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Item No. Info 2
North West Community Council
January 12, 2026

TO: Chair and Members of North West Community Council

FROM: Jaqueline Hamilton, Acting Commissioner of Operations

DATE: November 4, 2025

SUBJECT: Bedford West Water Quality Status Update – Summer 2025

INFORMATION REPORT

ORIGIN

Bedford Municipal Planning Strategy, Bedford West Secondary Planning Strategy, Policies BW-3, SW-4 and SW-5. Development agreements between the Halifax Regional Municipality and West Bedford Holdings Ltd, between Halifax Regional Municipality and Cresco Ltd, and between Halifax Regional Municipality and Clayton Developments Ltd.

EXECUTIVE SUMMARY

A water quality monitoring program has been ongoing in the Bedford West Secondary Plan area since 2009, through Development Agreements executed under the Bedford West Secondary Planning Strategy (BWSPS). Results from the summer 2025 sampling event are presented in this report. This is the second of three reports on the 2025 sampling season to track the eutrophication process within the Paper Mill Lake watershed. Eutrophication is the process of nutrient enrichment in lakes.

Summer sampling took place on August 19-20, 2025. Thirteen sites are sampled through this program. Exceedances of the recreational *E. coli* guideline concentration were reported at three sampling sites. Given the variability in *E. coli* concentrations in surface water, resampling for *E. coli* at these sites was not requested. Exceedances of the total phosphorus (TP) threshold (10 µg/L) were reported at four sampling sites. Per the updated procedure described in the staff report *Bedford West Water Quality Status Update – Spring 2025*,[1] testing was requested on the three samples reporting exceedances above 20 µg/L. Retested concentrations were all above or equal to 20 µg/L, and are listed in *Table 2* of this report.

[1] Report is available online here: Bedford West Water Quality Status Update – Spring 2025, North West Community Council August 11, 2025 | Halifax.ca

BACKGROUND

The Bedford West area is one of three areas designated as existing growth areas under the Regional Plan for serviced development (municipal water and wastewater systems). The Bedford West area is

