Section 1

Introduction to the Basin and Our Audit

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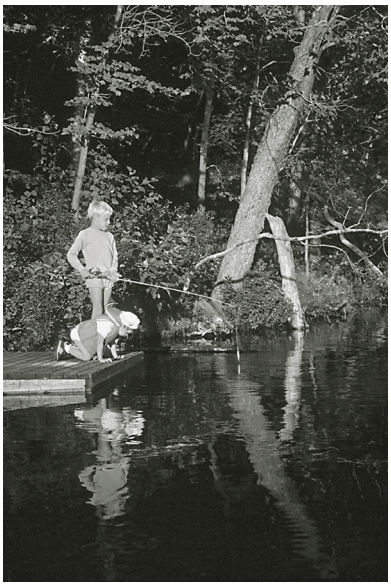
The basin is a major economic force for Canada . . .



. . . and supports our quality of life.

Source: Bruce Litteljohn

A unique and threatened home

1.1 To 16 million Canadians, from Thunder Bay to Quebec City, Severn Sound to Trois Rivières, the Great Lakes and St. Lawrence River basin is home. We depend on the basin's rich resources for clean air and drinking water, food and shelter, good health, employment, sport, and recreation. The basin is a natural wonder and the envy of the world, holding some 20 percent of the Earth's fresh water.

1.2 The basin is also a major economic force for Canada. Its lakes, rivers, and streams support the highest concentration of industry in the country. In 1998 the basin supplied $11.8 billion of Canada's agricultural products, feeding not only Canadians but also people around the world.

1.3 And yet we, together with over 25 million Americans who share the basin, subject its environment to a lot of stress: industrial, municipal, and agricultural pollution of water; invasive species of plants and fish; air pollution, acid rain, and smog; the loss of valuable species and areas of biodiversity; and climate change. The health of the basin's inhabitants is subject to bacterial, viral, and parasitic diseases; toxic contaminants; and endocrine-disrupting chemicals. And the social well-being of communities in the basin is affected by beach closings, limits on fish consumption, and drinking water advisories.

Canadians ought to be concerned

1.4 **We depend on the basin's health.** Settlers were likely first attracted to this region by its pure and expansive fresh waters, vast resources of timber, and prime farmland. Today, the basin is far different. Through centuries of concentrated human activity and into the 21st century, the history of the basin is a picture of a once natural ecosystem damaged by increasing and ever-changing demands and pressures. While it still has a wealth of natural resources, it is no longer a pristine ecosystem but a complex mix of industry, agriculture, protected and recreational areas, and urban development. We have transformed the landscape, altered the natural flow of waters, and stocked the lakes and rivers. It is a hydrologic system 10,000 years in the making that we are trying to manage to our benefit and the benefit of our children and their children.

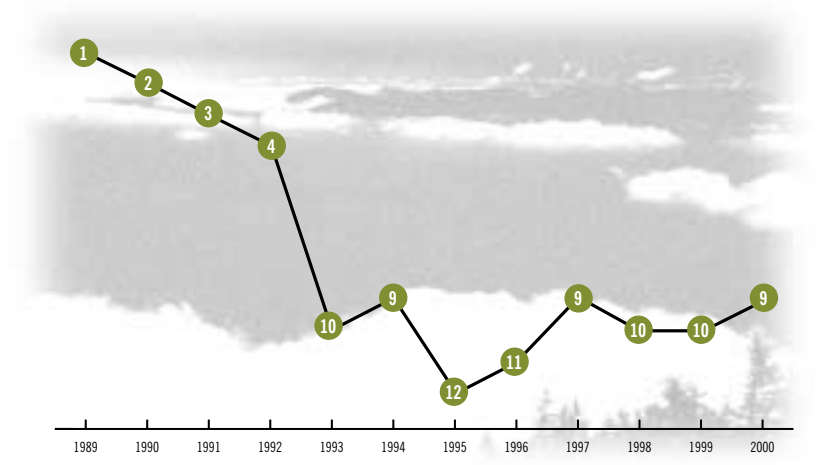
Canadians are concerned—10 years of polling

1.5 "Environment just is not a political priority anymore." We heard this repeatedly as we prepared this chapter. And yet this view did not correspond with what we saw on the ground—individuals and communities caring for

their environment in their professional and volunteer activities. So we looked at 10 years of public opinion polls to see what Canadians have said about the environment.

