

Options for a Water Resource Management Strategy for Nova Scotia



Introduction

We value water because it is *essential for life* – for the health and well being of people, communities and the natural environment. Water contributes to a sustainable economic future and a strong quality of life. Water is part of the heritage of our province, and it also holds spiritual value. We are at a moment in history where we have an opportunity to address the challenges facing our water resources in a way that will make a substantial difference to our shared future.

It has been estimated that by 2025, more than half of the world's population will be facing problems based on access to water.¹ Lack of water for daily needs is already a reality for one in three people around the world.² We are fortunate in Nova Scotia to continue to enjoy safe, secure water that meets the needs for our communities, businesses and environment. Nova Scotia has 13,300 kilometres of coastline³ and more than 6,700 lakes and hundreds of rivers, groundwater and wetlands. Although the province is in a comparatively good position right now, our water resources are increasingly under pressure. A comprehensive water resource management strategy will ensure that Nova Scotia remains a high-quality place to live, work, play and do business.

Nova Scotia's key challenges regarding water-resource management include:

- **Demographic challenges** Although the population of Nova Scotia is not expected to increase significantly in coming decades, it is predicted that by 2026, the Halifax Regional Municipality and surrounding counties will be home to nearly 70 per cent of Nova Scotia's population.⁴ This means that there will be more intense water needs for domestic, industrial, agricultural and recreational purposes in this central region in the future. It also means that the number of people who live in other communities will decrease. Some communities currently face a substantial increase in population during the summer months, at a time of year when water can be less abundant.
- **Consumption and contamination** Even at present, there are concerns about how much water is being used and how the quality of water is being impacted. Canada's per-household consumption of water is among the highest in the world. Removing vegetation and disturbing soil, through activities such as development, forestry or agriculture, can cause erosion and sedimentation that clogs water ways and destroy fish habitat. Effluent created by sewage disposal systems or industrial processes, for example, can add additional chemicals, nutrients and bacteria into water sources. Floods or droughts are common concerns about the quantity of water. There are also some natural conditions that limit the amount of water available for human use.

¹ Kulshreshtha, S. 1998. A Global Outlook for Water Resources to the Year 2025. *Water Resources Management* 12(3):167–184.

² World Health Organization. 2009. *10 Facts About Water Scarcity*. [online] URL: www.who.int.

³ CBCL Inc. 2009. *Our Coast. Live. Work. Play. Protect. The 2009 State of Nova Scotia's Coast Report*. Nova Scotia Fisheries and Aquaculture, Halifax, Nova Scotia.)

⁴ Canmac Economics Ltd. 2006. *Summary of the Nova Scotia Demographic Research Report: A Demographic Analysis of Nova Scotia into 2026*. Nova Scotia Department of Education, Skills and Learning Branch, Halifax, Nova Scotia.

- **Overlapping jurisdictions and mandate** One of the greatest challenges facing water management is the complex and overlapping responsibilities of different levels of government. This presents challenges for making decisions that are integrated and based on the best available knowledge. This complexity also presents a barrier for individuals, businesses and communities trying to navigate through rules and regulations.
- **Watershed-based challenges** The current division of responsibilities for water management has meant that decisions about water have often been made one at a time. This makes it challenging to see the cumulative effects of these decisions. Furthermore, the natural flows of water (and connections between surface water and groundwater, for example) are often difficult to see and do not match municipal, provincial or other legislative boundaries. The challenge is to better integrate water-management decisions into an approach that reflects the natural processes of a watershed.
- **Infrastructure challenges** Municipal and rural systems in Nova Scotia are already today facing challenges in terms of age and capacity.⁵ Future demographic shifts will put municipal water supplies and systems under greater pressure. At the same time, as populations in other rural areas and small towns in Nova Scotia decline, these communities will have more difficulty financing their water infrastructure. It can be many times (estimated up to 40 times)⁶ more expensive to address water-quality problems that develop rather than protecting water resources at the outset of a project.
- **Financial challenges** Finding the resources needed to support the range of new and existing initiatives proposed for a water strategy will be difficult. Current fees received for water withdrawals generate approximately \$1 million in revenue. Close to 80% of this amount is paid by a single user. Innovation, partnerships, collaboration and prioritization will be essential elements in determining the best way forward.
- **Access to information.** Recent studies and reports across Canada identify a lack of knowledge about water and access to information as a large barrier to the sustainable management of water resources.⁷ In particular, there are large gaps in knowledge about how much water is available and how much is being used.
- **Climate change** The impacts of climate change will pose new challenges for water users. Climate change will impact the water cycle through changes in rainfall amount, form (e.g. rain versus snow), and timing, as well as evaporation rates. New information and knowledge will be required to help plan for the future. Also in Nova Scotia, low-lying and coastal areas may increasingly be affected by sea-level rise or flooding, potentially causing problems for our drinking water and wastewater infrastructure in these areas. There is also a greater risk of salt water intruding into the groundwater in coastal areas, which would make it more difficult for coastal communities to obtain adequate sources of drinking water.

