January 12, 2026

From David Patriquin, Prof of Biology, Dalhousie University (retired 2008)
Contact: davidgpatriquin...

To: Vicki Elliott-Lopez, Associate Deputy Minister, Interim CEO, NS Provincial Housing Agency; Chair, Executive Panel on Housing in the HRM
cc: Premier Tim Houston
cc: Kevin Neatt, Clayton Developments Ltd.
cc: Environment and Sustainability Standing Committee (HRM)
cc: Walter Regan, Karen Robinson, co-chairs Sandy Lake-Sackville River Regional Park Coalition

Subject: **Concerns about the precarious state of Sandy Lake should not be dismissed as "pseudo-science"**

Recently I was informed of a FOIPOP posting* related to the Sandy Lake Special Planning Area which includes a letter of Oct 22, 2024 from Kevin Neatt, VP at Clayton Developments Ltd./The Shaw Group sent to "Premier; Minister, Env cc Jason Brunt, Subject: Response to David Patriquin"

* https://openinformation.novascotia.ca/FOI-Requests/2025-02385-PRE/723y-6g96/about_data

Mr Neatt's letter includes the covering page of the letter (e-mail) I sent on Oct 1, 2024 to the Premier and others on the subject "The Precarious State of Sandy Lake (Special Planning Area)"*

*My letter was addressed to Premier Tim Houston & Mayor John Savage, Minister John Lohr (Municipal Affairs & Housing) and Minister Tim Halman (Environment and Climate Change) with cc's, amongst others, to Kevin Neatt at Clayton Developments Ltd. The e-mail and related docs are compiled in one document patriquin1Oct024.pdf, attached.

In his "Response to David Patriquin", Mr.Neatt asserts that my letter was written "*on behalf of the residents currently residing on Sandy Lake*" and asks that it be reviewed "*in the context of the inherent bias they have to maintain their current exclusive status residing directly on Sandy Lake*".

In the opening paragraph of his letter Mr.Neatt comments that "*when opposition to projects extends beyond rational objections, and cites pseudo-science as fact, we feel the need to respond*"

As further evidence of my inherent bias, Mr. Neatt cites concerns I have expressed about the Southdale development.

As a Trusted Partner of the Government in their housing efforts, I can understand that Mr. Neatt's comments would have been duly considered by the recipients which included Stantec Consultants who were given the contract to prepare the Community Studies for the Sandy Lake SPA.

That perhaps explains why any reference to existing limnological profile data for Sandy Lake were completely lacking in the Stantec Watershed Report for the Sandy Lake SPA.*

*I had been asked by Stantec to share with them my limnological data for Sandy Lake and data of others that I had compiled and did so, also I discussed the material with them in two meetings. It was my clear understanding that those data would be appropriately considered in their Community Studies for Sandy Lake. When I saw the Stantec reports after they were released publicly on May 16, 2025, I wrote (May 28, 2025) to John Haseltine, a senior planner at Stantec and the individual with whom I had most communication, and asked why the Stantec Reports did not reference any of the information that I shared with them. He responded July 15, 2025, thanking me for my input and commenting that they "did not *intend* to ignore your input" (my italics), and noted that the Sandy Lake work was "accepted". He provided no explanation as to why the input was in fact "ignored".

Mr Neatt's comments are clearly an attempt to smear my reputation with the provincial government but at age 82, I am really not concerned on that count; I will note that Mr. Neatt's comments were not copied to me while my comments were copied to Mr, Neatt.

I am very concerned, however, that Mr. Neatt's comments are the reason that none of the existing limnological profile data on Sandy Lake were referenced or otherwise considered in the Stantec Community Studies, not even those data obtained entirely independently of myself. Hence, I suggest, the Stantec reporting on the current state of Sandy Lake and the recommendations for mitigative measures are seriously deficient.

I have written earlier, on July 18, 2025, to Colton LeBlanc (Minister of Growth and Development, Nova Scotia) and Melissa Eavis (HRM, Lead Planner for the Sandy Lake SPA) describing in detail the "Missing Data" and the inadequacy of the recommended mitigative measures. I appealed to Minister LeBlanc,

> *"...that the missing data and related comments and concerns be appropriately considered – not that they be accepted necessarily, but that they be properly vetted e.g. by asking an independent authority to review the observations and comments and the Stantec Reports and to make recommendations accordingly.*

I have received no replies or even acknowledgements of my communication* from the Minister or the Lead Planner.