1.6 **People care about the environment.** The environment is consistently among the top 12 issues Canadians cite as important. Exhibit 1.1 shows that the environment was the top concern in 1989 but has fallen steadily since then, pushed aside by economic worries. This may lend credence to the view that the environment matters less to Canadians today.

Exhibit 1.1 Where the environment ranks in the top 12 issues confronting Canada



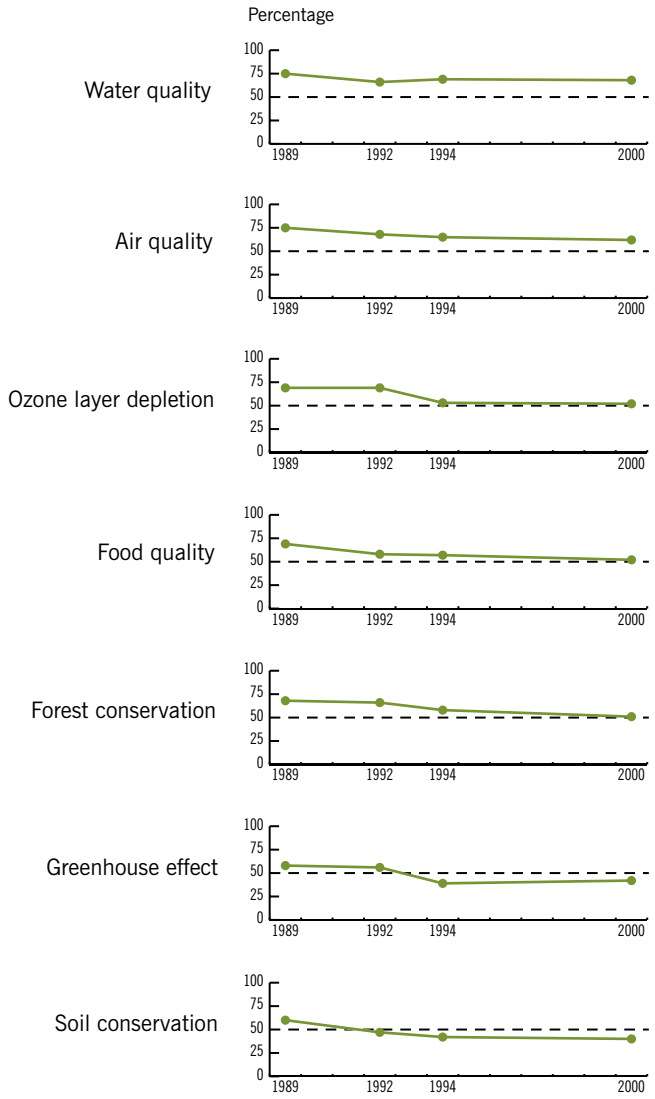
Source: IPSOS-Reid "Canadians' Public Policy Issues Agenda" 1988–2000. The question asked, Thinking of issues presently confronting Canada, which one do you feel should receive the greatest attention from Canada's leaders?

1.7 **Concerns are increasing.** More in-depth questioning, however, leads to different results—84 percent of Canadians say they are more concerned about the environment than they were five years ago. Exhibit 1.2 shows that since 1989, a majority of Canadians have been somewhat or very concerned about seven major issues.

1.8 **Water tops the list.** Water quality has topped the list of concerns since 1994. Recent polls show heightened public concern about water, endangered species, and contaminated sites. Pollsters conclude that the environment is an enduring and understated concern.

1.9 **Looking to government to take responsibility.** In-depth polls also reveal what Canadians expect from their governments. The polls suggest that we have moved from preferring a team effort, involving government, individuals, industry, and private groups, to wanting the government to take responsibility for protecting the environment. More than half of the Canadians polled believe that the federal and provincial governments share this responsibility.