⁵ Gaudreault, V., and Lemire, P. 2006. *Age of Public Infrastructure in Canada*. Statistics Canada, Ottawa, Ontario. [online] URL: <http://www.statcan.gc.ca/pub/11-621-m/11-621-m2006035-eng.pdf>.

⁶ Nova Scotia Environment and Labour (NSEL). 2002. *A Drinking Water Strategy for Nova Scotia*. Halifax, Nova Scotia.

⁷ Forum for Leadership on Water (FLOW). 2009. *FLOW Monitor: Canadian Water Policy Watch*. 1(Fall). Toronto, Ontario. [online] URL: http://www.flowcanada.org/sites/default/files/newsletters/FlowMonitor_email_0.pdf.

Consultation Process

In early 2008, Nova Scotia Environment released a document called *Towards a Water Resource Management Strategy for Nova Scotia*. Public feedback on this document was gathered through 14 workshops held throughout the province, resulting in a second document released in September 2008 entitled *What We Heard: a Public Feedback Report*. The information summarized in this document has been carefully reviewed by the many provincial and federal government agencies involved in this process. A cross-government, internal assessment has also been undertaken to determine where the government is best positioned for action.

Based on this, Nova Scotia Environment is now proposing a series of options that would form the basis of an effective water resource management strategy. Throughout this process, Nova Scotia Environment has worked together with 12 other provincial government agencies, two federal agencies, many municipal governments throughout the province, and the public. Nova Scotia Environment is now undertaking a final consultation on the Water Strategy to help identify priorities from a list of possible actions that will achieve our collective goals. This document is the basis of that consultation.

A few of these options represent existing government commitments. Those outside of government will have different opinions about which options should be advanced to the strategy. Developing a final water strategy will involve planning, prioritizing and consideration of fiscal realities. Your feedback is an essential part of this prioritization process.

We are asking for specific feedback on the options being proposed. At the end of this document you will have an opportunity to respond to some specific questions. If you have any additional comments please provide these at the end.

You can provide your feedback to us in a variety of ways – via mail, email, or by fax.

Deadline: June 7, 2010

Contact Information

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Proposed Vision and Goals for a Water Resource Management Strategy

The vision and the five goals below reflect the diversity of needs and values for water. They frame the specific aspects of water management that lead to the actions being proposed for a water strategy.

Vision

Water is essential for life – to be valued, kept safe and shared.

Goals

- **Human Health** - Safe, secure water for consumption, recreation and livelihoods.
- **Economic Prosperity** - Sustainable and beneficial use of water resources.
- **Ecosystem Integrity** - Protection, conservation and enhancement of water resources and dependent ecosystems.
- **Emergency and Hazards Preparedness** - Minimization of impacts from water-related emergencies and hazards.
- **Monitoring and Knowledge** - Strengthened knowledge about water resources.

Within the context of these goals, the options presented below are proposed actions to address the challenges facing water resources in Nova Scotia over the next fifteen years.