*Documents posted at www.vesicolor.ca/sdocs

On Nov 12, 2025, I attended the Public Open House on the Sandy Lake SPA, assuming it would provide an opportunity to question the consultants, discuss concerns etc. as in the past for such events, however, it was a tightly controlled venue limited to one-on-one discussions with some HRM reps. I was able to discuss my concerns with an HRM planner who said he would do some follow up, but I have heard nothing.

I and an academic colleague from my Dal days had a lengthy discussion with Scott MacCallum of Clayton Developments Ltd. which in retrospect gave me some inking of the perspective Mr Neatt expressed to the Premier (but which I did not know about at the time).*

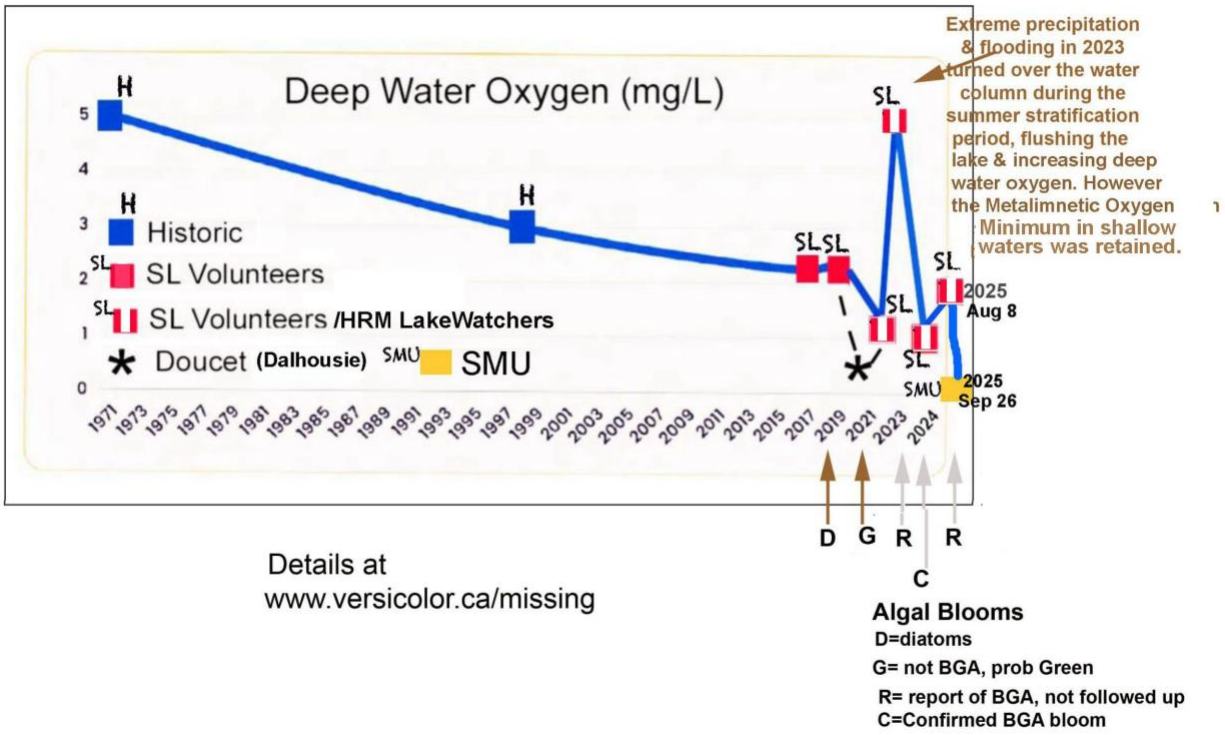
* We had a fairly intense discussion in which Mr, MacCallum suggested that the data I was showing him in a chart (see below) are not reliable. He said Prof. Rob Jamieson from Dal had been doing measurements at Sandy Lake for Clayton and none of their data showed the low oxygen values I (and others) had been reporting. I asked 'can I see

the data?. "No, its confidential; he said. 'And I suppose if I ask Rob Jamieson about it, he will also say he can't talk because it's confidential.' 'Yes, that's correct' he replied (or words to that effect). When I pointed out that one of the lowest points on the diagram was one obtained by Jamieson's student in 2021, Mr MacCallum insisted that oxygen is just another variable, you can't say much from it anyway. My attempt to have a serious discussion was met with more such rhetorical responses and at some point I simply terminated the discussion.

