provide one paragraph on our scientific group at the end.

What I had stated to the media recently was nothing new. I had stated such aspects dating back to the 1980's, even before I became an accomplished applied limnologist, i.e., practical lake scientist (although there are lot more famous scientists than myself among our international membership).

In summary and in point format, [I] to [V], only:--

[I] HRM's lake water sampling of 2006 to 2011 was a synoptic survey only. It included mostly once-a-season surface water sampling, 3 seasons a year.

It did not include under-the-ice sampling in winter. Per leading handbooks in limnology, that is necessary as well.

It did not include sampling at discrete depths either, which is necessary in deeper lakes. Surface sampling (preferably at arms-length) may be sufficient for most shallow lakes.

The initial sampling of select metro lakes conducted by our group in 1990 was similar to the HRM's. But we realized early on that it did not yield satisfactory info; in other words we self-critiqued although we are all volunteers and have no employees at all!

We then expanded our sampling of lakes all across the HRM (and other municipalities to a lesser extent) quite significantly.

Of lately, we concentrate on biological sampling for obvious reasons enunciated below.

[II] I was also very clear to the media that HRM's sampling did not include any comprehensive biological sampling.

In addition, staff did not develop what are known as Temperature/Dissolved Oxygen depth profiles throughout the critical period of summer, especially in lakes that stratify. Most shallow lakes do not stratify except where some deep spots are extant.

Any authentic limnologist will understand the need for that. All they need is a Temp/DO meter.

[III] Re the value of biological sampling, I herewith cite verbatim from a year-2006 study/synopsis conducted by a leading consultant to the CCME (Canadian Ministers of the Environment):-

“Among the limitations of relying solely on chemical and/or physical parameters to assess ecological health and sustainability is the fact that existing EQGs only consider a toxic response to single chemicals, and therefore cannot account for the cumulative impacts from multiple chemical discharges (a “cocktail” of compounds) which may be coupled with physical changes in the environment. Furthermore, EQGs may not account for lower response thresholds in highly sensitive organisms or life-stages. Single-point-in-time samples can miss, cannot detect, or cannot re-construct periodic events that collectively may influence a biota.”

For their full report, see

http://www.ccme.ca/assets/pdf/biocriteria_report_e_web_1.0.pdf, and for related aspects, see our web page, <http://lakes.chebucto.org/quotes.html> (our web page has links to numerous other scientific pages that we wrote).

[IV] The fecal coliforms most of you were concerned with was inconclusive since for realistic reasons, one has to sample weekly, or even more often if high values result in order to confirm so that the public is not unnecessarily alarmed.

In addition, to definitely establish the source of elevated fecal values (whether human sewage, bird feces, dog feces, or other sources), one can carry out what is known as BST (Bacterial Source Tracking). I recall mentioning that at the Regional Council in the past!

I had also carried out Phase-1 literature survey (other phases are currently in progress) for a project headed by Mr. John Sheppard PEng., formerly with the HRM, now with Halifax Water. John has that report and it is not confidential.

BST (now known internationally as MST) is relatively unknown in Nova Scotia.

At an experimental project during 2002/2003 supported in large part by John Sheppard's group, and to a lesser extent by the Province (NSE) at Maynard Lake, Dartmouth, it revealed some unexpected sources of fecal coliforms. John's engineering staff did carry out superb smoke testing and Tv inspection of storm sewers at that time but came up empty handed, I recall. But the source of pollution seems to have miraculously diminished. If interested, read our web page on the said lake (<http://lakes.chebucto.org/WATERSHEDS/MAYNARD/maynard.html>).

[V] I am indeed aware of the practicality of costs but biological sampling hardly costs anything as long as you have qualified staff and access to good quality microscopes!

Indeed, if there are qualified/willing professionals on your new Regional Watershed Advisory Board, they should be able to carry out such sampling, literally at no cost to the public. One does not need a whole lot of time; one could do it on weekends or holidays. That's what we primarily did, and still do these days.

EPILOGUE

I had personal acquaintances and/or associates who served on the former Halifax Watershed Advisory Board (HWAB), and the Bedford Board (BWAB/BWAC). I also had dealings with one former long time member of the Dartmouth Board (DLAB) years ago, specifically with Dr. Don Gordon, when he was still with the BIO-DFO.

Further, I had invited select members of all the 3 watershed advisory boards, who had a science background, to participate with us pragmatically but everyone declined and/or did not respond. I also raised that when I myself served on the Halifax Watershed Advisory Board (HWAB) during the initial years, whenever occasion arose.

Re: Our scientific society, the SWCSMH:- We are loosely knit international collaborative partnerships across the vast expanse of Canada and the USA. We also count some senior Government scientists among our formal membership. In summary, some of our members are scientists in multiples disciplines (some extensively published ones), and select others are engineers, mostly with doctoral degrees, being present/retired professors in civil, environmental/agricultural, and petroleum engineering. We also have medical doctors as well as scientists in medical microbiology. Approx. 25% to 35% reside in Nova Scotia; that number changes with time due to burn-out, other priorities, etc.