Options to *protect the quality and quantity of water*

Assess the health of water resources in priority areas

- *Develop water-quality standards and objectives for both fresh and coastal water to assess risk to water resources*

Standards and objectives for both fresh and coastal water (where it is impacted by land-based activities) can help to determine when water quality has been degraded or to assess risks to water quality. These standards and objectives, based on guidelines developed by the Canadian Council of Ministers of the Environment, will aid communities, businesses and other stakeholders to gain a better understanding of the health of the water resources they rely on.

- *Strengthen baseline data, assessment tools and monitoring capacity to identify when water resources are at risk*

Current monitoring efforts would be maintained and could be expanded to ensure that trends in water quality and quantity are identified and reported on. The development of a Water-Quality Index that measures impacts of activities on water resources would help to identify risks (such as from land-based activities, or the effects of climate change) to surface water, groundwater, watersheds, wetlands and coastal areas.

Improve protection measures to limit negative impacts on water

- *Improve protection measures, such as setbacks or buffer zones, road salt-management plans, watercourse alteration procedures, risk assessments of water-control structures, the identification of ecologically significant water resources such as wetlands, and the identification of areas critical to recharging water resources*

The cumulative effects of all activities in a watershed can have significant negative impacts on water quality, and/or quantity. Practices that prevent the deterioration of water quality and quantity could be encouraged, without unnecessarily restricting development and use. Stronger protection measures, may also be proposed, such as establishing consistent 'setbacks' or 'buffer zones' (areas of natural vegetation) along surface-water bodies for all areas of the province to prevent erosion and decrease pollutants and siltation from entering the waterways. These protection measures would be developed in partnership with industries and municipalities, building on successes that are already in place.

Selected current activities

- New standards and guidelines for the treatment of drinking water and wastewater*
- Surface water and groundwater monitoring programs (e.g., Nova Scotia Lake Surveys, Nova Scotia Groundwater Observation Well Network)
- Wetlands Conservation Policy for Nova Scotia*
- Environmental Farm Plan program
- Guides and best practices manuals for industry and contractors (e.g., Proponents Guide to the Nova Scotia Wetland Conservation Policy)
- Restoration of tidal flows to constricted estuaries, such as Cheverie Creek and dykelands in St. Croix

*Target under the **Environmental Goals and Sustainable Prosperity Act**

Enhance programs and tools to promote conservation and restoration

- ☞ *Evaluate and update materials, tools and Better Management Practices (BMP) manuals for use in Nova Scotia*

Better information about sensitive areas can help municipalities, landowners and individuals make informed decisions about water resource conservation. Educational materials that have proven to be effective in other jurisdictions could be edited and modified for use in Nova Scotia.

- ☞ *Support pilot projects that evaluate tools used to conserve and restore water resources and ecosystem health.*

Pilot projects could be established to evaluate potential programs, such as riparian health assessment tools or ecosystem goods and services, for example.

Options to increase the understanding of, and the value placed on, the water we have and use

Conduct scientific assessments of water resources in priority areas

- ☞ *Develop 'water budgets' for watersheds*

A water budget compares the water that is naturally available to the water currently being used in a watershed or aquifer. These budgets can help to plan for activity, and identify when and where water shortages and other problems might occur. They can also reveal opportunities to develop innovative ways to conserve water. Scientific data from groundwater and surface water assessments could be collected from watersheds across Nova Scotia along with water-use and meteorological data as a basis for these budgets.

Selected current activities

- Annapolis Valley Groundwater Assessment Project
- Groundwater and surface water resources inventories and maps
- Surface and Groundwater Withdrawal Approval Program and guides
- Climate Change Regional Adaptation Collaborative(RAC) Study – A research partnership on sea-level rise and salt-water intrusion

- ☞ *Review existing knowledge to determine changes to the water cycle based on new climate conditions*

Climate change is expected to bring changes such as warmer and wetter weather to Nova Scotia. What is not well-understood is the impact that those changes will have on our water cycle and, therefore, the future of our water resources. As the climate changes, information may be needed to adapt current practices so that they ensure continued availability and sustainability of water for all uses.