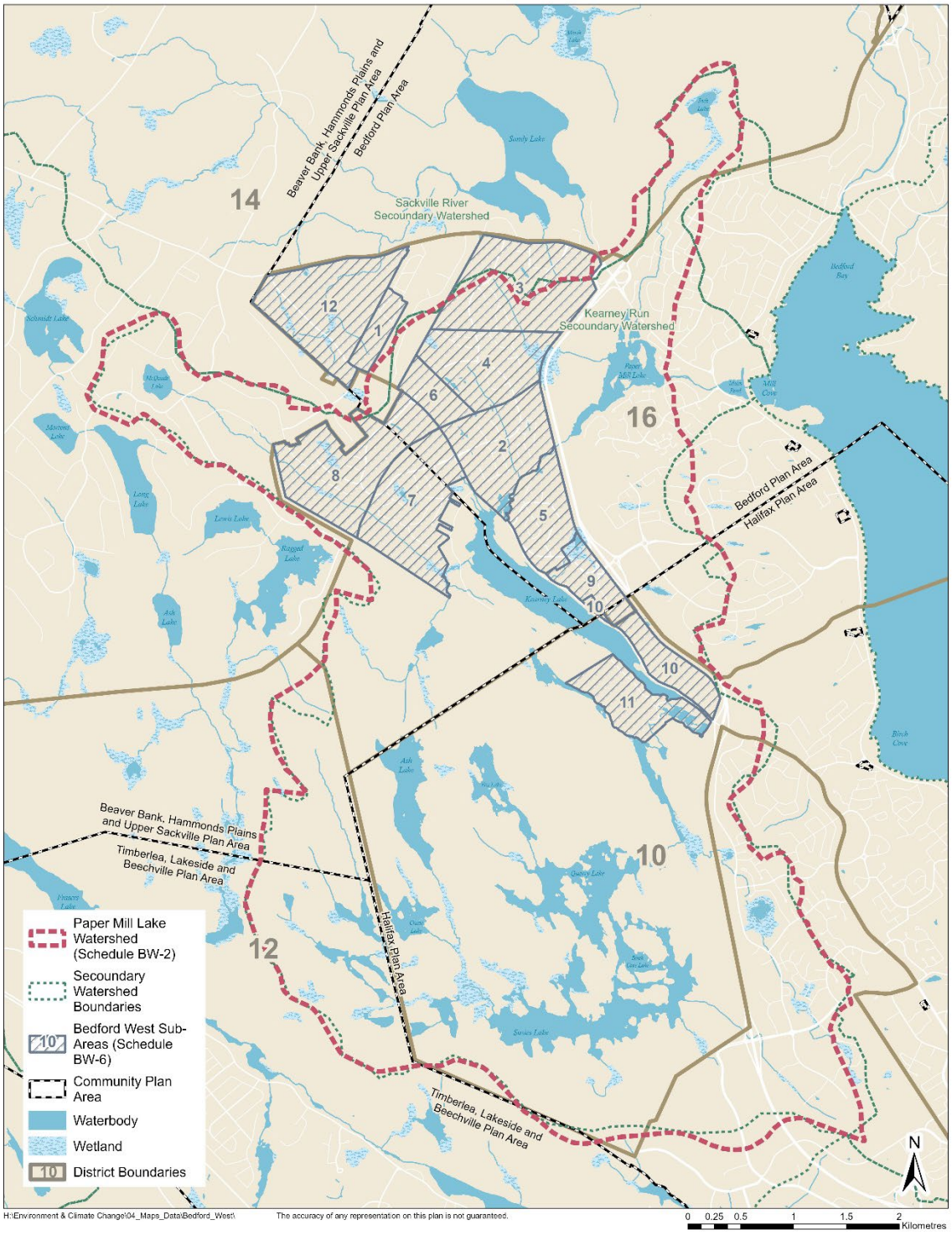

Figure 1: Sub-areas identified under the Bedford West Secondary Planning Strategy within the Papermill Lake watershed.

approximately 1,052 hectares (2,600 acres) in size and located on the west side of the Bicentennial Highway, in the vicinity of Hammonds Plains Road and Kearney Lake Road. In 2006, the Bedford West Secondary Planning Strategy (BWSPS) was adopted with the policy directive to enable new mixed-use communities while ensuring their design considered protection of the natural environment. *Figure 1* illustrates the areas encompassed by the BWSPS. Sub Areas 2 to 9 have approved development agreements and are either constructed or under construction. Sub Areas 1, 10 and 12 are Special Planning Areas designated through the Province of Nova Scotia's Housing in the Halifax Regional Municipality Act.

Policy BW-3 of the BWSPS requires a water quality monitoring program for the Paper Mill Lake watershed to track the eutrophication process. Eutrophication is the process of nutrient enrichment in lakes. While this eutrophication can happen naturally, it is primarily caused by human activities. Policy BW-3 aims to prevent nutrient enrichment from impacts of human activities in the Paper Mill Lake watershed. Land disturbances during construction, surface hardening, the use of chemical fertilizers, stormwater inputs, in-use and historic on-site septic systems, and vegetation removal are all potential sources of nutrients in lakes. These changes can result in relatively rapid changes in trophic status, from lower trophic states (fewer nutrients) to higher trophic states (more nutrients). This rapid change in water quality leads to excessive plant growth, excessive algae growth, cyanobacteria blooms, and conditions generally resembling a poorly circulating backyard pond.

The water quality monitoring program was specified in the BWSPS in response to the Municipality's statement "that best management practices may be needed both during development and afterward to maintain water quality in the lakes" and "that a water quality monitoring program be established on lakes throughout the watershed" as published in the BWSPS in 2006.[2]

The terms of the monitoring program are specified within the Development Agreements that have been negotiated in consultation with the former Bedford Watershed Advisory Board (Sub Areas 1-9). This board was dissolved in 2013 and replaced with the broader Regional Watersheds Advisory Board (RWAB). Development agreements for the Bedford West subdivision negotiated between 2013-2022 occurred in consultation with RWAB. While the municipal planning strategy policies supporting the monitoring program remains in place, and development agreements continue to require the monitoring, there has been no referral of planning applications to advisory committees since the adoption of Bill 137 in 2022, which introduced amendments to the *HRM Charter* suspending the referrals for a period of three years. The adoption of Bill 68 in March 2025 further extended the suspension of referrals to advisory committees until November 25, 2026.

All Development Agreements under the BWSPS have identified the value of 10 micrograms per litre (µg/L) of total phosphorus (TP) as a "trigger value," representing the transition point between the oligotrophic and mesotrophic states per Environment and Climate Change Canada's criteria (*Table 1*).

[2] The Bedford West Secondary Planning Strategy can be found online here: THE BEDFORD WEST SECONDARY PLANNING STRATEGY.pdf

Table 1: Summary of Canadian trophic status triggers. Environment and Climate Change Canada (2004).