Exhibit 1.2 **Canadians are very concerned about environmental issues**



Source: The Gallup Poll, 1989, 1992, 1994 and 2000. The question asked, How concerned are you with the following environmental issues?

What our audit examined

The purpose of this audit

1.10 As federal legislative auditors, we have a mandate to report to the House of Commons "matters of significance" that we note in the way the government manages environmental and sustainable development issues. With the importance of the basin and the concerns of Canadians in mind, we conducted this audit to answer three questions:

- What is the state of the Great Lakes and St. Lawrence River basin?

- What role does the federal government play in protecting and preserving this key ecosystem, and how is it performing in that role?
- How can the federal government do better and advance the sustainable development of the basin for generations to come?

Audit objectives and criteria

1.11 In examining the role and performance of the federal government in each of the subject matters, our audit objective was to answer the following questions:

- Has the federal government fulfilled its mandate, legislative responsibilities, and other policy commitments?
- Has the government applied good management practices?
- Has the government established good governance structures?

The criteria we used to arrive at the answers are presented in Exhibit 1.3.

Exhibit 1.3 Audit objectives and criteria

Objectives	Criteria
❶ Has the federal government fulfilled its mandate, legislative responsibilities, and other policy commitments?	We expected that the federal government was fulfilling the responsibilities and commitments it has made in legislation, international agreements, departmental policies and plans, sustainable development strategies, and similar documents. This includes a commitment to use an ecosystem approach to managing.
❷ Has the government applied good management practices?	We expected that the government was using good management practices in the areas we examined. These practices include the following: • Understanding existing risks, emerging threats, and opportunities. • Establishing clear and consistent priorities for programming. • Translating priorities into plans that define expected results. • Evaluating and applying appropriate tools to achieve the expected results. • Obtaining and using the necessary information (environmental, social, and economic) for decision making. • Establishing indicators of progress. • Using those indicators to measure progress. • Sharing information and lessons learned.
❸ Has the government established good governance structures?	We expected that the government was using appropriate institutions and mechanisms to manage the issues we examined. Specifically, we expected to find the following: • Credible reporting. • Effective accountability arrangements within and among departments and, where appropriate, between departments and other jurisdictions or organizations. • Adequate transparency. • Protection of the public interest.

Subject matters

1.12 Many issues have a bearing on sustainable development in the Great Lakes and St. Lawrence River basin. Over the past decade, several of them have been the subject of audits and studies by the Office of the Auditor General and the Commissioner of the Environment and Sustainable Development. They include climate change, toxic substances, smog, environmental assessment, biodiversity, and contaminated sites, among others, and are described in Appendix A. In our audits for this chapter, we focussed on four subject areas: water, agriculture, fisheries, and species at risk.

1.13 **Water.** Water is the dominant feature of the Great Lakes and St. Lawrence River basin. Canada has an extraordinary wealth of water resources. We have more lake area than any other country and more water per person than any other large country. Despite being one of the world's biggest users of water, we use less than two percent of the fresh water that our national watercourses renew each year.

1.14 The waters of the basin provide our drinking water, support our recreation, and drive our industries and agriculture. The lakes and rivers provide habitat for terrestrial and aquatic species alike. In the basin, industrial, municipal, and agricultural pollution affect the quality of this vital resource and affect our health and quality of life. And the interest in removing water in bulk from the Great Lakes could have serious consequences for local supplies and uses of water in the future. We must ensure that our use of it can be sustained. In this audit, we looked at the following:

- managing industrial and municipal contaminants (Subsection 3.2);
- tackling contamination in areas of concern (3.3);
- monitoring water quality for human and ecosystem health (3.4);
- managing water use and withdrawals (3.5);
- planning for good water quality (3.6); and
- the federal government's strategy for managing fresh water (3.7).

1.15 **Agriculture.** Agriculture in Ontario and Quebec accounts for the largest single use of land in the basin and contributes about 40 percent of the value of agricultural output in the Canadian economy. Over 100,000 farms produce a wide range of crops that help to feed the more than 16 million consumers in the region and contribute to Canada's exports.