Improve knowledge about water resources and their contribution to the economy

- ☞ *Develop guidance that links water supply, availability and quality issues to regional economic potential*

Many businesses and sectors of the economy are striving to change how they use and dispose of water to lessen their impact on the environment. Areas of the province with adequate quality and availability of water should be identified, so that investment and development can be properly planned for and directed. Beneficial practices could be identified and profiled as models to encourage these activities.

- ☞ *Ensure that regional economic strategic plans consider water needs (quality, quantity and infrastructure)*

Currently, Regional Development Authorities work with municipalities and businesses to identify economic issues and opportunities that need to be addressed over five-year timeframes. As economic plans are renewed, water could be incorporated and considered as an ingredient for future economic success across the province.

Review the fee structures for water approvals

- ☞ *Review current fee structures for water in Nova Scotia*

Under a review of current fee structures for water approvals, changes to ensure that pollution prevention measures, and the true value of water, are reflected in its cost could be made. A revised fee structure may be based on the impacts of water use on the quality and quantity of the resource. Fees collected for water use would continue to be directed to provincial water-management programs. A challenge is that nearly 80% of the approximately \$1 million currently generated in revenue for water-resource management in the province is from a single user.

Options to *plan and build with water in mind*

Support planning and decision-making based on water availability

- ☞ *Prepare guidance for industries and municipalities to determine the availability and sustainability of water supplies for new developments*

Decisions about land use can be improved by having information regarding the availability of enough good quality water to support present and future needs. The development of guidance materials and tools would enable industries and municipalities to determine how much water is available for new developments and predict potential effects on existing developments.

- ☞ *Improve information about major risk areas*

Increased storm events may physically threaten infrastructure close to the coast, or overwhelm infrastructure with high volumes of water. As well, low-lying coastal areas are at risk from salt-water intrusion into groundwater supplies and increased erosion and flooding. At a watershed scale increasing amounts of paved and built surfaces prevent water from seeping back into the ground, contributing to downstream erosion and flooding. Floodplains of major river systems may be defined on a priority basis to assist municipalities and other land managers to protect infrastructure and investments, and to improve natural flood-mitigation capacity. New information would be developed to address these risks.

Selected current activities

- Statements of Provincial Interest providing guiding principles for decisions regarding land use.
- Integrated Community Sustainability Plans (ICSPs) providing a 20-30 year vision for Nova Scotia communities
- Changes to building code and design standards in the Nova Scotia Climate Change Action Plan
- Guidelines for developers regarding the Nova Scotia Wetland Conservation Policy
- Sustainable Coastal Development Strategy (in progress – due 2010)

☞ *Increase the water-related information available to governments, land-use planners, water managers, consultants and industry*

Timely and easy-to-understand information on water can improve the quality of decision making, project planning and policy development. Current pilot projects that focus on determining the most effective means of providing groundwater data to municipalities for land-use planning provide a possible model for developing such information. New uses for interactive and online mapping systems could also be explored.

Promote low-impact development

☞ *Promote residential conservation measures, including the use of cisterns and rain barrels, low-flow fixtures and other building practices that encourage water stewardship*

The Climate Change Action Plan has resulted in significant changes to the Nova Scotia Building Code in terms of water use. The Code requires “low-flush toilets and permit the use of water-free technologies and the re-use of grey water by December 31, 2009.” Building on those changes, support for other water-conservation measures such as green (living) roofs, rainwater harvesting, and the use of cisterns and rainbarrels, would contribute to changes in water use and stormwater generation in urban areas. Promoting low-impact development could also include promoting greenspace corridors within developments.

☞ *Promote innovation in water-use and treatment technologies*

Not all activities require the same quality of water. For example, irrigating lawns does not require treated and potable water. The use of alternative sources of water, such as greywater or rainwater, could be encouraged in areas of high demand. Constructing wetlands to treat wastewater and stormwater is another innovation that could help achieve this option.

