

# Environment Canada



## Performance Report

For the period ending  
March 31, 2002

David Anderson  
Minister of the Environment

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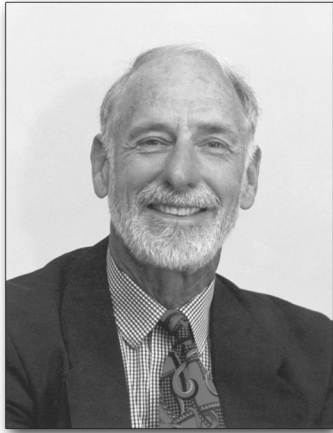
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# Section 1: Minister's Message



As the Minister responsible for Environment Canada, I am pleased to present the Departmental Performance Report for 2001–2002. This Report focuses on the progress made on the priorities outlined in Environment Canada's *Report on Plans and Priorities* (RPP) for 2001–2002.

The progress achieved during the year 2001–2002, as detailed in this Report, demonstrates Environment Canada's sound record of performance. Success has been the result of a strong team commitment at Environment Canada working in partnership with all levels of government, individual Canadians, non-governmental organizations and industry.

The environment is a quality of life issue for Canadians. We do not always choose the environmental challenges we face. They are often part of a global phenomenon requiring a decision by Canada on which areas must be addressed and the level of engagement and activity required. Environmental challenges also result from past failure to appreciate the value of our natural capital and understand that prevention and wise management are the most cost-effective measures over the long term. Regardless of the source, we must all share the responsibility and work together, to the best of our means, to actively protect the environment. This formula for success will turn our challenges into rewards that benefit all, present and future.

The issues the federal government has on its agenda, as highlighted in the January 2001 Speech from the Throne, are concerns for which Canadians also see a need for action. Environment Canada's stated priorities included a comprehensive knowledge and innovation agenda, reducing the health impacts of environmental threats, becoming better stewards of our natural environment, gathering international support for Canadian priorities and objectives, and developing a workable plan for meeting our climate change commitments.

There can be little argument that the issues on our agenda will be with us for some time to come, and the federal government will have a critical role in addressing them. Achieving substantive and lasting results in these priority areas requires ongoing management by decision-makers at all levels over the long term. It also involves a fundamental re-thinking of how we approach the environment and how we balance economic, social, and environmental factors in our decision-making processes.

We will continue to build on our past successes to deal with new pressures by developing an environmental management framework that is founded on good science, innovative tools and partnerships which will fundamentally shift attitudes and behaviours towards addressing the root causes, rather than the symptoms, of environmental problems.

***Honourable David Anderson, P.C., M.P.***  
***Minister of the Environment***



# Section 2: Strategic Context

This section provides an overview of the Department and the progress made on the strategic priorities stated in Environment Canada's Report on Plans and Priorities (RPP) for 2001–2002. This performance report also serves as Environment Canada's annual report on science and technology (S&T).

## 2.1 Departmental Overview

### 2.1.1 Mandate, Vision and Mission

#### Mandate

The mandate of the Department of the Environment is to preserve and enhance the quality of the natural environment, including water, air and soil quality; conserve Canada's renewable resources, including migratory birds and other non-domestic flora and fauna; conserve and protect Canada's water resources; carry out meteorology; enforce the rules made by the Canada – United States International Joint Commission relating to boundary waters; and coordinate environmental policies and programs for the federal government (*Department of Environment Act*).

- ■ ■ The legislation and regulations that provide Environment Canada its mandate and allow it to carry out its programs can be found at: [www3.ec.gc.ca/EnviroRegs](http://www3.ec.gc.ca/EnviroRegs)

#### Our Vision

*At Environment Canada, we want to see a Canada:*

- where people make responsible decisions about the environment; and
- where the environment is thereby sustained for the benefit of present and future generations.

#### Mission

Environment Canada's mission is to make sustainable development a reality in Canada by helping Canadians live and prosper in an environment that needs to be respected, protected and conserved. To this end, we undertake and promote programs to:

- protect Canadians from domestic and global sources of pollution;
- conserve biodiversity in healthy ecosystems; and
- enable Canadians to adapt to weather and related environmental influences and impacts on human health and safety, economic prosperity and environmental quality.

### 2.1.2 Organized to Deliver Results

Organizationally, the Department is divided into five headquarters services, five regions, plus the Human Resources Directorate and Corporate Offices. Because environmental issues are cross-cutting, Environment Canada fulfills its mandate and manages its activities through four business lines in a matrix management approach: Clean Environment; Nature; Weather and Environmental Predictions; and Management, Administration and Policy.

Each business line is set up to deliver a long-term strategic outcome. Each desired outcome includes two or three more specific long-term goals, which, in turn, are divided into a series of distinct, achievable targets.

These business lines and their long-term goals, called "long-term key results," provide the framework for internal accountability and management as well as external reporting. The long-term key results also provide a stable, results-based strategic direction against which pressures faced by the Department, and shorter-term priorities to address these pressures, are organized.

#### Clean Environment Business Line

##### Strategic Outcome

Through the Clean Environment business line, Environment Canada protects Canadians from domestic and global sources of pollution.

##### Long-term key results

- Reduced adverse human impact on the atmosphere and on air quality.
- Understanding and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern.

#### Nature Business Line

##### Strategic Outcome

Through the Nature business line, Environment Canada conserves biodiversity in healthy ecosystems.

##### Long-term key results

- Conservation of biological diversity.
- Understanding and reduction of human impacts on the health of ecosystems.
- Conservation and restoration of priority ecosystems.

## Weather and Environmental Predictions Business Line

### Strategic Outcome

Through the Weather and Environmental Predictions business line, Environment Canada helps Canadians adapt to their environment in ways that safeguard their health and safety, optimize economic activity and enhance environmental quality.

### Long-term key results

- Reduced impact of weather and related hazards on health, safety and the economy.
- Adaptation to day-to-day and longer-term changes in atmospheric, hydrological and ice conditions.

## Management, Administration and Policy Business Line

### Strategic Outcome

Through the Management, Administration and Policy business line, Environment Canada provides strategic and effective departmental management to achieve environmental results.

### Long-term key results

- Strategic and integrated policy priorities and plans.
- A well-performing organization supported by efficient and innovative services.

Each business line is led by an assistant deputy minister who provides leadership by building shared ownership for priorities, strategies and performance commitments across the Department.

- ■ ■ A detailed description of Environment Canada's planning, reporting and accountability framework can be found at: [www.ec.gc.ca/introec/dept\\_org.htm#mf](http://www.ec.gc.ca/introec/dept_org.htm#mf)

Business lines are not isolated from each other; each makes important contributions to the success of the others. Business lines have common areas of interest, such as air quality, climate change and environmental effects, and are working cooperatively to achieve results.

## Linkages Across Business Lines

All parts of the environment are linked. Every day, the atmosphere interacts with every ecosystem and every person. Although atmospheric issues and their ecosystem impacts appear unrelated, there are strong links between individual environmental issues. Global air issues are integrators of our business lines. For instance, some chemicals linked to climate change are also implicated in smog, acidification and stratospheric ozone depletion. The science behind all these air issues plays a role in the decline, invasion and adaptation of species, the adaptation of humans and their economic processes, the production of environmental services and the development of policies and protocols. These linkages provide the key in mitigating atmospheric change issues. Strategies to reduce greenhouse gases (GHGs) will produce visible results in the other atmospheric issues, as well as ecosystem health, biodiversity and human health. Through its interdependent business lines and matrix structure, the Department is organized to reflect these profound linkages.

Program delivery in Environment Canada is achieved by drawing on the Department's scientific and technical knowledge combined with a strong regional understanding of the social, cultural and economic factors that shape attitudes, perceptions and behaviour. Environment Canada's regional offices deliver the national vision for the environment at the local level. They work in partnership with provinces, territories, communities and others across the country and encourage them to set goals sensitive to local and regional ecosystems. They provide science-based information, tools for action and opportunities for sharing experiences and learning. Moreover, they help build the capacity of all the players involved to effect changes that will improve their quality of life.

## 2.1.3 Financial Information by Business Line

### 2001–2002 Departmental Performance

	Planned Spending	Total Authorities	Actual Spending
Clean Environment	\$275.5	\$343.3	\$332.5
Nature	\$185.0	\$190.3	\$184.3
Weather and Environmental Predictions	\$230.9	\$265.4	\$254.3
Management, Policy and Administration	\$100.8	\$153.3	\$150.5
<b>2001–2002 Total Gross</b>	<b>\$792.2</b>	<b>\$952.4</b>	<b>\$921.5</b>

**Note:** Includes spendable revenues. Details provided in Table 2.

## 2.2 Progress on Strategic Priorities

### 2.2.1 Highlights of Progress on Priorities

In the RPP for 2001–2002, Environment Canada outlined five strategic priorities to guide actions to be taken by its Business Lines. Priorities included:

- an innovative approach to environmental management;
- reducing the health and safety impacts of environmental threats;
- a natural legacy;
- addressing climate change; and
- international leadership.

We have included in section 2.1.2 a description of how Environment Canada uses a business line structure to fulfill its mandate to Canadians. This structure provides a stable



management framework for assigning organizational accountability and allocating resources in alignment with long-term strategic outcomes. The table below provides a crosswalk between the overarching priorities of concern to Canadians, departmental priorities and the comprehensive

management framework of the Department. Highlights of progress on departmental priorities are described below. Section 3 provides details of departmental performance in the context of the long-term strategic outcomes sought by each business line.

## Delivering Departmental and Government Priorities Through EC's Business Line

Government Priorities	Environment Canada's Priorities	Business Line (See Section 3)
Sharing Opportunity — A Clean Environment & Creating Opportunity — Innovation	<b>An Innovative Approach to Environmental Management</b>	Management, Administration and Policy
	<b>Reducing the Health and Safety Impacts of Environmental Threats</b>	
Sharing Opportunity — A Clean Environment	• Clean Air	Clean Environment, Weather and Environmental Predictions
Sharing Opportunity — A Clean Environment & Creating Opportunity — Innovation	• Clean Water	Clean Environment; Nature; Weather and Environmental Predictions
Sharing Opportunity — A Clean Environment	• Toxics Management	Clean Environment
Sharing Opportunity — A Clean Environment	• Security — Safeguarding Canadians	Clean Environment; Weather and Environmental Predictions
Sharing Opportunity — A Clean Environment	<b>A Natural Legacy</b>	Nature
Sharing Opportunity — A Clean Environment	<b>Addressing Climate Change</b>	Clean Environment; Weather and Environmental Predictions; Management, Administration and Policy
Sharing Opportunity — A Clean Environment	<b>International Leadership</b>	Management, Administration and Policy
Excellence in the Public Service	<b>Modern Management Action Plan</b>	Management, Administration and Policy

### *An Innovative Approach to Environmental Management*

Progress on environmental issues will be achieved only if an innovative approach is taken that moves Canada's environmental agenda beyond its customary focus on urgent and immediate issues. Canada requires a more systematic, integrated framework for dealing with environmental issues — a sustainable development approach based on knowledge, partnerships and incentives.

#### a) Science and Technology

Environment Canada is a major performer of S&T in Canada. It is the country's largest institutional contributor to environmental research and is the main partner of the other nine top producers of environmental research in Canada. Its S&T covers a very broad range of scientific activities, from research to applied science to monitoring and reporting.

■ ■ ■ See details of performance accomplishments in Section 2.2.2 (Pursuit of Excellence in Science at Environment Canada).

#### b) Canadian Information System for the Environment (CISE)

As part of the commitment to improve understanding of the state of the environment and the performance of Canada's environmental policies, programs and institutions, a Budget 2000 decision created the Task Force on the Canadian Information System for the Environment (CISE). The CISE Task Force was appointed to advise the Minister of the Environment on how to best provide timely information to policy-makers, civil society and Canadians that empowers them to adopt sustainable practices. On October 23, 2001, the Task Force presented its final report to the Minister of the Environment. In response to the report's recommendations, work is proceeding through the CISE Secretariat to build a national, more shared and strategic approach to collecting, managing, assessing and disseminating environmental information.

■ ■ ■ See related performance stories in Section 3.4.1 (Knowledge) – CISE.

■ ■ ■ To learn more about CISE, visit: [www.ec.gc.ca/cise](http://www.ec.gc.ca/cise)

## Reducing the Health and Safety Impacts of Environmental Threats

### a) Clean Air and Clean Water

In April 2001, Environment Canada announced the Interim Plan on Particulate Matter and Ozone, which committed \$120.2 million to accelerate action and further the Clean Air Agenda. The Interim Plan focuses on reducing emissions from the transportation and industrial sectors. In 2001–2002, the Department took major steps to bring cleaner on-road transportation to Canadians. Two major accomplishments are the proposed regulations for on-road vehicles and engines and regulations limiting the sulphur content in diesel fuel.

Environment Canada is working with the provinces and territories to develop comprehensive emission reduction strategies for a number of major industrial sectors in Canada. In 2001–2002, technical advisory networks completed reports inventorying the emissions from seven industrial sectors, describing the control technologies and management practices available to reduce emissions and evaluating potential emission reductions that could be derived from application of available techniques. These technical reports will provide an important basis for the development of provincial and territorial implementation plans on emission reductions.

Canada's National Air Pollution Surveillance (NAPS) Network is a joint program of the federal and provincial governments to monitor and assess the quality of ambient air. Starting in 2001–2002, Environment Canada is investing a total of \$22 million over four years to upgrade the network's infrastructure, measurement protocols, techniques and equipment. In addition, the Department continued to improve and expand the National Air Quality Prediction Program in 2001–2002. More than half of the Canadian population is now being served by local air quality forecasts in summer months.

- ■ ■ See related clean air performance stories in Section 3.1.1 (Air Quality) – Vehicles, Engines and Fuels – Reducing Emission; Multi Pollutant Emission Reduction Strategies; Monitoring and Reporting – Strengthening the National Air Pollution Surveillance Network; Section 3.3.1 (Improve Society's Capacity) – Knowledge and Awareness of Hazardous : Developments in Forecasting Air Quality.
- ■ ■ To learn more about clean air issues and protecting our environment, visit: [www.ec.gc.ca/air/introduction\\_e.cfm](http://www.ec.gc.ca/air/introduction_e.cfm)

In the 2001 Speech from the Throne, the Government of Canada affirmed its commitment to lead in developing stronger national guidelines for water quality by enhancing scientific research and continuing its collaboration with partners.

Environment Canada's effort to protect Canada's water resources is directed at working with provinces and territories, through the Canadian Council of Ministers of the Environment (CCME), to address freshwater priority issues. The May and September 2001 CCME meetings demonstrated advances with respect to collaboration and a shared commitment to strong drinking water standards. Environment Ministers agreed to collaborate on priorities for research, share best management practices, accelerate development of water quality guidelines and link existing water quality monitoring networks.

In 2001, the National Water Research Institute (NWRI) brought together many of Canada's key people in the area of water research to identify the key threats to sources of drinking water and aquatic ecosystem health. The Department also continues to build on successes achieved through its six ecosystem initiatives. Ecosystem initiatives are cooperative efforts on targeted ecosystems to address and solve complex environmental issues.

- ■ ■ See related clean water performance stories in Section 3.2.3 (Water) – Source-to-Tap and also (Ecosystems Initiatives) – St. Lawrence Action Plan and Canada-Ontario Agreement.
- ■ ■ To learn more about issues relating to water quality, visit: [www.ec.gc.ca/envpriorities/cleanwater\\_e.htm](http://www.ec.gc.ca/envpriorities/cleanwater_e.htm)

### b) Toxics Management

Environment Canada's vehicle for reducing the level of contaminants in the environment is the *Canadian Environmental Protection Act, 1999* (CEPA 1999). The renewed CEPA focuses on a proactive approach to prevent harm to the environment and human health caused by chemicals.

In 1999, the Commissioner for Environment and Sustainable Development recommended that the Minister of the Environment develop and adopt "rigorous requirements" for managing voluntary initiatives. In June 2001, Environment Canada issued a Policy Framework for Environmental Performance Agreements, which outlines essential principles and design criteria. The Department also published its first pollution prevention planning requirement under CEPA 1999 in 2001–2002.

Recently, new regulations addressing pollution entering waterways from metal mining across Canada were made. The new Metal Mining Effluent Regulations (MMER) are among the most comprehensive and stringent standards for mining effluents in the world. The Department is also working with all relevant parties to determine how to minimize the risks of road salts based on the conclusions of a scientific evaluation published in December 2001.

- ■ ■ See related performance stories in Section 3.1.2 (Existing Substances) — Risk Assessment; and Risk Management: Innovative Tools for Managing Environmental Risks.
- ■ ■ To learn more about issues relating to toxics management, visit: [www.ec.gc.ca/envpriorities/cleanwater\\_e.htm](http://www.ec.gc.ca/envpriorities/cleanwater_e.htm)

### c) Security—Safeguarding Canadians

The events of September 11<sup>th</sup> brought to everyone's attention the need for increased action and immediate measures to increase the safety and security of Canadians.

Under the security package announced in December 2001, Environment Canada was allocated \$20.5 million over three years to enhance environmental emergency regulations and border controls controlling the import/export of hazardous substances, including improved tracking of transboundary movements of hazardous waste.

During the morning of the September attacks, the Department rapidly provided specialized guidance regarding long-range atmospheric transport and dispersion of plumes from the locations attacked. Simulations were quickly completed and used to assess potential hazards to the population in Canada.

- ■ ■ See related performance stories in Section 3.1.2 (Existing Substances) – Hazardous Material – Protecting our Environment and our Communities; and in Section 3.3.1 (Improve Society's Capacity) – Providing Prompt Specialized Numerical Simulation Support on Behalf of Canadians During September 11<sup>th</sup> Terrorist Attacks.

### *A Natural Legacy*

Environment Canada is continuing to shape and promote a Natural Legacy Agenda by encouraging the conservation, protection and sustainable use of natural resources. This approach is an important part of our long-term goal of advancing the Canadian Biodiversity Strategy.

Bill C-5 is priority legislation. The proposed Species at Risk Act goes beyond previous efforts, as it is national in scope and provides a framework based on science, cooperation and incentives backed up by legal prohibitions, if required. The House of Commons Standing Committee carried out clause-by-clause review last fall and tabled its report in the House in December. Report Stage and Third Reading of the Bill were completed in June 2002. Following Second Reading in the Senate on June 13, the Bill was referred to the Senate Committee on Energy, the Environment and Natural Resources. The Bill could receive Royal Assent in the fall, with Proclamation as early as April 2003.

In September 2001, Wildlife Ministers committed to the development of a stewardship strategy for Canada. In 2001–2002, this strategy was prepared in the form of a draft Canadian Stewardship Agenda. This Agenda proposes

a national vision for stewardship, operating principles, goals and priority actions. An intergovernmental working group, chaired by Environment Canada, prepared the Agenda which will be presented at a Joint Ministerial meeting scheduled for fall 2002.

Environment Canada promotes a number of specific stewardship initiatives enabling private landowners to protect and maintain habitat for species at risk, including the Habitat Stewardship Program for Species at Risk and the Ecological Gifts Program. In its second year (2001–2002), the Habitat Stewardship Program funded 153 projects that were directed towards benefiting the habitat of more than 200 nationally listed and 80 provincially listed species at risk. Totalling more than \$10 million in federal funds, the Year 2 Program facilitated partnerships with more than 400 landowners, natural resource sector associations, businesses, communities and conservation organizations.

- ■ ■ See related performance stories in Section 3.2.1 (Species at Risk) – Sydenham River Multi-Species Recovery Strategy; and also (Habitat/Migratory Birds) – Stewardship for Conservation and Sustainable Use: Canada's Stewardship Agenda.
- ■ ■ To learn more about Canada's species at risk and their recovery, visit: [www.cws-scf.ec.gc.ca/sar/](http://www.cws-scf.ec.gc.ca/sar/)

### *Addressing Climate Change*

The agreements reached in 2001 in Bonn and Marrakech have helped clarify how the international climate change regime will operate. In light of these and other global efforts, Canada can now consider ratification of the Kyoto Protocol. In deciding how Canada should meet its climate change commitments, the Prime Minister has established two prerequisites — a workable plan that asks no region of the country to bear an unreasonable burden, and full consultations with the provinces/territories, stakeholders and Canadians.

Through Budget 2000, Action Plan 2000 on Climate Change and Budget 2001, the government has committed \$1.6 billion, over the next five years, to climate change initiatives. Actions include helping owners and builders of commercial buildings use new technology to save energy and money, working with the oil and gas sector to find commercially viable ways of capturing and storing carbon dioxide, helping Canadian industry improve its energy efficiency by benchmarking its performance against the best in the world, working with automobile manufacturers to greatly improve the fuel efficiency of vehicles, encouraging consumers to buy the most efficient vehicles and equipment that meets all their needs, and making forest and agricultural management practices even more sustainable. Action Plan 2000 also advances knowledge and foundation building in climate science, impacts and adaptation.

Other areas of investment include renewable energy — providing incentives for the production of wind power and putting in place tax measures for other renewable energy and energy efficiency initiatives; and the doubling of the original \$125 million investment in the Green Municipal Enabling Fund and the Green Municipal Investment Fund.

- ■ ■ See related performance stories in Section 3.1.1 (Climate Change) — Climate Change Action Fund — Public Education and Outreach.
- ■ ■ To learn more about Environment Canada’s work on climate change, visit: [www.ec.gc.ca/climate/](http://www.ec.gc.ca/climate/)

## *International Leadership*

Canada enjoys a strong reputation internationally, based on leadership shown on important social and environmental issues. It is this reputation that Canada built upon in the lead up to the World Summit on Sustainable Development in Johannesburg in August 2002.

In 2001–2002, Environment Canada initiatives contributed to the following major accomplishments:

- successfully hosted meetings of the G8 Leaders, G8 Environment Ministers and the first-ever meeting of Health and Environment Ministers of the Americas (HEMA);
- became the first country to ratify the Stockholm Convention on Persistent Organic Pollutants;
- played a key role in the development of the Bonn Agreement on Climate Change and the subsequent Accord at Morocco;
- hosted the first Intergovernmental Review Meeting for the Global Programme of Action for the Protection of Marine Environments from Land-based Activities (Canada was the first country to have developed a National Program of Action in June 2000);
- signed the Cartagena Protocol to the United Nations Convention on Biological Diversity;
- signed the Ozone Annex with the United States which will help to improve air quality in southern Ontario, Québec and parts of Atlantic Canada;
- provided funding for the United Nations Environment Programme (UNEP) International Children’s Conference on the Environment;
- played a key role in finalizing a cooperation agreement between the World Meteorological Organization and the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO) related to long-range transport and dispersion modeling applied to treaty verification; and
- played an instrumental role in the successful launch of the Joint Commission for Oceanography and Marine

Meteorology co-sponsored by the World Meteorological Organization and the Intergovernmental Oceanographic Commission of UNESCO.

- ■ ■ See related performance stories in Section 3.4.1 (Partnerships) — International Leadership on Environmental Issues: World Summit on Sustainable Development.

## **2.2.2 Progress on Other Ongoing Interests**

### *Sustainable Development*

In accordance with Treasury Board Secretariat guidelines, this performance report provides performance information that provides Parliament with an overview of the implementation of Environment Canada’s Sustainable Development Strategy, including reference to our efforts related to the Sustainable Development in Government Operations initiative.

- ■ ■ Refer to Annex A.1 – “Sustainable Development Strategy”.
- ■ ■ See related performance story in Section 3.4.1 (Shared Initiatives) – “Managing for Sustainable Development”.

### *Pursuit of Excellence in Science at Environment Canada*

A quantitative study of the output of Canadian scientific research articles in the environmental sciences for the period 1980–1998 was recently completed by the Department’s Science Policy Branch in cooperation with the Observatoire des sciences et des technologies. As part of the results documented by the study, Environment Canada was identified as the lead environmental sciences research organization in the country. The Department’s publications dominate in the specialties of general environment, meteorology and atmospheric sciences, and environmental health and toxicology. We place second in terms of environmental engineering and water resources.

- ■ ■ To learn more about the study entitled “Bibliometric Profile of Environmental Science in Canada: 1980–1998,” refer to: [www.ost.qc.ca/OSTE/Document/Env\\_Can\\_105\\_EN.pdf](http://www.ost.qc.ca/OSTE/Document/Env_Can_105_EN.pdf)

S&T activities account for approximately 70% of departmental spending. These efforts create the knowledge and tools needed to deliver the Department’s mandate to help Canadians live and prosper in an environment that needs to be protected, respected and conserved. S&T enables us to better understand cause-and-effect relationships, to ensure early identification of emerging issues and to find the most effective and efficient solutions to environmental challenges. Environment Canada’s S&T activities support the Department’s ability to develop and

implement policy, deliver important services to Canadians and develop new technologies for environmental purposes.

The Department promotes excellence in its S&T through a clear and effective management system. It consists of the external S&T Advisory Board to the Deputy Minister, a Special Science Advisor, as well as several internal S&T management committees. Environment Canada also takes direction on the evaluation of the management and performance of its S&T programs from the principles of the Federal Science and Technology Strategy developed in 1996 and from the Council of Science and Technology Advisors, which provides expert advice on internal federal government S&T. These elements of the management system serve as the mechanism by which the Department contributes to and implements federal S&T policies and management practices.

In addition to performing S&T, Environment Canada works to catalyze partnerships and networks for environmental S&T. These are critical to the Department's ability to deliver S&T and make effective use of S&T outputs. Such collaborative arrangements also help to resolve environmental issues — for example, through consensus-building on “state of science” assessments.

### Key S&T Accomplishments

#### a) Science Contributions

Key science contributions to the business lines during the planning period are reported in Section 3 under the individual business lines.

- ■ ■ See related performance stories in Section 3.1.1 (Air Quality); Section 3.1.2 (Existing Substances) – Risk Assessment; Section 3.2.1 (Habitat/Migratory Birds) – North American Bird Conservation Initiative; Section 3.2.2 (Contribute Science-Based Advice and Solutions) – Environmental Quality Standards: Significant Contribution made by NWRI; Section 3.3.1 (Increase the Margin of Safety) – R&D on Severe Weather – University-Based on Severe Weather Research Initiatives; (Quality and Citizen-Centred Service) – National Radar Project, and also (Improve Society's Capacity) – Wind Chill Forecasts; Section 3.4.2 (Citizen Focus) – e-Government.

#### b) Ensuring Ongoing S&T Excellence

Environment Canada has taken many important steps to ensure the ongoing excellence of its S&T. Specific accomplishments include the following:

- An **external review of the MSC's research and development (R&D) programs** was conducted by a panel of international scientists in order to evaluate performance and improve decision-making on departmental resources and planning. The panel concluded that the MSC is a world leader in many areas of atmospheric and climate science and that its

R&D program “is fundamentally sound and responsive to the needs of Environment Canada and the Canadian citizens.” The panel's report also noted that the R&D program is ‘very limited in terms of the critical mass of people, facilities, and financial resources required to remain a strong, vibrant part of the research community’.

- Progress was made on **integrating federal research efforts** on a number of issues. For example, a science assessment on *Nutrients and their Impact on the Canadian Environment* was produced under the 5NR Memorandum of Understanding<sup>1</sup> (MOU).
- Working in collaboration with other science-based departments, Environment Canada is leading the development of a proposal aimed at integrating the S&T resources of federal departments, universities and the private sector to provide solutions to emerging crosscutting national policy issues and to seize economic opportunities for the public good.
  - ■ ■ See related performance stories on collaborative scientific efforts in Section 3.3.1 (Increase the Margin of Safety) – R&D on Severe Weather – University-Based on Severe Weather Research Initiatives.
- Progress was made on **implementing the federal Framework for Science and Technology Advice**, in accordance with the Department's three-year implementation plan. Environment Canada chaired an interdepartmental committee that worked to help promote the adoption of the Framework for S&T Advice principles and guidelines, ensure accountability for the Framework and evaluate the effectiveness of these actions. A workshop on Best Practices in the Use of Federal S&T Advice was held and a number of tools were developed, including a pilot training course on science advice in policy, a science advice checklist for Cabinet documents and a guide for self-assessment of adherence to the Framework.
- A **collaborative research partnership** was developed between Environment Canada's National Wildlife Research Centre (NWRC) and Carleton University in Ottawa. A new NWRC research facility is being constructed on the Carleton campus and is expected to become the hub of an eastern Ontario wildlife science network.
- The **CISE Task Force** released its final report. The report recommends actions to improve the transparency and accountability of governments and to provide Canadians with timely, consistent and credible

<sup>1</sup> The 5NR MOU is an agreement between the five federal departments dealing with natural resources (Agriculture and Agri-Food Canada, Environment Canada, Fisheries and Oceans Canada, Health Canada and Natural Resources Canada) to encourage collaboration and coordination in the use of S&T for sustainable development.

information on the state of Canada's environment. The development of CISE is a central part of efforts to improve the science foundation upon which environmental decisions are based by ensuring that the environmental information needed for responsible decision-making is available to all who need it.

- ■ ■ To learn more about Environment Canada's S&T, visit: [www.ec.gc.ca/scitech/index\\_e.htm](http://www.ec.gc.ca/scitech/index_e.htm)

## *Modern Management Action Plan*

Environment Canada's Modern Management Action Plan (MMAP) is focused on the Government of Canada commitment of the highest quality of service to the public; it addresses five critical areas (Responsible Spending, Managing for Results, Exemplary Workforce, Values and Citizen Focus) to a well-performing public sector organization. The MMAP is a departmental commitment to establishing an organization that is accountable, results-oriented and responsive to public needs.

The development and acceptance of the MMAP in 2001–2002 represent a significant accomplishment towards the ultimate goal of enhancing managerial capacity and modernizing management practices. In the first year of implementation, progress has been made in enhancing performance and risk management practices, enhancing internal control and continuing improvements to our focus on citizen needs, particularly through the e-Government strategy implementation.

- ■ ■ See related performance stories in Section 3.4.2 (Managing for Results) – Modern Management Action Plan.

## *e-Government and Service Improvement*

Modernizing government services is not new to Environment Canada. Over the course of our history, we have constantly striven to make our services more accessible, more integrated and more meaningful for Canadians. Environment Canada has a long-standing tradition of delivering effective, citizen-focused services and programs to Canadians and has established critical partnerships to make this possible.

In 2001–2002, Environment Canada took significant steps towards meeting our commitment to provide seamless access to environmental information services for our full range of clients and partners, including the Canadian public, businesses, other government departments, other levels of government and communities of interest. In Section 3 of this report, we document the Department's accomplishments in building and maintaining the e-Government infrastructure and in improving and transforming services to Canadians.

The Department is progressing well on the Service Improvement Initiative, which seeks to achieve a 10% improvement in the quality of current key services by the year 2005. At present, three key services are part of this initiative:

- precipitation elements in forecasts;
- severe weather warnings; and
- toxic import and export permits.

For these services, the Department is developing benchmarks (through the use of surveys), standards and service improvement plans to establish the basis for achieving improvement in the quality of services. The improvement plans will be implemented in fall 2002. Service delivery against established standards will be measured each year until 2005 to assess the progress towards the attainment of the 10% improvement target. Future Departmental Performance Reports will demonstrate performance against established targets.

Based on the results of this pilot project, Environment Canada will be assessing, in fall 2002, the possibility of expanding the Service Improvement Initiative to other services.

- ■ ■ See related performance stories in Section 3.4.2 (Citizen Focus) – e-Government.

## *Environment Canada's Litigation Committee*

Environment Canada's Litigation Committee (ECLC) completed its 2<sup>nd</sup> year of operation in the spring of 2002. The ECLC provides advice and tools to departmental managers on litigation issues in order to resolve disputes in a most efficient and effective fashion. Progress in the management of Environment Canada's legal risk management was made in 2001–2002 in the areas of: case management; cost management; promotion of dispute resolution; and, contributing to the Government's Legal Risk Management Initiative.

Of note is the promotion of dispute resolution mechanisms in an effort to mitigate or prevent potential litigation. The outcome of this approach results in cost avoidance to the Department. Environment Canada is also in the process of designing an alternative dispute resolution framework to resolve contracting disputes, which will include training packages and other dispute resolution tools. Further, the Department is drafting a federal policy aimed at engaging the affected parties in the remediation of federal contaminated sites in a non-litigious manner.

## *Foundations*

In the Auditor General's Report issued April 2002, various recommendations were made to enhance the level of accountability to Parliament of private foundations delegated responsibilities by government. Environment Canada has been the sponsor or co-sponsor of four such delegated arrangements:

- Canadian Foundation for Climate and Atmospheric Sciences (CFCAS);
- Sustainable Development Technology Fund;
- Green Municipal Enabling Fund; and
- Green Municipal Investment Fund.