1.16 Farming also has a substantial impact on the environment. It accounts for 5 to 20 percent of all water consumption. It causes soil erosion, water pollution, and loss of biological diversity, which affect the long-term sustainability of the watershed. Our audits examined the following:

- management of manure and fertilizer (Subsection 4.2);
- effects of soil erosion (4.3);
- environmental impacts of agricultural policies and programs (4.4); and
- practices for environmentally sustainable agriculture (4.5).

1.17 **Species and spaces at risk.** Plants, mammals, and fish and their habitat are important parts of the biological diversity of Canada and the basin. Protecting and recovering species at risk and practising stewardship of wildlife habitat, including wetlands, are integral to sustaining the biological diversity and environmental health of the basin. In this audit, we looked at the following:

- protecting and recovering species at risk (Subsection 5.2);
- conserving wetlands (5.3); and
- conserving habitat through stewardship (5.4).

1.18 **Fisheries.** People in the basin rely on fish for food, a livelihood, or recreation. Each year, the basin's lakes and rivers supply more than $40 million in commercial fish landings and support economic activity worth over $100 million. Recreational angling in the Canadian portion of the basin provides a further $350 million a year in economic benefits.

1.19 The health of fish and fish populations is a barometer of the condition of the lakes. Chemical pollution in the water has contaminated the fish; consumption advisories have been issued for each of the Great Lakes and for the St. Lawrence River. The stocking of sport fish and the presence of invasive aquatic species have had enormous impacts on the ecosystem. Our audit of fisheries management examined the following:

- responding to invasive aquatic species (Subsection 6.2);
- protecting fish habitat (6.3);
- providing scientific support for fisheries decisions (6.4); and
- defining the federal role in freshwater fisheries (6.5).

1.20 **Ecosystem initiatives.** We also examined selected practices of the federal government in the governance and management of its regional ecosystem initiatives, St. Lawrence Vision 2000 and Great Lakes 2000 (subsections 7.2 and 7.3).

1.21 **The International Joint Commission.** Because of its substantial influence on federal programming in the basin, we audited the federal government's relationship with the International Joint Commission (Section 8).

Geographic coverage

1.22 The geographic scope of our audit was the freshwater system of the Great Lakes and St. Lawrence River basin, extending from Thunder Bay in the west to Quebec City in the east. We focussed largely on the Mixedwood Plains ecozone (Exhibit 1.4).

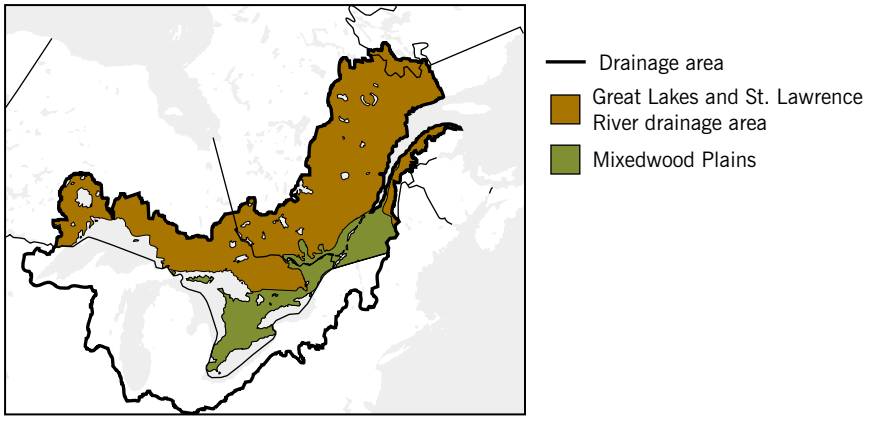
Other matters

1.23 We intended to develop a comprehensive and consolidated picture of federal spending on environmental and sustainable development issues in the basin. That proved impossible, in part because federal departments don't record their financial transactions region-wide. Where financial information

was available on a specific program or activity we audited, we have discussed it in the pertinent subject sections.

