Environment Canada
Atlantic Region

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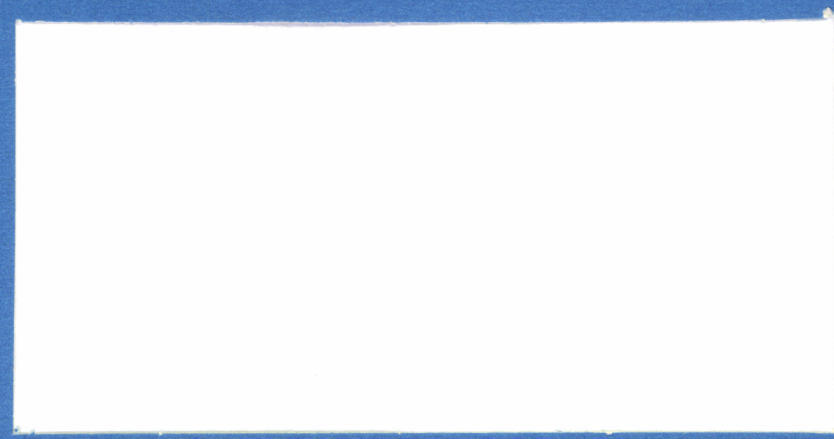
Région de l'Atlantique



A Brief Presented to the Inquiry on Federal Water Policy

By

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I Environment Canada and Atlantic Region Water Resources

The purpose of this brief is to outline Environment Canada's perception of water issues and related needs in the region for consideration by the Inquiry in making recommendations concerning federal water policy.

Because they are generally abundant and of "good" quality, the water resources of the Atlantic region tend to be taken for granted. With the possible exception of acid rain, no prominent region-wide water issue, problem, or situation affects all the region's residents in the same way, at the same time, and with the same impact. Situations do occur, for varying lengths of time, that distress the users of water and the water resources themselves because of the demands made on them. Some recurrent situations arise, that sometimes impose severe difficulties (e.g. flooding on the Saint John River) on the local public affected by them. In most cases, government policies and programs are important in the resolution of these difficulties.

In this region as elsewhere, water plays an integral role in the life, progress, and welfare of the people. Fisheries and forestry, for example, are cornerstones of Atlantic Canada's economy, particularly in rural areas. Both are affected by, and in turn strongly influence, water quality and quantity. The region's water resources are also fundamental in the social sense. Human health is a prime concern, and the importance of good water management is underlined by the fact that this region relies heavily on natural untreated water for human consumption. Moreover, water based recreational activities are important socially and

contribute significantly to local economies. Such activities need adequate water bodies of high quality for their success. It follows, therefore, that one of Environment Canada's principal objectives - harmonizing society with the environment (for the benefit of both) - will be served and promoted in the public interest if sound water policies and management practices are devised, adopted, and carried out to good effect.

Environment Canada's interests in the water resources of the Atlantic Region are numerous and diverse. Water and its use are major considerations in the Federal Inland Waters Policy, and also in our policies and strategies on environmental quality, wildlife habitat management, atmospheric environment, national parks, forest renewal and land use. The department's responsibilities are embodied in such legislation as the Department of Environment Act, Fisheries Act, Canada Water Act, Contaminants Act, Boundary Waters Treaty Act, Migratory Birds Convention Act, Forestry Research and Development Act, and National Parks Act. Programs arising from these responsibilities include water data collection, flood damage reduction, weather services, environmental protection, wildlife habitat protection and enhancement, and forest research and development. In delivering such programs, Environment Canada has developed substantial knowledge and expertise that can be brought to bear on all aspects of the water cycle and on water management, use, and conservation in the Atlantic region.

The department recognizes fully the jurisdiction of provincial governments over many aspects of water resource management. In the conduct of its programs, it works cooperatively with them, through agreements or less formal arrangements, in the discharge of shared responsibilities and those of mutual interest.

II Water Issues in Atlantic Canada

For ease of presentation water issues are separated here into their quantity, quality, management, and international aspects. It is recognized, however, that these categories are somewhat arbitrary, and that many issues involve more than one facet of water policy and management.

1. Quantity Issues

(i) Scarcity

Water is generally available in adequate quantities throughout the region but some localized supply problems occur. For example, in Nova Scotia the communities of Liverpool, Springhill, Truro, Trenton, and Westville experience seasonal shortages. In others, including New Glasgow, Stellarton, and Sydney, the supply is adequate, but the infrastructure for delivery is not. In Prince Edward Island, there is concern regarding the possible depletion of groundwater in the Winter River Basin which is the recharge area for the Charlottetown supplies. In Newfoundland, the City of St. John's had to invoke a "state of emergency" relative to water shortages and use during the summer of 1984.