At Environment Canada, a number of actions are under way to strengthen the reporting transparency and accountability in the foundations that the Department has sponsored. Our action plan takes into consideration the flexibility existing in the signed agreements and ensures that the Auditor General's observations are fully taken into account in new or renewed agreements. In particular, the following broad actions will be taken:

- Starting with the Report on Plans and Priorities (RPP) for 2003–2004, information will be provided on performance expectations that have been established for sponsored foundations; subsequent Departmental Performance Reports will provide assessments of progress against these expectations.
- Evaluations have been planned for two of our existing sponsored foundations to assess their progress against desired results midway through their planned life; results from these evaluations will be summarized in the Departmental Performance Report.
- The foundations have guidelines governing their activities, and Environment Canada has mechanisms in place to take corrective actions, where this is warranted.

■ ■ ■ Refer to Annex A.4 – “Foundations”, for more information on Environment Canada sponsored arrangements.

# Section 3: Business Line Performance

This section provides detailed performance information of selected stories in each of Environment Canada's four business lines. Performance stories were selected based on the achievement of a significant milestone during the review period, anticipated interest on the part of Parliamentarians or the Canadian public and their relation to government-wide priorities.

■ ■ ■ To obtain detailed information on accomplishments relative to the performance commitments set out in the Department's RPP 2001–2002, visit: [www.ec.gc.ca/dpr/2002/rpptable\\_e.htm](http://www.ec.gc.ca/dpr/2002/rpptable_e.htm)

## 3.1 Clean Environment Business Line

Through the Clean Environment business line, Environment Canada acts to protect Canadians and their environment from domestic and global sources of pollution.

Activities under the Clean Environment business line are managed according to an issue model. This model follows the life cycle of a typical environmental issue — problem identification, solution development, implementation of solutions and tracking of performance. Our activities begin with research on the toxic substance and assessment of its effect on ecosystems and human health. Work continues with development of management options and implementation of the most appropriate risk management mechanisms. Finally, there is ecosystem monitoring to ensure that the desired environmental results are achieved. The cycle begins again if problems are identified through results of monitoring or new research findings.

Through the Clean Environment business line, Environment Canada aims to achieve two long-term key results:

- reduced adverse human impact on the atmosphere and on air quality; and
- understanding and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern.

### Clean Environment

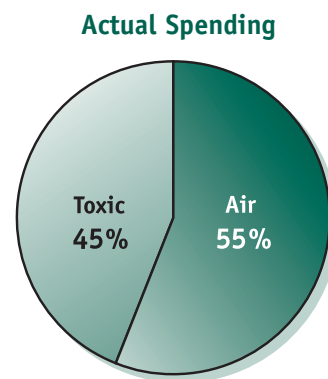
#### 2001-2002 (Including spendable revenues)

Reduced adverse human impact on the atmosphere and on air quality.	143.7\$
	185.9\$
	<b>184.0\$</b>
Understanding and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern.	131.8\$
	157.4\$
	<b>148.5\$</b>
<b>Total for the Clean Environment Business Line</b>	275.5\$
	343.3\$
	<b>332.5\$</b>

Planned Spending

Total Authorities

Actual Spending



### 3.1.1 Long-term Key Result: Atmosphere and Air Quality

*Reduced adverse human impact on the atmosphere and on air quality*

Through this long-term key result, Environment Canada focuses on three broad categories of air pollutants. It should be recognized, however, that all air issues are closely interconnected because of their common sources and common health and environmental impacts.

First are pollutants that alter the atmosphere itself. The resulting changes may affect human and environmental health. This category includes emissions of GHGs and the resulting climate change and emissions of substances that deplete the stratospheric ozone layer. Second are pollutants that use the air as a pathway, with most environmental and health effects arising after the substances are deposited on land or in water, often at considerable distances from their



source. Examples include acid rain and POPs. Addressing these substances requires international cooperation as well as action to control releases within Canada. Third are pollutants that alone, or in combination with each other, reduce the quality of the air we breathe. Ground-level ozone and particulate matter are significant pollutants of this type. The ease with which air pollutants can travel across borders means that addressing air issues requires cooperation both internationally and across Canada. Increasingly, Environment Canada seeks to take actions with its partners that address several pollutants

simultaneously, thus providing multiple benefits for the same investment.

## Performance Framework

The “air result” is divided into five areas of focus that support this long-term key result. The following table aligns those five areas of focus, the long-term indicators and targets, and the commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

### CLEAN ENVIRONMENT BUSINESS LINE

*Long-term key result: Reduced adverse human impact on the atmosphere and on air quality*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #1: Climate Change – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Implement the Government of Canada Action Plan 2000 on Climate Change.</li> <li>Work towards ratification decision on the Kyoto Protocol.</li> </ul>	<p><b>Indicator:</b> Canadian GHG emissions.</p> <p><b>Target:</b> reduce total emissions to 6% below 1990 levels between 2008 and 2012.</p> <p><b>Indicator:</b> improvements in carbon efficiency of the Canadian economy (i.e., production of unit of gross domestic product [GDP] with fewer GHG emissions).</p> <p><b>Indicator:</b> Percentage of alternative energy relative to total energy used.</p>	<p>✓ <b>Climate Change Agenda: Action Plan 2000</b></p> <ul style="list-style-type: none"> <li>Manage and implement Government of Canada Action Plan 2000 on Climate Change.</li> <li>On Environment Canada-led emission reduction initiatives — design and implement measures to ensure that maximum GHG emission reduction potential is achieved.</li> <li>On OGD-led emission reduction initiatives — influence to ensure that maximum GHG emission reduction potential is achieved.</li> </ul> <p>✓ <b>Climate Change Action Fund (CCAF)</b></p> <ul style="list-style-type: none"> <li>Implement Budget 2000 initiatives not already in place (including CCAF extension and public education and outreach).</li> </ul>
<b>Area of Focus #2: Air Quality – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Air quality is improved by achievement of Canada-wide Standards (CWS), continuous improvement in air quality and keeping clean areas clean.</li> <li>Canadians take action to protect their health through increased engagement of citizens in actions to reduce their exposure to air pollution.</li> </ul>	<p><b>Indicator:</b> Transboundary flows of air pollution are reduced.</p> <p><b>Target:</b> Commitments to reduce air pollution (from PM and ozone, acid rain, and any other emerging sources) are implemented per negotiated agreements between Canada &amp; US.</p> <p>Reductions by 2010 are estimated to be 44% for NOx and 20% for VOCs in the ozone transboundary region of eastern Canada.</p>	<p><b>Ozone Annex</b></p> <ul style="list-style-type: none"> <li>In 2002, Canada and the United States will report on progress to implement commitments to reduce emissions and to report on air quality and industrial pollution.</li> <li>In 2005, Canada and the United States will review the standards and progress.</li> </ul> <p><b>CWS for Particular Matter (PM) and Ozone</b></p> <ul style="list-style-type: none"> <li>Make progress towards achieving the CWSs for PM and Ozone.</li> </ul>
	<p><b>Indicator:</b> Emissions from vehicles, engines and fuels are reduced.</p> <p><b>Target:</b> Smog-forming emissions from new vehicles are reduced by 90% by 2010 compared with 2000.</p> <p><b>Target:</b> Smog-forming emissions from new off-road equipment reduced by at least 60% by 2010 from 2000 levels.</p>	<p>✓ <b>Vehicles, Engines and Fuels</b></p> <ul style="list-style-type: none"> <li>Develop policy and regulations to implement new emission standards applicable for the 2004 model year and beyond for on-road and off-road vehicles and engines (by 2002).</li> <li>Develop measures for vehicle and fuel emissions and sources of VOCs.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
	<p><b>Indicator:</b> Emissions from industrial and other sectors are reduced.</p> <p><b>Indicator:</b> Canadians take action to reduce air pollution.</p> <p><b>Target:</b> Canadians and their communities are engaged in actions to reduce their emissions and support government actions.</p> <p><b>Indicator:</b> Canadians understand how to interpret air quality information and are aware of actions they can take.</p> <p><b>Target:</b> Canadians have better access to and make better use of information and tools to interpret air pollution information and the impact on their health and on the health of vulnerable populations.</p>	<p>✓ <b>Multi-Pollutant Emission Reduction Strategies</b></p> <ul style="list-style-type: none"> <li>Develop multi-pollutant emission reduction strategies for major industrial sectors (2001).</li> </ul> <p>✓ <b>Monitoring and Reporting</b></p> <ul style="list-style-type: none"> <li>Report on air quality, and its causes, through enhanced National Pollutant Release Inventory (NPRI) and NAPS/Canadian Air and Precipitation Monitoring Network (CAPMoN)</li> </ul>
<b>Area of Focus #3: Acid Rain – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Implement Canada-wide Acid Rain Strategy and conduct ecosystem monitoring.</li> </ul>	<p><b>Indicator:</b> Canadian emissions of sulphur dioxide (SO<sub>2</sub>) and NO<sub>x</sub>.</p> <p><b>Target:</b> Continue to meet permanent national limit on SO<sub>2</sub> emissions of 3.2 million tonnes annually.</p> <p><b>Target:</b> Reduce SO<sub>2</sub> emissions by 50% from cap by 2010 in Ontario, Québec, New Brunswick and Nova Scotia.</p> <p><b>Target:</b> Reduce transboundary flow of SO<sub>2</sub> emissions from the United States.</p> <p><b>Target:</b> Canada-USA agreement for further SO<sub>2</sub> cuts in the United States (beyond 2004).</p>	<p><b>Canada-wide Acid Rain Strategy</b></p> <ul style="list-style-type: none"> <li>Initiatives will start in 2002–2003.</li> </ul>
<b>Area of Focus #4: Hazardous Air Pollutants – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Support international control regimes for POPs and heavy metals.</li> </ul>	<p><b>Indicator:</b> Atmospheric deposition of hazardous air pollutants.</p> <p><b>Indicator:</b> Implement Canada-wide Standard for mercury emissions and products.</p> <p><b>Target:</b> Under development for mercury.</p> <p><b>Target:</b> Virtually eliminate 12 POPs identified in the UNEP (global) POPs Convention from the Canadian environment.</p>	<p><b>Organic Pollutants (POPs)</b></p> <ul style="list-style-type: none"> <li>Reduce and eliminate the release of POPs in the atmosphere. Canada led the negotiation of a Global POPs Convention that was formally adopted at a ministerial meeting in May 2001.</li> </ul>
<b>Area of Focus #5: Stratospheric Ozone – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Compliance with the Montreal Protocol and implementation of the domestic agenda for the Montreal Protocol.</li> <li>Provide assistance to developing countries to meet their Montreal Protocol obligations.</li> </ul>	<p><b>Indicator:</b> Domestic consumption and production of ozone depleting substances.</p> <p><b>Target:</b> Reduce consumption of hydrochlorofluorocarbons — 35% by 2004 (base year 1996).</p> <p><b>Target:</b> Reduce production and consumption of methyl bromide — 50% by 2001 (base year 1991).</p>	<p><b>Montreal Protocol — Domestic Agenda</b></p> <ul style="list-style-type: none"> <li>Initiatives will start in 2002–2003.</li> </ul>

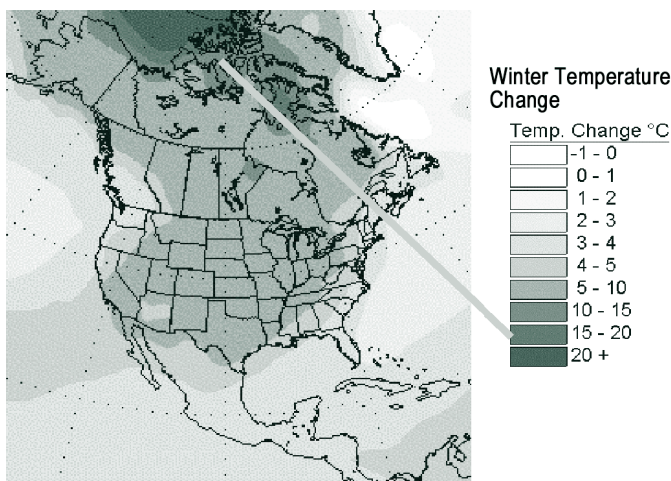
**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

## Area of Focus #1 – Climate Change

### What is the issue?

Water vapour, carbon dioxide, methane and nitrous oxide and other “greenhouse gases” help to regulate the Earth’s climate by trapping solar energy that re-radiates from the Earth’s surface as heat. This natural greenhouse effect maintains the Earth’s surface temperature 33°C warmer than it would be otherwise. Since industrialization, however, emissions from human activities such as burning fossil fuels, forestry and agriculture have increased the concentrations of these GHGs in the atmosphere.

### Projected Winter Temperature Change between 2080–2100 (compared to data from 1975–1995)



Canada’s total GHG emissions have been rising since the early 1980s, largely due to transportation and energy use. Canada is one of the highest per capita emitters of GHGs in the world.

The average global temperature has risen about 0.6°C over the past century. Canada’s average temperature has increased 1.1°C in the past 50 years. The northwestern Arctic has warmed by 1.8°C. Unless drastic reductions in greenhouse gas emissions are made, by the end of this century, global temperature are expected to increase from 1.4 to 5.8°C. Canada’s average temperature is expected to change by up to 5.0°C, with even higher increases in the Arctic (see above figure).

These temperature increases will have serious consequences for our health, our environment and our economy. The frequency and severity of heat waves in our major cities will increase. Sea ice and permafrost will melt. Water levels in some of the Great Lakes could drop by more than a metre. Water flows in the St. Lawrence could decrease by 40%. Farmland in parts of southwestern Saskatchewan and

southern Alberta could become semi-arid. Parts of the northeastern Pacific Ocean will become too warm for salmon. Parts of our Atlantic provinces could be flooded by rising sea levels and accompanying increases in storm surges.

### What are we doing about it?

At the Third Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Kyoto, Japan, in December 1997, Canada and other industrialized nations agreed to reduce their collective GHG emissions by 5.2% from 1990 levels over the period from 2008 to 2012. Under the Kyoto Protocol, Canada’s target is to reduce GHG emissions by 6% below 1990 levels.

In 1998, Canada established the National Climate Change Process, bringing together industry, academia, non-government organizations, municipalities, and federal, provincial and territorial governments to develop options for implementing the Kyoto Protocol. Based on these consultations, Canada’s federal, provincial and territorial governments developed a series of national business plans, which outline actions to be taken individually, in partnership and collectively to respond to climate change.

Environment Canada shares the lead on a number of climate change initiatives, including:

- Action Plan 2000 (AP2000), a \$500-million investment over five years, which is the Government of Canada’s contribution to Canada’s First National Climate Change Business Plan.
- CCAF, a \$150-million commitment over three years, to develop a national implementation strategy on climate change and to support early actions to reduce GHG emissions.

These and other federal, provincial, territorial, academia and industry-led initiatives are moving Canada towards its emission reduction target and towards a better understanding of the science of climate change.

The Government of Canada has established two important conditions for deciding on ratification of the Kyoto Protocol. First, there must be a *workable* plan that does not ask any region of the country to bear an unreasonable burden and second the completion of consultation with provinces, territories, stakeholders and Canadians.

On May 15, 2002, the federal government released A *Discussion Paper on Canada’s Contribution to Addressing Climate Change*. The paper presents four policy options to meet Canada’s Kyoto target. The Paper was discussed with provinces and territories at the May 22<sup>nd</sup> meeting of federal,

provincial and territorial Energy and Environment Ministers. In June, national consultations were held in 14 cities with over 450 stakeholders. The Paper also outlined analysis done through the National Climate Change Process. Results indicate that while Canada's GDP in 2012 would be about 31 percent greater than in 2000 without actions to reduce GHG emissions, it would instead be between 29 and 31 percent greater depending on the approach employed to achieve our climate change goal.

## Climate Change Agenda: Progress Through Action Plan 2000

AP2000 received final Treasury Board approval in October 2001. Action Plan 2000 built on some of the best ideas from Canada's national consultations on climate change. The Plan seeks to balance economic and environmental performance in Canada through action on all fronts - industry, government and Canadians. Through investments in innovation and technology, AP2000 seeks to reduce greenhouse gas emissions, sustain economic and job growth, and increase Canadian competitiveness. The five-year, \$500-million initiative is led by Environment Canada and Natural Resources Canada. Other partners include Transport Canada, Agriculture and Agri-Food Canada, Industry Canada, Foreign Affairs and International Trade Canada, and Indian and Northern Affairs Canada.

AP2000 targets 12 key sectors and includes 45 measures addressing transportation, energy (oil and gas production and electricity), industry, buildings, forestry and agriculture, international projects, technology, science impacts and adaptation. These sectors account for more than 90% of Canada's GHG emissions.

All 45 measures are under way. The measures will achieve an estimated reduction of 45 megatonnes of GHG emissions per year by 2010. In the medium term (five years), the measures provide the policy direction that will help Canada to become a world leader in sustainable development and one of the most advanced countries in the production and use of all forms of energy. Efforts are now focused on program delivery of Action Plan measures.

The Action Plan 2000 may be viewed at: [www.climatechange.gc.ca/english/whats\\_new/action\\_plan.shtml](http://www.climatechange.gc.ca/english/whats_new/action_plan.shtml)

Based on these consultations and other information, the Government of Canada is developing a draft plan. The plan will be integrated with other Government of Canada initiatives in the areas of innovation, infrastructure, communities and Canada's place in the world.

- Information on steps towards a workable plan for climate change can be found at: [www.climatechange.gc.ca/english/actions/what\\_are/canadascontribution/index.html](http://www.climatechange.gc.ca/english/actions/what_are/canadascontribution/index.html)



### Climate Change Action Fund—Public Education and Outreach

The Government of Canada established the \$150 million three-year CCAF in February 1998 as one of a number of initiatives to help Canada meet its Kyoto commitments.

Phase 2 of the initiative extended the funding for a further three years for CCAF for five blocks of activity: Building for the Future; Science, Impacts and Adaptation (SIA); Technology Early Action Measures (TEAM); International; and Public Education and Outreach (PEO).

Environment Canada co-manages the CCAF with Natural Resources Canada and has the lead on the PEO block as well as the science for the SIA block. PEO Phase 1 funding totaled \$30 million and sponsored over 150 projects; Phase 2 will see a further investment of \$20 million. SIA Phase 1 funding for science totaled \$7.5 million, and supported 79 scientific projects.

## SIA Phase I Project: State of the Arctic Cryosphere during the Extreme Warming of 1998

The summer of 1998 was unusually warm across the Canadian Arctic. This study, a highly collaborative undertaking that involved three federal government departments, nine Canadian universities, and the private sector, examined the effects of unusual warmth on snow, ice and permafrost conditions, and placed those effects in the context of the last 30-40 years, the warm decade of the 1990s, and other extreme warm years (e.g. 1960, 1962 and 1988). The effects of the 1998 warming included the earliest observed melting of sea ice and a September sea ice cover that was 25% less than the previous recorded minimum. Results also showed an above normal glacier melt, snow melt and seasonal ground thaw depth development.



### Accomplishments

The overall objectives of the PEO block are to build public awareness and understanding and to provide Canadians with the information necessary to take responsible action to reduce GHG emissions and adapt to climate change.

### PEO Pilot Hubs

The First National Business Plan identified “enhancing awareness and understanding” as a critical element of the climate change agenda and proposed that outreach “Hubs” be piloted. The goal of the Hub Network is to work with partners (provincial, territorial, regional, business, environmental, academic and other stakeholders) to build awareness and understanding of climate change and motivate action to reduce GHG emissions. With the exception of Ontario and Québec, all provinces and territories have Hubs in operation; October 2002 has been set as the launch date for the final two Hubs. All of the Hubs will be assessed after 18 months of operation and decisions made on their future operation. The first to be

evaluated, early in 2002, was the Nova Scotia Hub. Findings showed that the Hub had successfully built new partnerships and extended the reach of climate change information. The success of the Hub has prompted CCAF-PEO and other partners to continue funding through March 2004.

### PEO Projects

PEO project investments are focused on four target groups: communities and municipalities, youth and educators, business and industry, and the general public. In 2001–2002, PEO activity focused primarily on winding down Phase 1 CCAF projects and gearing up for Phase 2 activity.

Examples of the type of projects concluded include:

- **Transportation:** Reducing how much time we spend in our cars is critical to the challenge of GHG emissions. PEO has supported over 20 projects to promote alternatives and encourage their use. One initiative, Better Environmentally Sound Transportation (BEST), is piloting a project to reduce car trips to secondary schools in the Victoria and Vancouver areas. The “Off Ramp” program encourages students to walk, cycle, take transit or carpool. The project has served as a pilot and will be replicated in other urban centres in British Columbia, and the rest of the country. The project has received significant media attention and received an Organisation for Economic Co-operation and Development (OECD) award for Sustainable Transportation Education.

### Toronto’s “Turn it Off” project

Baseline studies indicate that over 50% of motorists were observed idling, suggesting significant opportunity to reduce emissions by applying a community-based social marketing. Through a combination of commitments from motorists and no-idling signs at drop-off points, Toronto drivers were encouraged to “Turn it Off” at school and public transit drop-off points. An average reduction in the incidence of idling of 32% and idling duration of 73% was achieved.

- **Science and Nature Centres and Museums:** PEO has funded 15 projects to develop exhibits, programs or presentations that explain to the general public the science and environmental consequences of climate change and provide examples of actions that can be taken to reduce GHG emissions. There is now a major display in each province, and the potential for replicating these exhibits in other nature centres and museums is high. The number of visitors to date to all projects is estimated at 1.5 million.

### Saskatchewan Science Centre

Young visitors learn about climate change as they tour the miniature town of Discovery Junction at the Saskatchewan Science Centre. “Townsppeople” at the stores, farms and businesses explain how they reduce GHG emissions, and visitors get involved through hands-on activities. The program reaches 150,000 people each year. Teacher feedback has been positive.

- **Sila Alangotok** (an Inuvialuit expression meaning “the weather is changing”) is the title of a video produced by the International Institute for Sustainable Development. The video illustrates the impact that climate change is having on the traditional lifestyle of the Inuit living on Banks Island in the Beaufort Sea. The project developed an innovative method for recording and sharing local observations on climate change. The work received worldwide exposure when it was previewed at the sixth Conference of the Parties in November 2000 and continues to receive significant media coverage. In October 2001, the video was broadcast by CBC’s *The Nature of Things* to introduce and conclude a four-part series on climate change.
- In fall and winter 2001–2002, two negotiated agreements were concluded, including a contract with Stonehaven for a three-part television series based on the book “Storm Warning: Gambling with the Climate of our Planet” by Canadian author Lydia Dotto, for the Discovery Canada Channel.

### Environment Canada Initiatives

The PEO program also funds Government of Canada outreach activities. Activities for 2001–2002 included the following:

- An updated version of the four-page climate change tabloid “Think Climate Change” that provides an overview of climate change impacts in Canada, what the government and businesses are doing, community action programs and what individuals can do. The tabloid was inserted in 127 newspapers across Canada.
- A climate change partners’ toolkit of materials was produced for use by the Hub Network.
- Public opinion research was conducted with 2,200 Canadians to measure awareness and understanding of climate change, its causes and its impacts.

## Impacts and Benefits

Results of polling conducted by Environment Canada, Natural Resources Canada and the Climate Change Secretariat indicate that seven in ten Canadians (69%) now recognize the term “climate change”. Many Canadians have some understanding of the principal sources of climate change and demonstrate some knowledge of how climate change may affect the country or themselves. Ultimately, PEO activities are about changing the behaviours of Canadians and, as with any such campaign, require sustained outreach and education efforts.

## Next Steps/Future Challenges

The mid-term evaluation of PEO Phase 1 activity (March 2001) found that the program had funded proponent-driven efforts broadly across sectors and regions and concluded that Phase 1 was a successful exploration of opportunities and possibilities. In its second phase, PEO is using a strategic approach to identifying projects with targeted calls for proposals to build on successful projects and address gaps.

The most recent research reveals that while awareness of climate change as an environmental issue is increasing, Canadians’ understanding of the issue and what they can do about it has changed relatively little over the past few years. Much more can be done. In the next year, Environment Canada will continue to manage the PEO program with a focus on projects directed at communities, youth and educators, and business sectors.

- ■ ■ To access the Hub Network, visit: [www.nccp.ca/NCCP/cchg/index\\_e.html](http://www.nccp.ca/NCCP/cchg/index_e.html)
- ■ ■ For information on the various PEO projects, visit our Scrapbook at: [www.climatechange.gc.ca/english/scrapbook/index.shtml](http://www.climatechange.gc.ca/english/scrapbook/index.shtml)
- ■ ■ See related performance story in Section 3.3.2 (Scientific Leadership) – Climate Change-Science.

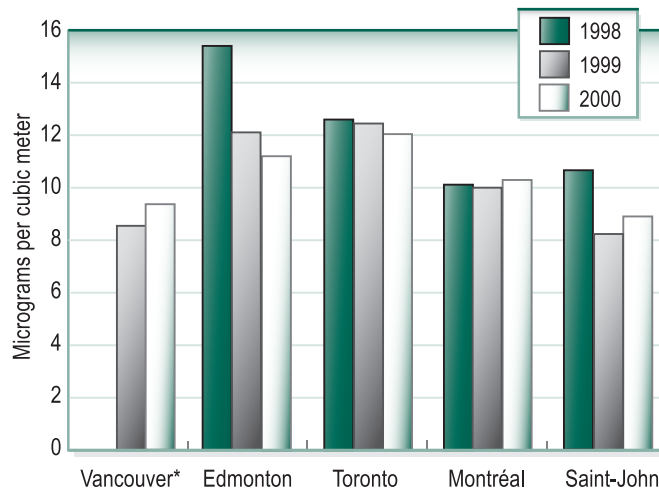
## Area of Focus #2 – Air Quality

### What is the issue?

Although there have been improvements in levels of airborne pollutants, many parts of Canada, both urban and rural, continue to experience unacceptable air quality, especially in the summer. In many locations, ground-level ozone and airborne particles combine with other air pollutants to produce smog. Emissions of volatile organic compounds, nitrogen oxides, sulphur dioxide, and ammonia contribute to these concentrations of ground-level ozone and airborne particles. The smallest airborne

particles, those with diameters smaller than or equal to 2.5 micrometres (PM<sub>2.5</sub>), pose the greatest threat to human health, because they can travel deepest into the lungs.

Average Annual Concentrations of Fine Particulate Matter (PM 2.5)



\* 1998 data not available for Vancouver.

Source: Environmental Protection Service, Environment Canada.

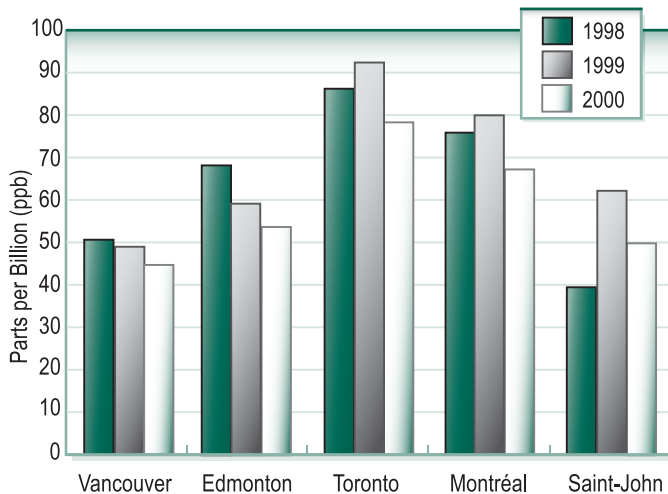
Air quality is determined by locally and regionally variable meteorological conditions. Levels of airborne particles vary depending on the region, the level of pollutant emissions from both local and long-range sources, and the season. High-levels of pollution can occur in all seasons and affect most of the populated regions of Canada. Ground-level ozone is heavily dependant on the weather and peaks in the spring and summer. It is a concern principally in the Windsor–Québec City corridor and, to a lesser extent, in the southern Atlantic region and the Lower Fraser Valley of British Columbia. Subject to annual variation and local conditions, trends in ground-level ozone levels vary considerably across the country although they tend to be higher east of the Ontario/ Manitoba border. Levels of several other important pollutants have dropped over the last 10 years but emissions of volatile organic compounds have not shown much of an improvement. Changes in the method for collecting data for fine particulates (PM<sub>2.5</sub>) makes it difficult to determine historical trends but data available does show that many areas record daily levels that pose a health risk, especially considering recent health findings that there is no safe health threshold for particulate pollution.

### What are we doing about it?

Clean air remains a top environmental priority for the government. The stage was set for domestic and transboundary air pollution reductions with the launch of the 10-year Clean Air Agenda in May 2000. The Agenda

is being delivered through a number of initiatives, including the Federal Agenda on Vehicles, Engines and Fuels, CWSs for key smog-causing pollutants, and the Ozone Annex to the Canada–United States Air Quality Agreement. Signed in December 2000, the Annex includes commitments by both countries to significantly reduce smog-causing pollutants and to monitor and report on progress. In collaboration with Health Canada and external researchers, Environment Canada continues to conduct scientific research and assessments that guide Clean Air policies and form the knowledge basis for future emission reduction and citizen empowerment programs.

**Levels of Ground Level Ozone, Selected Cities, 1998-2000**



Note: Composite trends based on 4th Highest 8-h Daily Maximum Ozone (ppb); the Canada-wide standard for ground level ozone is 65 ppb.  
Source: Canadian National Air Pollution Surveillance Network, 2002.

In February 2001, the Government committed \$120 million to accelerate action and further the Clean Air Agenda. Following this, in April 2001, Environment Canada announced the Interim Plan on Particulate Matter and Ozone. The interim plan focuses on reducing emissions from the transportation sector (transportation emissions are the single largest contributor to Canada’s air pollution problem) and industrial sectors, and is backed up by improvements to air quality monitoring and reporting to Canadians.

## Reduction of Benzene Emissions

The Benzene CWS represents a very significant success story for CCME. The national progress report shows that total benzene emissions from identified sectors were about 39% less in 1999 than in 1995, well beyond the 30% reduction target in Phase 1. In fact, the Phase 2 target for 2010 has almost been reached (nearly nine years ahead of time). More importantly, NAPS monitoring has shown an average 30% drop in ambient benzene levels in Canada’s 16 largest urban areas.



## Vehicles, Engines and Fuels — Reducing Emissions

Transportation is the single largest contributor to Canada’s air pollution problem and on-road vehicles are responsible for a large portion of smog-forming emissions.

In 2001, the government committed \$48.4 million over 2001–2002 to 2004–2005 to undertake initiatives to reduce emissions from the transportation sector. The government’s plan was developed after extensive consultations with provincial and territorial governments, environmental and health organizations, and automobile and fuel sector representatives. The Federal Agenda on Cleaner Vehicles, Engines and Fuels, published in the *Canada Gazette*, Part I, on February 17, 2001, outlines the government’s comprehensive 10-year plan for action (regulations, guidelines, studies) for on-road vehicles and engines, heavy-duty vehicle inspection and maintenance, off-road vehicles and engines, gasoline and diesel fuel.



### Accomplishments

In 2001–2002, the government took major steps to bring cleaner on-road transportation to Canadians. Working with stakeholders, the Department’s two major accomplishments were the development and publication of proposed regulations to set new emission standards for on-road vehicles and engines and of proposed regulations to limit sulphur content in on-road diesel fuel to 15 parts per million (ppm).

### Vehicles and Engines

In 2001–2002, the Department developed proposed On-Road Vehicle and Engine Emission Regulations under CEPA 1999 to align Canadian emission standards for on-road vehicles and engines with those of the U.S. Environmental Protection Agency, which are generally recognized as the most stringent national standards in the world. Beginning with the 2004 model year, the proposed regulations will phase in more stringent emission standards for on-road vehicles and engines and will apply to light-duty vehicles (e.g., passenger cars), light-duty trucks (e.g., minivans, pickup trucks, sport utility vehicles), heavy-duty vehicles (e.g., trucks and buses), heavy-duty engines and motorcycles. The proposed regulations were published in *Canada Gazette*, Part I, on March 30, 2002, and are expected to be finalized in fall 2002.

In the interim, an MOU between Environment Canada, the Canadian Motor Vehicle Manufacturers’ Association, the Association of International Automobile Manufacturers of Canada and the member companies of these associations was signed in June 2001. The MOU formalizes industry’s

commitment to market the same low-emission vehicles in Canada as in the United States for the 2001–2003 model years.