1.24 We looked at the federal government's most recent sustainable development strategies (released in February 2001) and found very few references to the Great Lakes and St. Lawrence River basin. However, the strategies do include commitments that we discuss in this chapter with the related subject matters.

Exhibit 1.4 Mixedwood Plains ecozone and Great Lakes and St. Lawrence River drainage basin



Organizational and jurisdictional setting of the basin

1.25 By any standard, the organizational, jurisdictional, and legal framework in the basin is complex. The political boundaries of this massive watershed do not correspond to the natural ones. Many levels of government are involved in managing the basin's environment and sustainable development: two federal, two provincial, eight state, and hundreds of regional and municipal governments. Our audit examined only the performance of Canada's federal government.

Two federal governments

1.26 The international border between Canada and the United States bisects all of the Great Lakes except Lake Michigan, which lies wholly in the U.S. Our neighbour to the south has a significant impact on the lakes. The United States accounts for roughly three quarters of the population around the Great Lakes, over 80 percent of its municipal water consumption, and about 90 percent of its industrial water consumption. Actions taken (and not taken) by governments in both countries affect the health of the lakes. To manage their actions and the impacts, Canada and the United States signed the Boundary Waters Treaty (1909) and the Great Lakes Water Quality Agreement (1972, 1978, 1987), and created the International Joint Commission to assist in administering both.

Separating federal and provincial jurisdictions

1.27 Canada's responsibility for protecting the basin is further complicated by the constitutional split in legislative powers. The federal and the provincial levels of government both have authority to protect the environment.

1.28 **Environment.** Sections 91 and 92 of the *Constitution Act*, 1867 set out the subjects for which each level of government has exclusive authority. Every statute passed by the legislature at either level must be traceable either to one or more of the subjects assigned to it or to another power set out in the Constitution. However, the Constitution does not specifically assign the environment, as such, to either the federal or the provincial level. And sustainable development had not been conceived of when the Constitution was adopted.

1.29 The federal government's powers over the environment lie in Parliament's constitutional authority over criminal law (which authorizes it to prohibit activities that harm the environment); its powers over coastal and inland fisheries, navigation, agriculture, and interprovincial and international trade and commerce; and its regulation of the activities of industries in its jurisdiction, such as aviation, international transportation and communication, and nuclear power. Parliament's authority to legislate for "peace, order and good government" may be used to deal with environmental emergencies. It can also support national measures that are beyond the provinces' capabilities—measures to control pollution, for example.

1.30 The provinces' participation is needed to carry out many of Canada's international commitments. Each province has legislative powers over the management and sale of public lands and timber; municipal institutions; the development, conservation, and management of non-renewable natural resources and forestry resources in the province; the generation and production of electrical energy; property and civil rights in the province; and generally all matters of a local or private nature in the province.

1.31 **Agriculture.** Both the federal and the provincial legislatures may enact laws that govern agriculture—each province, for agriculture within the province; and Parliament, for agriculture in all or any of the provinces. A province cannot pass an agricultural law that conflicts with any federal law that applies to agriculture in the province.

1.32 Exhibit 1.5 identifies the level of government—federal, provincial, or both—responsible for key environmental and sustainable development issues. Both levels share jurisdiction over most of the subjects we examined for this chapter—water, agriculture, species and spaces, and fisheries.

1.33 **Authority for international matters.** Parliament also has authority to act on all environmental concerns that Canada shares with the United States (however, Canada cannot use its international treaty-making powers to give itself legislative powers it does not have under the Constitution).