It is thus important to recognize that, although water is abundant on a regional scale, there are local situations where it is quite limited for physical or economic reasons. These situations become more critical when quantity limitations are associated with, or due to quality problems. A case in point would be Port aux Basques, Newfoundland.

(ii) Flooding

Significant flooding occurs in some parts of the region including the flood-plain of the Saint John River in New Brunswick, the Exploits River in Newfoundland, and the Truro-Onslow areas of Nova Scotia. Flood Damage Reduction Agreements are in effect with the governments of New Brunswick, Nova Scotia, and Newfoundland to limit inappropriate development on flood-plains.

Recommendation Concerning Water Quantity Issues

It is recommended that means be sought to accelerate water resource evaluation activities to ensure that suitable water is available in adequate quantities throughout the region, particularly in areas where industrial and/or population expansion is anticipated.

With regard to flooding, no new policy requirements are foreseen at present.

2. Quality Issues

Issues of water quality are of greater concern in the Atlantic Region than are issues of water quantity.

(i) Toxic Chemicals

Toxic chemicals of both natural and man-made origin affect a number of the water supplies in the region. As an example of the former, the mineralized zones (usually associated with sulfidic ore bodies) found in many localities in the Maritimes, lead to severe acidification problems when mined (or, in some cases, merely exposed) . An outstanding example is the area surrounding the Halifax International Airport. It has contributed significantly to the acid content of neighbouring water bodies for more

than twenty years.

Man-induced chemical contamination of water systems has paralleled the growth, use, and distribution of chemicals in our society. While Atlantic Canada does not have a large industrial or population base, water supplies in some communities have been contaminated. For example:

* Spraying by the agriculture and forestry sectors has led to the presence of aldicarb in ground water in P.E.I.

* The aquifer supplying Amherst N.S. has become contaminated as a result of the disposal of chemical wastes. This may pose serious problems in the future because of limited availability of other sources of supply.

* There have been numerous instances of oil tanks rusting and corroding with consequent leakage of hydrocarbons into water supplies.

* Gold mining has left a legacy of surface and ground water problems, including arsenic contamination, in Waverley, Sackville and on the Eastern Shore, Nova Scotia.

For these and other reasons, some central raw water supply systems do not meet "acceptable limits" of potability, and hardly any meet the "objective limits" as defined in federal guidelines published by Health and Welfare Canada. In general, limited treatment is provided for these supplies by municipalities. Further, there exists a dearth of information concerning the presence of toxic chemicals in raw drinking supplies.

(ii) Acid Rain

The Atlantic Region receives significantly more acid rain than it produces. This, coupled with the fact that most areas, with the exception of P.E.I., have poor natural buffering capacity, makes the problem

particularly serious. Among the many reported impacts, some of special concern in the region are degradation of salmon spawning and other aquatic habitat, reduction of forest growth, and the changing of plant species composition in wetlands to the detriment of waterfowl. While some reduction in acid precipitation can be achieved by limiting local emissions, truly significant progress depends on the curtailment of emissions in the industrial areas to the west of the Atlantic Provinces.

(iii) Salt Water Intrusion

Salt water intrusions into ground water supplies are a problem in many coastal areas, particularly in parts of New Brunswick and Prince Edward Island. The problem is caused by a combination of insufficient understanding of aquifer characteristics and fresh water heads available, and inappropriate placement and depth of wells in affected areas.

(iv) Causeway Projects, Prince Edward Island

These projects associated with road construction in PEI have led to numerous situations of choked estuaries which eutrophy and, in fact, become septic with adverse effects on shellfish resources, aesthetics, and health. Remedial measures will be costly.

(v) General Effluent

Atlantic Canada lags behind much of the country in the treatment of municipal waste. Recent studies and surveys show that, while most small communities have waste treatment systems, many larger centres including Halifax, Edmunston, and St. John's do not. The installation of domestic waste collection and treatment facilities has been greatly hindered in

recent years by reduced levels of funding.

(vi) Forest Management

Forestry is a major industry in Atlantic Canada, and is currently faced with serious problems of wood supply and resource protection. Forest management and harvesting affects water resources in a variety of ways, and a wide array of regulations and guidelines have been promulgated to prevent or ameliorate negative impacts. Areas of concern include the addition of chemical pesticides to waterways, siltation due to erosion, and the raising of water temperature by removal of the forest canopy. However, such regulations have not always been formulated against the background of a full understanding of the effects of forestry practices on water resources. Given the economic importance of the forest sector to the region, and the high costs of forest operations, there is a need for more rigorous assessment of the effects of forestry practices on water supply. Resulting regulations should recognize both the value added to the economy by the forest industries, and the basic importance of preserving good quality water.