## Regional Corporate Smog Action Plan

The federal government is working to reduce emissions of smog precursors from its operations through the Corporate Smog Action Plan (CSAP). In Ontario Region, the CSAP is a joint program of Environment Canada, Health Canada and Public Works Canada delivered to all 28 federal government departments and agencies with operations in the region.

In 2001, the CSAP was piloted at Ontario Region's Downsview facility. Staff were notified approximately 20 times of smog advisories during 2001–2002. Via two questionnaires, staff were asked if they changed their routines or took actions to reduce smog and air pollution. Based on preliminary results, 58% of questionnaire respondents used alternate modes of transportation such as carpooling; 72% avoided using small gas engines such as lawn mowers and leaf blowers; 59% suspended use of solvents and pesticide; and 27% avoided refueling their cars between 8 a.m. and 8 p.m. on smog days. Actions taken by staff at the Downsview facility in summer 2001 resulted in a reduction of approximately 5 800 kg of pollutants.

Environment Canada-Ontario Region developed a federal response guide and smog kit to assist all CSAP coordinators in program implementation. A CSAP information package and poster were developed for distribution to all federal departments in southern Ontario as educational and awareness tools. Other federal departments with operations outside the Toronto area are interested in participating, as the CSAP is extended throughout southern Ontario.

Other accomplishments include:

- a discussion draft of the planned Off-Road Small Spark-Ignition Engine Emission Regulations was released for public consultation in July 2002. This regulation would establish emissions standards for gasoline utility engines;
- ongoing work to develop a new code of practice for heavy-duty vehicle inspection and maintenance programs (fall 2002);
- amendments to CEPA 1999 to include the authority to regulate small marine engines such as those used in outboards and personal watercraft (November 2001); and
- ongoing work to develop new emission regulations for off-road engines, aligned with U.S. standards, for gasoline utility engines (e.g., snowblowers, portable generators, lawnmowers), diesel engines such as those used in construction and agricultural equipment, and recreational marine engines.

### Fuels

The development of effective policies to reduce emissions must treat vehicles, engines and fuels as an integrated system. For example, fuel regulations have been put in place to ensure that the sulphur content of fuels does not impede the effective operation of the advanced vehicle and engine emission control technologies needed to comply with the stringent new exhaust emission standards.

Proposed Sulphur in Diesel Fuel Regulations were developed and published in the *Canada Gazette*, Part I, in December 2001. The proposed regulations will limit the sulphur content of diesel fuel, intended for on-road vehicles, to 15 ppm and come into effect in 2006 (a year later in the Arctic regions). These regulations complement the Sulphur in Gasoline Regulations, published in 1999, which limit the average sulphur levels to less than 30 ppm throughout Canada by 2005.

### Impacts and Benefits

The stringent emission standards proposed in the On-Road Vehicle and Engine Emission Regulations will reduce the allowable levels of smog-forming emissions from most new vehicles and engines by about 90% relative to current limits. The proposed Sulphur in Diesel Fuel Regulations will reduce the sulphur content in on-road diesel fuel by 95% in 2006.

By the year 2020, it is estimated that the proposed On-Road Vehicle and Engine Emission Regulations in combination with the Sulphur in Diesel Fuel Regulations will result in the following reductions in emissions from the in-use fleet of on-road vehicles: NO<sub>x</sub> (74%), VOCs (14%), CO (6%) and PM<sub>10</sub> (64%), relative to emission reductions already achieved by current regulations and programs. With these reductions come substantial health benefits for Canadians in terms of the avoidance of premature deaths, respiratory cases in children and asthma symptom days across Canada.

The application of improved emission control technologies on new on-road vehicles and engines, which help meet more stringent emission standards, will also result in decreased emissions of benzene, 1,3-butadiene, acetaldehyde and acrolein, all of which are on the CEPA List of Toxic Substances. Formaldehyde, which has been proposed to be added to the CEPA List of Toxic Substances, will also be reduced.

### Next Steps/Future Challenges

In the upcoming year, Environment Canada plans to:

- finalize the proposed On-Road Vehicle and Engine Emission Regulations;
- launch a process to address the sulphur content in fuel oil, with a view to matching the requirements set by the European Union by 2008;
- formally propose the Off-Road Small Spark-Ignition Engine Emission Regulations in the *Canada Gazette*, Part I; and
- release a discussion draft of the planned Off-Road Diesel Engine Emission Regulations for public consultation.



- ■ ■ To access the Notice of Intent on the Federal Agenda for Cleaner Vehicles, Engines and Fuels, visit: [www.ec.gc.ca/CEPARRegistry/documents/notices/g1-13507\\_n1.pdf](http://www.ec.gc.ca/CEPARRegistry/documents/notices/g1-13507_n1.pdf)
- ■ ■ For information on the various regulations, visit: [www.ec.gc.ca/CEPARRegistry/regulations/](http://www.ec.gc.ca/CEPARRegistry/regulations/)



## Multi-Pollutant Emission Reduction Strategies

In June 2000, the CCME (excluding Québec) agreed to a list of Joint Initial Actions when they signed the *Canada-wide Standards (CWS) for Particulate Matter (PM) and Ground-level Ozone*.<sup>2</sup> The Joint Initial Actions include the development of national, multi-pollutant emission reduction strategies (MERS) for seven key industrial sectors.

### MERS Industrial Sectors

- electric power generation (EPG);
- base metals smelters;
- iron and steel mills;
- concrete batch mix plants;
- asphalt mix plants;
- pulp and paper mills; and
- lumber and allied wood products plants.

Industrial sectors were chosen when they represented significant sources of direct emissions of PM and precursors of PM and ozone; were common to most jurisdictions and could benefit from a multi-pollutant approach. It was also expected that effective action for these sectors could be initiated in the near term (i.e., by 2005, when the Joint Initial Actions are expected for completion).

Each MERS approach will provide a national picture of emission reduction plans for each given sector and will be developed based on the jurisdictional plans on PM and ozone and national multi-pollutant analysis. In addition to addressing the pollutants that contribute to PM and ozone, these strategies will also take into account measures to reduce emissions of greenhouse gases (GHGs) and other air pollutants (e.g., mercury).

The MERS process comprises three activities:

- *National Multi-pollutant Analysis*: For each sector, national, multi-pollutant analysis or a Multi-pollutant Emission Reduction Analysis Foundation (MERAFA) report will be produced as a resource for jurisdictions to draw upon when developing implementation plans to meet the PM and ozone CWSs. These reports provide

sectoral foundation analyses and include technical feasibility studies on reduction options and costs, emission standards, best management practices, and competitive analysis and policy instruments (for the EPG sector only).

- *Forum for Information Sharing and Coordination*: Jurisdictions will share information on sectoral actions in different parts of the country and will have a forum to discuss potential federal instruments for action in a given sector (i.e., Guidelines, Codes of Practice, etc.).
- *National Sector Roll-up*: A national picture of each sector will be assembled based on the actions identified by each jurisdiction and on the information obtained from national multi-pollutant analyses.



### Accomplishments

In 2001–2002, the CCME focused on the development of MERAFA. Under the guidance of technical advisory groups, multi-pollutant analysis reports were begun for each of the seven sectors. For the EPG sector, a Clean Air workbook was produced and used as the basis for seeking feedback at a national stakeholder workshop. For each of the other six industrial sectors, draft MERAFA reports are nearing completion and expected to be finalized by fall 2002.



### Impacts and Benefits

Addressing environmental issues from a multi-pollutant perspective allows for the development of integrated solutions to problems of smog, acid rain, toxic releases and climate change. The expectation is that the analysis contained in the EPG MERS Clean Air Workbook and the six industrial MERAFA reports will inform sectoral emission reduction actions in individual jurisdictional implementation plans to achieve the CWSs for PM and ozone.

An important benefit of the MERS process to date is the opportunity it has provided for partnership and dialogue among all levels of government, industry, public interest organizations and other stakeholders across the country, and for the identification of best practices and techniques in the selected sectors.



### Next Steps/Future Challenges

The first step of the MERS process (national, multi-pollutant analysis) is near completion. The next two steps are information sharing and national roll-ups. During these stages, the CCME forum will facilitate the coordination and sharing of information among jurisdictions, as each jurisdiction develops its implementation plan to meet the CWSs for PM and ozone.

<sup>2</sup> Similar actions are under way in Quebec to match the level of protection in other jurisdictions.

For the EPG sector, Environment Canada will support a study to analyze the options and costs for a range of emission reduction scenarios for the five provinces with the highest levels of fossil-fuel-based electric power generation (Alberta, Saskatchewan, Ontario, New Brunswick and Nova Scotia).

For the non-energy industrial sectors, the MERAF reports will be used to inform possible future Federal involvement with these sectors. This may include the development of emission standards in Environmental Codes of Practice and other initiatives for the management of toxic substances under CEPA 1999.

■ ■ ■ Information on the CCME MERS approach to support CWSs can be found at: [www.ccme.ca/assets/pdf/rvsd\\_mers\\_update\\_e.pdf](http://www.ccme.ca/assets/pdf/rvsd_mers_update_e.pdf)



## Monitoring and Reporting — Strengthening the National Air Pollution Surveillance Network

Formed in 1969, Canada's NAPS Network is a collaborative program of the federal and provincial governments to monitor and assess the quality of ambient air. NAPS is primarily an urban network and, prior to investments in 2001–2002, comprised 239 monitoring stations in 136 municipalities.

The NAPS monitoring stations are operated by the provincial and territorial governments, and the data collected from these and other stations are shared with Environment Canada. The Department then shares these data across provinces and with U.S. partner agencies. In addition, Environment Canada is responsible for providing the major portion of capital for equipment in each station and administering elements of the quality assurance program, including site selection criteria, instrument calibration and data validation.

A total of \$22 million over four years will be invested in the NAPS Network infrastructure, in improvements to measurement protocols, techniques and equipment, and in supporting the national Air Quality Prediction Program (AQP).<sup>3</sup>

■ ■ ■ See related performance stories also in Section 3.3.1 (Improve Society's Capacity) — Knowledge & Awareness of Hazards: Developments in Forecasting Air Quality.



## Accomplishments

The recognition in recent years of the importance of determining the health and environmental impacts of air pollutants underscores the importance of a strong, continent-wide air quality monitoring network.

### Network Upgrades

Approximately one-half of the NAPS investment (\$11 million over four years) is earmarked for improvements to the physical infrastructure. The investment will:

- add new instruments at existing sites to measure new elements of interest, such as PM;
- upgrade infrastructure at existing sites and replace aging equipment where necessary; and
- expand the Network by adding 20 new sites (increased from 10 based on consultations with the provinces and territories).

Much of the equipment purchased will meet the specific monitoring needs of the Canada–U.S. Ozone Annex and the CWSs on PM and ozone. The balance will be spent on replacing existing monitors for the measurement of criteria pollutants, which are used by the provinces to report daily air quality indices. Investment upgrades began in 2001–2002 and will continue for the next three years.

### Network Management

Environment Canada works in close cooperation with the NAPS Network organizations from the provincial and territorial governments. To meet a recommendation of the Commissioner of Environment and Sustainable Development, the decision to formalize these relationships was made, and MOUs have been developed between Environment Canada and each jurisdiction. In many regards, the MOUs document the principles and arrangements that have evolved over the previous 30 years. The MOUs clarify the cooperative operating principles and priorities of the Network and ensure continued access by Environment Canada to the data collected by the provinces and territories. It is expected that the MOUs will be signed by early fall 2002.



## Impacts and Benefits

Infrastructure improvements, network expansion and measurement protocols for new pollutants will ensure that the NAPS Network provides the data required to:

- *Measure progress against our international and national commitments:* The Network must continue to meet the monitoring requirements of the Ozone Annex and the

<sup>3</sup> Environment Canada maintains a second network, CAPMoN, a rural network with 24 monitoring stations. A total of \$7 million will be invested under the Interim Plan on PM and Ozone.

CWSs for PM and ozone. Strengthening the Network has led to improvements in the characterization of smog precursors.

- *Make better-informed policy decisions:* Reliable, comprehensive and timely measurements of air quality allow policy-makers to undertake regional analysis and develop policy positions.
- *Improve air quality warnings to Canadians:* More than one-half of all Canadians live in areas where ground-level ozone may reach high-levels during the summer months, and every urban centre has levels of airborne particles that are high enough to cause health impacts. Warnings and advisories to Canadians are informed by NAPS Network data.

In the longer term, the air quality data collected by the Network provide the basis for evaluating our air pollution control strategies, identifying urban air quality trends and detecting emerging air pollution issues. Decisions in many other public policy areas benefit from air quality data, including land-use planning, public transportation design, urban renewal and other development decisions.

## National Pollutant Release Inventory

In 2002, the NPRI will be expanded to include Criteria Air Contaminants (the key components of smog). New pollutants to be covered include NO<sub>x</sub>, VOCs, sulphur oxides (SO<sub>x</sub>), PM and carbon monoxide. Environment Canada is undertaking R&D to further develop acceptable methods to measure these new criteria.

### Next Steps/Future Challenges

Implementation of the planned upgrades to the Network will continue with investments of approximately \$2.3 million in each of the next three years. Towards the end of the four-year upgrade plan, the focus will shift to improving laboratory operations to increase the number of samples that can be analyzed and developing new protocols and methodologies to expand the number of pollutant types that can be measured.

- ■ ■ See related performance stories in Section 3.3.1 (Improve Society's Capacity) – Knowledge & Awareness of Hazards: Developments in Forecasting Air Quality.
- ■ ■ To learn more about the NAPS Network, visit: [www.msc-smc.ec.gc.ca/NatChem/particles/n\\_naps\\_e.html](http://www.msc-smc.ec.gc.ca/NatChem/particles/n_naps_e.html)
- ■ ■ For national air quality data, visit: [www.etcentre.org/naps](http://www.etcentre.org/naps)
- ■ ■ During smog season (May to September), view ground-level ozone maps for New Brunswick, Nova Scotia, PEI, Ontario and Québec at: [www.ec.gc.ca/air/ozone-maps\\_e.shtml](http://www.ec.gc.ca/air/ozone-maps_e.shtml)

## 3.1.2 Long-term Key Result: Toxic Substances

*Understanding and prevention or reduction of the environmental and human health impacts posed by toxic substances and other substances of concern*

Addressing the problem of toxic substances is complex, for several reasons. Some substances are concerns in themselves; others are part of larger environmental and health issues, such as urban smog, water quality, ozone layer depletion and Arctic contamination. Substances can be released from “point sources” (e.g., specific industrial plants) and “non-point sources” (e.g., vehicle exhaust). Many substances enter the environment from local sources, but others originate beyond Canada’s borders. Other substances occur naturally in the environment (e.g., heavy metals) or are released through natural processes but also through human activity.

### Performance Framework

The overall goal for the “toxics result” is to prevent or reduce environmental and human health threats posed by toxic substances and other substances of concern. Given this, the toxics goal involves management in three areas:

- Existing substances — adverse impacts on human health and the environment from existing substances of concern are understood by Canadians and prevented and/or reduced;
- New substances — adverse impacts on human health and the environment from new substances and new activities are understood by Canadians and prevented; and
- Persistent, bioaccumulative toxic substances (PBTs) — PBTs are virtually eliminated.

The following table aligns the three areas of focus, the long-term indicators and targets, and the commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## CLEAN ENVIRONMENT BUSINESS LINE (Continued)

*Long-term key result: Understanding and prevention or reduction of the environmental and human health impacts posed by toxic substances and other substances of concern*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #6: Existing Substances – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Risk assessment of substances already in the marketplace.</li> </ul>	<p><b>Indicator:</b> Identification of “CEPA toxics”.</p> <p><b>Target:</b> Categorize all of the approximately 23,000 substances on the Domestic Substances List (DSL) (jointly with Health Canada) by 2006.</p> <p><b>Target:</b> Carry out screening-level risk assessments for those substances identified as persistent and inherently toxic, or bioaccumulative and inherently toxic, in a responsible manner that ensures that resources are applied adequately to substances of concern.</p> <p><b>Target:</b> Assessment of other substances of concern that become banned or severely restricted by other domestic and international jurisdictions.</p>	<p>✓ <b>Risk Assessment</b></p> <ul style="list-style-type: none"> <li>Publish statements from the Ministers of Environment Canada and Health Canada in the <i>Canada Gazette</i> recommending to the Governor in Council that several substances be added to the List of Toxic Substances in Schedule 1 of CEPA 1999. Following this publication, the Ministers will have two years to propose a regulation or instrument in relation to prevention or control of the substances and a further 18 months after that to finalize their plan and publish it in the <i>Canada Gazette</i>.</li> </ul>
<ul style="list-style-type: none"> <li>Risk management actions to address sources of greatest concern for those substances added to the List of Toxic Substances (Schedule I of CEPA 1999).</li> </ul>	<p><b>Indicator:</b> Preventive and control instruments in place for domestic uses and release of toxic substances.</p> <p><b>Target:</b> Each year, 10–20 CEPA-toxic substances are anticipated.</p>	<p>✓ <b>Hazardous Material</b></p> <ul style="list-style-type: none"> <li>Unanticipated – September 11 terrorist attacks</li> <li>Work with provinces to update standards and practices to ensure that the transboundary movement and disposal of hazardous waste are managed in an environmentally sound manner.</li> </ul> <p><b>Sydney Tar Ponds/Coke Ovens Cost-Sharing Agreement</b></p> <ul style="list-style-type: none"> <li>Negotiate a second cost-sharing agreement for the next phase of remediation of the Sydney Tar Ponds/Coke Ovens by 2002–2003. Build on progress made under the current agreement towards laying the foundation for the remediation of the site.</li> <li>Public protection through site security, the development of an emergency response capacity, the implementation of a separation zone around project activities, and the increased knowledge made available through studies and site assessments.</li> <li>Stabilize the site in preparation for remediation through the construction of a sewer interceptor and the management of landfill leachate.</li> <li>Demolish/dispose of contaminated structures and a tarcell, effectively removing more than 25,000 tons of contaminated coal tar and more than 4.6 million litres of contaminated liquids and sludge.</li> <li>Implement a Technology Demonstration Program to determine appropriate remediation technologies, and make the information available to the community to facilitate dialogue on an acceptable solution to the contaminated sites.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<ul style="list-style-type: none"> <li>Ensuring effectiveness of risk management mechanisms.*</li> </ul>	<p><b>Indicator:</b> Increased rates of compliance with regulations.</p> <p><b>Target:</b> Under development.</p>	<p>✓ <b>Risk Management</b></p> <ul style="list-style-type: none"> <li>Focus on the management of transitional toxics and PSL 1 &amp; 2 using new risk management tools when appropriate.</li> </ul>
<b>Area of Focus #7: New Substances – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Identify and implement management controls.</li> </ul>	<p><b>Indicator:</b> All notified substances assessed and conditions or other controls issued within regulatory time frames for all substances suspected of being toxic.</p> <p><b>Target:</b> Under development.</p>	<p><b>New Substances Notification</b></p> <ul style="list-style-type: none"> <li>Assess approximately 1,300 new substance notifications in 2001–2002.</li> </ul>
<ul style="list-style-type: none"> <li>Work towards ratification decision on Biosafety Protocol.</li> </ul>	<p><b>Indicator and Target:</b> Under development.</p>	<p><b>Biosafety Protocol</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>
<ul style="list-style-type: none"> <li>Provide advice on environmental assessments of policies, plans, programs and projects.</li> </ul>	<p><b>Indicator and Target:</b> To be determined.</p>	<p><b>Environmental Assessments</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>
<b>Area of Focus #8: Persistent, Bioaccumulative Toxic Substances (PBTs) – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Work to virtually eliminate releases of PBTs into the environment.</li> </ul>	<p><b>Indicator:</b> Prevention or control instruments in place for PBT substances.</p> <p><b>Target:</b> Under development.</p>	<p><b>Elimination of Releases of PBTs in the Environment</b></p> <ul style="list-style-type: none"> <li>Submit CWSs for mercury products, petroleum hydrocarbons, dioxins and furans to federal and provincial ministers of the environment for signature in April/May 2001.</li> <li>Approve CWS (final) on benzene by the end of 2001.</li> </ul>

**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy Target or Initiative.

## Area of Focus #6: Existing Substances

### What is the issue?

The Domestic Substances List (DSL) is an inventory of about 23,000 substances manufactured in, imported into, or used in Canada on a commercial scale. The Existing Substances Program assesses not only substances on the DSL but other items such as non-commercial substances, manufacturing by-products, effluents and emissions. Most of these substances are not considered to pose a risk to human or ecosystem health; however, some may be found to be toxic as defined under CEPA 1999.

Over the past 20 years, scientists have learned a great deal about the detrimental effects of toxic substances. Some toxic substances can be transported over long distances through air or water. Some can persist in the environment and, while present in only barely detectable amounts, can adversely affect many species and ecosystems. They can also build up in the tissues of aquatic species and animals

that many Canadians consume. Some Aboriginal peoples and Inuit and others who rely heavily on such species for their food are especially vulnerable. While all Canadians can be affected by toxic substances, the greatest health risk is to susceptible populations such as young children and the elderly.

There are also economic consequences of the release of toxic substances into the environment: the costs and liabilities associated with remedial measures and the disposal of wastes impose substantial economic burdens on Canadians.

### What are we doing about it?

Environment Canada and Health Canada are responsible for determining if substances pose environmental and human health risks and, if so, ensuring that management measures are put in place. CEPA 1999 requires the categorization of all substances (chemicals, polymers, biological substances) on the DSL by September 2006.

This categorization requirement involves reviewing 23,000 substances and identifying those that are persistent and/or bioaccumulative and inherently toxic (P and/or B and iT), or those having the greatest potential for human exposure (Health Canada responsibility). Follow-up assessments are conducted where appropriate<sup>4</sup>. Canada is the first country to undertake such a comprehensive review. Others, including the United States and Europe, are now moving in this direction.

## Risk Assessment

Environment Canada has developed a systematic approach to categorize and assess substances so as to minimize the potential health and environmental risks posed to Canadians. Any substance categorized as persistent and/or bioaccumulative and inherently toxic by Environment Canada scientists will then undergo a screening assessment to determine if it meets the CEPA criteria for being placed on the List of Toxic Substances.

There are three possible outcomes from the screening level assessments: (1) No further action required under this program if the substances does not pose a risk to the environment or human health; (2) Recommend addition to Schedule 1, List of Toxic Substances; and (3) Recommend addition to the CEPA Priority Substances List.

For each toxic substance, Environment Canada will develop a risk management strategy (which can include regulations, guidelines, pollution prevention plans, environmental performance agreements or other measures) to minimize environmental and health impacts.

## Accomplishments

In 2001–2002, the Department continued to build the foundation (e.g., approach, methodologies, criteria and tools) for evaluating all substances in use in Canada. Major accomplishments and milestones include the following:

- In 1995, 25 substances, including individual chemicals, mixtures and effluents, were placed on the second Priority Substances List (PSL2). Environment Canada has completed the five-year process to conduct priority risk assessments for these substances, which proposed that 18 be concluded as “CEPA toxic”. In 2001–2002, Environment Canada:

- added five PSL substances to the List of Toxic Substances: respirable particulate matter less than or equal to 10 microns (PM<sub>10</sub>), acetaldehyde, acrolein, acrylonitrile and 1,3-butadiene; and
- published final Ministerial decisions in the *Canada Gazette* indicating that eight additional PSL substances were determined to be toxic and proposed for addition to the List of Toxic Substances: ammonia, textile mill effluents, nonylphenol and its ethoxylates (NPEs), inorganic chloramines, road salts, ethylene oxide, formaldehyde and N-Nitrosodimethylamine (NDMA).
- With the closure of the PSL2 process, the Department is introducing a new, more streamlined screening assessment methodology. The Screening Level Risk Assessment (SLRA) will be developed based on lessons learned with the PSL2 assessments and will be applied to upcoming substance evaluations meeting the P and/or B and iT criteria. If the SLRA determines a substance to be toxic, the substance is then directly proposed for addition to the List of Toxic Substances to be considered for regulatory or other controls. If, following the SLRA, further work is required to assess more comprehensively the risks associated with the release of the substance, the substance is then added to the PSL for priority assessment regarding toxicity.

## Assessing and Managing Toxic Substances

NPEs are high-volume chemicals used in a variety of products, such as detergents, emulsifiers, wetting agents and dispersing agents. NPEs were on the PSL 2 list and underwent a comprehensive risk assessment. After public consultation, the Minister of Health and the Minister of the Environment proposed, on June 23, 2001, that they be proposed for addition to the List of Toxic Substances under CEPA 1999 because they are considered toxic to the environment. The risk assessment found NPEs in water, sediment, wastewater, sludge (from municipal and industrial effluents) and soil. Exposure to NPEs has been reported to cause acute adverse effects in invertebrates, fish, mammals and algae. A strategy has been developed and is currently being discussed with various stakeholders to reduce or eliminate the risks posed by NPEs. According to the assessment report, NPEs primarily enter the Canadian environment through the discharge of industrial and municipal wastewater effluents. Therefore, the overall risk management strategy will address four priority sectors for the management of NPEs: products containing NPEs; textile processing; municipal wastewater effluents; and pulp and paper processing.

- In spring 2002, Environment Canada published the Environment Canada’s *Guidance for Categorizing Organic Substances on the Domestic Substances List* for public comment. The document describes the methodology and criteria for categorizing the approximately 12,000 organic substances on the DSL.

<sup>4</sup> In addition to the DSL, Environment Canada and Health Canada must also review all new substances. The Department currently receives approximately 1,000 new substance notifications per year; this number is expected to increase with the growth in biotechnology products.

- To gain experience in implementing SLRA on a large volume of substances, a pilot project involving 123 organic substances is under way. A Technical Advisory Group, which comprised experts from federal and provincial governments, industry, environmental non-government organizations and academia assisted in the development of the pilot. The final results are expected within two years and will be used to refine the SLRA methodology, the criteria for moving to a more thorough assessment and the methodology for prioritizing substance assessment.



### Impacts and Benefits

The government's assessment approach and methodologies will ensure that CEPA 1999 requirements are fully met. The activities discussed above contribute to this goal and:

- enhance openness and transparency by inviting input from experts from academia, industry, government and environmental groups at all stages of the risk assessment process;
- increase knowledge by conducting the monitoring, science and research required to complete the assessments;
- prioritize substances and streamline the process to better manage the increasing number of substances;
- minimize environmental and health risks by identifying and assessing priority substances; and
- improve efficiency by involving risk managers to minimize duplication of effort in assessment and risk management activity.



### Next Steps/Future Challenges

Risk assessment activities in 2002–2003 will continue to move the government towards the CEPA 1999 objectives and targets. Specifically, the Department will:

- develop methodologies for categorizing the 2,500 inorganics and 4,000 polymers on the DSL;
- publish the SLRA technical guidance manual; and
- complete SLRAs for substances from two classes (perfluoro alkyl substances [PFOs] and brominated flame retardants [PBDEs]) and for sodium ferrocyanide.
- publish follow-up reports on 13 PSL substances.

- ■ ■ See related performance story in Section 3.2.1 (Existing Substances) – Risk Management: Innovation Tools for Managing Environmental Risks.
- ■ ■ More information on the evaluation of substances on the DSL can be found at: [www.ec.gc.ca/substances/ese/eng/dsl/pilpro.cfm](http://www.ec.gc.ca/substances/ese/eng/dsl/pilpro.cfm)

- ■ ■ For information on the Priority Substances List, visit: [www.ec.gc.ca/substances/ese/eng/psap/psap.cfm](http://www.ec.gc.ca/substances/ese/eng/psap/psap.cfm)
- ■ ■ The CEPA web site can be accessed at: [www.ec.gc.ca/CEPARegistry/default.cfm](http://www.ec.gc.ca/CEPARegistry/default.cfm)



### Hazardous Material: Protecting our Environment and our Communities

While a significant portion of the media coverage to date has been directed towards chemical, biological and radiological warfare agents, threat assessments in Canada and the United States concluded that commercially available hazardous materials and the facilities that manufacture or store them potentially pose a far greater risk.

Under the security package announced in December 2001, Environment Canada was allocated \$20.5 million over six years to implement measures to enhance, among other things:

- environmental emergencies prevention, preparedness, response and recovery; and
- border controls to enforce regulations controlling the import and export of hazardous substances and to improve the tracking of transboundary movements of hazardous wastes.



### Accomplishments

#### *Environmental Emergencies Regulations*

Environment Canada has identified several areas where legislative authorities in CEPA 1999 can be used to increase safety and security in Canada:

- Section 199 of CEPA 1999 empowers the Minister with the authority to require Environmental Emergency (E2) Plans at facilities that manage toxic substances.
- Section 200 of CEPA 1999 grants broader regulatory authorities to address a wider range of substances that affect human health or the environment (i.e., not limited to substances assessed to be CEPA toxic). Section 200 gives Cabinet the authority to make regulations respecting prevention, preparedness, response and recovery to an environmental emergency.

## Environmental Emergencies Program

Environment Canada is an active player in confronting the environmental aspects of emergencies. The mission of the Environmental Emergencies program is to reduce the frequency, severity and consequences of these events. We achieve that mission through promoting preventive measures and preparedness, providing response advice and advancing S&T, both in Canada and abroad.

Under Section 200, Environment Canada has proposed an E2 Regulation that requires any person who uses or stores an identified substance, at levels above specified thresholds, to notify Environment Canada of the location and quantity (within 90 days), prepare an E2 Plan (within six months) and test and implement the E2 Plan (within one year).

## Environmental Damages Fund

The Environmental Damages Fund (EDF) established by the Treasury Board in 1995 serves as a special holding or trust account to manage funds received as compensation for environmental damage. Contributions to the Fund may come in the form of court orders, awards, out-of-court settlements, voluntary payments and other awards provided by various international liability funds.

When an incident occurs that results in damages to the environment, the courts can use a number of pieces of federal environmental legislation, that include, the *Canadian Environmental Protection Act, 1999* (CEPA 1999), the *Fisheries Act*, the *Migratory Birds Convention Act* (MBCA 1994), the *Canada Wildlife Act*, the *Canada Shipping Act* (CSA) and the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRIITA 1992) to direct awards to the EDF from responsible parties. The resulting awards are used to restore the environment as a result of the damage done, and may also deter other parties from causing damage in the future.

In December 2001, a multi-stakeholder consultation session with some 40 groups was held to discuss the proposed Regulation. There was general support for the initiative and consensus on using the list of 174 substances and thresholds developed by the Conseil pour la réduction des accidents industriels majeurs (CRAIM) of Montreal.

Draft Environmental Emergency Regulations were published in *Canada Gazette*, Part I, on August 10, 2002. Final Regulations are expected by early 2003.

- ■ ■ For more information on the Department's E2 activities, visit: [www.ec.gc.ca/ee-ue/main/main\\_e.cfm](http://www.ec.gc.ca/ee-ue/main/main_e.cfm)

### *Transboundary Movement of Hazardous Substances and Wastes*

Under CEPA 1999, some substances are banned from production or import into Canada, while others are allowed on a restricted basis only. To better enforce these bans and limits, Environment Canada has expanded its security intelligence program. New security funding has been

used to double the number of intelligence officers across the country, provide new personal protective equipment (i.e., suits to protect personnel from exposure to biological agents or chemical hazards) and enhance training programs for both intelligence officers and enforcement personnel. These activities will also help to improve the exchange of information with our intelligence partners (e.g., Royal Canadian Mounted Police [RCMP], Port Authorities, the Canadian Security Intelligence Service [CSIS], provincial police departments) and improve the detection of possible threats to Canada.

To improve the timely tracking and verification of hazardous waste shipments, Environment Canada is working with the Canada Customs and Revenue Agency (CCRA) to implement the use of electronic smart-cards for the notification and authorization of shipments. A pilot project is planned for 2002–2003, with full implementation at 30 major border points beginning in 2003–2004.

- ■ ■ See related performance story in Section 3.3.1 (Improve Society's Capacity) – Numerical Simulation Support on Behalf of Canadians.
- ■ ■ To find out more about the Department's Transboundary Movement Branch and its activities, visit: [www.ec.gc.ca/tmb/eng/tmbhp\\_e.html](http://www.ec.gc.ca/tmb/eng/tmbhp_e.html)



## Risk Management: Innovative Tools for Managing Environmental Risks

Environment Canada uses a range of tools to protect the environment, including regulations, guidelines, codes of practice, economic instruments, challenge programs and educational campaigns. Feedback from international environmental agencies shows Canada to be at the forefront with respect to the application of voluntary programs and innovative management approaches that complement traditional regulatory activity.