Trophic Status	Total Phosphorus (µg/L)
Ultra-oligotrophic	<4
Oligotrophic	4-10
Mesotrophic	10-20
Meso-eutrophic	20-35
Eutrophic	35-100
Hyper-eutrophic	>100

In accordance with the terms for the Bedford West Development Agreements, the Municipality is required to submit test results to the Developer and the North West Community Council (NWCC) within three months of being received from the consultant, or immediately, if TP or bacterial results exceed management thresholds identified therein. RWAB was dissolved by Regional Council on July 9, 2024.[3] The Environment & Sustainability Standing Committee (ESSC) is the successor body to RWAB.[4] Subsequent reports submitted in compliance with the BWSPS will be sent to NWCC and ESSC.

Monitoring provisions in the Development Agreements could be seen as assuming that development activity bears relation to the test results. Research done by the Centre for Water Resource Studies (CWRS)[5] in the Paper Mill Lake Watershed has since pointed out that site-specific changes in water quality identified from lake sampling cannot be attributed to a single source and has recommended that individual developments should not be regulated based on trophic state indicators in a lake. Some reasons for this are:

1. Development-derived surface water contamination tends to originate from non-point sources, for example contamination tends to come from overland water flow across an entire site rather than from a single discharge pipe into a lake.

2. In-lake phosphorus, while easily measured, cannot be traced back to a single source. For example, phosphorus released by decomposing plant material in a lake cannot be differentiated analytically from phosphorus released by sediment flowing into a lake from a development site.

In cases where an exceedance of phosphorus is noted, staff can request confirmation testing and determine whether any corrective action by the developer is required per their stormwater management and sedimentation and erosion plans.

DISCUSSION

The purpose of this report is to share the results of this water quality monitoring program in the Paper Mill Lake watershed undertaken as part of the Bedford West Development Agreements at the 2025 summer sampling event. A map identifying sampling locations is included in Attachment A. Note that there are two

[3] The report associated with this decision of Regional Council is available online here: Governance Review – Phase 1 Implementation Plan and Advisory Committee Review - July 9/24 Regional Council | Halifax.ca
[4] The full text of Administrative Order 1 is available online here: Administrative Order One, Respecting the Procedures of Council | Halifax.ca
[5] Presentation by Rob Jamieson, Ph.D., P.Eng., entitled “Phosphorus Loading and Trophic State Assessment in the Paper Mill Lake Watershed”, North West Community Council, November 15. 2016. The presentation can be found online here: 161115nwcc1131pres.pdf

new sampling locations as of the spring 2025 sampling event, KL-6 and KL-7. These sampling locations are associated with development agreements newly signed in Bedford West Sub-area 10.

Summer sampling took place over two days on August 19-20, 2025. Thirteen sites are sampled through this program. Results from the summer 2025 event are posted publicly on the HRM Lakes & Rivers webpage.

Exceedances of the recreational *E. coli* guideline concentration were reported at three sampling sites, HWY102-1, LU, KL-4, at concentrations of 548 µg/L, 236 µg/L and 272 µg/L, respectively. Given the variability in *E. coli* concentrations in surface water, follow-up sampling will not be reflective of conditions on the original sampling date. As a result, resampling for *E. coli* analysis at these sites was not requested.

Beginning at the summer 2025 sampling event, the retesting procedure for total phosphorus exceedances was modified as described below:

- Retesting will be requested when exceedances are ≥20 µg/L.
- Discrete, duplicate samples will be collected on the original sampling date. These samples will be sent to the analytical laboratory and preserved. If exceedances are observed, these duplicate samples will be analyzed and compared to the original sample results.
- This duplicate sampling will indicate whether exceedances are representative of conditions in the water at the time of sampling and remove uncertainty surrounding potential changes to water chemistry in the watercourses between the original sampling and resampling dates.
- Previous resampling efforts showed that fluctuations in TP are occurring in the Paper Mill Lake watershed throughout a season, likely due to a combination of factors (changes in flow, precipitation events and the degree of thermal stratification). However, due to the time interval between sampling events in previous years, resampling did not confirm whether concentrations observed were representative of conditions at the time of original sampling, as it could be up to six weeks between the original sampling date and the resampling date. This change will address that uncertainty.

Summer 2025 total phosphorus (low level) concentrations observed are listed in Table 2. Exceedances of the 10 µg/L threshold set out in the BWSPS shown in bold red, and were observed at sampling locations PML-1, LSD, HWY102-1 and HWY102-2. Exceedances of the 20 µg/L retest threshold are shown in cells with red backgrounds, and were observed at sampling locations PML-1, LSD and HWY102-1.