Recommendations Concerning Water Quality Issues

1. A review should be carried out of policies, legislation, and funding to deal with the continuing toxic chemicals problems in the region.

2. Early action to reduce U.S. and Canadian sources of acid rain should be sought. As a second priority, research on its effects and mitigating measures should be supported and enhanced, as well as other sources of acidification.

3. The elimination of problems of salt water intrusions should be sought through more research into their dynamics, and the introduction of remedial measures, such as improved well location and construction.

4. Current patterns in treatment of municipal wastes should be reviewed throughout the region to determine infrastructure needs and the levels and sources of funding to meet them.

5. Regulations concerning forest harvesting should be reviewed to determine whether they are realistic relative to impacts on water resources. Amendments should be made where appropriate.

III Management Issues

1. Management Legislation

Legislation concerning water resources management has not been developed in a planned manner but, rather, on an ad hoc basis by various levels of government in response to emerging situations. The result is a fragmented legislative base with elements of water management control exercised by the four provincial governments, the federal government, and appearing in numerous Acts, regulations, and by-laws. This points to a need for their review and possible revision leading to a more coherent body of water legislation.

2. Technical Information Requirements

In the Atlantic Region, there is inadequate information on all aspects of water, particularly the ground water resources. There has been

little systematic study of ground water despite the fact that some 44% of the population is served by private wells. The fact that ground water has proved to be a more economical source of supply than surface water for communities such as Springhill, Nova Scotia, accentuates the need for fuller information about the resource.

Data collection networks for surface water have been established for many years, but emerging water management issues indicate a distinct need for more and better interpretation programs to provide reliable information for water management decision-making.

In view of the fact the last major comprehensive study of the region's water resources was carried out over 15 years ago (and contained significant data gaps) there is now a requirement to better define and evaluate the resource. New studies of supply, quality, and demand are essential and there is a need for information on the economic value of water, use patterns and forecasts, methods of management, and industrial requirements.

There is also a need for an improved data base to deal with the problems of toxic chemicals. This is true for both forecasting and evaluation functions where invalid or incomplete data may lead to faulty decisions or courses of action. Further information is also required on the effects of man-made organic substances, heavy metals, and of dissolved oxygen depletion on aquatic life.

Additional weather radars are required, especially in New Brunswick, eastern Nova Scotia, and western Newfoundland to allow better estimates of rainfall and snowpack, and to facilitate predictions of streamflow. As well, it is considered that the existing precipitation observation network is deficient in several areas, including northern New Brunswick and most of Labrador.

3. Strategic Planning

There are no regional strategic plans for water management in Atlantic Canada. Such plans, formulated under specific enabling legislation could provide a structured background against which federal and provincial water management activities could be designed and implemented. The types of management information needed for regional strategic planning are not generally available at present; nor are federal water programs sufficiently coordinated to meet strategic planning needs.

4. Management for Conservation

During the past two decades, considerable progress has been made in increasing awareness of the needs to protect water resources and the environmental values which they support. However, in Atlantic Canada, there remain a number of concerns regarding preservation of aquatic habitats:

* Impairment of fish habitat by dams, often without fish ladders, is common. Low-head hydro, unless properly designed could pose a serious threat to salmon streams in New Bruswick.

* Development projects (dams, highways, agriculture) need to be planned and managed with more sensitivity to fish and waterfowl habitats, and to aquatic resources generally. At present their potentially disruptive effects on ecosystems are often under-rated or overlooked. For example, the proposed route for a highway in Nova Scotia had to be altered in an advanced stage of planning to avoid destruction of marshlands, and road construction has caused siltation with resultant death of aquatic vegetation at a bird sanctuary in P.E.I.

5. Economic Aspects of Water Management

The economic importance of water in the Atlantic Region has long been underestimated by development agencies due to the apparent abundance of the resource. Also, water constraints do occur where the resource is inadequate for development.

Forestry and paper manufacturing, agriculture, fish and food processing, tourism, and power generation are all substantial water using industries in the region. The fourth-ranked group of water consuming industries, food processing and beverages, is the most important group in the manufacturing sector in terms of its contribution to GDP and total employment. Moreover, it consists largely of fish processing enterprises - a mainstay of the rural economy in the Atlantic Region.

It is important to note that some federal programs that previously supported infrastructure development (e.g. those of CMHC and DREE) have not been replaced. This translates into a situation where required funding is quite limited or not available for the development of new infrastructure, the protection of substantial previous federal investments, or the replacement of old and worn-out systems.

It is essential that the economic importance of water and the need for well maintained infrastructure be recognized in the design of future development programs and the water resources associated with them. In this respect, the economic value of water could be reflected in pricing policies. The introduction of appropriate pricing policies at the local level would help to solve some of the funding problems.