## Innovative Risk Management — Enviroclub

Supported by Environment Canada, Economic Development Canada, the National Research Council of Canada and the Climate Change Action Fund, the Enviroclub initiative is intended for small and mid-sized firms (SMEs). The initiative has two components: in-plant execution of viable pollution prevention projects and raising awareness of eco-efficiency.

In 2001–2002, two Enviroclubs were completed and enabled manufacturing SMEs in Saguenay–Lac-Saint-Jean and Central Québec to improve their environmental performance while enhancing their competitiveness.

For the 18 participating SMEs, environmental results included the reduction of greenhouse gases and hazardous wastes. The savings achieved by these projects will amount to some \$1.5 million a year.



Over the last year, Environment Canada expanded and refined the use of two innovative policy tools: Environmental Performance Agreements (EPAs) and Environmental Effects Monitoring (EEM).

#### a) *Environmental Performance Agreements (EPAs)*

EPAs are voluntary agreements negotiated among industry, government agencies and NGOs to achieve specified environmental results. The EPA process can enable parties to identify and address a broader range of environmental issues than the traditional regulatory approach, and address a range of substances that require attention that would otherwise go unregulated. The measures in the agreements are not prescriptive and give companies the flexibility to institute environmental measures. These types of voluntary agreements are increasingly common in Europe, Japan and the United States.

EPAs have the potential to achieve clear and measurable results in the management of toxic substances with less administrative burden than regulations, meaning that results are achieved sooner and at a lower cost. However, it is important to note that EPAs do not replace the regulatory framework. In fact, the authorities under CEPA 1999 provide a “regulatory backstop” and reduce the likelihood of non-compliance.

#### **Accomplishments**

This year, three EPAs were signed which included many facilities and industrial sectors. As mentioned in last year’s Departmental Performance Review, in June 2001, a new Policy Framework for Environmental Protection Agreements was approved by the Minister. In considering EPAs as a risk management tool, factors such as the nature of the risk being managed and the environmental performance and compliance history of the companies or sector involved was taken into account. As well, the companies or sectors must have demonstrated experience with voluntary codes.

In 2001–2002, EPAs contained detailed commitments to air, water quality, energy use and waste management, as well as commitments to the community. The three agreements were:

- MOU with the Canadian Chemical Producers’ Association (CCPA) (and Health Canada, Industry Canada, Alberta, Saskatchewan and Ontario). The objective of the MOU, which replaces an earlier agreement signed in 1994, is to reduce the release of chemical substances through voluntary action under the CCPA’s Responsible Care Program. The MOU includes an annex setting out specific targets and timelines to reduce releases of VOCs. A significant aspect of the MOU is the active participation of environmental NGOs,

including Pollution Probe and STOP, as well as two members of the CCPA Advisory Panel for Responsible Care®.

- EPA with Dow Chemical regarding the production and distribution of 1,2-dichloroethane. In 1997, releases from Dow’s facilities accounted for approximately 79% of 1,2-dichloroethane emissions. The use of an EPA provides the company with flexibility in terms of how they will meet the emission reduction targets. The Environmental Management Plan in the EPA includes five-year reduction goals with annual milestones based on performance requirements that are equivalent to the U.S. Environmental Protection Agency National Emission Standard for Organic Hazardous Air Pollutants (HAPs).
- EPA regarding Refractory Ceramic Fibre (RCF). This agreement stipulates the establishment of a monitoring program to collect data from the manufacturers and processors of RCF, which will be used by health and environment specialists to better evaluate the risks associated with this substance.

#### **Impacts and Benefits**

As the EPA Framework was published in June 2001, it is too early to judge the effectiveness of the Framework and the resultant EPAs. It is anticipated that the use of EPAs will increase as the results of current agreements are assessed and demonstrate EPAs to be a viable environmental management option.

#### **Next Steps/Future Challenges**

Other agreements are in various stages of consideration or development. Environment Canada is committed to negotiating EPAs where they are identified as an appropriate tool, and there is the prospect of significant, measurable environmental results that can be achieved at lower cost.

- ■ ■ The Policy Framework for Environmental Performance Agreements can be found at: [www.ec.gc.ca/epa-epe/pol/en/framework2.cfm](http://www.ec.gc.ca/epa-epe/pol/en/framework2.cfm)
- ■ ■ The MOU with the CCPA can be found at: [www.ec.gc.ca/epa-epe/ccpa-acfpc/en/index.cfm](http://www.ec.gc.ca/epa-epe/ccpa-acfpc/en/index.cfm)
- ■ ■ The EPA with Dow Chemical can be found at: [www.ec.gc.ca/sop/download/dceMOU\\_e.pdf](http://www.ec.gc.ca/sop/download/dceMOU_e.pdf)
- ■ ■ The EPA regarding RCF can be found at: [www.ec.gc.ca/sop/download/rcfmou\\_e.pdf](http://www.ec.gc.ca/sop/download/rcfmou_e.pdf)

#### b) *Improved Assessment of Environmental Impacts of Industry Regulations: Environmental Effects Monitoring (EEM)*

EEM is a scientific tool that assesses the effects of effluent from industrial or other sources on fish, fish habitat and the

human use of fisheries resources. Information from EEM, together with social, economic and technical considerations, may then be used to assess the adequacy of regulations in protecting aquatic environments to ensure proper management, conservation and protection of aquatic environments.

In Canada, EEM was first applied in the pulp and paper sector. Since 1992, the Pulp and Paper Effluent Regulations (under the *Fisheries Act*) have required mills to conduct EEM studies. The regulations call for each mill to develop an individual monitoring program based on national requirements and guidance and site-specific conditions. The regulations also require complete EEM studies every four years—detailed reports were submitted by each mill in 1996 and 2000.

As well, risk management strategies will be developed for substances added to the list of Toxic Substances in 2001–2002, in consultation with industry and other stakeholders. During 2001–2002, risk management strategies were developed for consultation on proposed measures for acrylonitrile, textile mill effluent, nonylphenol and its ethoxylates and road salts. As well, Environment Canada developed and consulted on working documents outlining requirements to carry out pollution prevention planning for acrylonitrile and dichloromethane.

### Accomplishments

The major accomplishment in 2001–2002 was the incorporation of EEM into the new MMER under the *Fisheries Act*. The EEM requirements are based on consensus recommendations from the multi-stakeholder Metal Mining EEM Working Group, which included strong industry representation.

### Impacts and Benefits

One of the immediate benefits of EEM is improved environmental monitoring and reporting. The Framework requires EEM studies every three years, and, after a number of cycles, this data will provide quantitative and qualitative answers to questions around the response of organisms and populations to the presence of effluents in the receiving aquatic environment. Data generated by EEM will contribute to our understanding of the health of aquatic ecosystems.

EEM data let us know how well the regulations are protecting the environment. Information from EEM may then be used to assess the adequacy of regulations to ensure the proper management, conservation and protection of aquatic environments.

## Metal Mining Effluent Regulations (MMER)

The new MMER which will be fully in force in December 2002, replace the 1977 Metal Mining Liquid Effluent Regulations. The MMER which were developed after extensive consultation over a six-year period, are among the most comprehensive and stringent national standards for mining effluents in the world.

The new Regulations have more exacting requirements than the previous regulations and apply to all Canadian metal mines (approximately 100) operating in seven provinces and three territories. The Regulations also introduce:

- more comprehensive and stringent effluent quality standards based on best available technologies economically achievable (BATEA);
- a prohibition of the discharge of effluent that is acutely lethal to rainbow trout; and
- a requirement for all mines to conduct a comprehensive EEM program.

The Regulations will require new investment in environmental protection technology. By bringing all mining operations up to the same standards, the Regulations will level the playing field for industry members in terms of expected environmental performance. Implementation of BATEA will increase containment and decrease discharges of pollutants, decrease toxicity of effluents, increase monitoring and reporting, enhance protection of aquatic environments and demonstrate world leadership in mining environmental practices and technologies.

### Next Steps/Future Challenges

Currently, EEM is limited to assessing changes in aquatic environments. In the future, it is possible that the Framework could be expanded to address biodiversity and air quality issues.

Lessons learned from EEM in the pulp and paper and metal mining sectors will be used to refine individual EEM plans, improve sampling protocols and, if necessary, improve regulations for these two sectors. EEM results will show if better protection of fish, fish habitat and fisheries on a site-specific basis is required.

EEM tools and concepts will be applied to other areas as appropriate. To date, there has been consideration given to the application of EEM to municipal wastewater discharges.

- ■ ■ For more information on EEM, visit: [www.ec.gc.ca/eem/english/default.cfm](http://www.ec.gc.ca/eem/english/default.cfm)
- ■ ■ For more detail on the new MMER, visit: [www.ec.gc.ca/press/2002/020619\\_n\\_e.htm](http://www.ec.gc.ca/press/2002/020619_n_e.htm)

## 3.2 Nature Business Line

Environment Canada acts to conserve the biodiversity and the health of ecosystems by building shared sustainability strategies for Canada's wildlife and ecosystems, contributing to the scientific understanding of ecosystems and developing partnerships to improve the health of nationally significant ecosystems. Within this business line, Environment Canada discharges federal responsibilities for managing migratory birds, species at risk, freshwater and wetland resources and also develops the S&T policies and practices used throughout the Department.

Environment Canada, through the Nature business line, aims to achieve, in partnership with others, the following three long-term key results:

- conservation of biological diversity;
- understanding and reduction of human impacts on the health of ecosystems; and
- conservation and restoration of priority ecosystems.

### Nature

#### 2001-2002 (Including responsible revenues)

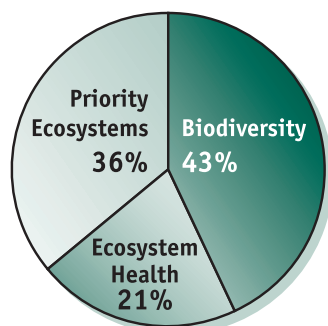
Conservation of biological diversity	\$77.3
	\$80.8
	<b>\$79.1</b>
Understanding and reduction of human impacts on the health of ecosystems	\$43.2
	\$41.4
	<b>\$39.0</b>
Conservation and restoration of priority ecosystems	\$64.5
	\$68.2
	<b>\$66.2</b>
<b>Total for the Nature Business Line</b>	\$185.0
	\$190.3
	<b>\$184.3</b>

Planned Spending

Total Authorities

**Actual Spending**

### Actual Spending



## 3.2.1 Long-term Key Result: Biological Diversity

### Conservation of biological diversity

Human-induced pressures on biodiversity continue to result in significant declines in many species of animals and plants, in certain cases pushing them to the edge of extinction. At the other end of the spectrum, some human activities that upset ecological balances have led to burgeoning populations of some species now considered overabundant, again presenting conservation challenges. Urbanization, agricultural intensification, forest harvesting and other resource extraction industries are increasingly leading to habitat loss and fragmentation, a concern that is further compounded by the long-term effects of acid precipitation, widespread and expanding use of pesticides and other toxic chemicals, and the threat of global climate change. Traditional uses of wildlife, such as tourism and hunting for food, add to the impacts of human activities on our wildlife populations, and increased international human movement and trade have led to new threats from introduced disease and invasive alien species.

### Performance Framework

The “biological diversity” long-term result is divided into four areas of focus. The following table aligns the four areas of focus with the high-level strategies, long-term indicators and targets, and commitments for 2001–2002 that form Environment Canada's response to the long-term key result for the planning period.

## NATURE BUSINESS LINE

Long-term key result: Conservation of biological diversity

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #1: Species at risk – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Continue to implement the National Strategy for the Protection of Species at Risk.</li> <li>Continue to address new challenges such as the incorporation of traditional knowledge in the assessment process of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).</li> <li>Implement a revised National Recovery Process for species at risk and link recovery-related tracking to the Habitat Stewardship Program.</li> <li>Contribute to the development of an Aboriginal engagement strategy.</li> <li>Continue to use stakeholder consultations and participation as a way to achieve the desired results.</li> </ul>	<p><b>Indicator:</b> Change in species status over time.</p> <p><b>Indicator:</b> Recovery trends for species at risk, percentage of threatened and endangered species of migratory birds with stable or increasing populations.</p> <p><b>Target:</b> Threatened or endangered species populations under federal jurisdiction meet the objectives of recovery strategies and action plans within 15 years.</p> <p><b>Target:</b> No species of special concern under federal jurisdiction is listed as threatened or endangered.</p> <p><b>Target:</b> Species at risk are protected through continuing implementation of the Accord for the Protection of Species at Risk in Canada by all jurisdictions.</p>	<p>✓ <b>National Strategy for the Protection of Species at Risk</b></p> <ul style="list-style-type: none"> <li>Guide the Species at Risk Act through the House of Commons and develop an initial set of regulations by 2001–2002.</li> <li>Develop pilot bilateral agreements with Ontario, British Columbia and the Yukon under the Accord for the Protection of Species at Risk by 2001–2002.</li> <li>Complete bilateral agreements/arrangements with the provinces and territories by 2002–2003.</li> <li>Complete science assessments of status of listed species at risk by 2001–2002.</li> </ul>
<b>Area of Focus #2: Habitat – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Develop an Environment Canada protected areas strategy and assist in developing a federal protected areas strategy.</li> <li>Develop a Canada-wide Stewardship Action.</li> <li>Continue to promote the stewardship approach in all new and renewed conservation initiatives.</li> <li>Contribute to the development of an Aboriginal engagement strategy.</li> <li>Continue to use stakeholder consultations and participation as a way to achieve the desired results.</li> </ul>	<p><b>Indicator:</b> Trends in area of wildlife habitat conserved, protected and rehabilitated under direct Environment Canada actions.</p> <p><b>Indicator:</b> Trends in area of wildlife habitat conserved, protected and rehabilitated through stewardship, conservation land agreements, ecological gifts, etc.</p> <p><b>Target:</b> Habitats are conserved, protected and rehabilitated to meet the objectives of the Canadian Wildlife Service's (CWS) conservation plans for migratory birds and species at risk within 15 years.*</p> <p><b>Target:</b> Use ecosystem approach principles when making resource management decisions.*</p>	<p>✓ <b>Environmental Stewardship</b></p> <ul style="list-style-type: none"> <li>Develop a federal protected areas strategy in cooperation with other government departments by 2001–2002.</li> <li>Implement the Ecological Gifts (Ecogifts) Program and ensure its smooth operation.</li> <li>Implement the Habitat Stewardship Program through regional partnerships with provinces and territories, NGOs, resource industries and other stakeholders during 2001–2002 to 2003–2004.</li> </ul>
<b>Area of Focus #3: Migratory Birds – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Implement the North American Bird Conservation Initiative (NABCI).</li> <li>Continue to foster existing and develop new science partnerships with universities and other federal departments.</li> <li>Contribute to the development of an Aboriginal engagement strategy.</li> <li>Continue to foster international cooperation through our work on various international agreements, conventions and strategies.</li> <li>Continue to use stakeholder consultations and participation as a way to achieve the desired results.</li> </ul>	<p><b>Indicator:</b> Population trends of migratory bird species.</p> <p><b>Target:</b> Migratory bird populations are sustained at healthy levels by the year 2020 and ensure access to migratory birds in a fair and equitable manner.*</p>	<p>✓ <b>North American Bird Conservation Initiative</b></p> <ul style="list-style-type: none"> <li>Continue to develop the NABCI by putting in place a partnership implementation structure by 2001–2002 and by reaching agreement with partners on bird conservation plans and priorities by 2002–2003.</li> <li>Increase involvement of Aboriginal peoples in migratory bird management and other conservation issues by establishing co-management processes and structures through negotiation with Aboriginal peoples and amending <i>Migratory Bird Regulations</i> as needed.</li> </ul>

**Area of Focus #4: Broader Conservation Agenda – not reported on this planning period**

<ul style="list-style-type: none"> <li>Ongoing and enhanced partnerships with provinces/territories, NGOs and our international partners are critical to the delivery of results under this broader agenda.</li> </ul>	<p><b>Target:</b> Facilitate the development of a broader conservation agenda.</p>	<p><b>Canadian Biodiversity Strategy</b></p> <ul style="list-style-type: none"> <li>Develop and influence a shared agenda among Canadian and international partners to conserve biodiversity in general.             <ul style="list-style-type: none"> <li>Facilitate a federal-provincial-territorial consensus on national implementation priorities under the Canadian Biodiversity Strategy and agreement on how to address each in 2001–2002.</li> <li>Facilitate the implementation of the Canadian Biodiversity Strategy by all stakeholders.</li> </ul> </li> <li>Contribute to the development of a Canada-wide strategy for alien invasive species.</li> <li>Coordinate Canada's contribution to international forums and facilitate domestic response to domestic commitments.</li> </ul>
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**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy Target or Initiative.

## Area of Focus #1 – Species at Risk

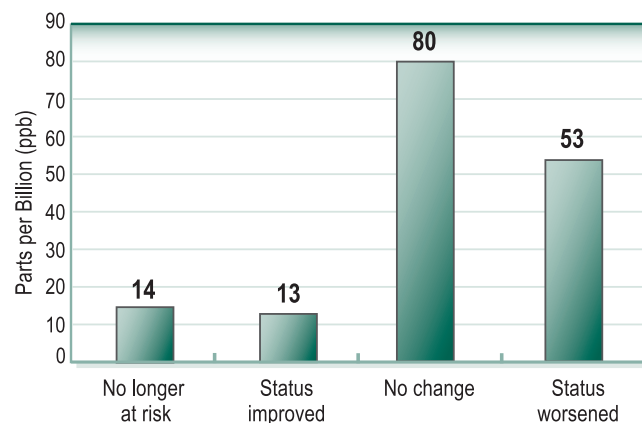
### What is the issue?

Wildlife populations and their habitats have been disappearing rapidly due to extensive human activities that have resulted in deforestation, the spread of non-native species, the loss of wetlands, and air and water pollution. The world's plants, animals and other organisms all play a key role in maintaining the Earth's atmosphere, climate, landscapes and water in a way that will allow for our continued economic sustainability. Loss of species impairs the Earth's ability to provide those services on which people and economic prosperity depend. Many Canadians regard biodiversity as intrinsically valuable.

Only a small fraction of Canada's approximately 71,000 known species have been studied in depth, and new species are still being discovered. For example, in the early 1990s, as many as 60 new insect species were identified in the canopies of old-growth forests in the Carmanah Valley and South Moresby on the west coast.

COSEWIC has been identifying and monitoring Canadian Species at risk since it was established in 1978. As of May 2002, 402 Canadian species were listed at risk of imminent or eventual extinction (i.e., endangered, threatened or of special concern). COSEWIC reassesses the status of many species on the list to determine trends. During the period 1985–2001, the status of most reassessed species (162 species) either remained unchanged or deteriorated. The places in Canada with the most endangered species are those where humans have had the greatest impact on the environment.

**Change in Status of Reassessed Species at Risk, 1985-2002 (Number of Species Reassessed)**



Data source: Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Adapted by: National Indicators and Assessment Office, Environment Canada.

### What are we doing about it?

In April 2000, the Minister of the Environment announced the National Strategy for the Protection of Species at Risk strategy for species at risk. The approach involves three main pillars: the 1996 Accord for the Protection of Species at Risk under the direction of the Canadian Endangered Species Conservation Council (CESCC), the proposed *Species at Risk Act* and the Habitat Stewardship Program for Species at Risk (HSP). Budget 2000 provided for the national strategy through a Government of Canada commitment of \$90 million over three years and stabilized funding of \$45 million in subsequent years for the protection of species at risk.

## Prairie Conservation

Focusing on the Missouri Coteau, and Frenchman and Missouri river watersheds of Saskatchewan as major landscape initiatives, the Habitat Stewardship Program for Species at Risk (HSP) has addressed various conservation issues. With emphasis on reconnecting tracts of natural prairie, considerable success has been achieved by securing lands for the purpose of sustaining natural prairie ecosystems. Within these HSP projects, 76,551 acres were secured by permanent conservation easements, land gifts in fee-simple, or in voluntary stewardship agreements. Many of the latter are specifically associated with Burrowing Owl conservation. With the inclusion of habitat enhancement work to convert cropland to permanent pasture and to develop rotational grazing systems, the total area managed as potential Burrowing Owl habitat rises to approximately 82,162 acres.

The proposed Canadian *Species at Risk Act* aims to protect wildlife at risk, with the objective of helping their numbers recover. It will cover all species listed under the Act as extirpated, endangered and threatened, as well as their critical habitats. The proposed Act fulfills the Government of Canada's commitments domestically under the Accord for the Protection of Species at Risk and internationally under the Convention on Biological Diversity. It is legislation that emphasizes conservation actions, incentives and stewardship, all backed by provisions for protecting critical habitat.

Under the Accord for the Protection of Species at Risk, the National Recovery Program has been strengthened and the level of cooperation between the federal government and the provinces and territories improved. The CESCC released two documents under the Accord in 2001: the 11<sup>th</sup> annual report of the national recovery program, Recovery of Nationally Endangered Wildlife (RENEW), and the first report on the General Status of Wild Species in Canada, a collaborative overview of the condition of Canada's wild flora and fauna.



### National Strategy for the Protection of Species at Risk: Sydenham River Multi-Species Recovery Strategy

The Sydenham River in southwestern Ontario supports an astonishing diversity of aquatic species, including at least 34 species of mussels and 80 species of fish. Many species are rare. In fact, 14 species have been listed as at risk by COSEWIC. A recovery team was formed in 1999 to develop a strategy to help recover "species at risk" in the Sydenham River. A key goal of the recovery strategy is to sustain and enhance the native aquatic communities of the Sydenham River through a comprehensive ecosystem approach that focuses on addressing all species at risk in a single strategy.

As the Province of Ontario is legally responsible for the species involved in this effort, the Ontario Ministry of Natural Resources plays the key leadership role. Federally, Fisheries and Oceans Canada is extensively involved in recovery efforts due to jurisdictional responsibility for fish habitat. While Environment Canada has no legal mandate in this area, due to expertise in many aspects of this initiative, departmental personnel have been invited to participate in recovery efforts over the past few years in three ways:

- participating in development of a model multi-species recovery plan;
- providing professional expertise in freshwater mussels and in water quality (through NWRI); and
- funding contributions to stewardship and research — projects with landowners through the federal Habitat Stewardship Program and the Environment Canada/World Wildlife Fund Endangered Species Recovery Fund.

## Sydenham River Recovery Strategy

The first part of this strategy relates to goals and approaches for overall ecosystem recovery, the second, to goals and approaches for three organism groups (fish, mussels and a turtle). Third, species-specific information summaries are included for each of the species at risk. Overall approaches towards achieving objectives are organized into categories corresponding to the four Recovery Action Groups implementing the strategy:

**Management:** Ten approaches to provide habitat protection through habitat identification and mapping and the transfer of this information to planning agencies.

**Habitat Improvement:** Twelve approaches to improve habitat in rural areas through incentive-based programs and demonstration projects.

**Research and Monitoring:** Ten approaches to track changes in the ecosystem and address important research questions.

**Community Awareness and Outreach:** Three approaches to increase awareness of initiatives.

The approach being used is serving as a model for other recovery teams. It should be noted that all activities are supported by the Habitat Stewardship Program.



### Accomplishments

A Sydenham River Recovery Strategy has been drafted. Recovery Action Groups have been formed and the development of action plans is under way. The multi-disciplinary nature of the recovery team ensures participation of a broad range of species and habitat experts, regional planners and stakeholders. Efforts to engage landowners through federal and provincial initiatives, especially through the Habitat Stewardship Program have proven very successful.



## Impacts and Benefits

Successful implementation of the recovery approaches contained in the Sydenham River Recovery Strategy will result in improved water quality and a healthy ecosystem for all native species that are present in the Sydenham River. The ecosystem approach will benefit several species at risk as well as other native species in the Sydenham River watershed. Multi-species or other higher-scale recovery approaches promote: efficient consultations; coordination of effort; reduced conflicts between listed species; and benefits to other species not at risk.



## Next Steps/Future Challenges

Multi-species recovery planning is a complex, time-consuming and expensive undertaking but leads to effective and long-term solutions that protect and recover species at risk. Development and implementation of successful action plans can only take place with the full involvement and support from landowners and other stakeholders. Partnerships, awareness and stewardship are fundamental components of the recovery strategy and will continue to play a major role throughout implementation.

The recovery team recognizes the importance of integrating recovery planning with other conservation efforts under way in the Sydenham River area, in order to avoid duplication of effort and conflicts between the needs of different species or land users.

■ ■ ■ For more information on Sydenham River Recovery Strategy, visit: [www.sydenhamriver.on.ca/](http://www.sydenhamriver.on.ca/)

## Area of Focus #2/3 – Habitat/Migratory Birds

### What is the issue?

Across Canada, many natural areas are rapidly disappearing, along with critical habitat for the many plant and animal species that they support. Losses of habitat are clustered largely in southern Canada, because pressure for development is the highest there. Protected areas help conserve natural ecosystems, maintain biodiversity and provide ways to understand ecosystems. They can also provide a source of individuals for reintroduction to restored areas. Protected areas include nature reserves, designated wilderness areas, national parks, national wildlife areas, habitat/species management areas such as migratory bird sanctuaries, and other conservation areas. Landowners are encouraged through stewardship initiatives to protect habitat essential for species at risk along with other species.

From 1990 to 2001, the total areas under protection in Canada increased from approximately 4.45 percent to 6.6 percent of total land, an increase of nearly 20 million hectares. Despite these increases, protected spaces in Canada still falls short of the objectives in 1992, when the federal government joined the provinces and territories in endorsing a statement of commitment to complete Canada's network of protected areas.

### What are we doing about it?

Environment Canada is viewed as the lead agency responsible for the management of transboundary migratory wildlife. It plays a direct role in the recovery of species at risk and habitats and the conservation and protection of existing wildlife populations through the management of national wildlife areas, migratory bird sanctuaries and marine protected areas. The Department also influences action on federal lands and facilitates land stewardship through initiatives such as the HSP, the North American Waterfowl Management Plan (NAWMP), ecological land donations (Ecogifts) and Ramsar designations (wetlands of international importance).

## Ongoing Environment Canada Stewardship Initiatives

For the last several years, Environment Canada has helped to facilitate significant on-the-ground stewardship activities through three programs – the Habitat Stewardship Program (HSP), the Ecological Gifts Program and the North American Waterfowl Management Plan (NAWMP). For an EC investment in all three programs of \$18M annually, there has been over \$100M spent on habitat stewardship activities last year alone.

- 1. HSP:** Designed for species listed as “at risk,” the HSP directs funds where they are most needed – into the hands of people who work on the lands and in the waters of Canada and who care about its natural legacy. The HSP was significantly expanded in 2001–2002 to \$10 million in federal funding for more than 150 projects across Canada in that year alone. In addition, over \$20 million for an overall ratio of 1:2.08 was raised in matching funds from partners. This initiative assists Environment Canada in efforts to target gaps in traditional wildlife program funding by providing funds for species and habitat on private lands.
- 2. Ecological Gifts Program:** The protection of Canada's environmental heritage is a critical component of the federal approach to conservation. Since 1995, landowners across Canada have been able to receive tax assistance for protecting ecologically sensitive lands through the giving of Ecogifts. Ecogifts are gifts of the title to a property, or of the value of a conservation “easement,” “covenant” or “servitude” attached to a title. For spending \$2.4 million in 2001–2002, a total of \$13 M was received in donations during the last fiscal year. New, significantly improved income tax rules covering Ecogifts were put into place during 2001–2002.
- 3. NAWMP:** NAWMP is an international action plan to conserve waterfowl throughout the continent. The Plan's goal is to return waterfowl populations to their 1970s levels. NAWMP projects contribute to the protection of habitat and wildlife species across North America. Annual departmental spending of \$6.5 million is matched with funding from provinces and territories, organizations in the United States and NGOs.



## Stewardship For Conservation and Sustainable Use: Establishing Canada's Stewardship Agenda

Stewardship is about individuals and organizations from across Canadian society doing the right thing for the environment for natural resources and land and waters, and taking responsibility for the health of Canada's natural legacy. In many forums in recent years, provinces, territories and the federal government have committed to supporting and encouraging stewardship as a key conservation tool across Canada. Today, there is a new thrust on the stewardship front in Canada — the development of Canada's Stewardship Agenda.

The Department has acted as the facilitator for this Agenda, which will serve to support stewardship across the country. Canada's Stewardship Agenda will provide the framework upon which future priorities will be based in areas such as education, web portal development, a national network, recognition, the use of economic incentives and policy development and a proposed national stewardship charter.

### Funding to Protect Wildlife in South Okanagan – Similkameen, British Columbia

In January 2001, Minister Anderson announced that the Government of Canada, under the HSP, has allocated \$664,000 toward 11 stewardship projects in the South Okanagan – Similkameen area, recognized as one of the nation's three most endangered natural systems. The projects focus on habitat restoration, wetland and grassland stewardship, landowner education and continued work with First Nations communities to address issues related to First Nations lands, where a large portion of the habitat for species at risk in the South Okanagan – Similkameen occurs. These partnership-based projects will help to secure more sustainable land use in the region and improve the survival prospects of identified species at risk.

### Accomplishments

In September 2001, Wildlife Ministers committed to the development of a stewardship strategy for Canada. During 2001–2002, this strategy was prepared in the form of Canada's Stewardship Agenda. The Agenda provides a flexible plan to advance stewardship across Canada by fostering continued collaboration among jurisdictions and the voluntary sector. The Agenda was developed with extensive involvement of conservation and resource sector interests during 2001–2002 through national consultations under the Voluntary Sector Initiative organized by Wildlife Habitat Canada. An intergovernmental working group,

chaired by Environment Canada and consisting of provincial and territorial jurisdictions, Environment Canada, Fisheries and Oceans Canada, the Parks Canada Agency and other federal departments prepared the Agenda. The finalized Agenda will be presented at a Joint Ministerial Council meeting in September 2002.

The Agenda proposes a national vision for stewardship and a set of operating principles. The Agenda outlines four key goals, objectives for each goal and a set of four priority actions that recognize and empower stewards. Priority action areas include establishing a network of stewards across Canada; improving coordination among stewardship programs and efforts; and supporting the capacity of individual stewards to deliver conservation activities. Through a national web portal and a proposed National Stewardship Charter, the Agenda draws on collective experience, complements investments in stewardship programs and fosters actions to conserve and promote wise use of natural resources. It is intended to establish a broad, long-term course of action, foster collaborative actions and identify priorities for future investment in stewardship.

### Impacts and Benefits

Canada's Stewardship Agenda is a means to promote increased cooperation among Canadians and enhanced capacity for Canadians to further engage in the conservation of our natural heritage. The Agenda draws on the collective experience of communities, organizations, Aboriginal peoples, the private sector and individuals and complements existing investments in stewardship programs. By establishing a broad long-term course of action, the Agenda will help guide future investment in stewardship.

### Ontario Ecogifts Program

Under the Ontario Region Ecogifts Program, 52 new Ecogift files were started in 2001–2002, bringing the total files by December 31, 2001, to 91 completed gifts covering 4,326 hectares and worth approximately \$16 million. The Great Lakes Sustainability Fund (GLSF) also supported habitat rehabilitation and rural stewardship projects in Areas of Concern in the Great Lakes basin, with the objective of delisting fish and wildlife-related beneficial use impairments. The GLSF funded 55 projects in 2001–2002, worth an estimated \$2.8 million.

### Next Steps/Future Challenges

Plans are in place for Resource Ministers to approve Canada's Stewardship Agenda in September 2002. Detailed implementation planning will follow later in 2002–2003. This Agenda delivers national commitments in a Stewardship action plan under the National Accord



and the Canadian Biodiversity Strategy. The Agenda will also support delivery of a stewardship strategy under the proposed *Species at Risk Act* (SARA).



### **North American Bird Conservation Initiative (NABCI): Setting the Foundation for Migratory Bird Conservation in North America**

Canada has a legal mandate to protect migratory birds and the federal government has played a leadership role within a broad partnership of organizations in the conservation of these species. In recent years, the growing realization of widespread declines in populations of many species of migratory birds throughout North America has made a strong federal presence in this issue mandatory. Conserving populations of migratory birds helps maintain the ecosystems and ecological functions of which they are an integral part and is accomplished most effectively before these species become critically at risk. The challenge of addressing this critical issue within Canada is being tackled through intensified efforts on the part of Environment Canada working with Canadian and international partners. Through such efforts, the foundation has been laid for the development of a comprehensive, innovative Migratory Birds Program Strategy for Canada.