Table 2: Summer 2025 Total Phosphorus

Sample Location	Acceptable Phosphorus Concentration (µg/L)	August 19-20 Total Phosphorus (µg/L)	Retest Total Phosphorus (µg/L)
KL-1	10	<2	
KL-2	10	7.4	
KL-3	10	2.5	
KL-4	10	5.4	
KL-5	10	2.1	
KL-6	10	3.6	
KL-7	10	2.1	
PML-1	10	**45.2**	**22.5**
PML-2	10	3.5	
LU	10	9	
LSD	10	**49.4**	**49.2**
HWY-102-1	10	**28.8**	**20**
HWY-102-2	10	**12.3**	

Per the procedure outlined above, duplicate samples were collected for TP analysis on August 19-20 with the original samples. TP results were received by municipal staff on August 29, 2025, at which time municipal staff requested the preserved duplicate sample be analyzed. The final TP results are included in *Table 2*, and indicate the TP concentration reported in the original sampling event reflected conditions in the lake on the original sampling date accurately.

A specific management plan for Kearney Lake, one of two primary lakes sampled under this program, was requested by Regional Council.[6] A report recommending remediation actions was presented to Regional Council on August 23, 2022,[7] and the recommendations put forward by staff in the report were accepted by Regional Council at that time. Staff are currently working to complete the recommended remediation. The CWRS and municipal staff, through a research partnership, have received funding to install an array of floating treatment wetlands in Kearney Lake beginning in 2026. The project will test various wetland configurations and plant species to test treatment efficiency and maintenance requirements, and aims to determine if larger deployment of these treatment wetlands will have an impact on water quality in the municipality's urban lakes.

In August 2025, CWRS and municipal staff deployed the first of the floating treatment wetland structures in Little Kearney Lake to assess their durability through winter conditions. Full deployment of the floating treatment wetlands in Kearney Lake is planned for spring 2026.

Next Steps

To address the requirements of BWSPS Policy BW-5[8] moving forward, staff are taking a combination of approaches to monitoring and managing development impacts on water systems. Water quality data collected under this program and through other programs underway in the area, subject to the Bedford West Development Agreements, are being considered collectively to assess current watershed health and lake trophic status. Staff are using this information to inform future development considerations and to develop a watershed management framework for the entire municipality.

Development with the potential to affect lakes is being monitored as part of the LakeWatchers baseline water quality monitoring program. This program samples over 70 lake basins in the municipality semiannually and reports the results against CCME thresholds. An example of this is the development underway at the former Penhorn Mall, upslope from Penhorn Lake.

In addition, on August 20, 2024, Regional Council accepted a draft framework for watershed management for implementation by staff.[9] In coordination with the Halifax Green Network Plan and Regional Plan, this framework will support the proactive protection of aquatic ecosystems and establish water quality targets for managing land-based activities that impact water quality, aquatic and riparian ecosystems, and water resources. This framework aims to manage collective land-use impacts on a watershed scale, in alignment with the terms of Policy BW-5, as quoted above. This work has begun, with results anticipated to return to Regional Council in 2027.

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[6] Motion from Halifax Regional Municipality's Regional Council Meeting of December 7, 2021, available online here: Councillor Morse - Kearney Lake and Little Kearney Lake - Dec 7/21 Regional Council | Halifax.ca

[7] Report is available online here: Kearney Lake and Little Kearney Lake Management Plan - Aug 23/22 Regional Council | Halifax.ca

[8] Policy BW-5 states: In the event that water quality threshold levels, as specified under clause (c) of Policy BW-3, for Paper Mill Lake or Kearney Lake are reached, the Municipality shall undertake an assessment and determine an appropriate course of action respecting watershed management and future land use development in the area. An assessment shall consider the CCME guidelines. Water quality thresholds and any assessment reports shall be made available to the public.

[9] The staff report can be accessed online here: Municipal Watershed Management Framework - Aug 20/24 Regional Council | Halifax.ca

The Kearney Run watershed was recommended for the second round of watershed plan development, expected to begin in 2027.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

COMMUNITY ENGAGEMENT

No community engagement was required for this report.