6. International Issues

In the Atlantic Region, the relationships with the United States

concerning water, including hydro-meteorology, has generally been harmonious and cooperative. However, some continuing issues are worth noting.

* The proposed raising of a hydro headpond at Grand Falls, New Brunswick, would flood agricultural land in Maine. If the project proceeds it will probably be referred to the International Joint Committee.

* Effluent from a base metal mine in Maine could degrade the quality of the Aroostook River. However, mining is presently at a standstill due to low copper prices. Monitoring is underway.

* Effluents from hog and poultry processing upstream of Edmundston, New Brunswick, degrade water quality in the Saint John River. Some abatement measures have been taken and the International Saint John Water Quality Committee is monitoring the situation.

* Several New Brunswick rivers have been degraded and their temperature increased by municipal and food processing wastes entering their upper reaches in Maine. The International Committee has accepted revised quality objectives and monitoring continues.

* A number of municipal and industrial development activities on both sides of the St. Croix River have contributed to closure of the estuary shell fishery.

Significant improvements have been effected over the past decade, such as the abatement of some pollution sources and the installation of fish ladders, as a result of federal-provincial and international cooperation. However, the various issues are being dealt with individually and there is a requirement for a more holistic approach to dealing with these international water situations.

Recommendations Concerning Management Issues

1. A review of existing water legislation should be carried out to determine its adequacy for addressing present-day water issues, and changes made where appropriate. This should be accompanied by an examination of the prospects for closer coordination of federal water programs.

2. Increased emphasis should be placed on obtaining additional information and interpretations of a wide range of water matters including available resources, demand and supply forecasts, economic importance, quality, and hydrometeorology.

3. The prospects for developing regional strategic water management plans should be explored.

4. An awareness of the need to protect aquatic habitats should be promoted, especially among development agencies, industry, and the public.

5. The concept of the economic importance of water should be articulated and promoted, and pricing policies introduced that reflect the economic value of water.

6. The need for, and availability of funding for infrastructure should be reviewed and remedial action taken where necessary.

7. A more holistic approach should be taken to the improvement of the aquatic environments of the Saint John River and its neighbouring international streams.

IV Research and Education

1. Research

It is maintained by researchers that there is insufficient funding for water-related research carried out by a number of institutions in Atlantic Canada. As a result of constraint in recent years, funds for the Water Resource Research Subvention Program have been reduced from $1,000,000 to $250,000 nationally. Moreover, there is no federal fresh water research facility east of Ontario.

The vital contribution of research to water management policies and programs becomes more critical as problems of quality and quantity become more complex; and the nature of many of these problems dictates that a multi-disciplinary approach to research should be taken. Specific research subjects for which enhanced levels of funding should be available in the region include:

- presence of toxic chemicals in raw drinking water.
- effects of LRTAP
- saltwater intrusions
- relationships between land use practices, including industrial activity and urban development, and water quality
- fate and pathways of chemicals and their long term environmental impacts
- analytical methods
- exploration techniques
- water demand management techniques
- ground water dynamics

2. Education

The most pressing educational requirement relative to water resources in the Atlantic Region involves assisting the public and development agencies to understand the importance of water to the overall socio-economic fabric. The fact that water resources have finite limits, must be recognized, a concept which may not be readily accepted owing to our traditional belief in abundant and high quality supplies. The value of water will only be appreciated when it is seen as a commodity vital to public health and well being and one which requires, like any other renewable resource, harvesting, processing, and transportation prior to consumption. The achievement of a greater public awareness of the importance of water should be a prime objective.

Recommendations Concerning Research and Education

1. Funding for research into water problems and training in hydrological services should be increased.

2. Public education programs should be improved and intensified to foster a fuller understanding of the social, economic, and environmental importance of water resources.

V Summary

In summary, the salient water issues in Atlantic Canada can be stated as a series of needs which remain to be satisfied.

1. Regional strategic planning for the management of water resources.

2. A thorough comprehensive study of the region's water resource base (including special reference to groundwater) to provide management and decision-making information.

3. Amelioration of the effects of important sources of water quality degradation including acid rain, toxics, and general effluent.

4. Identification and removal of localized water-based constraints to economic development.

5. A review of the needs for funding mechanisms and cost-sharing for the development of new infrastructure and the maintenance and replacement of existing facilities.

6. Review of and, where necessary, amendments to water legislation.

7. Increased understanding of the economic value of water as a resource in itself, and the linkages between water resources and economic development along with pricing policies that reflect the economic value of water.

8. Increased research on many aspects of water quality.

9. Emphasis on the synthesis and interpretation of available raw data.

10. Public education as to the value of water resources and the requirement to use them wisely.