### **Accomplishments**

As many migratory birds found in Canada spend a great deal of time in the United States and/or Mexico, this strategy must be based on cooperation among jurisdictions working together in strong, long-term partnership arrangements. Also, partnerships among provinces and territories, as well as with a number of industries and NGOs in all three countries, must be developed and fostered over time.

### **Sea Ducks and Aquaculture: Baynes Sound Scoters Studied**

Regional CWS officials, in collaboration with Simon Fraser University and the U.S. Fish and Wildlife and Geological Services of Alaska, have started a field study into the winter ecology of sea ducks (Surf Scoter and White-winged Scoter) in the Baynes Sound area, Vancouver Island. The sea ducks are being monitored to understand aspects of their foraging behaviour and how they use the available habitat in Baynes Sound. Study results will help CWS advise where scoter habitat should be protected and will also be used to evaluate conservation actions and provide recommendations for sustainable levels of shellfish aquaculture. The research is a component of a larger three-year project investigating interactions between sea ducks and aquaculture in British Columbia and is a good example of international cooperation on shared avian populations.

In light of the recognized need for continental partnership for bird conservation, NABCI was established as a framework to build critical linkages. Today, NABCI exists internationally, among Canada, the United States and Mexico. CWS is playing a leadership role in the NABCI forum as the coordinator of multi-partner strategies. During 2001–2002, all Canadian provinces agreed to become members of NABCI, as did a significant number of new resource sector organizations.

A NABCI Canada Council, chaired by the Assistant Deputy Minister (ADM), Environmental Conservation Service, with representatives from all provinces and territories, some industrial sectors, bird conservation groups and NGOs such as Bird Studies Canada and Ducks Unlimited, was set up in 2001–2002. The first science-oriented session was held to explore the full range of issues affecting migratory birds. As part of NABCI Canada, specific targets for all Canadian populations of migratory birds will be established.

The new Migratory Birds Program Strategy for Environment Canada is being developed by CWS within the context of NABCI. This strategy covers population monitoring, habitat monitoring and modelling, research and data management.

Data on populations of migratory birds found in the 1970s will serve as the benchmark against which progress will be measured over time. When complete, the strategy will include priorities and actions for the four groups of migratory birds (landbirds, shorebirds, waterfowl and waterbirds). The national plan for each of these four types of birds will cover national as well as regional priorities for each type.



### **Impacts and Benefits**

Today, many species of birds are experiencing population declines of a magnitude and duration that warrant immediate action. The NABCI and the Migratory Birds Program Strategy represent the breadth of the CWS commitment to bird conservation. With these new initiatives in place, CWS will maximize the efficiency and effectiveness of the Migratory Birds Program, engage in partnership arrangements in a strategic manner and be positioned to attract new partnerships and resources for migratory bird conservation.

### **Piping Plovers**

The International Piping Plover Census, conducted every five years, showed an increase in Piping Plovers recorded in Eastern Canada between the 1996 and 2001 surveys, but population levels still remain lower than the 1991 census. Factors that have led to stabilization in population numbers include guardian programs, public education and increased use of conservation techniques such as symbolic fencing and enclosures.

## Next Steps/Future Challenges

Migratory bird conservation is a long-term commitment of the Canadian federal government. The CWS will use this new strategy as a framework for developing priorities, managing the existing program and acquiring additional resources to meet new program requirements. Periodic reassessment of the delivery of Canada's bird conservation program will continue as the new strategy is implemented.

### Greenland Eider Ducks

Cooperative Canada–Greenland monitoring and modelling — using satellite telemetry, aerial surveys, harvest surveys and banding — have shown that most eiders breed in the eastern Canadian Arctic winter in Greenland and that current levels of harvest in Greenland are detrimental to the long-term stability of the Arctic Canada eider population. In response to the results of the monitoring, Greenlandic authorities have proposed reducing the length of their eider hunting season.

## 3.2.2 Long-term Key Result: Health of Ecosystems

*Understanding and reduction of human impacts on the health of ecosystems*

The ability to secure a clean and healthy environment for Canadians is dependent upon our capacity to understand how our ecosystems are affected by human-induced stressors and to transfer that knowledge to Canadians and the global community so that it can be incorporated into decision-making. An understanding of the ecosystem structure, processes and functions, as well as of the effects of economic activities, including land-use changes, inputs, products, wastes generated and resource stocks and flows across all sectors, is a critical requirement for an effective ecosystem-based management approach and of fundamental importance to sound decision-making.

### Performance Framework

The “health of ecosystems” long-term key result is supported by four areas of focus. The following table shows those areas of focus with the high-level strategies, long-term indicators and targets, and commitments for 2001–2002 that form Environment Canada's response to the long-term key result for the planning period.

## NATURE BUSINESS LINE (Continued)

*Long-term key result: Understanding and reduction of human impacts on the health of ecosystems*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #5: Provide timely information and advice to Canadians – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Environmental monitoring to describe ecosystem status and trends and provide early detection of ecosystem changes.</li> <li>Communication of status and trends of ecosystem health.</li> <li>Enhance existing partnerships and building new ones.</li> </ul>	<p><b>Indicator:</b> Effective monitoring and reporting systems in place.</p> <p><b>Target:</b> Under development.</p>	<p>✓ <b>Ecosystem Status and Trends Monitoring</b></p> <ul style="list-style-type: none"> <li>Establish a status and trends monitoring system to detect changes in our ecosystems and report issues of environmental concern to Canadians in 2001–2002.</li> <li>Develop and implement an Environment Canada monitoring strategy by 2001–2002.*</li> <li>Produce environmental indicator bulletins along with status and trends reports during 2001–2002 to 2003–2004.</li> </ul>
<b>Area of Focus #6: Advance science understanding – not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Enhance partnerships on existing issues and build new partnerships on emerging ones.</li> <li>Integrated science assessments to create, review, interpret and synthesize knowledge on critical and emerging environmental issues.</li> <li>Communicate new scientific knowledge.</li> </ul>	<p><b>Indicator:</b> Evidence of new tools to advance scientific understanding.*</p> <p><b>Target:</b> Under development.</p>	<p><b>S&amp;T Partnerships on Issues</b></p> <ul style="list-style-type: none"> <li>Explore, together with the environmental science community and others, ways of enhancing the effectiveness and efficiency of science research through networking and partnership opportunities; prepare an interim report for the Environment Canada Science and Technology Advisory Board by the end of 2001, and issue a final report by end of 2002.*</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
		<b>New Knowledge</b> <ul style="list-style-type: none"> <li>Enhance scientific research by significantly strengthening the role of the NWRI.</li> <li>Develop new knowledge on research issues identified in the Nature Research Agenda during 2001–2002 to 2003–2004*               <ul style="list-style-type: none"> <li>Develop a research strategy to address the effects of genetically modified organisms on ecosystems in 2001–2002.</li> </ul> </li> <li>Publish eight science assessments.</li> </ul>
<b>Area of Focus #7: Contribute science-based advice and solutions – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Development of science-based solutions including the development of science-based benchmarks and tools to assess and measure the state of ecosystem health and advice on management actions.</li> </ul>	<b>Indicator and Target:</b> Under development.	<b>✓ Environmental Quality Standards</b> <ul style="list-style-type: none"> <li>Develop stronger national guidelines for water quality.</li> </ul>
<b>Area of Focus #8: S&amp;T Capacity - not reported in detail on this planning period</b>		
<ul style="list-style-type: none"> <li>Enhanced partnerships to advance excellence in science.</li> </ul>	<b>Indicator and Target:</b> Under development.	<b>S&amp;T Capacity and Infrastructure</b> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>

**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy Target or Initiative

## ***Area of Focus #5 – Provide Timely Information and Advice to Canadians***

### ***What is the issue?***

Conducting ecosystem monitoring and assessments to identify and report what is happening in Canadian ecosystems is the first critical step to conserving and protecting the health of Canada's ecosystems. Environmental monitoring is a cornerstone in detecting and tracking ecosystem changes. Monitoring should provide both comprehensive information on ecosystem status and trends and early detection of ecosystem change as a basis for preventive actions, including appropriate research. It is equally important that monitoring be based on consistent, meaningful and ecologically relevant indicators of this change so that results can be interpreted, compared and communicated in terms of their significance to ecosystem health. To be achievable at the national level, monitoring design must also provide opportunities for effective partnerships, from other federal departments to the general public. Innovative research on new and emerging stressors and the evaluation of the efficacy of existing policies and management actions provide critical early detection of potential change and also enable the design of relevant ecosystem indicators for monitoring.

Finally, effective interpretation and reporting of information are needed to communicate significant ecosystem changes and to influence timely and appropriate response to this change.

### ***What are we doing about it?***

Environment Canada's efforts are focused on designing and implementing a system for assessing and reporting ecosystem status and trends that tracks, measures and describes ecosystem response to environmental stressors and provides early detection of significant new stressors. The Department fosters innovative research and enhances predictive capacity in detecting new, emerging (e.g., endocrine disrupting substances) or poorly understood stressors (e.g., in-use pesticides; cumulative stresses). Environment Canada is also producing the Ecosystem Status and Trends Series, which includes Early Detection Advisories of Ecosystem Change on key environmental issues to inform and advise scientists, government and the public on ecosystem change and to raise awareness of the importance of ecosystem change. It continues partnerships within the Department, other federal departments, Canadian jurisdictions, international agencies and the public to promote effective and consistent ecosystem and cumulative effects monitoring, to gain efficiencies and to facilitate the sharing of information and exchange of ideas and expertise.



## Ecosystem Status and Trends Reporting: Development of a New Ecosystem Status and Trends Highlights Report

A challenge faced by Environment Canada over the past years has been in determining how best to deliver scientific information to decision-makers and the public quickly and effectively. Doing so means that decisions can be informed and behaviours can be influenced towards environmentally responsible choices. In 2002, the Department launched a new mechanism to broadly disseminate current monitoring and research findings to decision-makers and the public in a timely manner on important, emerging ecosystem issues. These new Ecosystem Status and Trends (ES&T) Highlights Reports are being developed as web-based products found on the State of the Environment (SOE) Infobase.

### What Is an ES&T Highlights Report?

Each ES&T Highlights Report contains a succinct summary of observed status and trends for specific ecosystem components; a brief overview of the significance of the observations; and discussion, where appropriate, of implications for further monitoring and research programs. ES&T Highlights Reports are 2 to 4 pages in length and are written in non-technical language. A focus on charts, illustrations and photos ensures that information is reader-friendly and easy to absorb. For users wishing further details, direct links are provided to supporting reports and databases.



### Accomplishments

Environment Canada's Indicators Program has a lengthy history of providing information on environmental trends. In addition, detailed studies are conducted on an ongoing basis in the SOE Reporting Program. However, the Department recognized that there were specific gaps in the reporting of environmental information, in that scientific results on emerging issues monitored in particular sites or areas were not getting to the public in a usable way. Discussion on how best to fill this gap led to the design and implementation of an ES&T web site. The first prototype of an ES&T Highlights Report posted to this site (*Amphibians and Reptiles in Canada*) was presented to the Ecological Monitoring and Assessment Network (EMAN) National Science Conference in April 2002. Further initiatives under development include Trends in Mercury Levels in Fish; The Threat of Invasive Alien Species in Canada—Highlights; and Climate Change and Hydrology.



### Impacts and Benefits

Through ES&T Highlights Reports, scientific information on emerging issues will start to become accessible to a much larger audience, in a cost-effective manner, thereby

bringing increased public attention to specific environmental issues.

Through this vehicle, audiences that are generally not inclined to read detailed scientific papers can be reached, including program managers, policy-makers, NGOs and the educational community. The brief reports will point towards new priorities for scientific investigation as well as priorities for policy analysis. ES&T Highlights Reports will also serve as an educational tool with the potential to influence public behaviour.



### Next Steps/Future Challenges

Ultimate success of this initiative will depend on the commitment of EMAN partners as well as other parts of the departmental science community to making contributions to the ES&T site on an ongoing basis.

■ ■ ■ For more information on Ecosystem Status and Trends Reporting, visit: [www.ec.gc.ca/soer-ree](http://www.ec.gc.ca/soer-ree)

## Area of Focus #7 – Contribute Science-Based Advice and Solutions

### What is the issue?

Once we know what is happening in the environment, research is needed to understand the individual and cumulative impacts of specific stressors on the health of ecosystems—*why it is happening*. To effectively deal with change, we must understand and communicate information about the human activity causing that change and the importance of the change to the overall health of the ecosystem. Research is primarily aimed at identifying those activities having significant impacts on Canadian aquatic ecosystems, ecosystem components that are most vulnerable to impacts and opportunities to minimize these impacts. Related ecosystem research on wildlife and its habitat and atmospheric science and monitoring also support our overall understanding of the impact of human activities on ecosystem health. The study of basic ecosystem structure and function is also important in order to support ultimate understanding of ecosystem response to stress. Science assessment is the primary mechanism for delivery of scientific knowledge and information to the scientific community and policy-makers, and plays a key role in providing succinct, state-of-scientific-knowledge reviews of complex environmental issues.

### What are we doing about it?

Environment Canada is committed to generating new scientific knowledge to help us understand the impact of human activities on the health of ecosystems and to

providing timely and credible information and advice to decision-makers in Canada and abroad so they can make informed decisions.

In working with partners, the Department aims to take a leadership role in sustaining Canada's environment by:

- aligning its research, monitoring and reporting objectives and those of Canadian partners;
- tapping the expertise of partners and using that information to address domestic environmental concerns;
- transferring research and monitoring findings, knowledge, tools and technologies to partners and, where appropriate, commercializing research outputs;
- sharing resources in order to carry out research, monitoring and reporting more effectively;
- striving to maintain and strengthen Canada's involvement in international research and monitoring programs; and
- working to ensure that sound S&T are available in a usable form for environmental decision-making.



### **Environmental Quality Standards: Significant Contributions Made by the NWRI in Identifying Threats to Water Quality and Enhancing the Dialogue Between Scientists and Decision-Makers**

Canadians across the country are growing increasingly anxious about what is happening to their water supply. Some threats to water quality in Canada have been with us for some time, and some are only beginning to emerge. All will require action if the quality of Canada's water is to be protected and improved. Early in 2001, in response to growing public concern, scientists from NWRI in Environment Canada met with colleagues from other government departments and research facilities to discuss what they see as the major threats to water quality in Canada.



### **Accomplishments**

During the Threats to Water Quality workshop, organized and led by NWRI, participants agreed on a list of 15 major issues that are posing threats to sources of drinking water and aquatic ecosystem health. Many of these issues are interconnected. After the workshop, NWRI prepared a comprehensive report, *Threats to Sources of Drinking Water and Aquatic Ecosystem Health in Canada*. This "first-step" report describes each of these issues and identifies critical questions to be answered as well as the challenges that researchers and governments will face in trying to resolve these issues. NWRI recognizes that the list of 15 probably

does not tell the whole story, and other problems might well appear in the next few years.

## **Major Issues Posing Threats to Sources of Drinking Water and Aquatic Ecosystem Health**

- Waterborne Pathogens
- Algal Toxins and Taste and Odour Problems
- Pesticides
- Persistent Organic Pollutants and Mercury
- Endocrine Disrupting Substances
- Nutrients—Nitrogen and Phosphorus
- Aquatic Acidification
- Ecosystem Effects of Genetically Modified Organisms
- Municipal Wastewater Effluents
- Industrial Point Source Discharges
- Urban Runoff
- Landfills and Waste Disposal
- Agricultural and Forestry Land Use Impacts
- Natural Sources of Trace Element Contaminants
- Impacts of Dams/Diversions and Climate Change



### **Impacts and Benefits**

Through conducting the Threats to Water Quality Workshop, NWRI was able to engage other partners in coming together to identify key challenges in each of the 15 priority areas posing threats to water.

Four major conclusions were drawn as a result of this effort:

- The quality of water resources and sources for drinking water are threatened by a wide range of contaminants.
- Key sources of the contaminants include agricultural and forestry practices, municipal wastewater effluents, industrial discharges, urban runoff, landfill and disposal sites, and natural sources.
- Emerging global trends (e.g., climate change, pollution) will increase impacts on Canada's water quality and quantity.
- Impacts on water quality are projected to increase without renewed efforts to better understand threats, monitor occurrences and trends, and adopt guidelines and practices to mitigate or eliminate problems.

Identification of the key challenges faced in the area of water quality served to set research priorities for NWRI and the Government of Canada, as well as proving useful for a wide range of other interested parties, including the CCME.

The conclusions from the workshop held in early 2001 provided the springboard for subsequent planning and implementation of workshops sponsored by the CCME on the Effects of Agricultural Activities on Water Quality, Groundwater Quality, and Water Re-use and Recycling. The key point in these workshops was to link science to policy by:

- communicating current research to policy and program managers;
- identifying research needs and research priorities; and
- suggesting a process for ongoing information sharing and communication.

### Next Steps/Future Challenges

Results from the workshops held to date provide essential information for making strategic decisions on water in the future. As well, they are guiding decisions related to expansion of NWRI.

- ■ ■ For more information on Threats to Sources of Drinking Water and Aquatic System Health in Canada, visit: [www.nwri.ca/threats/intro-e.html](http://www.nwri.ca/threats/intro-e.html)
- ■ ■ See related performance story in Section 3.2.3 (Water) – Source-to-Tap.

## 3.2.3 Long-term Key Result: Priority Ecosystems

*Conservation and restoration of priority ecosystems*

Major ecosystems are under continuous threat from a number of stressors, such as increased population, industrial activity and unsustainable land use. These activities are leading to increased air and water pollution and the disappearance of habitat required to maintain the natural balance of living things and their environment. In addition, freshwater issues have become an increasing concern to Canadians, the provinces and territories and the federal government. All provinces have taken actions to modernize their water policies, regulations and strategies to better meet their responsibilities for water management, and Environment Canada has been working to better fulfill its role in water management.

### Performance Framework

The “priority ecosystems” result is divided into two areas of focus that support the long-term key result. The following table aligns those two areas of focus, the long-term indicators and targets, and the commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## NATURE BUSINESS LINE (continued)

*Long-term key result: Conservation and restoration of priority ecosystems*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #9: Water – reported on this planning period</b>		
	<p><b>Indicator:</b> under development</p> <p><b>Target:</b> Safe and secure water for all uses.</p>	<p>✓ <b>Freshwater Management</b></p> <ul style="list-style-type: none"> <li>• Pursue, with other key departments, proposals to strengthen federal activities relating to water management.</li> <li>• Continue to work with provinces and territories to seek agreement on and develop collaborative approaches for addressing key issues of national significance related to freshwater management.</li> </ul>
<b>Area of Focus #10: Ecosystem Initiatives – reported on this planning period</b>		
	<p><b>Indicator:</b> Evidence of increased scientific understanding.</p> <p><b>Target:</b> Under development.</p>	<p>✓ <b>St. Lawrence Action Plan</b></p> <ul style="list-style-type: none"> <li>• In 2003, under St. Lawrence Action Plan, develop water-level management models and tools that integrate biological components.</li> </ul> <p><b>Northern Ecosystem Initiative</b></p> <ul style="list-style-type: none"> <li>• Under the Northern Ecosystem Initiative, undertake research on the effects of endocrine disruptors on fish resident to the Athabasca River and Smoky–Wapiti river systems and report findings in 2003.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
		<p><b>Northern Rivers Ecosystem Initiative</b></p> <ul style="list-style-type: none"> <li>By 2002, through the Northern Rivers Ecosystem Initiative, advance knowledge, tools and awareness of how northern ecosystems are affected by climate change, development activities and contaminants.</li> </ul>
	<p><b>Indicator:</b> Evidence of public awareness and capacity.</p> <p><b>Target:</b> Under the Great Lakes Program, federal actions completed in 13 Areas of Concern by 2005.</p> <p><b>Indicator:</b> Evidence of behavioural change and incremental environmental improvements.</p> <p><b>Target:</b> Under the Georgia Basin Ecosystem Initiative, reopen greater than 25% of closed shellfish harvesting areas in selected Georgia Basin communities by 2005.</p>	<p>✓ <b>Canada–Ontario Agreement</b></p> <ul style="list-style-type: none"> <li>Under the Great Lakes Program, a new Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem was signed in 2001.</li> </ul> <p><b>Atlantic Coastal Action Program</b></p> <ul style="list-style-type: none"> <li>In 2001–2002, under the Atlantic Coastal Action Program, provide funding, technical and scientific support to over 100 projects sponsored by 18 Atlantic community-based ecosystem organizations.</li> </ul>

**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year’s report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

## Area of Focus #9 – Water

### What is the issue?

Human activity affects the quality of water resources throughout the country. Threats to water quality come from municipal wastewater discharges (sewage, combined sewer overflow and stormwater runoff), effluent from septic systems, industrial effluent, waste from intensive livestock operations, agricultural runoff and the deposition of atmospheric pollution. Also, high water use results in many different impacts, such as high costs for supplying drinking water, treating wastewater and maintaining or upgrading infrastructure.

Canada is not immune to risks associated with the contamination of water. Canadians are concerned about the quality and sustainability of their water, including drinking water and source water protection. There is an increasing need to reevaluate the instruments and institutional arrangements that govern water management in Canada.

### What are we doing about it?

Through the CCME, Environment Canada is working with its provincial and territorial counterparts to ensure safe and secure water for Canadians. Ongoing and future efforts to protect water quality from source to tap include focusing on water quality research priorities, sharing best management practices, developing a water quality monitoring network, improving Internet-based information on water quality and accelerating the development of water quality guidelines.

Federally, Environment Canada focuses its efforts on working with other departments to address immediate

federal water priorities and to propose ways of enhancing collaboration with partners on water priorities of national importance. The Department continues to promote a common vision and priorities for freshwater management and to invest in opportunities to enhance overall ecosystem health through its ecosystem initiatives. Budget 2000 created the Green Municipal Funds (GMF) to support municipal investments in innovative environmental projects and green infrastructure. The Government of Canada doubled the Funds to \$250 million in Budget 2001. The \$200 million Green Municipal Investment Fund and the \$50 million Green Municipal Enabling Fund, both administered by the Federation of Canadian Municipalities, support environment projects, including projects aimed at water distribution and wastewater facilities, water conservation and storm runoff.



### Source-to-Tap: A comprehensive, Multi-Barrier Approach to Providing Safe Drinking Water to Canadians

Canadians are concerned about the quality of drinking water and are demanding action by all levels of government. The Inquiry Reports for both Walkerton and North Battleford provided recommendations for ensuring the safety of drinking water. These recommendations, which have relevance across Canada, made it clear that it is not enough to have enforceable standards for drinking water quality. Rather, they highlighted the importance of adopting a multi-barrier or “source-to-tap” approach. Protection of water quality from source to tap can be achieved only if there are close cooperation and shared

objectives among the diverse range of sectors and stakeholders that influence or are responsible for the quality of our drinking water. CCME provides an excellent venue for this outreach and is in a position to identify and promote common objectives and approaches involving collaboration of the various sectors.

## What Is a Multi-Barrier, Source-to-Tap Approach?

The multi-barrier approach broadens the traditional focus on water quality treatment by highlighting the importance of protecting the lakes, rivers and aquifers that are the sources of our drinking water, as well as ensuring effective treatment and distribution systems. The multi-barrier approach recognizes that differences exist and flexible approaches are needed: one size does not fit all — protection of source waters is particularly important for small, rural and northern communities where treatment of water is limited by cost considerations, whereas treatment may be priority in larger communities. A multi-barrier approach is the most effective means of protecting drinking water quality and is critical to the government's commitment to protect and sustain freshwater resources.

### Accomplishments

While provincial and territorial governments have the primary responsibility for managing and protecting drinking water quality, the federal government is responsible for ensuring the safety of drinking water within areas of federal jurisdiction, such as national parks and First Nations reserves, and plays a significant role in protecting water quality through research and promoting pollution prevention.

Ensuring safe drinking water for Canadians is an objective shared by all jurisdictions. Accordingly, the federal Minister of the Environment is playing a leadership role in achieving a more collaborative and coordinated approach to protecting drinking water from source to tap, both with his federal colleagues and with provinces and territories through the CCME.

In September 2001, CCME highlighted that all jurisdictions are taking comprehensive action to protect the quality of drinking water from source to tap and reaffirmed its commitment to improve collaboration on research, monitoring, guideline development and providing information to Canadians — all key components contributing to the multi-barrier approach.

While implementation of the multi-barrier approach across the country is recognized as a long-term goal, actions under the direction of CCME will provide a solid foundation on which to proceed. This includes sharing knowledge of threats to water quality and developing strategies to reduce or eliminate impacts that can be put in place by individual jurisdictions. Specifically, during 2001–2002, progress has been made in the following areas:

- **Strengthening linkages between research and decision-making**

Key to success in ensuring safe drinking water is the sharing of knowledge, experiences and best management practices among all jurisdictions. In this regard, efforts are under way to better link research and policy decisions and to provide provinces with access to federal research results and opportunities to influence the research agenda. Building on a science assessment of Threats to Sources of Drinking Water and Aquatic Ecosystem Health (see related performance story in section 3.2.2 [Contribute Science-Based Advice and Solutions]), a number of expert workshops were organized by NWRI, together with provincial co-chairs, to bring scientists and policy makers together to discuss priority water quality issues.

- **Water quality guideline development**

Guidelines are the yardsticks against which the quality and safety of drinking and source water are measured. Emphasis has been placed on accelerating guideline development to ensure that guidelines are up to date and there are no gaps, particularly for microbiological contaminants. Close collaboration between health and environment agencies has been established through linking work of the federal/provincial/territorial committee responsible for developing drinking water quality guidelines and the CCME Task Group responsible for producing ambient water quality guidelines. Together these groups have developed a document describing the multi-barrier approach.

- **Linking existing water quality monitoring networks**

Information on contaminants and trends in water quality needs to be better understood on a national basis. Current efforts are focused on better linking the many water quality monitoring networks across the country so this information can be shared and made more widely available.

- **Information for Canadians**

Canadians are demanding action and information—CCME work demonstrates to Canadians the commitment of governments to act collectively. CCME is helping Canadians understand the complexity of protecting drinking water and providing context for action undertaken collaboratively, such as research, monitoring and guidelines. A web site describing Source to Tap protection of drinking water quality and actions being taken by each jurisdiction has been added to the CCME web site.

### Impacts and Benefits

Source water protection requires broad collaboration and partnerships. Many benefits accrue from sharing knowledge and experience. With the strong support and leadership of the Minister of the Environment, CCME made the protection of drinking water quality a priority in 2001–2002.





## Next Steps/Future Challenges

A successful, long-term multi-barrier approach to the provision of safe drinking water will continue to involve coordination of all parties in Canada with roles to play in water protection and management, drinking water treatment and distribution systems. CCME's contribution will focus on describing options and tools for source water protection such that tangible results can be measured. The CCME water quality task group is looking to develop new tools that can be used by jurisdictions to protect drinking water sources, while the Drinking Water Committee of Canadian Environmental and Occupational Health Committee of Health Canada is looking to develop new tools for the treatment and distribution of drinking water. Source water protection must focus on the development and implementation of watershed management plans involving all stakeholders.

■ ■ ■ For more information on Source-to-Tap, visit:  
[www.ccme.ca/sourcetotap/](http://www.ccme.ca/sourcetotap/)

## Area of Focus #10 – Ecosystem Initiatives

### What is the issue?

Ecosystem initiatives are cooperative efforts on targeted ecosystems to address and solve complex environmental, economical and social issues as identified and agreed upon by stakeholders. Ecosystem initiatives help Canadians achieve environmental results through partnerships, pooling resources, focusing science, coordinating efforts, sharing information and experiences and generating a broad basis of support. Moreover, they help build the capacity of all the players involved to make better decisions and to effect change.

### What are we doing about it?

Environment Canada works with a broad spectrum of governments and communities of interest in pursuit of shared objectives in six ecosystem initiatives in Canada — namely, the Atlantic Coastal Action Program, the St. Lawrence Action Plan Vision 2000, the Great Lakes 2020, the Northern Rivers Ecosystem Initiative, the Fraser River Action Plan/Georgia Basin Ecosystem Initiative and the Northern Ecosystem Initiative.



## St. Lawrence Action Plan

The Phase III of St. Lawrence Action Plan (St. Lawrence Vision 2000, or SLV 2000) began in June 1998 following the signature by Environment Canada and Québec Ministry

of the Environment of a new agreement on joint action. A number of departments, organizations and agencies of the federal and Québec governments have pooled expertise, information and resources since that time to achieve significant results. The Action Plan also extends beyond governments to include many non-government partners. The budget for SLV 2000 is \$239 million. Phases I and II of the Action Plan gave priority to urgent interventions such as reducing discharges of toxic liquid effluents from the industrial sector and protecting wildlife habitats and species of concern. The Action Plan is currently in its third successive phase of activity. This third phase, ending on March 31, 2003, aims at three main objectives — namely, to protect the health of citizens, to protect the ecosystems and to promote community involvement in improving access to the St. Lawrence River.



## Accomplishments

The overall goal of SLV 2000 is to ensure sustainable development of the St. Lawrence ecosystem. It includes six components: agriculture, biodiversity, industrial and urban, human health, community involvement and navigation. SLV 2000 also has a management system, accessible to partners via the Internet, to track the achievement of results. Accomplishments of note in each component for the 2001–2002 fiscal year, which involved a substantial contribution by Environment Canada, are highlighted below:

### Accomplishments of Note for 2001–2002

**Agriculture:** To contribute to a 50% reduction in the use of pesticides, work continued in four key program areas in 2001–2002. A key success is found in the workshops offered to farmers to assist with practical pollution prevention measures for reducing the use of pesticides. Over 700 participants participated in these workshops, where, on farm locations, they learned how to make use of innovative techniques and machinery that would serve to reduce pesticide use. Environment Canada conducted a research project on the optimal use of pesticides for various weather conditions. Significant expenditures were made in providing financial support to farmers for building storage facilities for manure (as a result of erecting these facilities, 771 farms have conformed to regulations by 2001).

**Biodiversity:** A fish-pass was built at the Saint-Ours dam, allowing five species at risk, including the copper redhorse, to have access to habitats located between the Saint-Ours and the Chambly dams on the Richelieu River. This pass was inaugurated in August 2001, and initial test results indicate that, along with other species, the redhorse are ascending the new fish ladder. A total of \$1.8 million was provided by many partners who took part in this joint new venture.

The modelling of the St. Lawrence freshwater ecosystem describes the dynamics and ecosystem behaviour of the St. Lawrence and simulates a wide range of physical conditions such as flow rates, water levels and currents. By integrating our biological and physical knowledge of the St. Lawrence, this model will provide a better understanding of the effects of water level fluctuations on the St. Lawrence ecosystem and thus help us improve management methods. The results were presented during IJC Biennial Water Levels Workshop in last October.

**Industrial and Urban:** Work continued in 2001–2002 with respect to the reduction of toxic effluents from small and medium-sized businesses. In total, the program to develop new environmental technologies has given rise to 34 projects representing a total investment of \$5.9 million. In her recent report, the Commissioner of Environment and Sustainable Development noted that the St. Lawrence and Great Lakes initiatives should be more closely aligned, and remaining municipal effluent work should be coordinated to a much greater extent.

**Human Health:** To contribute to protecting human health, studies were conducted to reduce human exposure to the contamination risks posed by recreational waters, drinking water and aquatic products. Various research projects were completed in 2001–2002. Specifically, Environment Canada conducted a project related to the safety of opening various shellfish areas. As well, a questionnaire on health issues related to the St. Lawrence River was widely distributed.

A study on the pre-natal exposure to organochlorines compounds in the Lower North Shore region of the St. Lawrence has demonstrated the concentrations in mother milk are decreasing from year to year.

**Community Involvement:** To contribute to building consensus in riverside communities, 14 ZIP (Zone d'intervention prioritaire) committees are now in place to actively implement environmental remedial action plans along the river. In 2001–2002, a forum was organized to bring together 150 people who have been working on ZIP committees to exchange ideas and best practices. Environment Canada provided a significant level of funding for the important event (\$100,000) aimed at identifying future priorities as well as sharing "best practices". At this workshop, the participants learned how they could work more effectively with communities in the future. As well, in 2001–2002, \$837,000 was allocated to fund approximately 17 new concrete action projects initiated by citizens.

**Navigation:** Based on new studies of riverbank erosion, a voluntary measure with respect to reduced ship speed is now in place in vulnerable zones in the Montreal – Sorel area. Recent Canadian Wildlife Service studies confirm that erosion has decreased since commercial ships speeds have decreased.