Exhibit 1.5 **Who's in charge of which environmental and sustainable development issue**

Jurisdiction

F Mostly federal
FP Shared federal–provincial
P Mostly provincial

Issue	
Air	
International and transboundary pollution	F
Regulation of air emissions	FP
Agriculture	
International trade	F
Regulations	FP
Research and monitoring	FP
Programs to improve practices	FP
Standard setting	FP
Energy sources	
Interprovincial and international commerce	F
Nuclear energy	F
Hydro-electrical, oil and gas, coal, etc.	P
Environmental assessment	FP
Fiscal measures and economic tools	FP
Fish	
Conservation of freshwater fish	FP
Prevention of aquatic invasive species	F
Protection of fish habitat	F
Allocation of fishing rights	P
Research	FP
Forestry	P
Land use planning	P
Mining	P
Monitoring and protecting human health	FP
Transportation	FP
Waste management	
Domestic waste	P
Waste water	P
Biomedical waste	P
Hazardous waste	P
Interprovincial and international movements of hazardous waste	F
Contaminated sediments and sites	FP

Exhibit 1.5 (continued)

Issue	
Water	
Transboundary and international pollution	F
Transboundary rivers	F
Water exports	F
Protection of basin and river water quality	FP
Regulation of industrial effluents	FP
Regulation of municipal effluents	P
Quality of drinking water	P
Water quantity monitoring	FP
Water demand management	FP
Wildlife and habitats	
Protection of wildlife	FP
Protection of migratory birds	F
Recovery of species at risk	FP
Protection of spaces at risk	FP

The program and institutional framework

1.34 To further complicate the organizational setting, the federal, provincial, and state governments involved in the basin have a myriad of treaties, agreements, and programs that address the environment. These include the following:

- binational and international commitments;
- national agreements, between the federal and the provincial and territorial governments; and
- federal and provincial strategies, plans, and programs.

1.35 The key agreements, organizations, and programs that affect the issues we examine in this chapter are charted in Appendix B (foldout). It may be useful to note the following about the foldout:

- Some of the agreements and programs it shows apply across Canada; others apply only to the Great Lakes and St. Lawrence River basin.
- Because our audit did not include the management of air quality, forestry, and hazardous waste, the foldout presents them in less detail than the areas we did audit—water, species and habitat, fisheries, and agriculture.
- Appendix B does not show the organizations outside government that play an important role in managing environmental and sustainable development issues.

The Great Lakes Water Quality Agreement

1.36 The federal governments of Canada and the United States signed the first Great Lakes Water Quality Agreement in 1972. It remains a dominant influence on federal activities in the Great Lakes. It has been updated and amended several times, and each amendment created new obligations.

1.37 **The call for "virtual elimination" of specific contaminants**. Initially, the Agreement focussed on the presence of excess nutrients in the lakes. It set numerical targets for reducing phosphorous discharges into lakes Erie and Ontario. Additional research and monitoring helped to define and better describe the presence of toxic chemicals in the basin and the problem of eutrophication (when excessive plant growth and subsequent decay rob waters of oxygen, making them inhospitable to fish). As a result, objectives and targets for environmental management in the basin were refined and incorporated into a revised Agreement in 1978. The revisions shifted the emphasis of the Agreement toward a call for the "virtual elimination" of persistent toxic substances from the lakes. These substances were increasingly associated with damage to the health of fish and wildlife in the basin. The 1978 Agreement established a list of toxic chemicals for priority action. It also refined the targets for phosphorous reduction in the Great Lakes.

1.38 **Moving to an ecosystem approach.** The 1978 revisions broadened the goals of the Agreement from restoring and enhancing "water quality in the Great Lakes system" to restoring and maintaining the "chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem." This shifted the focus of the Agreement from protecting the lakes to protecting the ecosystem. The Agreement also specified a commitment to undertake surveillance and monitoring in order to assess compliance with the Agreement's objectives, evaluate trends in water quality, and identify emerging problems.

1.39 **Areas of concern.** The Agreement was amended again in 1987 to require remedial action in heavily degraded locations or "areas of concern" around the lakes. The International Joint Commission and the Canadian and U.S. federal governments, the Ontario government, and state governments in the U.S. identified 43 geographic areas of concern to which the Agreement applied; 17 of them are on the Canadian side of the lakes, 5 of which are shared with the United States along connecting rivers.