In the interests of due process/public trust and given the contentions of Mr. Neatt which are now in the public domain, I am asking the Task Force to consider my comments offered below on why the limnological observations that I compiled in various reports and shared with Stantec are not "pseudo-science" and should still be appropriately considered in relation to the Sandy Lake SPA.

Ultimately, the rigour of the scientific process and progress in science depends not on reputations and credentials of individuals, but on independent verification (or not) of observations and results of experiments and independent evaluation of explanations and consideration of alternative explanations about what such observations can tell us.

The diagram below shows the near-the-bottom, hypolimnion oxygen levels in Sandy Lake during peak summer stratification (mid to late August) based on all publicly available data 1971 to 2025 with the observer groups identified. Also shown are years in which algal blooms have been reported. It was this diagram but without the observers tagged that I have included in various submissions and reports on www.versicolor.ca/sandylakebedford; I tagged the observers in the diagram after my discussion with Scott MacCallum at the open house event to underscore the involvement of multiple observers in obtaining these data.



Completely independent of myself, limnological observations were conducted on Sandy Lake by Casey Doucet/Rob Jamieson of Dalhousie University in 2021*. Their observation of a very low, hypoxic (< 2 mg/L) deepwater (hypolimnion) oxygen level in the late summer sampling period of 2021 was the first such record.

* **Identifying lake water quality trends and effective monitoring strategies in a rapidly urbanizing region** (2022-12-08) *Doucet, Casey*; Not Applicable; Master of Applied Science. Available on Dalspace: https://dalspace.library.dal.ca/items/4b3b81e9-452c-43c0-8a0e-d63f829bd3db. Some of those data are utilized in a related paper: **Synoptic snapshots: monitoring lake water quality over 4 decades in an urbanizing region** June 2023 Lake and Reservoir Management 39(2):1-19 DOI:10.1080/10402381.2023.2205355 Authors C. Doucet et al. (13 authors)

Subsequent measurements by the "Sandy Lake Volunteers" under the direct supervision of or following the protocols of and reporting to, the Halifax LakeWatchers program also revealed low deepwater oxygen levels in 2022, 2024, and 2025. A further sampling by Limnologist Linda Campbell of Saint Mary's University in early October of 2025 recorded the lowest value yet reported.

The only sampling that was conducted entirely under my supervision was that conducted in 2017 and 2019. Those deepwater oxygen values were just above 2 mg/L; in combination with two sets of earlier historical values, I suggested that they indicated a long term trend in decline of hypolimnion oxygen - a phenomenon widely documented for many temperate lakes.

The one observation of a deepwater oxygen level that was well above the hypoxic level over the years 2021 to 2025 was made in 2023*. Based on comparison of limnological profiles in the spring and late summer for each of the years 2022, 2023 and 2024, I have suggested (hypothesized) that the extreme precipitation in the summer of 2023 destabilized the summer stratification which would account for the anomalously high oxygen in 2023.*

*See "2023 Limnological Profiles, effects of episodic precipitation, and occurrence of a Metalimnetic Oxygen Minimum in Sandy Lake (Bedford, NS)" (https://versicolor.ca/sandylakebedford/waters/lakes/limnol-profiles/2023-limnological-profiles-effects-of-episodic-preciptation/)

So I ask, what "pseudo-science" was involved in these observations? The observations were hardly mine alone - are they all suspect? Should a paper that cites some of these data and the occurrence of a blue-green algal bloom in November of 2024 (an unusually late occurrence) be retracted?*

*"Unusually late occurrence of a Dolichospermum bloom in a Nova Scotia lake" by Linda Campbell, David Patriquin, Michael Agbeti in *Harmful Algae News* (HAN): An IOC Newsletter on Toxic Algae and Algal Blooms. Open Access. 78:10-11. https://doi.org/10.5281/zenodo.14883731. PDF Link.