## Impacts and Benefits

Some of the impacts and benefits derived from accomplishments achieved to date include:

- Reduced pesticide use in the agricultural environment and decreased pesticide contamination in the water of tributaries;
- Since 1998, 22 recovery plans for safeguard of priorities species was developed or implemented; 3 ecological reserves created, and 101 350 hectares protected;
- A groundswell of support to protect the St. Lawrence River — over 200 environmental stakeholders in Québec have participated in SLV 2000, including many representatives from riverside communities. There have been invaluable cooperation and support for activities with all partners in federal and provincial governments. Partners continue to provide programs and funds to work towards sustainable development in the region; and

- Of the 107 industries targeted for action, 80 have achieved their environmental results and have been awarded environmental recognition certificates. A thorough report evaluating the potential toxicity of sewage treatment plants' effluents in Québec allowed to focus on particular provincial and federal actions to reduce pollutants from these sources.



## Next Steps/Future Challenges

Work will continue during 2002–2003 to achieve the target results for the Action Plan by the end of Phase III (March 31, 2003). For the final year, there is a continued recognition that riverside communities are in the best position to identify and direct local initiatives and address the environmental issues along the St. Lawrence. The ever-growing number of partners, combined with the complexity of issues, makes the task of managing the St. Lawrence a significant challenge.

For Environment Canada, the challenges over the next year will focus on laying the groundwork for a new five-year plan in place by the beginning of the 2003–2004 fiscal year. Much of this effort involves working closely with all parties involved in the development. A new provincial water policy soon to be launched by the Québec government will be an important element during negotiations.

- ■ ■ For more information on SLV 2000, please visit: [slv2000.qc.ec.gc.ca/index\\_a.htm](http://slv2000.qc.ec.gc.ca/index_a.htm)



## Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem

The Governments of Canada and Ontario share a common interest in rehabilitating, protecting and conserving the Great Lakes Basin ecosystem. The 2002 Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA), effective March 22, 2002, is a successful model of federal–provincial cooperation. It recognizes the shared jurisdiction surrounding many of the issues in the Great Lakes basin, establishes common goals and results and coordinates actions to eliminate overlap and optimize use of resources for maximum results.

Canada works with the United States through the bi-national Great Lakes Water Quality Agreement (GLWQA), which sets out specific actions to clean up the Great Lakes. The COA is the mechanism through which Canada and Ontario coordinate their actions in order to achieve Canada's commitments under the GLWQA.

## Accomplishments — The 2002 Agreement

Due to the number of federal and provincial departments, ministries and agencies working in the Great Lakes, negotiations proved lengthy and at times challenging. Signatories to the COA are eight federal departments and agencies: Agriculture and Agri-Food Canada, the Department of Canadian Heritage, the Department of Fisheries and Oceans, Environment Canada, Health Canada, Natural Resources Canada, Public Works and Government Services Canada, and Transport Canada; and three provincial ministries: the Ontario Ministry of Agriculture, Food and Rural Affairs, the Ontario Ministry of the Environment and the Ontario Ministry of Natural Resources.

The 2002 COA differs from previous agreements by articulating specific responsibilities for Canada and Ontario as well as those that are shared and would benefit from collaborative action.

Through the COA, both governments have set out environmental priorities and specific goals and actions for the enhancement and preservation of the basin's ecosystem. Under the 2002 COA, four annexes focus on environmental priorities that will benefit from federal-provincial cooperation and coordinated action.

Each annex sets out a series of desirable goals and actions to be achieved over the five-year duration of the COA. The annexes address:

- the cleanup of the remaining Areas of Concern within the basin;
- the implementation of a series of bi-national lakewide management plans to address problems unique to each Great Lake;
- the virtual elimination and significant reduction of harmful pollutants within the basin; and
- improved monitoring and information management.

The 2002 COA can be adapted to respond to emerging issues in the Great Lakes basin ecosystem. While four annexes were part of the Agreement at the time of signing, annexes may be developed at any time and will come into force upon signing.

## Impacts and Benefits

By defining a vision for the basin, specific goals and results and the commitment to action by both governments, the COA provides momentum to broader efforts and facilitates collaborative arrangements and collective action among all people and organizations with an interest in the basin.

## A Continuing Focus on the Great Lakes

For 30 years, a series of Agreements has enabled North Americans to achieve significant progress towards the shared vision of a *healthy, prosperous and sustainable Great Lakes Basin for present and future generations*. Levels of many pollutants have been reduced, water quality has been improved and species and their habitats have been restored.

## Next Steps/Future Challenges

Canada and Ontario are now working cooperatively to implement the COA. It will take considerable time, effort and resources to achieve the results set out in the Agreement. Both governments have established a secretariat to oversee the effective and efficient management of the Agreement. As well, the COA commits Canada and Ontario to report regularly and publicly on the state of the Great Lakes Basin ecosystem as it relates to actions taken pursuant to the Agreement.

Recognizing that the efforts of the Governments of Canada and Ontario alone cannot achieve the vision of a healthy, prosperous and sustainable Great Lakes Basin, the engagement and efforts of all levels of government, the private sector, community groups and individuals are required. Both governments have committed to establishing a stakeholder/public advisory group that will assist in engaging a broader Great Lakes constituency.

■ ■ ■ For more information on the Canada-Ontario Agreement, visit: [www.on.ec.gc.ca/laws/coa/](http://www.on.ec.gc.ca/laws/coa/)

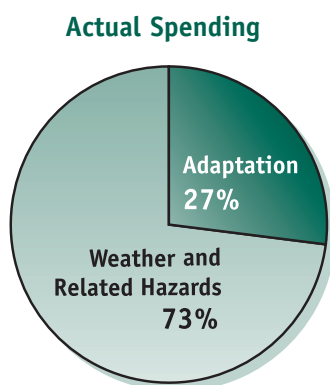
## 3.3 Weather and Environmental Predictions Business Line

Canadians are affected by weather and environmental conditions such as tornadoes, winter storms, floods, droughts, sea ice, lake water levels, aircraft turbulence and road icing. These conditions affect the health and safety of Canadians, their businesses, the economy and the environment. Operating 365 days per year, 24 hours per day, the Weather and Environmental Predictions business line provides the following:

- warnings for health, safety, adaptation and reduced economic loss;
- weather and environmental forecasts and information for effective decision-making (health, economic efficiency and environmental quality); and
- knowledge and understanding for environmental policies based on sound science.

## Weather and Environmental Predictions 2001–2002 (Including responsible revenues)

Reduced impact of weather and related hazards on health, safety and the economy	\$169.4 \$193.3 <b>\$186.3</b>
Adaptation to the day-to-day and longer term changes in the atmospheric, hydrological and ice conditions	\$61.5 \$72.1 <b>\$67.9</b>
<b>Total for the Weather and Environmental Predictions Business Line</b>	<b>\$230.9</b> <b>\$265.4</b> <b>\$254.2</b>
Planned Spending	
Total Authorities	
<b>Actual Spending</b>	



### 3.3.1 Long-term Key Result: Reduced Impact of Weather and Hazards

*Reduced impact of weather and related hazards on health, safety and the economy*

Through its warning program, Environment Canada, primarily via the media, informs Canadians of imminent or short-term weather and related environmental hazards. Doing so ensures that Canadians have the knowledge and the time to react to protect themselves, their property and their businesses.

Each year, Environment Canada, through the Meteorological Service of Canada (MSC), issues approximately 14,000 warnings of high-impact weather, such as severe thunderstorms, tornadoes and ice storms. The Department also provides education and outreach to Canadians in addition to offering direct technical support to clients and partners. For example, Environment Canada provides information to provinces in support of flood programs and provides critical ice information in support of Coast Guard activities, international shipping and offshore resource extraction. All are supported by a strong R&D program.

#### Performance Framework

The “hazards” long-term key result is divided into three areas of focus. The following table aligns these three areas of focus with the high-level strategies, long-term indicators and targets and commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## WEATHER AND ENVIRONMENTAL PREDICTIONS BUSINESS LINE

*Long-term key result: Reduced impact of weather and related hazards on health, safety and the economy*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
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### Area of Focus #1: Increase the margin of safety from high-impact weather and related hazards – reported on this planning period

<ul style="list-style-type: none"> <li>Increase quality, utility and satisfaction by focusing our production offices on warnings and increasingly automating routine products such as the day-to-day weather forecast.</li> </ul>	<p><b>Indicator:</b> Lead times and accuracy of warnings.*</p> <p><b>Target:</b> Meet the standards in the Public Weather Charter by 2004.</p>	<p><b>Lead Time and Accuracy</b></p> <ul style="list-style-type: none"> <li>Develop and implement a Public Weather Warning Charter with standards to be met by 2003.*</li> <li>Develop a Marine Weather Hazard Charter by 2003.*</li> </ul>
<ul style="list-style-type: none"> <li>Increase quality, utility and satisfaction by increasing R&amp;D on detecting potential hazards and by developing new forecast techniques (including data assimilation) and transferring knowledge to the production offices.</li> </ul>	<p><b>Indicator:</b> Lead times and accuracy of warnings.*</p> <p><b>Target:</b> Meet the standards in the Public Weather Charter by 2004.</p>	<p><b>✓ R&amp;D on Severe Weather</b></p> <ul style="list-style-type: none"> <li>Understand the precursors of severe weather and how we observe them, recognizing the role of antecedent conditions.</li> </ul>
<ul style="list-style-type: none"> <li>Improve access to our data by the public, private and academic sectors.</li> <li>Improve our visibility with Canadians through the media, the Internet and an increased community presence.</li> </ul>	<p><b>Indicator:</b> Lead times and accuracy of warnings.*</p> <p><b>Target:</b> Meet the standards in the Public Weather Charter by 2004.</p>	<p><b>Improved Access and Visibility</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #2: Provide Canada with a quality and citizen-centred weather and related environmental prediction service – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Resolve capacity, affordability and sustainability issues by implementing full life cycle management of our mission critical systems to resolve Occupational Safety and Health, rust-out and obsolescence issues.</li> </ul>	<p><b>Indicator:</b> State of monitoring systems.</p> <p><b>Target:</b> Replace and/or modernize 10% of networks so they are within their expected life cycle by 2002–2003.*</p>	<p>✓ <b>Monitoring Systems</b></p> <ul style="list-style-type: none"> <li>Complete the National Radar Project.</li> <li>Replace up to six class 1 volunteer ship weather systems per year as per priority list (RPP 2002–2003).</li> <li>Replace mercury-based equipment with alternative technologies.*</li> </ul>
	<p><b>Indicator:</b> Percentage of operational federal hydrometric sites cleaned up.</p> <p><b>Target:</b> Clean up 25% of existing known contaminated federal hydrometric monitoring sites by 2002–2003.*</p>	<p><b>Contaminated Sites</b></p> <ul style="list-style-type: none"> <li>Clean-up protocols, agreements and plans in place.</li> </ul>
<ul style="list-style-type: none"> <li>Resolve capacity, affordability and sustainability issues by increasing recruitment and training to ensure that we have the right skills and can address the demographic issues.</li> </ul>	<p><b>Indicator:</b> Demographics of S&amp;T Employees.</p> <p><b>Target:</b> Increase the number of S&amp;T staff in the 20 – 35 age range by 2002–2003.</p>	<p>✓ <b>Workforce Renewal Initiatives</b></p> <ul style="list-style-type: none"> <li>Hire and train 20 new candidates for the meteorology profession in 2001–2002.</li> <li>Implement a human resource renewal plan, including management development and succession plans.</li> </ul>
<ul style="list-style-type: none"> <li>Become more accountable to Canadians.</li> <li>Implement quality assurance and control measures for all of our data systems.</li> </ul>	<p><b>Indicator and Target:</b> To be determined.</p>	<p><b>Quality Assurance</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>

**Area of Focus #3: In partnership with others, improve society’s capacity to adapt to, anticipate, mitigate, withstand and recover from high-impact weather and other hazards that threaten their health, safety and security – reported on this planning period**

<ul style="list-style-type: none"> <li>Increase outreach and education on hazards to ensure that Canadians are aware of their vulnerability, understand our products and services and how to use them and can prepare for hazards.</li> <li>Invest in research on factors affecting society’s vulnerability and capacity to adapt.</li> </ul>	<p><b>Indicator:</b> Awareness of vulnerability.</p> <p><b>Target:</b> Under development.</p>	<p>✓ <b>Knowledge and Awareness of Hazards</b></p> <ul style="list-style-type: none"> <li>Introduce the forecast of particulates into regional smog forecasts by end of 2001.*</li> </ul>
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**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year’s report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy Target or Initiative

## Area of Focus #1 – Increase the Margin of Safety

### What is the issue?

Human and economic losses from floods, tornadoes, severe winds, snow and ice storms can be tragic and are often severe. As Canada grows, population concentrations increase along with chances that extreme weather events will affect more people. To protect themselves, Canadians need promptly disseminated, accurate forecasts and warnings, in addition to guidance about what to do when severe weather threatens. Timely meteorological information is essential for reducing risks to Canadians, and Canadians have increasing expectations on the advance notice they need to prepare themselves.

### How Much Advance Notice Do You Need for an Approaching Thunderstorm?

	1997	2002
<15 Minutes	24%	22%
15 – 29 Minutes	23%	8%
30 – 59 Minutes	21%	13%
1 Hour or More	29%	44%

### How Much Advance Notice Do You Need for an Approaching Winter Storm?

	1997	2002
<1 Hour	16%	3%
1 – 3 Hours	33%	26%
3 – 6 Hours	18%	17%
6 – 12 Hours	15%	19%
12 or More Hours	16%	26%

National Survey on Meteorological Products and Services — 2002, Decima Research Inc., pp. 63 and 68.

## What are we doing about it?

Environment Canada monitors weather and other related conditions and builds computer models to produce forecasts and warnings. Ongoing research with the universities and industry is focused on improving scientific understanding and developing methods and tools to better predict environmental hazards.

The Department also works with the media and other partners to inform and educate people about weather and how best to react in order to reduce the number of casualties and damage from natural disasters. Environment Canada is also investigating new ways to better deliver weather information to all Canadians, including the use of telephone systems, the Internet and televised Weather Alert messages.

Over the past year, efforts to improve access have led the Department to amalgamate a number of weather web sites into a Single Window on the Weather, [www.weatheroffice.ec.gc.ca](http://www.weatheroffice.ec.gc.ca). Since its creation in July 2001, the new web site has received over 50 million visits and has quadrupled its reach to the Canadian public (see related performance story in Section 3.4.2 (Citizen Focus) — e-Government).



### R&D on Severe Weather — University-Based Severe Weather Research Initiatives

Government, industry and universities joined forces to ensure that Canadian knowledge in the area of extreme weather remains at a superior level and that a high degree of coordination among the sectors is maintained. In 2001–2002, three interrelated university-based extreme weather research initiatives were launched in Montreal, the centre of expertise for extreme weather research in Canada.



#### Accomplishments

The successful launch of these three initiatives, resulting from efforts of MSC working in partnership with academics and others, will ultimately serve to both increase the accuracy of weather forecasts and decrease the lead time required to prepare forecasts.

- **The Laboratoire Universitaire sur le Temps Extrême (LUTE):** LUTE, set up to conduct R&D on extreme weather (e.g., storms, tornadoes, droughts), was established as the result of extensive collaboration among members of the Network for Computing and Mathematical Modelling (ncm<sub>2</sub>). This network brings MSC together with eight Montreal centres for research in the area of computing and mathematical modelling. The objective of LUTE is to coordinate and promote research

and cooperation in the area of atmospheric sciences (in particular, extreme weather), while ensuring that highly qualified personnel are trained. The structure offered by the ncm<sub>2</sub> leads not only to large-scale coordination of partners, but also to access to a wide range of expertise among the members and industrial partners.

- **Canadian Weather Research Program (CWRP):** The CWRP — a partnership between government, universities and the private sector — was established to promote research initiatives on weather forecasting. Strong ties with the U.S. Weather Research Program and the World Weather Research Program will serve to link CWRP to new methods and more efficient ways of forecasting weather. In 2001–2002, an initial phase of CWRP grants was announced. Environment Canada provided \$300,000 in funding for initiatives aimed at R&D in two innovative areas: a new type of forecasting and work on high-sensitivity precipitation forecasting.

## Canadian Hurricane Centre

Continued research into tropical systems transitioning in Atlantic Canada is critical in the process for improving the tracking of the intensity of tropical systems, which in turn will lead to more timely and effective warnings for Atlantic Canadians. Several collaborative research projects between EC, the National Research Council and university scientists/students to document the structure of these storms will enable numerical weather prediction models to better predict the atmospheric changes and oceanographic response from these threatening storms.

- **McGill University Chair in Extreme Weather:** The Institute for Catastrophic Loss Reduction and Environment Canada committed funds (\$30,000 and \$100,000 per year for five years, respectively) to support a new senior scientist position in the Department of Atmospheric and Oceanic Sciences at McGill University. Both the university and the Natural Sciences and Engineering Research Council (NSERC) committed similar amounts of funding through the NSERC Industrial Chair program. This Chair is to be formally announced in late June 2002 and will focus on training staff in the university, and carrying out a research program with 15 to 20 scientists.



#### Impacts and Benefits

These new initiatives will ensure a high degree of coordination among sectors in addressing the critical issue of extreme weather. Ultimately, R&D will result in increased accuracy of forecasts combined with a decreased lead time between forecasts and events.



## Next Steps/Future Challenges

On an ongoing basis, maintaining Canada’s competitive position as a leader in this area means ensuring that all our R&D efforts meet or exceed international standards. Ensuring that funding and other types of support are in place each year will go a long way towards attracting top scientists to our centre of expertise for extreme weather in Montreal.

## Area of Focus #2 – Quality and Citizen-Centred Service

### What is the issue?

Environment Canada serves Canadians, their institutions and businesses in several economic sectors, e.g., agriculture, transportation, fishing, energy, construction, travel and tourism. Canadians expect prompt, reliable services responsive to their needs. Thus, Environment Canada must possess the knowledge, combined with the most appropriate tools, to create and deliver a range of effective services for Canadians.

### Maintaining S&T Capacity

*“S&T expertise is becoming increasingly critical to Canada’s economic success. Our ability to recruit and retain highly qualified people—who can drive the innovation process and apply new technologies—has never been more pressing.”*

**Dr. Alan Winter,**  
President, Genome British Columbia  
(Canada Research Horizons, Summer 2002, p. 18)

Over the past few years, various studies of the WEP Business Line have revealed issues regarding human resources and rust-out of networks and systems, which will have an impact on service.

Environment Canada is one among many science and technology (S&T) organizations facing a human resource challenge. Over the next eight years, approximately one third of the S&T workforce and managers within the MSC will be eligible for retirement (about 20 percent of meteorologists, 40 percent of meteorological and hydrological technicians and 30 percent of research scientists). Attrition rates of 3.7 percent are almost double the long-term average of 2 percent. The Department has to become an attractive employer to the S&T community in order to be able to meet this challenge.

## What are we doing about it?

Observation networks are being modernized, as are current production systems and dissemination tools. New innovative tools and techniques will enhance service within existing budgets. The Department has made progress over the past few years in addressing some of the problems identified with a few of our mission critical systems:

- Since 1999, 228 mercury barometers (91 percent of the target sites) have been replaced by digital barometers. The project will be completed in 2002–2003.
- By March 31, 2002, 530 hydrometric sites (40 percent) had been assessed and either met or were cleaned up to the established criteria.

To maintain the existing level of skill and expertise and to continue providing a high-level of service, Environment Canada is recruiting scientists and technologists. A multi-year training partnership with MSC’s counterpart in the United States was signed in 2001–2002. Under the Cooperative Program for Operational Meteorology, Education and Training (COMET) partnership, all distance-learning training materials are now available to MSC meteorologists. COMET will become the foundation for a more formalized approach to the training and development of operational meteorologists.



### Monitoring Systems: New Automated Weather Observing System

Canada’s long-established volunteer observation ship program provides meteorological information from ships in inland and coastal waterways and trans-oceanic routes to marine and domestic users, as well as to international partners. Such information is used extensively on a daily basis for marine and climatological purposes. However, in many cases, instrumentation used for observations has become dated and, in some cases, obsolete. Program users have been receiving information in a somewhat haphazard manner, as it has been difficult to make data available in a timely, consistent manner. Thus, in recent years, MSC has embarked on a modernization of observing programs to test and qualify new sensors and systems. In this regard, in 2001–2002, nine ships were equipped with new Automated Voluntary Observing Ship (AVOS) systems.



### Accomplishments

The development of AVOS began when an MSC Port Meteorological Officer in the Ontario Region developed a set of specifications to improve observations and reporting from ships. The Department then contracted with a Canadian private sector partner in British Columbia—

AXYS Technologies Inc.—to develop a system to meet the need for a user-friendly system for ship observers. AVOS takes automated weather and marine observations and transmits these data via the INMARSAT Satellite system on an hourly basis above 51 degrees North latitude. The observers supplement the automated observed data with additional human observations on sky conditions, clouds, ice and sea state.

The *CCGS Sir Wilfrid Laurier* was the first ship to be fully equipped with a new AVOS system. It departed from Vancouver in July 2001 for the Arctic and has been fully operational and working well ever since. Since the *CCGS Sir Wilfrid Laurier* left port last July, AVOS has been installed on eight other ships, at a cost of approximately \$40,000 each. Six additional installations are planned for the 2002–2003 fiscal year. In total, long-range plans call for a fleet of 75 ships equipped with AVOS, at a rate of about 10 ships per year.

## Other Monitoring Initiatives — Six Additional Doppler Radar Stations Completed in 2001–2002

Doppler radar measures the intensity as well as the direction and movement of precipitation in the atmosphere. Today, Doppler radar is a key tool used by MSC to improve the detection of environmental hazards, such as severe weather and floods, in a timely manner. As the Weather and Environmental Predictions business line's capital investment priority, the National Radar Project is a multi-year plan aimed at converting all weather radar stations to Doppler technology.

When completed in 2003–2004, 31 Doppler radars will be in operation across the country. Implementation of National Radar Project activities in 2001–2002 focused on the installation of six new Doppler radars in Strathmore, Alberta; Landrienne, Villeroi and Val d'Irène, Québec; Halifax, Nova Scotia; and Marble Mountain, Newfoundland. Work on the Marion Bridge station in Nova Scotia was delayed somewhat due to legal issues but is now in progress. Eleven additional Doppler radars will be installed during the final two years of the National Radar Project.

The Department manages all aspects of each installation — from site selection to building hardware to the training of the personnel who operate equipment at each site. In 2001–2002, a new version of Unified Radar Processing software was developed, providing new processing and access functionality to forecasters across the country. Installation of this software will be completed in time for the severe weather season of 2002–2003.

The installation of Doppler radar ultimately improves the quality of weather forecasts. In fact, Doppler radar is the key tool used by forecasters in preparing weather watches and warnings.

When the National Radar Project is complete, the MSC Doppler radar network will cover 95% of Canada's population. Data produced by this technology are available to the public on Environment Canada's web site, allowing Canadians to monitor weather in a timely, effective manner if they choose this option.



## Impacts and Benefits

The major impact of the AVOS system has been a 10- to 100-fold increase in the number of observations, as the system provides hourly observations rather than just the four synoptic observations that are standard with VOS ships. In addition, this has translated into a sharp increase of quality observations in Canada's North, where data were sparse and irregular before the advent of AVOS. The increase in quality is most evident in the fact that the quality control system almost never flags or rejects AVOS observations, despite such a large increase in the volume of observations.

With international standards built into the AVOS and a user-friendly touch-entry screen, the work done by ship observers has become much easier and more efficient. Users have been enthusiastic in their praise for this new computerized system and the quality and frequency of products produced. Hourly transmissions combined with a drastic reduction in reported errors result in more accurate, useful outputs for weather forecasters to use in preparing their products. The Ice Reconnaissance program also uses AVOS data regularly.



## Next Steps/Future Challenges

Environment Canada was able to partner with and provide support to a Canadian company to expand its market. The private sector partner—AXYS—is now in the process of expanding to international markets through the sale of this tool.



## Workforce Renewal Initiatives

The majority of MSC staff are highly trained, specialized scientific and technical employees. Many work round-the-clock shifts, on land and at sea, throughout Canada, including the High Arctic. Staff monitor and predict severe weather events, warn of hazardous ice conditions at sea and measure water levels of major lakes and rivers. Dedicated staff are the primary reason for Environment Canada's reputation as a world-class meteorological prediction service and Canada's internationally recognized excellence in atmospheric science research. MSC needs to renew and enhance its workforce each year in order to continue providing Canadians with a continued high quality of service. In 2001–2002, two key activities were undertaken to recruit and train highly specialized staff in support of workforce renewal objectives.



## Accomplishments

**Meteorologists:** In September 2001, during the second year of Environment Canada's training program for new meteorologists, selected candidates from across Canada traveled to one of the MSC training centres (in Dartmouth, Montreal or Edmonton) to begin an intensive Meteorologist Operational Training Program. Seventeen of these individuals graduated in March 2002, joining the previous addition to the Department of 18 graduates in March 2001. Success in terms of meeting employment equity objectives in 2001–2002 was higher in the previous year.

**Water Survey Technicians:** The Water Survey Program, operated by MSC in partnership with the provinces, supplies critical data for issues such as drought monitoring and flood forecasting. The Prairie and Northern Region took the lead last year on behalf of the national program to address the aging of the technical workforce by developing and implementing an accelerated recruitment and training program for hydrometric technicians.

Implementation of the accelerated program allowed for the usual six months training to be completed in an intensive 10-week session during 2001–2002. A total of 15 new recruits graduated from the training program in March 2002. All recruits have since been placed in water monitoring positions across Environment Canada regions.

### MSC Climatologist Appointed as a Member of *The Order of Canada*

On December 4, 2001, David Phillips, MSC senior climatologist, was appointed as a Member to the Order of Canada by the Governor General in a formal ceremony at Rideau Hall. David received this award for promoting awareness and understanding of our country's climate. It represents our country's highest honour for lifetime achievement.

Acknowledged as Canada's foremost weather expert, David routinely discusses weather and climate issues on a national scale, focusing public attention on critical issues through the media, public appearances and educational tools.

David is a respected author (*Canadian Weather Trivia Calendar*, *The Day Niagara Falls Ran Dry*, and *Blame It on the Weather*), as well as a contributor to many scientific and popular publications. In addition to his most recent honour, he is also a recipient of the Andrew Thomson Prize in Applied Meteorology, the Patterson Medal for Distinguished Service to Meteorology in Canada, the Commemorative Medal for the 125<sup>th</sup> Anniversary of the Confederation of Canada and the Public Service Merit Award.

## Impacts and Benefits

In the short run, as a result of training efforts in 2001–2002, there are now highly skilled meteorologists and water survey technicians available to assist with challenges that lie ahead in both of these areas. In the longer run, recruitment and training efforts will assist in alleviating anticipated shortages and will reduce workload issues for existing staff.

## Next Steps/Future Challenges

Due to unique S&T skills required, it takes five to seven years to produce suitably trained graduates from atmospheric and hydrologic science programs at Canadian universities and colleges. Very limited recruitment over the past several years has meant that the university undergraduate and graduate programs in fields relevant to meteorology have been severely scaled back. Two years ago, the Department announced that a minimum of 20 new meteorologists per year will be hired in the foreseeable future. This has helped increase university enrollments in meteorology. This trend is expected to continue and expand the number of qualified Canadian candidates. However, competition for science professionals from the private sector as well as from other countries is fierce. Retaining new recruits as well as existing employees will be a challenge for at least the next five years.

■ ■ ■ For more information on MSC's Workforce Renewal efforts, visit: [www.msc-smc.ec.gc.ca/jobs\\_emploi/](http://www.msc-smc.ec.gc.ca/jobs_emploi/)

### *Area of Focus #3 – Improve Society's Capacity*

#### *What is the issue?*

An area of increasing attention and concern is the effect of weather and other hazards on public safety and security and on human health.

Over the past few years, Canadians have become increasingly aware of the role that weather and climate have in affecting their health, safety and security, and that of their property and the natural environment.

The events of September 11 have added new concerns over chemical, biological and nuclear attacks by terrorists and a new appreciation of the role of weather in affecting the impact of such attacks. Many of the skills, models, techniques and infrastructure needed to forecast weather-related hazards, are essential to forecast the effect of human-made hazards.

## What are we doing about it?

As a national meteorological service, the MSC contributes to the security of Canada with national operations that function 24 hours a day, networks of monitoring sites in all areas of the country, secure high-speed telecommunications that permit the real-time collection, processing and distribution of massive amounts of data and information, and highly skilled scientific and technical staff in offices across Canada. Environment Canada also has a singular ability among government departments to work through the media to make Canadians aware of safety and security issues and threats.

### Providing Prompt Specialized Numerical Simulation Support on Behalf of Canadians During September 11 Terrorist Attacks

On September 11, highly specialized numerical simulation tools were used when Health Canada, in its authoritative role for radiation protection in Canada, called upon the MSC to provide technical, scientific and operational support to Canada's emergency response programs. Health Canada's request was made in the context of assessing whether impacts on Canada might be felt if radioactive and/or other hazardous substances were on board aircraft used in the attacks. During the morning of the attacks, the Canadian Meteorological Centre (CMC) rapidly provided specialized guidance regarding long-range atmospheric transport and dispersion of plumes from the locations attacked. Simulations were quickly completed and used to assess potential risk to the population in Canada. Results indicated that it was unlikely that any material potentially released would affect Canadian territory within the first 72-hour period.

The tenacity of the group of individuals responsible for maintaining such tools was formally recognized on December 10, as the Operations Branch of CMC received the Head of the Public Service Award 2001 in recognition of support that contributed to the overall response to the terrorist attacks.

Ever since the nuclear accident disaster 15 years ago at the Chernobyl power plant in the Ukraine, the MSC has been making investments in order to understand and predict the movement of radioactive material in the atmosphere. By 1993, specialized numerical modelling tools have been implemented operationally at the CMC, to assess and forecast the dispersion of hazardous materials, with global coverage. Today, these highly specialized numerical simulation tools, coupled with the operational global numerical weather prediction system at the CMC, are ready at all times to ensure a responsive reaction as and when required.

The tools used on September 11 have wide application. They are also used to predict movement of materials from natural hazards such as the movement of volcanic ash through the atmosphere. In future, tools will be refined such that more localized results are available, a feature that will be of acute interest to governments in addressing threats to safety and security for Canadians.

With this capacity the Department provides surge responses in times of crisis or emergency for such events as nuclear or chemical releases into the atmosphere, Search and Rescue incidents, floods, tornadoes, and hurricanes. Safety and security of Canadians and their property are further served with the availability of broadcast services such as the Weatheradio network.

The same capacity is also used to address safety concerns due to a weather hazard or to health concerns created by pollutants resulting from our daily activities. Environment Canada aims to create a better understanding of the current state and trends of Canadian climate and to communicate this information in an easy-to-understand way to Canadians. Along with partners in universities and the provinces, the Department has created services such as smog forecasts that will help Canadians acquire the knowledge of the effect of this hazard on their health.

### Other Hazards: Implementation of Canada's New Wind Chill Index

Until last year, Canada did not have one wind chill factor to assist people in making sensible choices about whether to leave their homes, whether to send their children out or what to do and wear during the winter. Canadians provided clear feedback to Environment Canada that they did not favour one of the two existing measures (watts per m<sup>2</sup>), and that they would prefer a more consistent approach.

In 2001, a team of Canadian and American scientists and medical experts collaborated in developing a new wind chill formula. In a partnership with the Department of National Defense, physiological trials were conducted on human volunteers to determine the effects of wind and temperature on exposed skin. Combined with new scientific knowledge, a new wind chill index was calculated using data from these real-life tests. As a result, wind chill forecasts that Canadians hear today are consistent across the country. The new index provides people with a much closer approximation to how they will feel when outdoors in the cold for any length of time.

This new index is expressed in temperature-like units, the format preferred by most Canadians. To ensure that the new wind chill index meets the needs of Canadians, Environment Canada conducted extensive public surveys across the country. Despite the relatively mild winter of 2001–2002, survey results indicate that the new program has been positively received by Canadians.

Canada's new wind chill index is more accurate and is easy to understand. It enables citizens to take action to avoid injuries from the cold, such as dressing warmly to avoid frostbite and to make good decisions based on accurate information. This index has been officially adopted by both Canada and the United States. In addition, it is expected that it will be announced as the official world standard next year at the World Meteorological Conference.