1.40 **Lakewide management plans.** The 1987 amendments also mandated the development and implementation of lakewide management plans. These were intended to, among other things, broaden the scope of planning by identifying more comprehensively the sources of contaminants entering the lakes, and activities that could affect the quality of the water and the integrity of the ecosystem.

1.41 The 1987 amendments revised existing annexes to the Agreement and committed Canada and the U.S. to do the following:

- control pollution from non-point sources (pollution that does not originate from a single source); and
- identify the nature and extent of sediment pollution, and develop methods to evaluate the impact of contaminated sediments and the technological capabilities of programs to clean them up.

The specific requirements of the 1987 amendments are summarized in the Agreement's 17 annexes.

The federal government's presence in the basin

1.42 Today, the federal presence in the basin takes many forms. There are national policies and department-wide programs that are applied regionally. Examples are the Federal Water Policy, the National Fish Habitat Policy, scientific research and monitoring, stewardship of species, and agricultural income support programs. The efforts of the federal and provincial governments are co-ordinated through the Canada–Ontario Agreement and the Canada–Quebec Agreement. And there are regionally based ecosystem initiatives: the Great Lakes 2000 program and the St. Lawrence Vision 2000 partnership. Some national policies are delivered through the ecosystem initiatives; others are not. The ecosystem initiatives share many similarities but also have important differences.

1.43 In recent years there have been significant changes in the way our society frames environmental issues, what people and institutions expect of governments, and how governments have responded in their policies, approaches, and institutions. Our work has given us a new appreciation of the challenges facing the federal government.

- **A crowded and shifting environmental agenda.** Governments are grappling with hundreds of interconnected issues and threats, most of them crossing traditional political boundaries. A focus in the past on easily observed, acute stresses from single substances has been replaced by attention to subtle, chronic, and long-term stresses from many substances. And a focus on local issues has given way to global concerns.
- **Coping with multiple expectations.** Thousands of individuals and organizations attempt to influence the direction of government policy and support in the basin. On occasion, their views converge. But more often than not, stakeholders want significantly different approaches to solving problems.
- **Multiple priorities.** Environmental protection is not the only demand on government: deficit reduction, economic growth, alternative service delivery, social union, government on-line, and other government priorities also vie for the attention of scarce resources.
- **A shift to volunteerism and prevention.** Governments are under pressure from industry and other stakeholders to shift from regulatory "command and control" to a broad array of approaches, including

voluntary actions and economic incentives. Governments themselves recognize the need to shift from the old "react and cure" to "anticipate and prevent."

- **Public involvement and transparency.** There is a "consultation ethic" at play within the federal government—departments are directed to consult with the public and stakeholders as policies are developed. Increasingly, though, the public is seeking greater participation in ongoing decision-making, setting of priorities, and co-management of solutions. The public demands that information be transparent and accessible.
- **Partnerships and effective public accountability.** There is also a "partnership ethic" in the government—governments and the public alike promote the idea of partnership to achieve environmental objectives. But the increased use of partnerships has created other concerns and has prompted ongoing demands from stakeholders—and our Office—for clear definition of roles, specific commitments, effective accountability, and open and honest reporting.

Our focus is on the federal government

1.44 The discussion of each subject area in this chapter briefly outlines the main federal and provincial responsibilities in that area. However, while it is clear that both levels of government share responsibility for the health of the basin and its occupants, we direct our comments solely to the federal government and the way it discharges the responsibilities described in federal laws, programs, and policies.

Using this chapter

1.45 This chapter addresses three questions.

1.46 What is the state of the Great Lakes and St. Lawrence River basin? We present three different perspectives: historical, science-based, and international (Section 2).

1.47 What role does the federal government play in protecting and preserving this key ecosystem, and how is it performing in that role? We begin our detailed audit reports on each subject with an overview of the issues, the federal role and mandate, what we audited, what we found, and what we recommend (sections 3 to 8).

1.48 How can the federal government do better and advance the sustainable development of the basin for generations to come? We summarize our key observations and conclusions and discuss their implications. We conclude with a short list of ideas on how the federal government could do a better job of advancing sustainable development in the basin (Section 9).