Options to enhance the management of drinking water and wastewater systems

Enhance the management of emerging risks to drinking-water supplies

☞ *Evaluate the potential for a rural water-quality program*

The majority of Nova Scotians who are not serviced by a municipal system have their own well or water source. Limited information exists about water quality in private supplies, because many people do not test their water regularly (as is recommended). Wells that are no longer in use, but not decommissioned, pose a high risk to neighbouring wells because they directly access aquifers. Increased support for rural water-quality testing could provide enhanced public-health information and serve as a “sentinel” for identifying emerging risks to drinking-water supplies. As part of this action, efficient subsidies for rural water-quality testing and well upgrades may be extended

Selected current activities

- Implementation of the Nova Scotia Drinking Water Strategy
- Canada-wide Municipal Wastewater Effluent (MWWE) Strategy
- Homeowner education and subsidies through the Environmental Home Assessment Program (EHAP)
- The Drop on Water factsheet series providing water quality and other information to the public
- Partnerships such as the Private Wells Working Group and the Provincial Public Health Lab Network

☞ *Continue to assist communities with source water protection planning*

Through the Drinking Water Strategy for Nova Scotia (2002), source water protection planning was initiated for municipal drinking water supplies. Continuing with this program, rural water quality for Nova Scotians can be improved by supporting the rural water-quality protection efforts of others, sharing resources and developing relationships, and strengthening knowledge and experience.

☞ *Continue to implement and update drinking-water standards*

As per the Drinking Water Strategy for Nova Scotia (2002), drinking-water standards must be continually updated to reflect new health standards, research and treatment technologies, and emerging risks.

Improve the management and quality of wastewater effluent

☞ *Improve tools for, and awareness about, maintaining septic systems*

Failing septic systems have a significant impact on water quality. A targeted plan for addressing areas of the province with septic system issues could provide support to the individual resident or homeowner who has responsibility for these systems. The Environmental Home Assessment Program, which provides education, advice and subsidies for addressing septic system problems, could be continued as an effective way of promoting this action.

☞ *Evaluate the regulatory structure for small wastewater-treatment systems*

Small, private wastewater-treatment systems have an impact on environmental and public health. Support for improved, affordable treatment choices could be developed to ensure that the best options are available for managing wastewater.

☞ *Implement the Canada-wide Municipal Wastewater Effluent (MWWE) Strategy*

The Canadian Council of Ministers of the Environment (CCME) has developed a risk-based approach to managing municipal wastewater effluent that has already been committed to by the Province of Nova Scotia. This strategy requires all municipal wastewater facilities to achieve a minimum standard of secondary treatment. A one-window regulatory approach will be established that provides harmonization between federal and provincial authorities. Public reporting of performance is also a component of the MWWE strategy.

Options to encourage water efficiency and conservation

Promote best practices for water efficiency and conservation to meet new water needs

☞ *Develop education and awareness materials for water conservation*

Best practices for water efficiency and conservation would be promoted through educational materials about alternative household technologies (such as low-flow household appliances) and practices (such as the safe reuse of water in households for non-drinking uses). Educational materials would also be produced for industry, drawing attention to

Selected current activities

- As of December 31, 2009 low-flow and low-flush fixtures will be required in all new homes and renovations.
- In 2009, changes to the Nova Scotia Building Code Act to will also allow for use of waterless technology and greywater reuse.
- Canadian Premiers endorsed the development of a National Water Efficiency Labelling and Standards program in August 2009.

business practices that implement water reuse and reclamation. Existing government rebate programs for water efficiencies could be expanded.

☞ *Support the establishment of a national water-efficiency labeling and standards program*
Water efficiency and labelling standards (WELS) programs are a widely recognized and accepted tool for informing consumers of the most water-efficient products on the market, inspiring innovation in design and encouraging retailers to carry efficient products. As committed to in August 2009, Nova Scotia will participate in the development of a national WELS program led by the Canadian Council of Ministers of Environment (CCME).