Further information on Canada's new wind chill index can be found at [windchill.ec.gc.ca](http://windchill.ec.gc.ca)



### Knowledge and Awareness of Hazards: Developments in Forecasting Air Quality

Canadians require timely information about risks of pollutants, and they want to know what to do to protect their health in the face of such risks within their own communities. Since the launch of the National Air Quality Prediction Program (NAQPP) in 2000, Environment Canada has been working closely with its partners in response to public demand for locally relevant air pollution information. With guidance from advanced air quality models, forecasters

are able to provide the public with one- and two-day air quality forecasts.

## First National Workshop on Air Quality Prediction and Applications (AQ2001)

The MSC, Atlantic Region, hosted Canada's first National Workshop on Air Quality Prediction and Applications (AQ2001) in Fredericton, New Brunswick, on April 1 to 6, 2001. Air quality experts from across Canada, the United States and Mexico gathered to exchange information on air quality forecasting, monitoring and research. The 158 participants included meteorologists, scientists, chemists, members of lung associations and media.

AQ2001 covered the themes of Health, the North American Perspective, Modelling, Monitoring and Public Education and Outreach. Presenters who spoke to those themes included experts from various regions of Environment Canada, Health Canada, Parks Canada, various provincial agencies, the United States Environmental Protection Agency, Mexico City and private industry.

The workshop included sessions aimed at researchers and the public. One theme focused on such topics as the health effects of air pollution and how taking a risk management approach to air quality can be effective in Canada. The United States Environmental Protection Agency provided briefings on the AIRNOW program, which was officially expanded to include coverage over the provinces of Ontario, Québec and Atlantic Canada in May 2001. Workshop sessions focusing on the basics of atmospheric chemistry and aimed at improving the skill level of air quality meteorologists and specialists were also provided.

### Accomplishments

The NAQPP continued to improve and expand in 2001–2002. More than 60% of the Canadian population is now being served by local air quality forecasts (ozone level) in summer months. Maps predicting ground-level ozone for the next two days and reporting the current day's ozone measurements are available to the public at [www.msc-smc.ec.gc.ca/aq\\_smog/index\\_e.cfm](http://www.msc-smc.ec.gc.ca/aq_smog/index_e.cfm). Work is now under way to develop year-round air quality forecasts that include airborne particles (smoke, soot and dust). Given that air quality in Canada is also influenced by emissions in the United States, the modelling domain used in the NAQPP encompasses most of North America. Canada's experimental CHRONOS model is more sophisticated than any available in the United States for forecasting and its output is used by air quality forecasters in both countries.

This program is a national initiative and moves forward effectively only by working in close partnership with provincial governments, NGOs and municipalities in each region. Thus, implementation mechanisms and timing vary significantly across the country. Within each region, key accomplishments for the 2001–2002 fiscal year were as follows:

- **Atlantic Region:** In May 2001, the Smog Prediction Program was re-launched for the season in the three Maritime provinces. In this program, a two-day forecast is issued twice per day to the public. An evaluation program was initiated in Newfoundland preparatory to public forecasts in 2002. Finally, an Air Dispersion Pilot Project for Saint John and Fredericton, New Brunswick, began in January 2002 and ran until the end of March. The project focused on the air pollution cause by winter activities (e.g. wood burning).
- **Québec Region:** In partnership with the Montreal Urban Community, public health agencies and the Québec Ministry of the Environment, a daily wintertime air quality prediction program (Winter Info-Smog) for the greater Montreal region was launched in November 2001. In addition, the Summer Info-Smog Program was launched publicly in Montreal and was extended as a pilot to southern Québec with public access to follow in May 2002.
- **Ontario Region:** During 2001–2002, an air quality scientist was hired, work on improved infrastructure support to the Ontario Ministry of the Environment was completed and an evaluation of CHRONOS support for Ontario was conducted.
- **Prairie and Northern Region:** As a first step in developing an NAQPP, a pilot Ventilation Index (VI) Forecast Project was undertaken. The VI is a measure of how well a pollutant such as smoke will disperse or mix into the atmosphere to avoid high local concentrations. Since August 2001, the VI has been issued daily in eight locations.
- **Pacific and Yukon Region:** Recognizing the public need and demand for air quality forecasts in sensitive areas such as the Lower Fraser Valley, a Ground Level Ozone Prediction Program was developed for this area. The first publicly accessible air quality forecast was issued in June 2001. Validation testing carried out during the summer suggests that the statistical modelling technique chosen is proving to be a useful tool in forecasting pollution conditions. Based on the success of the ozone forecasts for the Lower Fraser Valley, forecast plans were developed for Kelowna and Kamloops in summer 2002. A pilot forecast program for airborne particles is planned for 2002.

### Impacts and Benefits

The primary goal of the NAQPP is to provide the public with the information they need to protect their health. With more than half of the population being given this type of information on a daily basis, Canadians are positioned better than ever before to make good decisions to protect

their health in response to changing air quality conditions. This is particularly important for parents of young children, as well as for individuals with chronic respiratory illnesses, such as asthma, bronchitis and heart disease.

In addition to health protection, access to air quality information on a daily basis means that Canadians are more aware of the impacts of their own behaviours and actions as well as the behaviours and actions of others. Also, Canadians now realize that it is not just urban areas being affected by air pollution — increasingly, rural areas are experiencing a broad range of health effects from airborne pollutants being transported from congested urban centres in other parts of the country and from across the border.

### Reports on the Air Quality Forecast Program from the Saint John, N.B., Coalition for Clean Air

*"It dictates my life. Not a day goes by when I don't check the readings so I can take action to protect myself". — (resident)*

A principal of a middle school uses the forecast to plan school activities.

Joggers and runners report that they use the forecast to decide if it is safe to go out on a strenuous run.

The asthma clinic of the Saint John regional hospital has developed a pamphlet to encourage use of the forecast.

### Next Steps/Future Challenges

Environment Canada will continue proactive and diligent efforts to advance forecasting science to suit different needs as well as to address multiple pollutants. The Department is working towards common national presentation to ensure consistency across the country, but needs to be flexible and

responsive to local air quality conditions and needs. The NAQPP requires \$3 million in funding on an annual basis. A key challenge is to move this program from a developmental phase to an ongoing service program that is appropriately resourced.

- ■ ■ For more information on the National Air Quality Prediction Program, visit: [www.msc-smc.ec.gc.ca/aq\\_smog/](http://www.msc-smc.ec.gc.ca/aq_smog/)
- ■ ■ See related performance stories in Section 3.1.1 (Air Quality).

### 3.3.2 Long-term Key Result: Adaptation to Changes

*Adaptation to day-to-day and longer-term changes in atmospheric, hydrological and ice conditions*

Each year, Environment Canada issues approximately 500,000 public weather forecasts, 200,000 marine weather forecasts and 400,000 aviation forecasts. The Department provides information on water quantity in our rivers and lakes, including information and advice on changing water levels in the Great Lakes and transboundary water allocations. For shipping and navigation, Environment Canada provides information on ice, wind and waves. Such information is essential for Canadians to adapt to their environment and understand the opportunities from their changing environment.

#### Performance Framework

The “adaptation” result is divided into three areas of focus that support the long-term key result. The following table aligns these three areas of focus, along with long-term indicators and targets and the commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## WEATHER AND ENVIRONMENTAL PREDICTIONS BUSINESS LINE (continued)

*Long-term key result: Adaptation to day-to-day and longer-term changes in atmospheric, hydrological and ice conditions*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #4: Increase economic efficiency, productivity and competitiveness through atmospheric and related science and services – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>• Improve quality, satisfaction and utility of services.</li> </ul>	<p><b>Indicator:</b> Satisfaction and quality of day-to-day products.</p> <p><b>Indicator:</b> Satisfaction and quality of seasonal products.</p> <p><b>Target :</b> Under development</p>	<p><b>Improved Products and Services</b></p> <ul style="list-style-type: none"> <li>• Initiatives to start in 2002–2003.</li> </ul>
<ul style="list-style-type: none"> <li>• Reposition ourselves in the marketplace by implementing an industrial strategy to promote growth of environmental prediction capacity in the private sector.</li> <li>• Improve access to meteorological and hydrological data.</li> </ul>	<p><b>Indicator:</b> Value of Canada’s private meteorological sector.</p> <p><b>Target:</b> Under development.</p>	<p><b>✓ Access and Private Sector Capacity</b></p> <ul style="list-style-type: none"> <li>• With private and public partners, deliver specialized products to the media and transportation sectors.*</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #5: Improve the quality and enjoyment of life for Canadians through atmospheric and related science and services – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Increase outreach and education on key environmental issues.</li> <li>Improve quality, satisfaction and utility of services.</li> </ul>	<p><b>Indicator:</b> Satisfaction and quality of public forecasts.</p> <p><b>Target:</b> Improve overall satisfaction with products and services.*</p>	<p>✓ <b>Accuracy of Forecasts</b></p> <ul style="list-style-type: none"> <li>Improve the accuracy of precipitation forecasts.</li> </ul> <p><b>Outreach on Environmental Issues</b></p> <ul style="list-style-type: none"> <li>Implement a national coherent weather service complaint strategy and feedback mechanism.</li> </ul>
<ul style="list-style-type: none"> <li>Improve access to meteorological and hydrological data.</li> </ul>	<p><b>Indicator:</b> Public access to services and information.</p> <p><b>Target:</b> Under development.</p>	<p>✓ <b>Hydrological Data</b></p> <ul style="list-style-type: none"> <li>Make climate and hydrological data and metadata more accessible to the public.</li> </ul>
<b>Area of Focus #6: Demonstrate scientific leadership in supporting domestic and international policies and protocols on global environmental issues – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Increase recruitment and training in key scientific and technical areas.</li> <li>Implement life cycle management and quality assurance and control measures.</li> <li>Move to a new science model based on increased collaboration and dependence on university research.</li> <li>Decide at which research forums we want to be players and leaders.</li> </ul>	<p><b>Indicator:</b> Network integrity.</p> <p><b>Target:</b> Under development.</p> <p><b>Indicator and Target:</b> Under development.</p>	<p>✓ <b>Climate Change — Science</b></p> <ul style="list-style-type: none"> <li>Continue to operate state-of-the-art climate models to project climate changes through the 21<sup>st</sup> century (RPP 2000–2001).</li> </ul>

**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy/Target or Initiative

## Area of Focus #4 – Increase Economic Efficiency, Productivity and Competitiveness

### What is the issue?

Canadian weather-sensitive industries (such as transportation, energy, construction, forestry, agriculture, fishing, recreation and tourism) contribute about \$150 billion annually to our Gross Domestic Product. For these industries, awareness, access and the use of high-quality, timely and reliable weather, water, climate and related information can significantly improve productivity and competitiveness.

### What are we doing about it?

The private meteorological sector in Canada is small, but diverse. Environment Canada is working to build stronger relationships with this sector and to encourage the development and use of value-added meteorological services. In addition to responding to the strategic needs of the private meteorological sector and identifying areas where it can play a supporting or cooperative role, the Department is working to improve data access and identify new and emerging business opportunities for this sector.

MSC is working with the Canadian Meteorological & Oceanographic Society (CMOS), academia and others to increase the use, value and benefits of meteorological and hydrological science, information and services in Canada. With respect to CMOS, the Department provided direct support to a private sector task force, which studied the relationship between the private meteorological sector and MSC. The Department has also been addressing barriers and the conditions necessary to facilitate growth of the value-added sector and improve our relations among the parties involved.



### Access and Private Sector Capacity: Enhanced Client Partnerships

Three key events in 2001–2002 served to significantly advance MSC partnerships with key clients:

- MSC renewed its contract with NAV CANADA for the provision of a broad range of aviation services over the next 10 years.
- A new contract with Pelmorex Inc. was signed whereby MSC will provide data and products for use by Pelmorex's specialty television services — The Weather Network and Météomédia with greater Government of Canada visibility with the public.

- A new Advisory Board was established providing MSC with a formal mechanism to obtain constructive feedback from a range of clients and partners over the coming years.



## Accomplishments

### *Renewal of NAV CANADA Contract for Aviation Services*

When NAV CANADA was created in 1996, it was stipulated that the new organization would contract to MSC for aviation weather services for a five-year period. After that, NAV CANADA would be free to pursue other methods of providing national weather services to Canadians. Environment Canada's initial agreement with NAV CANADA expired in November 2001. NAV CANADA's decision to continue to contract with MSC for aviation weather services is a credit to the quality services and innovative new services that were provided under the old agreement.

### Long-term Benefits of New NAV CANADA Contract

A longer-term agreement, under which a substantial level of revenue will be generated each year, mitigates risks to the Department for the next decade. Development and implementation of the rigorous, transparent approach to costing have already resulted in an increased level of understanding and trust on both sides. An optimal performance measurement system has been developed. Today, approximately one-third of the MSC operational workforce — 200 employees — are involved in the delivery of services to NAV CANADA. In a recent letter to Environment Canada's Deputy Minister, NAV CANADA complimented the Department on decision-making mechanisms, integrity and business acumen.

In renegotiating a new contractual arrangement, with NAV CANADA, MSC had to demonstrate that value for money would be provided under a new arrangement. Increased transparency in terms of calculating the cost of services and better clarity of NAV CANADA requirements was needed. Thus, MSC adopted two approaches to state the case for the efficient, effective delivery of aviation services. First, MSC made the transition to a comprehensive costing model known as “activity based costing,” (ABC), which clearly and visibly links the costs of specific inputs to specific outputs. Second, a new pricing methodology was developed to reflect the actual cost of inputs aligned to their specific requirements.

When costing information was shared with NAV CANADA during the negotiation process, it was recognized that an increase in costs for MSC services would be required. Under the new agreement (which commenced on December 1, 2001), MSC provides services to the aviation sector for \$17 million per year on a cost-recovery basis.

### *New Contract Signed with Pelmorex*

In 2001–2002, Environment Canada signed a new contract with Pelmorex Inc. to provide data and products for use by specialty television services — The Weather Network and Météomédia. Under provisions of this new contract, programming on both The Weather Network and Météomédia will include in increased attribution for Environment Canada data and products. Currently, the Department is working with all media to meet this same standard for attribution to the Government of Canada for the MSC data and products used in all broadcast services.

### Increased Media Coverage for Environment Canada

The new agreement provides Pelmorex with increased access to Environment Canada data and products. The Government of Canada receives greater visibility to the public via the media.

### *Establishment of an Advisory Board to MSC*

Prior to the 2001–2002 fiscal year, in response to findings from a major Alternative Service Delivery (ASD) study completed four years ago, a new MSC Advisory Board was formally created. The ASD study concluded that while weather services should continue to be provided by government (as opposed to becoming a commercial operation), the partners, clients and the private sector should play an enhanced formal role in setting MSC priorities.

This mechanism serves to engage a cross-section of Canadian society — either as advocates or providers of constructive criticism on MSC plans and activities. In Board meetings, senior executives from various stakeholder and clients groups provide client-focused advice to MSC. Each Board member is uniquely positioned to provide MSC with advice on issues such as strategic direction, new priorities, potential liabilities the organization may face and possible impacts of aging equipment. The Advisory Board is made up of members from the following organizations:

- Federal government departments and agencies;
- NAV CANADA;
- Canadian Federation of Agriculture;
- Pelmorex;
- Ontario Provincial Police;
- Student Federation of Canada;
- Canadian Federation of Municipalities;
- Canadian Association of Broadcasters;
- Canadian Interagency Forest Fire Centre; and
- Dalhousie University.

## Expected Impacts of New MSC Advisory Board

With the new MSC Advisory Board, client needs are placed at the forefront of the decision-making process. Advice given by the Board will be shared within the broad management cadre of Environment Canada and, in future, will have significant impacts on the evolution of MSC programs. Stronger relationships with the private sector will complement internal strengths in the delivery of a broad range of weather products and services for Canadians. In the future, clients will be asked to provide MSC with information on their operations and what they need from MSC to assist efforts in expanding or improving critical areas of their business.

The MSC Advisory Board met three times during the 2001–2002 fiscal year. As time passes, turnover of Board members will be encouraged every two to three years in order to ensure that a wide range of opinions and interests are represented at the MSC table as future priorities are set.

### *Area of Focus #5 – Improve the Quality and Enjoyment of Life for Canadians*

#### *What is the issue?*

Weather services are among the most frequently used federal government services. A large majority of Canadians polled (92 percent [National Survey on Meteorological Products and Services — 2002]) listen to at least one weather forecast daily. Weather, climate and air quality information and research provided by Environment Canada are used by the public to make decisions at work, at home and during recreational activities.

Providing increased and improved information to Canadians will expand their ability to take action, whether it is to help make decisions on how to dress in the morning, on whether to hold a picnic, or on whether to take protective measures during incidents of poor air quality and dangerous weather conditions.

## Serving Canadians

Canadians are most interested in obtaining weather information about the precipitation forecast (47 percent), followed by general temperature information (27 percent) (National Survey on Meteorological Products and Services — 2002, Decima Research Inc.).

More than eight in ten Canadians consider wind chill information to be very (29 percent) or somewhat (37 percent) useful as part of winter weather forecasts. (National Survey on Meteorological Products and Services — 2002, Decima Research Inc.).

## *What are we doing about it?*

The Weather and Environmental Provisions business line assesses the effectiveness of its programs in meeting the needs of Canadians by conducting public surveys and by measuring its performance via technical verifications of weather forecast accuracy. Other services are modified according to the needs of Canadians as expressed by municipal and provincial partners.

Environment Canada is constantly working to improve the quality of products to better meet user requirements. Marked improvements in the analysis and modelling systems of the weather forecast products were noted in 2001–2002, the direct results of years of research (see performance story that follows). These systems are the basis of the tools used by meteorologists to forecast weather, including the precipitation.

The Department also made efforts over the past few years to standardize many of its products and services across the country. The new wind chill index and the standardized warnings format are concrete examples of results of those efforts.



### **Accuracy of Forecasts: Marked Quality Improvements in Analysis and Modelling**

Changes implemented during 2001–2002 to Canada's operational global forecast system are significant. In December 2001, the successful implementation of a vastly improved analysis and modelling system resulted in an internationally recognized improvement to MSC forecast guidance products.



### **Accomplishments**

Those preparing and issuing weather forecasts to the public must rely significantly on computer simulations of weather patterns interpreted by forecasters. Models used for such simulations are complex and are continually improved, as new data and technology become available. The way data are processed and the way the atmosphere is modelled through simulations improved significantly by the quality R&D work done in recent years, culminating in changes to numerical weather prediction systems implemented on December 11, 2001. This is the result of a major team effort involving dozens of people. Essentially, two critical changes were introduced in 2001–2002:

- First, in the past, it has been difficult to correctly process data received via satellite (which represents a great proportion of the atmospheric data received). The way these data are processed was changed to a new scheme using direct raw satellite radiances. As well, this

information is now better integrated with other data received from the surface, ships and balloons. The impact of this change is a greatly improved, more reliable analysis of the current state of the atmosphere. In terms of impacts on forecasts, there are major improvements in short-term forecasts and some improvements in forecasts up to five days (this is especially the case in data-sparse areas, such as the Southern Hemisphere and the west coast of North America).

- Second, a significant improvement was made to the simulation process that determines how air flow interacts with the Earth's surface. This is a difficult process to simulate in numerical models, as the real interaction occurs at much finer scales than the model can resolve. The errors related to this term augment in time, so the improvement introduced in December 2001 has a greater impact on the medium- and long-term forecasts (i.e., from days 3 to 10).

## Significant Gains in a Single Year

Extensive evaluations conducted by operational meteorologists have shown that, in the vast majority of cases, forecasting of significant weather systems has improved, both in tracking and in intensity. Precipitation forecasts from the new system are also significantly closer to reality. Objective verifications indicate that there has been a gain of almost 12 hours of predictability (this means that 5-day forecasts are of the same quality today as 4.5-day forecasts were in the past). In fact, what was achieved last year is similar to total improvements achieved over the last decade.

## Impacts and Benefits

Every Canadian is touched by these changes either directly or indirectly as the services provided by weather forecasters from coast to coast have significantly improved. With better guidance and input from models, forecasters take higher-quality information and add their own knowledge to forecast upcoming weather.

Improvements to the global analysis and forecast system have had positive impacts on all other models and forecasts. The global system is the driver of all other modelling applications: regional and local models, the air quality model, the wave model and the environmental emergency model. There has been an approximate 12-hour increase in predictability for all these services.

Canada is recognized as world-class in this area — other countries are impressed by rapid and significant changes introduced last year and have expressed a strong desire to continue and strengthen scientific exchanges. This will be key to maintaining scientific excellence and quality services to Canadians.

## Next Steps/Future Challenges

Performance gains such as the ones achieved in 2001–2002 are uncommon. Thus, another upgrade such as this is not predicted in the near future. Canada now operates as one of the leading centres in the world for global forecasts. The real challenge in the years ahead will be to maintain the status achieved.

- ■ ■ For more information on MSC Forecasts, visit: [www.weatheroffice.ec.gc.ca](http://www.weatheroffice.ec.gc.ca)

## Hydrological Data For Dry Season Monitoring

Hydrometric data collected by the Water Survey Division (WSD) in Environment Canada regions across Canada include detailed documentation on the frequency and duration of droughts. Such data are collected under longstanding partnership arrangements with provincial and territorial governments and provide a foundation for understanding the hydrology of Canada. In turn, the data enable Canadians to make sound environmental, economic and quality of life decisions. Last year, during an exceptionally dry season in the Prairie provinces, staff in the WSD of the Prairie and Northern Region (PNR) were called upon to provide water data to provincial, local and United States partners in a more timely, comprehensive manner than ever before.

## Accomplishments

Throughout the seasons, the PNR collects, processes and disseminates timely data and information to a broad user community in three Prairie provinces as well as northern regions of the United States that share water with Canada's Prairie provinces. A major initiative launched five years ago has dramatically improved the capacity of the Prairie and Northern Region to provide this type of information. The investment of \$2.5 million over the past several years resulted in the capacity of a highly trained workforce to collect timely data from upgraded infrastructure in 250 hydrometric sites across the region in 2001–2002.

## Hydrology Data for Decision-Making

The frequency in response time provided in 2001–2002 represented a several-fold increase in one year (from daily or weekly to three hours). Today, across the region, skilled hydrometric technologists operate digital electronic data loggers coupled with the latest data technology available to provide hydrology data every few hours. Data from these sites assist clients in making timely decisions and in assessing and reporting critical situations as they arise.



With state-of-the-art equipment and a highly skilled workforce, the Prairie and Northern Region was able to significantly increase the frequency of monitoring and reporting of hydrologic conditions during 2001–2002. Response levels exceeded partner expectations during an exceptionally dry year.

In situations where the demand for water exceeds the available supply, conflicts often occur between the competing demands for water to sustain environmental, economic and quality of life activities. In 2001–2002, acute water shortages in the Prairie region made the likelihood of such conflicts very high. Doing its part to decrease the likelihood of such disputes, the WSD provided increased monitoring and hydrological expertise to the Prairie Provinces Water Board to ensure compliance of water sharing and to assist with preventing disputes between Alberta, Saskatchewan and Manitoba. As well, the WSD delivered on its longstanding obligation to ensure satisfaction of water-sharing arrangements and entitlements between Canada and the United States.



### Impacts and Benefits

The WSD supports other institutions in meeting their mandated responsibilities. Efforts of the WSD go a long way towards ensuring a level playing field for water sharing—a critical issue for many Canadians, particularly in times of drought. Enhanced efforts made in 2001–2002 to provide relevant, timely, high-quality information to key decision-makers meant that individuals with key roles in the water, economic and environmental sectors could look at appropriate adaptation strategies based upon sound information.

Positive feedback from many provincial and United States partners about the services and data provided during 2001–2002 indicates a high-level of satisfaction with the division’s ability to provide necessary data to ensure equitable sharing of resources, and thus to assist in the process of avoiding critical disputes.



### Next Steps/Future Challenges

Ongoing low-flow and drought conditions in watersheds across the region are expected to continue in 2002–2003. As a consequence of the increased frequency and quality of data provided to clients last year, it is expected that client demand for timely, reliable information on water resources will continue in future years.

■ ■ ■ For more information on Hydrological Data, visit:  
[www.msc-smc.ec.gc.ca/wsc/](http://www.msc-smc.ec.gc.ca/wsc/)

## Area of Focus #6 – Demonstrate Scientific Leadership

### What is the issue?

We have already seen the social and economic impacts of climate variability on Prairie droughts and water levels in the Great Lakes. These conditions, combined with other high-profile weather events, have already raised interest in several sectors including agriculture, shipping, construction, media, health, environmental conservation, forestry and recreation, as well as among the public. These sectors are quickly becoming aware of the emerging risks of climate change and variability. They see the impacts of extreme weather events (e.g., 1998 Ice Storm, 1997 Red River Flood) on businesses, homes and infrastructure, and citizens in many parts of Canada feel the stress from unusually hot summers. In addition, human health could be indirectly affected by more frequent severe air pollution events and increased incidence of diseases that usually occur in more southerly climates.

### What are we doing about it?

Environment Canada conducts research to ensure it has science, impacts and adaptation options needed for a solid scientific foundation on which to develop policies and strategies to safeguard our environment and protect human health. The Department participates in a multitude of cooperative projects with universities and research agencies in Canada and around the world to conduct research related to atmospheric and environmental sciences. It also supports the development of atmospheric science and policy capacity in the academic and private sectors.

For example, over the past few years, the Department has initiated new ways of promoting scientific research in academic and private sectors through the creation of CFCAS. The Department has also led the establishment of a funding agreement with the BIOCAP Canada Foundation to enable and promote the sustainable use of the biosphere to address the challenge of climate change.



### Climate Change — Science: Recent Advances in MSC’s Climate Change Research

Canada has experienced 19 consecutive seasons with above-normal temperatures. While unusual anomalies cannot, individually, be attributed to changes caused by humans (“anthropogenic climate change”), this observation is consistent with the presence of an emerging signal. Global-scale climate change detection studies, to which

the MSC climate model has contributed, now consistently find evidence of an “anthropogenic signal” in global temperature observations.

## Accomplishments

While MSC is able to conduct climate change impacts and adaptation research in some key areas, a comprehensive understanding of the impacts of climate change and possibilities for adaptation can come about only by engaging the large, diverse research community. During the past year, MSC provided this community with an array of new results from MSC’s global climate model. As a result, the broad community now has ready access, on the web, to information such as:

- carefully adjusted and homogenized observational data;
- large volumes of data from the MSC global climate model run using several different future emissions scenarios; and
- a variety of derived climate change scenarios.

Web site usage statistics indicated that these products are being used extensively in Canada and elsewhere around the globe.

## Research Indicates a Reduced Capacity to Disperse Pollutants

Over the past year, MSC has had some success in climate change detection studies, which indicate that pollutants may not be dispersed as much as was previously thought. A study published by MSC scientists on future changes in atmospheric transport points to an impact that has, as yet, not been considered. This study shows that the future climate may have a reduced capacity to disperse pollutants.

This has implications for future air quality that go well beyond those that might be expected to be direct consequences of a warmer atmosphere. These research results — emanating from extremely complicated analyses using sophisticated tools — popped up unexpectedly over the course of the last year. Specifically, research findings suggest that because pollutants do not mix well in the atmosphere, they are dispersed in more concentrated forms, and air quality in some regions worsens as pollutants travel in this state. Policy-makers, scientists, environmentalists and others are being advised of the possible ramifications of this new finding.

## Impacts and Benefits

Results of MSC climate change research is now available in a user-friendly format, publicly accessible on web sites. As a result of sharing research extensively within the global research arena, we have a higher level of confidence today in saying that humans are causing climate change. With this knowledge, policy-makers can act accordingly. Clearly, MSC provides information for a user community with a very significant need for such information.

Scientists conducting impacts and adaptation research on the future of forests, changes in Arctic sea ice cover or the availability of water, for example, seek to determine the likely impacts of climate change in their systems. MSC provides such researchers with scenarios of future climate conditions that can be used in making predictions run on how systems will change over time.

Researchers can be more confident about the quality of data they are given today as a consequence of the quality control done in MSC. Adjustments in records have been made such that users now have long-term, reliable “clean” data sets to work with. Thus, they can be more confident in results of analysis that indicate changes in climate.

## Next Steps/Future Challenges

In response to client demand, MSC will continue to make changes to its complex climate models. It is anticipated that in three to five years, significant impacts will be noted. Research in MSC, using the MSC global climate model, is now under way to determine if, in fact, a human influence on climate change is detectable on smaller scales (e.g., the climate of North America).

## The Prince Edward Island Sea Level Rise Project

Impacts and Adaptation Needs, Prince Edward Island: A Case Study was a multi-partner project carried out between September 1999 and June 2001, with the final report released on March 1, 2002. The study focused on two areas of Prince Edward Island, an urban area (the City of Charlottetown) and a rural area (Point Deroche to Savage Harbour). The project has proven to be leading-edge science. It addressed a serious regional vulnerability to climate change-induced sea level rise and demonstrated the need to identify climate change impacts early so that adaptation strategies can be developed. The project was a sterling example of the synergy developed between different science groups within the federal government, the university community and provincial and municipal governments.

The science outputs include a storm surge climatology and examination of the long-term tidal records to get a historical sea level rise in the Prince Edward Island area, long-term ice index, the use of the storm surge model to work with worst-case storm events, the development of extreme value statistics, the development of a Digital Elevation Model from Lidar mapping data and work to develop the socioeconomic impacts and adaptation scenarios.

The results put valuable information in the hands of local governments, on which they can base sound planning decisions. The City of Charlottetown has been using the results in planning and giving out building permits in the near-shore area. The tools and knowledge from this project are currently being used for much more detailed forecasts of storm surge events. This is of great value to the Emergency Measures staff of Prince Edward Island who are now able to warn citizens of impending flooding events and give tailored information for specific coastal areas.

As well, future research will move beyond looking at physical aspects of systems towards inclusion of chemical and biological factors. The scope of climate change science is rapidly expanding to include chemical cycles (e.g., sulphur compounds) in climate models. The next step will be to include biological factors (e.g., trees and vegetation). This work is being undertaken in partnership with collaborators in the universities and in the Department of Fisheries and Oceans, with the support of AP2000, CCAF, CFCAS and NSERC.

The ultimate key to success lies in securing a long-term funding base for research efforts where results are observed only in the longer run. In addition, attracting and retaining talented young scientists are a critical challenge faced by MSC, as it faces competitors offering much higher salaries for long-term, secure positions.

■ ■ ■ For more information on Climate Change Science, visit: [www.msc-smc.ec.gc.ca/climate/overview\\_science-e.html](http://www.msc-smc.ec.gc.ca/climate/overview_science-e.html)

### 3.4 Management, Administration and Policy Business Line

In the Management, Administration and Policy business line, Environment Canada develops the Department’s integrated management and policy agenda. This is the Department’s strategic medium and long-term agenda that focuses on leadership and partnerships to inform and engage citizens and on ways to provide efficient and innovative support services.

The objective of the Management, Administration and Policy business line is to deliver on a strong policy capacity, with a focus on the integration of economic, social and environmental considerations in decision-making; communications strategies and products that clearly articulate the environmental agenda; and management that is based on the orientation set out in the federal document entitled *Results for Canadians: A Management Framework for the Government of Canada*.

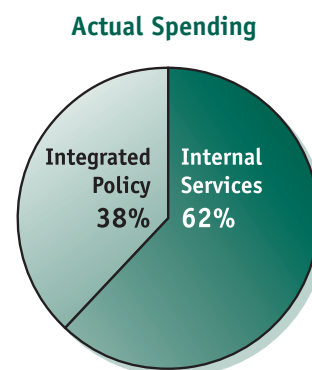
In the Management, Administration and Policy business line, Environment Canada has set out two long-term results:

- strategic and integrated policy priorities and plans; and
- a well-performing organization supported by efficient and innovative services.

#### Management, Administration and Policy 2001–2002 (Including responsible revenues)

Strategic and integrated policy priorities and plans	\$39.0
	\$55.7
	<b>\$57.2</b>
A well performing organization, supported by efficient and innovative services	\$61.8
	\$97.6
	<b>\$93.3</b>
<b>Total for the MAP Business Line</b>	\$100.8
	\$153.3
	<b>\$150.5</b>

Planned Spending  
Total Authorities  
Actual Spending



#### 3.4.1 Long-term Key Result: Policy Priorities and Plans

##### *Strategic and integrated policy priorities and plans*

To be effective, Environment Canada’s policy agenda must transcend short-term policy pressures and respond to the longer-term needs of government, partners (domestic and international) and Canadians. It must also be communicated to and supported by stakeholders and the public alike.