LEGISLATIVE AUTHORITY

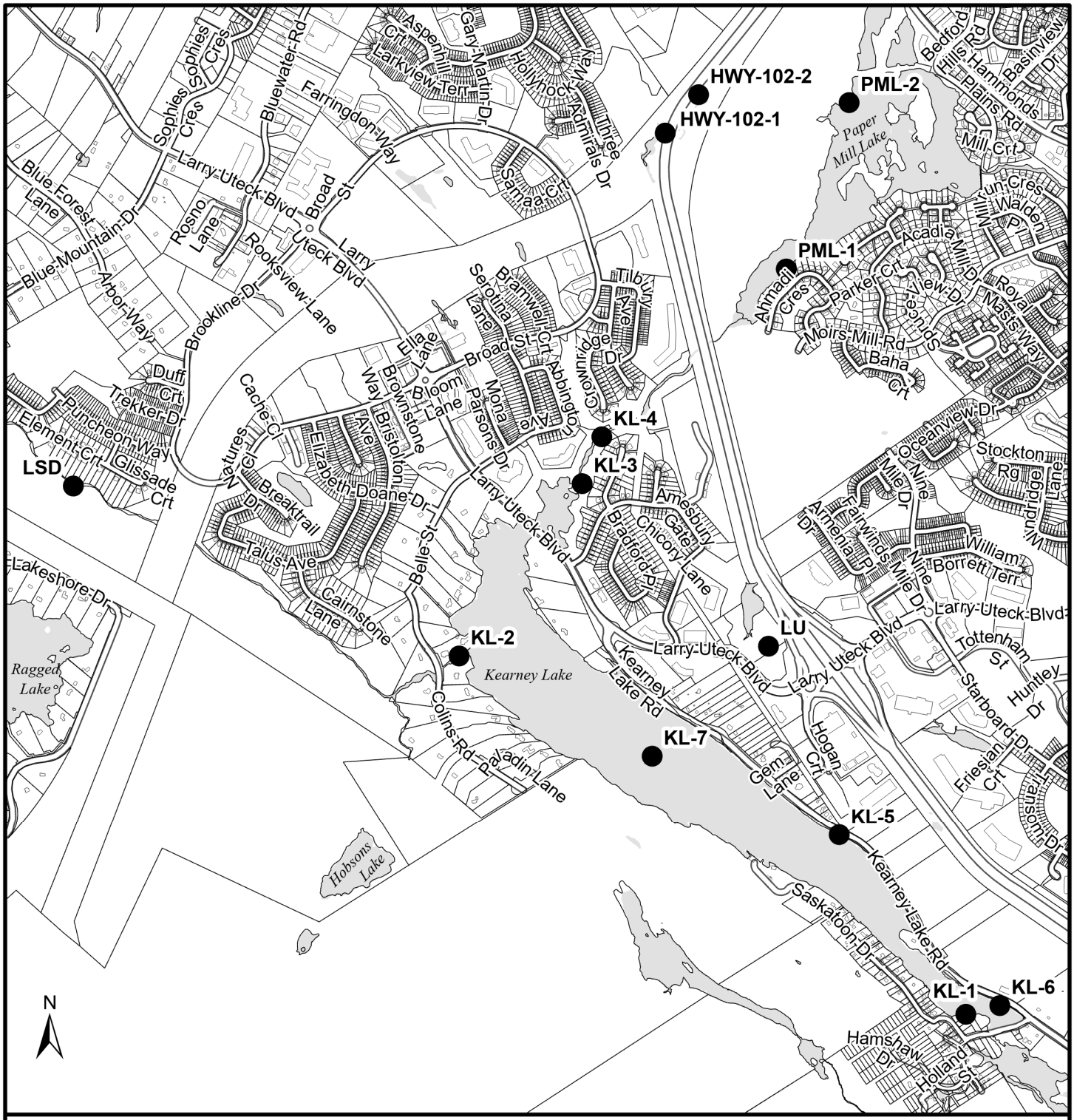
The *Halifax Regional Municipality Charter*, Part VIII, Planning and Development, Section 240, Development Agreements.

ATTACHMENTS

Attachment A Bedford West Water Quality Monitoring Program Sample Locations
Attachment B Tier 1 Environmental Quality Standards Exceedances, Summer 2025

Report Prepared by: Elizabeth Montgomery / Water Resources Specialist / Environment & Climate Change / Property, Fleet & Environment / 902.943.1954

Attachment A - Bedford West Water Quality Monitoring Program Sampling Locations



Bedford West Sampling Locations

HALIFAX

● Sampling location

The accuracy of any representation on this plan is not guaranteed.

4 June 2025

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Attachment B - Tier 1 Environmental Quality Standards Exceedances, Summer 2025

Water Quality Parameter	Aluminum (µg/L)	Iron	Manganese	Zinc (µg/L)
Threshold Value	**pH <6.5 - 5 µg/L pH >6.5 - 100 µg/L**	**300 µg/L**	**430 µg/L**	**7 µg/L**
KL-1				
KI-2		534	584	
KL-3				
KL-4	415 (7.00)	865	958	15
KL-5				
KL-6				
KL-7				
HWY102-1		412		11.8
HWY102-2		869		7.9
LU	134 (7.14)	359		11
LSD	601 (6.87)	1640	753	
PML-1	183 (7.27)	416		
PML-2				

Acceptable aluminum concentrations under this guideline are pH dependent. Lab-measured pH is noted in brackets next to the measured aluminum concentration in this table.