As described above, there are, purportedly, other data for Sandy Lake collected by Clayton Development Ltd. that are not consistent with these observations. Clearly if Mr Neatt is asserting that I am "citing pseudo-science as fact" based on their own observations, they should be making those observations publicly available and subject to independent review. If Prof. Rob Jamieson was involved in the Stantec monitoring as Mr. McCallum indicated, and Clayton would allow him to speak or write about those observations, I am confident he would provide an objective description of the nature of those data and how they relate to the data in the figure above.

Unfortunately the Limnological observations conducted by Stantec in 2023 and reported in the Sandy Lake SPA Watershed Report cannot be used as a substitute or to test the veracity of the observations compiled in the figure above as the Stantec observations extended to only 10 m depth. As well, as highlighted in the figure above, 2023 was a highly unusual year. That's all the more reason one would think they would have made use of the Casey Doucet/Rob Jamieson data for 2001.

In regard to the interpretations I have applied to the compiled Sandy Lake data and their implications for water quality, these are consistent with interpretations applied to similar data sets for the Halifax area in the two LakeWatcher reports to date, and to the most complete data set for a single year for Sandy Lake which was the dataset obtained by Casey Doucet/Rob Jamieson in 2021.

So again, I ask, what aspects of the interpretations qualify as "pesudo-science"?

Based on the long term decline in oxygen and the hypoxic levels of oxygen in 4 of the last 5 years, evidence from total P values of "Internal P Loading, the occurrence of algal blooms in recent years, and the continued appearance of a "metalimnetic oxygen minimum", I have suggested Sandy Lake is in a highly precarious state, and likely to be exceptionally sensitive to the proposed development, especially as it will occur in the area where major headwaters and associated wetlands are concentrated. I have commented that a more sensitive site could not have been chosen. That's not "scientific fact" and should not be regarded as such. It is an opinion, or an interpretation based on the observations; I believe it is well founded but I would not expect that it would be accepted or even cited *verbatim.*

Rather, my expectation was that the Stantec consultants would compile and review the data, and make their own interpretations and recommendations, the AECOM 2014 Watershed Report for Sandy Lake a good example. They could well have come to conclusions quite different from those I have offered, all well and good, and those might in turn be challenged. Or not if they are soundly based.

What's not acceptable, I suggest, is the total rejection by Stantec of all of the observational data - the "facts" - other than their own which were not sufficient on their own to characterize this dimictic lake.*

* In the Stantec Watershed Study, p. 3, they comment that "data with sufficient temporal resolution was prioritized to support modeling and scenario-based analysis", which could be seen as a rationale for rejecting all of the data I have cited except for the Doucet/Jamieson data for 2021 which involved multiple sampling through the open water season; also it extended through the hypolimnion which the Stantec data did not. Their one reference to the Doucet/Jamieson data was their reference to "Dalhousie University (Doucet C)" as a source of historical water data for the year 2021 in the Stantec Watershed Study for an entry Table 1.2, p.4, "2 samples for Nutrients, General Chemistry, Chlorophyll a, Metals").

Finally, I suggest that it's pertinent that The Shaw Group/Clayton Developments have recognized my field work and reporting as credible in the past. The Shaw Group/Clayton Developments changed course in their intended development of the Williams Lake Backlands (circa 2013) and instead negotiated with the Nature Conservancy of Canada and HRM to see the area designated the Shaw Urban Wilderness Park (2018). I was the lead for the background study of the Williams Lake Backlands that was pivotal to that whole process* and met with and was thanked by senior personnel from the Shaw Group/Clayton Developments prior to their announcement of their conservation initiative. My research on the Williams Lake Backlands case was evidently not perceived by Clayton Developments Ltd as conducted in the interests of those with "*inherent bias.*. [related to their] *exclusive status residing directly"* in this case, on Willaims Lake.