Require water-conservation plans and water metering for large water users.

☞ *Develop a framework for water-conservation planning and metering*
Water-conservation plans may require Nova Scotia's largest water users to focus on water efficiency. A framework would be provided to assist in the development of these plans. Water metering, particularly for large-scale uses such as irrigation and industrial processes, can help water users to find ways to use less water by identifying inefficient systems and infrastructure (e.g., leaks). The province would make investments in supporting this transition to water metering (through providing information, incentives and other assistance).

Options to *improve access to information about water resources*

Establish a centralized online source for water-related information

☞ *Establish a central location for information about water resources*

Currently, information on water quality and quantity is collected by many different stakeholders (e.g., provincial and municipal governments, community groups and volunteers) for a variety of projects, goals and mandates. This information has many uses, from protecting the environment and public health, to informing business practices, economic planning and land use. A central location within the provincial government for sharing water-related information would improve the ability of decision makers and the general public to access needed information that would not otherwise be easily available.

Selected current activities

- An information portal on geographic information about Nova Scotia (GeoNOVA Portal).
- An information portal providing facts, actions and guidance on climate change impacts in Nova Scotia
- Online reporting of Boil Water Advisories for all public drinking water supplies
- Online Interactive Groundwater Map

Invest in tools that enhance the information that is available to the public

☞ *Improve the capacity for sharing and communicating data*

Improving the format for sharing water-resources information, based on common standards for data, would enable multiple sources of monitoring information to be used in decision making. A web-based tool to communicate scientific information in easy-to-understand formats to a wide range of audiences could improve the awareness of risks to water quality and quantity, and actions to avoid or address those risks.

Developing online reporting systems for water-related monitoring requirements

☞ *Develop electronic reporting for water-monitoring activities*

Online reporting systems could support the timely review of reporting requirements, and improve the provincial government's ability to use this information as part of a wider body of knowledge about water resources. Online reporting systems could also reduce the level of administration and cost placed on municipalities, industries and individuals in complying with regulations (whether they apply to wastewater, drinking water, wetlands or watercourse alterations) or engaging in general monitoring activities.

Options to support community water-stewardship efforts

Support water-stewardship programs

☞ *Continue to support existing programs and initiatives*

A water-stewardship program could support activities involving joint effort and individual action, establishing community grants to provide seed funding for organizations and businesses addressing water and coastal issues such as conservation, protection and enhancement.

☞ *Build capacity for community water quality monitoring*

Many community-based organizations and volunteers are currently actively monitoring water quality in watersheds across the province. Building capacity for community organizations to monitor water quality in our freshwater and coastal environments could support a community-based citizen-science program to help assess the health of our water resources and watersheds.

Selected current activities

- Hands-on experience in environmental projects through the Nova Scotia Youth Conservation Corps
- Fish habitat restoration through the volunteer Adopt-a-Stream Program
- Community-based water monitoring programs (e.g., Kings County Volunteer Lake Water Quality Monitoring)
- Stewardship organizations and programs including the Clean Annapolis River Project (CARP) and Atlantic Coastal Action Program (ACAP)

Establish a Forum on Water Management in Nova Scotia

☞ *Initiate regional forums on water issues*

A series of regional water issue forums, that include the many and diverse stakeholders who care about water across Nova Scotia, could create a way to provide clarity on roles and responsibilities, to maintain a common vision, to collaborate on issues or projects at the local level, and to learn from each other. These forums would respect the mandates of the different organizations that may participate, and would provide an opportunity to partner and collaborate on projects at the local level. This would also be a mechanism for stakeholders to help identify policy gaps in water management that could be addressed by government.

Invest in water education and outreach activities for Nova Scotians

☞ *Promote an increased ethic of stewardship amongst the public*

A focused education and outreach program could be built on existing programs and partnerships in places such as schools and museums across the province.