* Ecological Assessment of the Plant Communities of the *Williams Lake Backlands* (The Williams Lake Conservation Company, 2014-02-12) Hill, Nick; Patriquin, David. Available on Dalspace https://dalspace.library.dal.ca/items/56d67273-f64f-47cb-bd58-6731485e52e2

My relationship with the "Williams Lake folks" - who had asked me to do a simple "floral survey" of the Williams Lake Backlands - was very much the same as I have had subsequently with the "Sandy Lake folks". In both cases, I conducted my studies entirely independently and without any compensation, I did far more than was expected (as a retired prof/ecologist active in several natural history and trail groups I simply liked doing it); I applied my own criteria to how I would conduct the studies and I wrote them up without any consultation with the Williams Lake folks or with the Sandy Lake folks. The only major difference is that the Williams Lake

Backlands studies were written up as a single report, while my studies of the Sandy Lake & Environs, as I refer to the area, have been reported on an ongoing basis on a website (www.versicolor.ca/sandylakebedford), that because it is a much larger area and I realized I could not compress the studies into a limited timeframe as I had for the Williams Lake Backlands. (I was also getting older and slower.)

I also conducted limnological observations on Williams Lake and Colpitt Lake separate from the studies of plant communities in the backlands when residents expressed concerns about possible impacts of salting on the Lake; that report* (no compensation received) led to HRM modifying their salting practices in the area on an experimental basis. Both as an undergraduate student and as a graduate student I had part time employment in the 1960s conducting oceanographic observations and my graduate degrees are in Marine Sciences. So I was familiar with the science and methodology of such observations, but handling YSI probes (not around in the 1960s) I was not. I borrowed the equipment from and was instructed how to use it, by the Community Based Environmental Network at SMU. In the case of Sandy Lake, the residents did not ask me or suggest I conduct limnological studies, that was entirely my initiative; I was simply curious about the lake which is broadly similar to Williams Lake, and initially I again borrowed the equipment from SMU. Two part time residents of Sandy Lake - their family has had camps there for generations - provided the boat; one of those "Sandy Lake Volunteers" was also very "techy" and in 2006 had mapped the lake bathymetry so he knew exactly where to find the deepest spot. He was/is especially adept at handling the YSI equipment and he, not me, has been recording the observations and passing the results on; since 2022 it's all been conducted under the direct supervision of and reporting to the Halifax LakeWatchers, often without my involvement in the field observations.

*Water quality measurements on Williams Lake and Colpitt Lake (Halifax, N.S.) Dec 7-13, 2015 with reference to possible impacts of road salt Date: Jan 6, 2016 Authors: Patriquin, David Publisher: Williams Lake Conservation Company. Available on Dalspace: https://dalspace.library.dal.ca/items/80f4323a-8f5f-404c-bf59-0ad80c37e82d

I must take further exception to the characterization of those who have advocated for a highly precautionary approach to any development in the area of Sandy Lake as people with "*inherent bias... to maintain their current exclusive status residing directly on Sandy Lake*". I reside on the Halifax Peninsula. Walter Regan, the co-chair of the "Sandy Lake-Sackville River Regional Park Coalition", resides in Sackville and is the long standing, well recognized and highly appreciated President of the Sackville Rivers Association. The (or one) connection: the Sandy Lake Watershed is the largest or second largest* subwatershed in the Sackville River Watershed; what happens to Sandy Lake has a big impact on the Sackville River Watershed, especially in relation to efforts to improve habitat for sea-going fish including Atlantic Salmon, Gaspereau, American Eel, Brook Trout.

*Depending on how the sub-subwatersheds are aggregated.

Further, the residents on Sandy Lake I have got to know are not rich people with exclusive neighborhoods on the lake, but members of working families that have resided or camped by the lake for generations; they genuinely care about the lake and the landscape and its many inhabitants.

I am grateful for your consideration of these comments. Please consult the 3 documents posted at www.vesicolor.ca/sdocs for more details.*

- *David Patriquin*

*Covering Letter; Comments Document ("Comments on Stantec Community Studies for Sandy Lake (a Future Serviced Community): Significant omissions & misinterpretation of data related to the water quality of Sandy Lake" by David Patriquin, July 18, 2025); Notes.

Attached: patriquin1Oct024.pdf (my letter of Oct 1, 2024 and attached docs)