##### Performance Framework

The “strategic and integrated policy priorities and plans” long-term result is divided into four areas of focus. The following table aligns those areas of focus with the high-level strategies, long-term indicators and targets, and commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## MANAGEMENT, ADMINISTRATION AND POLICY BUSINESS LINE

Long-term key result: Strategic and integrated policy priorities and plans

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
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### Area of Focus #1: Knowledge – reported on this planning period

<ul style="list-style-type: none"> <li>Improve the capacity of Canadian institutions and individuals to make decisions that support sustainable development by developing and sharing new knowledge and tools.</li> </ul>	<p><b>Indicator:</b> Under development.</p> <p><b>Target:</b> Enhancing the knowledge base to inform public debate and decision-making.</p>	<p>✓ <b>Canadian Information System for the Environment (CISE)</b></p> <ul style="list-style-type: none"> <li>Provide the Minister with the Report of CISE by October 2001. Develop implementation plan for CISE in 2002.*</li> <li>Conduct consultations with interested parties in summer 2001.</li> <li>Submit final design and implementation plan to the Minister by October 2001.</li> <li>Develop environmental indicators, data and other assessment tools that can contribute to policy-level decision-making by March 2003.</li> <li>Work with other departments and participate in the NRTEE and SDS indicators project.</li> </ul>
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### Area of Focus #2: Partnerships – reported on this planning period

<ul style="list-style-type: none"> <li>Develop and implement innovative approaches for working with key partners.</li> </ul>	<p><b>Indicator:</b> Strengthened support of federal environmental policy priorities and active engagement of key partners in implementation of these priorities.</p> <p><b>Target:</b> Strengthen Environment Canada's capacity to use partnerships to advance sustainable development and support and stimulate</p>	<p>innovation.</p> <p><b>Aboriginal Issues</b></p> <ul style="list-style-type: none"> <li>Develop an integrated framework for working with Aboriginal peoples on key environmental issues by fall 2002.</li> </ul>
<ul style="list-style-type: none"> <li>Provide support to Canadian communities in their transition to sustainable development.*</li> </ul>	<p><b>Indicator:</b> Improved capacity of local communities and communities of interest to take action and share information.</p> <p><b>Target:</b> Promote citizen engagement and contribute to community sustainability.</p>	<p><b>Sustainable Communities</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>
<ul style="list-style-type: none"> <li>Demonstrate international leadership.</li> </ul>	<p><b>Indicator:</b> Clear definition and advancement of Canada's environmental interests internationally.</p> <p><b>Target:</b> Advance Canada's environmental interest internationally, promote the integration of trade and the environment and environmental policies as well as health and environmental issues and foster international cooperation and good governance.</p>	<p>✓ <b>International Leadership</b></p> <ul style="list-style-type: none"> <li>Develop a national strategy on environmental education and sustainability by fall 2001. Finalize and table the strategy to the Earth Summit in South Africa by fall 2002.*</li> <li>Develop an integrated environmental and trade strategy with Canadian partners by fall 2002.*</li> <li>Establish government position on application of precautionary approach/principle that reflects environment policy needs by fall 2001.</li> <li>Actively contribute to completing a UNEP-led intergovernmental process, to assess and prepare recommendations on strengthening international environmental governance, in cooperation with other international organizations and groups by spring of 2002.</li> <li>Play a lead role in advancing the international debate on global environmental governance. Ensure Canadian views are reflected in the design of the Earth Summit 2002.</li> <li>Promote awareness and encourage implementations of OECD sustainable development policy recommendations and OECD Environmental Strategy, specifically elements relating to use of fiscal and market measures.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
		<ul style="list-style-type: none"> <li>• Collaborate with the Canadian International Development Agency (CIDA) to prepare a strategy to enhance Canadians, support for developing countries to implement Multilateral Environmental Agreements by January 2002.</li> <li>• Working with advisory and co-management boards.</li> <li>• Develop a coordinated federal position to international events with environmental health themes such as G8 Environment Ministers meetings (hosted by Canada in spring 2002) and the Earth Summit 2002 (fall 2002).</li> <li>• Develop North American Agenda on Children's Environment Health in cooperation with the United States, Mexico and the Commission for Environmental Cooperation.</li> </ul>

### Area of Focus #3: Innovative Policy Instruments – not reported in detail on this planning period

<ul style="list-style-type: none"> <li>• Provide leadership in the development and promotion of economic instruments as policy tools for environmental management.</li> </ul>	<p><b>Indicator:</b> Under development.</p> <p><b>Target:</b> Develop and apply innovative policy instruments to achieve environmental results and advance sustainable development.</p>	<p><b>Economic Instruments and Incentives</b></p> <ul style="list-style-type: none"> <li>• Use economic instruments to complement regulatory and other instruments for environmental management by end of 2003.*</li> <li>• Organize an internal working group to examine alternative tools, including economic instruments to manage environmental risks.</li> <li>• Participate in external forums on the use of economic incentives.</li> </ul> <p><b>Regulatory Management</b></p> <ul style="list-style-type: none"> <li>• Through the Departmental Regulatory Affairs Coordinating Committee, coordinate efforts to ensure effective and efficient delivery of the development of regulations that is consistent with federal regulatory policy requirements.</li> <li>• Establish a departmental priority-setting mechanism for regulatory proposals.</li> <li>• Establish an electronic planning and scheduling system for tracking regulatory proposals.</li> </ul>
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### Area of Focus #4: Shared Initiatives – reported on this planning period

<ul style="list-style-type: none"> <li>• Improve horizontal policy coordination across government on sustainable development.</li> </ul>	<p><b>Indicator:</b> Clear and effective policy priorities that are integrated with government-wide priorities.</p> <p><b>Target:</b> Under development.</p> <p><b>Target:</b> Develop strategic approaches to addressing environment and human health issues, including on children's environmental health, with Health Canada.</p>	<p>✓ <b>Managing for Sustainable Development</b></p> <ul style="list-style-type: none"> <li>• Targets and performance measures from the guidance document Sustainable Development in Government Operations (SDGO): A Coordinated Approach are incorporated into Environment Canada's Environmental Management System (EMS) aspect action plans, and work is under way to achieve these targets as they relate to Environment Canada's operations (SDS).</li> </ul> <p><b>Horizontal Policy Coordination</b></p> <ul style="list-style-type: none"> <li>• Initiatives to start in 2002–2003.</li> </ul>
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**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy/Target or Initiative

## Area of Focus #1 – Knowledge

### What is the issue?

One of the key ingredients in being able to make wise decisions about the environment or any other issue is the knowledge that we have, and can use, in decision-making — having the right information, at the right place, at the right time. Canada's current sustainable development information and knowledge base needs to be improved so that we can provide a better foundation for informed public debate and knowledge-based decision-making. Environment Canada believes that there are a number of things we can do to enhance the knowledge base within the Department and in the country, and to enhance the communication and use of that knowledge.

Science is an essential piece of the knowledge base for sustainable development. It is science that has enabled our understanding of the mutually dependent relationships between human activities and environmental quality. As Environment Canada is a science-based department, science is one of its strengths, yet there remain opportunities for further consolidation, enhancement and improved access.

### What are we doing about it?

In order to ensure that Canada's science and knowledge base is as comprehensive and accessible as possible, a robust environmental information system is needed. Environment Canada's response to this need is the Canadian Information System for the Environment (CISE). Building a comprehensive information system would help to 1) enhance accountability to Canadians through better reporting on progress in addressing environmental concerns; 2) provide information to Canadians and organizations that would empower them to take action to play their role in environmental management; and 3) strengthen the basis for sound public policies.

Environment Canada is leading the implementation of the CISE based on the October 2001 recommendations of the CISE Task Force. CISE will enable governments and stakeholders to share and integrate online information from numerous sources and provide it in a form that is readily accessible, understandable and usable by those who need it. It will also, over time, improve the quality and quantity of environmental information in Canada through developing national consensus on priorities for improvement of environmental information.



## The Canadian Information System on the Environment (CISE): Providing Canadians with Environmental Knowledge

Data and information from a full range of sustained and consistent monitoring programs are needed to identify the issues that threaten human and ecosystem health, predict emerging threats, choose effective solutions and assess whether progress is being achieved.

*“Measuring progress is about giving governments, companies—and indeed all Canadians—the information they need to ensure that the economic growth we enjoy is sustainable... Indeed there are already signs of a growing public desire for hard data on environmental sustainability.”*

**Paul Martin, Minister of Finance,  
May 25, 2001**

Existing problems with Canada's national environmental data have been cited by the National Round Table on the Environment and the Economy (NRTEE) and the Commissioner of the Environment and Sustainable Development. Currently, it is impossible to compare data across regions and jurisdictions, and individual Canadians

often do not know where to find environmental information. These data issues have contributed to an erosion of public confidence in governments and industry on environmental issues and an inability to assess progress on Canada's national and international environmental commitments.



### Accomplishments

The Minister of the Environment appointed a task force comprised of 21 senior academics, federal and provincial government officials, and Aboriginal, industry and NGO representatives in October 2000 to respond to these data issues. Its mandate was to advise the Minister of the design and implementation of an environmental information system. At the same time, \$9 million through Budget 2000 was committed to CISE and a complementary project—the Environment and Sustainable Development

Indicators (ESDI) initiative, led by the NRTEE.

*“Our vision of CISE is to enable timely access to and effective application of relevant, credible integrated environmental data and information in support of decision making by all Canadians, through a coordinated, cooperative network of government agencies, the private sector, academia, non-government organizations, Aboriginal peoples, and others.”*

**Task Force Final Report, 2001**

The CISE Task Force issued its preliminary recommendations in an interim report in May 2001. The Task Force solicited national input on this report through: a workshop with federal coordinators of information systems; workshops in seven cities across Canada with over 230 representatives from governmental and non-governmental organizations; a meeting with the

Youth Round Table for the Environment; a workshop with representatives of seven national aboriginal organizations; and the distribution of 2,500 interim reports to interested parties.

The Task Force's Final Report (presented to the Minister in October 2001) calls for a national, shared approach to collecting, managing and disseminating environmental information. The Task Force recommended that the system be developed as a network of Canadian and international organizations that produce environmental information, with central coordination activities provided by an independent organization jointly sponsored by federal, provincial and territorial governments.

Recognizing the benefits of the CISE approach to all Canadians, Environment Canada has proceeded with its implementation. The implementation phase of CISE includes projects that have a focus on developing partnerships and putting in place mechanisms and infrastructure for the sharing of information among various agencies and jurisdictions. Significant partnerships are being developed with the National Forest Information System, GeoConnections, Canadian Space Agency, provinces and territories, and non government organizations. Priority has been given to projects that support the proposed NRTEE environment and sustainable development indicators (water quality, air quality, wetlands and biodiversity) and help to establish data-sharing arrangements. Examples include:

- improving access to NAPS monitoring data;
- developing a national water quality data referencing network to integrate federal, provincial and municipal databases on source and drinking water quality;
- developing a national wetlands classification system and inventory; and
- linking sources of bird monitoring information to support bird conservation initiatives, with development of specific tools for environmental assessment.

## Impacts and Benefits

The impacts of issues such as smog, drinking water quality and climate change have raised the importance of environmental issues to Canadians. There is a consensus across the country on the need to understand, track and manage environmental change.

Scientists, policy-makers, industry and environmental groups all support the concept of a national information system and, seeing the benefits, are willing to invest in and contribute to the network.

*“The state of our environment is inextricably linked to Canada’s prosperity, competitiveness and growth. Over time, we believe that CISE will serve to improve the state of Canada’s environment and the effectiveness of environmental management in Canada.”*

**Task Force Final Report, 2001**

Benefits will include:

- empowering the general public to deal with environmental matters by providing easy and timely access to reliable information;
- improving the ability of Canadians to hold their governments (and others) accountable for their environmental record;
- providing the strategic information and knowledge base for better decisions by policy-makers on how best to sustain the environment;
- developing the data to measure progress against our national and international commitments; and
- providing the data and knowledge to improve our scientific understanding of natural systems and the human impacts on them.

## Next Steps/Future Challenges

In the upcoming year, CISE will focus on:

- building the infrastructure of the information system, i.e., the technologies, policies, standards and collaborative agreements;
- working with the provinces and territories to identify a governance model for CISE and define priorities; and
- implementing projects to support the ESDI initiative and access and integrate data on air quality, water and biodiversity.

Within two years, it is expected that a “road map” to guide data development nationally will be in place and data-sharing agreements signed with some partners.

■ ■ ■ For more information on CISE, visit: [www.ec.gc.ca/cise](http://www.ec.gc.ca/cise)

## ***Area of Focus #2 – Partnerships***

### *What is the issue?*

As the complexity of environmental and sustainable development issues continues to increase, more partners than ever must be involved in developing solutions and implementing them throughout the economy and society. New approaches are needed that help leverage the greatest possible collective impact from action by business, NGOs, universities, Aboriginal people, provinces, municipalities and citizens. Achieving results through innovative partnership arrangements is both a

*“There are considerable potential benefits to Nunavut from CISE through greater and more cost-efficient access to environmental data and from obtaining relevant and current information from other jurisdictions.”*

**Katherine Trumper,  
Deputy Minister, Department of  
Sustainable Development, Nunavut**

requirement and a critical opportunity in the transition to sustainable development.

We believe that some of the most important opportunities for partnerships are at the community level. Many communities are undergoing unprecedented change. They face complex social, environmental and economic challenges (e.g., downturn in rural communities, loss of traditional industries or way of life, environmental degradation, out-migration, seasonal unemployment, urbanization) and emerging opportunities (e.g., information and other technologies, value-added industries, tourism, community renewal).

A more integrated approach to bringing communities information and expertise and delivering federal programs and services will empower both communities and the government to identify and respond to sustainability goals and objectives.

At the global level, responsibility for environmental issues is shared by autonomous institutions. Policy and program coherence is rare, and institutions compete for profile and resources. There is a growing consensus that a lack of coordination among international agreements and institutions poses a major impediment to global sustainable development. To meet existing and emerging environmental challenges, the system of global environmental governance (namely, the international legal framework, the financial framework, the accountability framework and policy capacity) requires strengthening.

### *What are we doing about it?*

Environment Canada has a strong history of working through partnerships. The Department will continue to develop innovative approaches to build new partnerships that focus on shared agendas and outcomes and to establish and maintain strong constituencies in support of environmental progress.

At Environment Canada, we have been working to enhance community sustainability through our programs and services for some time (e.g., through our regional ecosystem initiatives and our education and communication efforts). We have focused considerable attention on building partnerships at the community level that bring together a broad range of government, private and voluntary sector organizations and on providing vital knowledge, tools, information and funding to enhance the ability of communities to promote sustainable development. As a Department, we draw on our partnerships within

communities to help carry out our sustainability mission and to address key issues of concern to Canadians, such as clean air, clean water, nature, climate change and weather at the local level.

At the international level, Environment Canada has made significant inroads through an intergovernmental process aimed at addressing many international environmental governance challenges in advance of the 2002 World Summit on Sustainable Development (WSSD). Canada's Minister of the Environment, in his role as President of the UNEP Governing Council, is leading this high-profile process. Ultimately, positive changes on this front will be an important investment in Canada's future and in the health, security and prosperity of Canadians.



### **International Leadership on Environmental Issues: The Road to the World Summit on Sustainable Development**

Sustainable development is the key to promoting conditions that lead to a higher quality of life for more of the world's people. The WSSD, held in Johannesburg in August and

September 2002, charted a global plan to promote sustainable development offering solutions to critical environmental issues by integrating environmental, economic and social development factors.

The responsibility for environmental issues at the global level is shared by countries, working in cooperation with a

large number of autonomous institutions. To meet existing and emerging environmental challenges, the system of international environmental governance—including the international legal, financial and accountability frameworks as well as policy capacity—requires strengthening. During the past two years, Environment Canada has contributed significantly to the development of an intergovernmental process to improve governance mechanisms in preparation for the WSSD.



### **Accomplishments**

Environment Canada's leadership and involvement in major international events in the last year firmly positioned Canada's priorities on the list of issues discussed at the WSSD and enabled the Canadian delegation to have a significant influence on the discussions and decisions that took place in Johannesburg. Canada worked hard to ensure that environmental considerations were integrated into

*"We live in a world where a child dies from a waterborne disease every 10 seconds and one-fifth of all the burden of disease may be associated with environmental factors."*

**David Anderson**  
Minister of the Environment  
April 14, 2002



discussions on development, poverty alleviation, trade, social development and more. Three priority issues for Canada are:

- international environmental governance;
- health and environment; and
- partnerships.

In 2001–2002, Minister Anderson was elected President of the Governing Council of UNEP for a two-year term. This position provides Canada with a unique opportunity to demonstrate leadership and influence global environmental issues and, in particular, to contribute to the successful conclusion of the Canada-led International Environmental Governance (IEG) process. In February 2002, at the third Global Ministerial Environment Forum in Cartagena, Colombia, Ministers reached agreement on recommendations to strengthen IEG in part by addressing the financial situation of UNEP, developing a strategic plan for capacity building for developing countries and identifying opportunities to improve the effectiveness of Multilateral Environmental Agreements.

In November 2001, Environment Canada and the Department of Fisheries and Oceans co-hosted the first meeting to review the implementation of the Global Program of Action (GPA) for the protection of the marine environment from land-based activities. Participants (including Ministers and other high-level delegates from 98 countries, international financial institutions and organizations, UN agencies and NGOs) produced the Montreal Declaration, a major contribution to the WSSD. Demonstrating its commitment to the GPA, Canada was the first country to publish a national report on the prevention of marine pollution and protection of coastal habitat from land-based activities.

The linkages between a healthy environment and human health are becoming increasingly clear. To build broader hemispheric support for the Canada's health and environment priority, in March 2002, Environment Canada and Health Canada co-hosted a meeting of Health and Environment Ministers of the Americas (HEMA), with the active support and technical cooperation of the Pan American Health Organization and UNEP (Regional Office of Latin America and the Caribbean and Regional Office of North America). This meeting led to a hemispheric agenda of priorities that reflects common concerns. In particular, HEMA led to agreement on priority issues (including integrated management of water resources, air quality, sound management of chemicals, and health implications of natural and human-made disasters) and the need for partnerships (government, industry, civil society, public) to work together on these issues. Health and Environment

Ministers also agreed to meet every four years prior to the Summits of the Americas to set directions and assess progress on common health and environment priorities.

An additional health and environment priority this year has been the development of a Canadian proposal for a global initiative on the environment and human health. The proposal calls for the active participation of developing and developed countries, under the leadership of the World Health Organization (WHO) and UNEP, to develop a synthesis of existing knowledge on the links between the environment and human health as a basis for future capacity building efforts. Environment Canada will work with HC in leading Canada's efforts to build broad global support for this initiative at the WSSD.



### Impacts and Benefits

Canada's involvement last year in UNEP, HEMA, and GPA placed Canada front and centre during the lead up to the World Summit. Environment Canada's leadership efforts have influenced key elements of the international environmental agenda and ensure a continued Canadian leadership role.

In 2001–2002, efforts to develop a more effective and efficient IEG framework paid off. The Framework removes barriers to the participation of developing countries by producing international agreement on a new UNEP funding formula (details of which will be finalized). The stable funding formula will make multi-year planning possible, will enhance coordination among international environmental organizations and is essential to achieving global environmental goals.



### Next Steps/Future Challenges

Environment Canada will continue to develop and position Canada's environmental priorities as a follow-up to the WSSD agenda. Partnerships with the private sector and others will be strengthened with the goal of applying innovative approaches and technologies to advance our national and international sustainable development goals.

- ■ ■ To find out more about Canada's role in global environmental issues, visit: [www.ec.gc.ca/press/2001/010205-3\\_b\\_e.htm](http://www.ec.gc.ca/press/2001/010205-3_b_e.htm)
- ■ ■ To find out more about the WSSD, visit: [www.canada2002earthsummit.gc.ca/index\\_e.cfm](http://www.canada2002earthsummit.gc.ca/index_e.cfm)
- ■ ■ To access the IEG final report, visit: [www.unep.org/governingbodies/governingcouncil\\_seventh.asp](http://www.unep.org/governingbodies/governingcouncil_seventh.asp)
- ■ ■ For more information on the Global Programme of Action, visit: [www.gpa.unep.org/igr/default.htm](http://www.gpa.unep.org/igr/default.htm); to view Canada's first GPA report, visit: [www.ec.gc.ca/marine/npa-pan/index\\_e.htm](http://www.ec.gc.ca/marine/npa-pan/index_e.htm)

## Area of Focus #4 – Shared Initiatives

### What is the issue?

Environment Canada believes in the need to adopt government-wide approaches to meet the sustainable development challenge. Sustainable development by its very nature implies the importance of working across departmental boundaries, and this has been a focus for the Department in recent years.

### Sustainable Development (SD) Coordinated Action and Planning Across Federal Departments

Initiative	Departmental Leads
1. SD in Government Operations	Public Works and Government Services Canada Natural Resources Canada Environment Canada
2. International Aspects of SD	Department of Foreign Affairs and International Trade Canadian International Development Agency
3. A Federal SD Strategy for the North	Indian and Northern Affairs Canada
4. SD and Healthy Canadians	Health Canada
5. Social and Cultural Aspects of SD	Human Resources and Development Canada Canadian Heritage
6. Productivity Through Eco-efficiency	Industry Canada Natural Resources Canada
7. SD Knowledge and Information/ Indicators and Reporting	Natural Resources Canada Statistic Canada Environment Canada
8. Sustainability in Communities	Environment Canada Industry Canada Natural Resources Canada

### What are we doing about it?

While each department is required to prepare its own SDS, since the tabling of the last strategies, considerable attention has focused on building support for government-wide initiatives on certain key sustainable development issues. Federal departments have been working towards coordinated action and planning in eight areas. In each of these areas, the focus is on establishing shared results and goals, coordinated actions and common measures of performance for participating departments.

Promoting teamwork and collaboration among departments will decrease overlap and improve the effectiveness of programs. More importantly, it will put into practice a more horizontal approach to advancing sustainable development across the federal government, and therefore a stronger likelihood of measuring progress

government-wide. This coordinated planning effort reflects an important step forward, but further effort will be required in the coming years as the process of building greater coherence and coordination across the federal government continues and evolves.



### Managing Sustainable Development: Leading by Example and Greening Government Operations

The Government of Canada is committed to making government greener by promoting the adoption of pollution prevention and environmentally responsible approaches and practices in each of its departments and agencies.

The federal government is the largest employer in Canada. It has an on-road vehicle fleet of some 23,000 vehicles and occupies over 25 million square metres of floor space in more than 50,000 buildings. Making government greener means encouraging federal employees to integrate sustainable development into decision-making. All federal employees can work to reduce the ecological footprint of federal operations, thereby helping the government meet its commitment to become a model of environmental excellence. Environment Canada is helping to achieve this commitment through our leadership on a number of government-wide initiatives, as well as our in-house actions.



### Accomplishments

The focus in 2001–2002 has been on developing the necessary frameworks, tools and critical partnerships that are required to make greening operations a reality. Major initiatives include Federal House in Order (FHIO), SDGO and the continued implementation of an environmental management system (EMS) within our own operations.

#### Federal House in Order

The FHIO initiative, which is co-led by Environment Canada and Natural Resources Canada, is the federal government's plan for meeting its GHG emission reduction target of 31% below 1990 levels by 2010. It has two main objectives: the first is to demonstrate federal leadership in addressing climate change to other sectors of the economy and to the Canadian public; the second is to provide enhanced services to departments and agencies to help them achieve their GHG emission reduction targets through buildings, fleets and the procurement of emerging renewable electricity.

Environment Canada's primary role in FHIO is the management of the Leadership Challenge through which all federal entities will be invited to undertake their own program of GHG emission reduction actions and to

voluntarily report on results. Through the Leadership Challenge, Environment Canada will coordinate the sharing of information and best practices, develop tools to help federal entities reduce emissions and facilitate leadership actions in areas such as employee commuting and vehicle procurement.

A significant FHIO accomplishment was the agreed allocation of the target between the 11 designated departments that account for 95% of federal emissions. The agreement commits signatories to achieving GHG reduction targets and requires that each department report annually on progress through a centralized GHG data inventory. These data are rolled up into an annual report that is submitted to the Voluntary Challenge Registry Inc. (VCR), outlining the federal government's progress towards its target. The Government of Canada achieved Gold Champion Level reporting designation for its 2001 report.

### *Sustainable Development in Government Operations*

SDGO is a government-wide initiative whose goal is to achieve coordination of the federal effort to green government operations and the integration of sustainable approaches and actions in day-to-day activities. To facilitate the integration of the principles of sustainable development into all federal government operational decision-making, the SDGO coordination role involves direction setting, enablement of action and government-wide reporting of concrete results.

The SDGO initiative is co-led by Environment Canada, Natural Resources Canada (NRCan) and Public Works and Government Services Canada, and it targets the 28 federal departments that prepare an SDS.

SDGO sets out goals for green government in seven priority areas:

- energy efficiency/buildings;
- human resources management;
- land use management;
- procurement;
- vehicle fleet management;
- waste management; and
- water and wastewater management.

Last year, work focused on developing an overall plan to improve coordination and set direction. Since the approval of *Sustainable Development in Government Operations, A Proposal for Moving Forward*, Environment Canada has established a web site to facilitate access to information, best practices and tools necessary to meet commitments. The Greening Government web site ([www.greeninggovernment.gc.ca](http://www.greeninggovernment.gc.ca)) also provides

departments and agencies with consistent SDGO indicators to help them measure their progress. The first government-wide report on greening operations will be produced in fall 2002.

### *Environmental Management System*

Within the Department, the EMS received renewed attention. Using a new EMS Implementation Guide, individual facility EMS plans were developed for 15 of the Department's largest owned facilities. EMS requirements address eco-efficiency measures such as water conservation, energy use and green procurement, as well as managing environmental risk associated with hazardous materials and contaminated sites. The facilities' environmental management plans (EMPs) also outline a common measuring and reporting structure to allow for comprehensive reporting across the Department. As one of the 11 designated FHIO departments, Environment Canada has been reporting on its GHG emissions from buildings and fleet and will begin reporting on SDGO targets in fall 2002.



### **Impacts and Benefits**

FHIO actions have laid the groundwork for the federal government to meet its GHG reduction targets and illustrates federal leadership on climate change and other environmental issues. FHIO has been launched across Canada via a series of workshops that were attended by approximately 700 managers and employees in over 20 departments and agencies.

To date, space reductions through downsizing, energy and fuel efficiency programs, and green power purchases have contributed to a 21.5% reduction in federal emissions from 1990 levels. The government has also shown leadership in such areas as the promotion of ethanol-blended fuels in the federal fleet and the launch of a payroll deduction pilot for transit passes. Activities to reduce emissions by the further required 9.5% will have impacts not only on the environment but also on the development of green industries. As an example, a significant portion of future GHG reductions will be achieved through the purchase of emerging renewable electricity. The government's target in this area (20% of total energy by 2005) represents an investment of \$30 million in the renewable energy sector. This policy provides a significant boost to the industry and will contribute to development of the alternative energy market for Canada.

Other government procurement decisions can act as a lever in the broader market. With annual expenditures on goods and services of approximately \$10 billion, Environment Canada and other departments can exert significant influence on the market to develop greener products, ranging from paper through to energy-efficient buildings

and vehicles. Even broader impacts can be achieved through our ongoing dialogue with organizations such as the Royal Architecture Institute of Canada (RAIC). Encouraging the integration of sustainable building concepts into the RAIC charter will impact all building and renovation activity in Canada.



### Next Steps/Future Challenges

Environment Canada will continue to play a leadership role on the FHIO and SDGO initiatives. The Department has received funding for the next five years for the FHIO Leadership Challenge Office, and it will continue the expansion of the initiative to non-designated departments and will continue with the development and promotion of emission reduction tools. Through SDGO, the Department will provide information on greening government to departments and take an active role in promoting government-wide initiatives in areas such as green procurement and EMS implementation.

Building on the 15 facility-based EMSs completed last year, the Department plans to develop EMSs for an additional 26 owned facilities in 2002–2003. The Department has also adopted FHIO and SDGO targets and will report on its progress against these.

- ■ ■ To learn more about sustainable development practices that can be adopted by industry and others or about the actions the government is taking to green its operations, visit: [www.greeninggovernment.gc.ca](http://www.greeninggovernment.gc.ca) and [www.fhio.gc.ca](http://www.fhio.gc.ca)

## 3.4.2 Long-term Key Result: Well-performing Organization

*A well-performing organization supported by efficient and innovative services*

Ensuring that the Department has the management context and capacity to achieve its environmental results entails providing the stewardship and frameworks that will lead to good management decision-making, a healthy work environment and a productive workforce.

### Performance Framework

The “well-performing organization” long-term key result is divided into five areas of focus. The following table aligns these five areas of focus, along with long-term indicators and targets and commitments for 2001–2002 that form Environment Canada’s response to the long-term key result for the planning period.

## MANAGEMENT, ADMINISTRATION AND POLICY BUSINESS LINE (Continued)

*Long-term key result: A well-performing organization supported by efficient and innovative services*

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
<b>Area of Focus #5: Citizen Focus – reported on this planning period</b>		
<ul style="list-style-type: none"> <li>Assess information and engagement needs of Canadians.</li> <li>Provide leadership and support to the Department in transforming internal and external relationships.</li> </ul>	<p><b>Indicator:</b> e-Government plays a significant role in enabling the Department to deliver on its mandate.</p> <p><b>Target:</b> Implement e-Government to further strengthen Environment Canada’s citizen focus and its ability to expand and deepen collaborative arrangements.</p>	<p>✓ <b>e-Government and Renewed Internet Presence</b></p> <ul style="list-style-type: none"> <li>Key elements of a more cohesive and integrated Internet presence for Environment Canada will be in place to support government online targets by December 2001.*</li> <li>A new Green Lane home page, client-centric classification and searching techniques, regular audience research and stronger linkages with weather information.</li> <li>Review and prioritize key services to meet the 2004 government online target and commence implementation in 2001–2002.</li> <li>In 2001–2002, evaluate the scope and cost of an environmental portal with a planned, phased introduction starting in 2002–2003, with continued enhancements over subsequent fiscal years.</li> <li>Renew our Internet presence in 2001–2002 to ensure better access of information to both internal and external users.*</li> </ul>
<ul style="list-style-type: none"> <li>Design, deliver, evaluate and report on activities in order to improve service to Canadians.</li> </ul>	<p><b>Indicator:</b> Improved service to citizens and stakeholders.</p> <p><b>Target:</b> Improve Environment Canada’s understanding of the information and engagement needs of Canadians.</p>	<p><b>Service Strategy</b></p> <ul style="list-style-type: none"> <li>Develop a plan to improve client satisfaction with the delivery of key services to the public in 2001–2002.</li> </ul>

High-Level Strategies	Long-Term Indicators/Targets	Initiatives and Deliverables (As stated in RPP 2001–2002)
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#### Area of Focus #6: Exemplary Workforce – reported on this planning period

<ul style="list-style-type: none"> <li>Enhance the departmental capacity for analysis.</li> </ul>	<p><b>Indicator:</b> A motivated, skilled and representative workforce with the capacity to deal with current environmental concerns and new challenges.</p> <p><b>Target:</b> Workforce increasingly representative of the public it serves — representation targets for women (technical category) 21.5%; Aboriginal peoples 1.3%; Persons with disabilities 4.9%; visible minorities 9.8% by April 2005.</p> <p><b>Target:</b> Employee competencies are appropriately used to achieve organizational goals — 80% of employees report that their capabilities are appropriately employed.</p> <p><b>Target:</b> Fill 90% of bilingual positions by employees who meet the linguistic requirements of their positions.</p>	<p><b>Human Resource Capacity</b></p> <ul style="list-style-type: none"> <li>Initiatives to start in 2002–2003.</li> </ul>
<ul style="list-style-type: none"> <li>Develop human resource tools to increase the self-serve capacity of managers across the Department.</li> </ul>	<p><b>Indicator:</b> Degree to which the workforce is being developed to meet the evolving and future requirements of the Department.</p> <p><b>Target:</b> Develop replacement plans for critical positions and groups.</p>	<p><b>Human Resource Development</b></p> <ul style="list-style-type: none"> <li>Develop a Management Development Policy in 2001–2002 and a Departmental Learning Investment Strategy in 2002–2003.</li> </ul>

#### Area of Focus #7: Responsible Spending – not reported in detail on this planning period

<ul style="list-style-type: none"> <li>Continue our progress towards linking financial and non-financial information.</li> </ul>	<p><b>Indicator:</b> Financial and non-financial information is integrated in a way that enables improved management decision-making.</p> <p><b>Target:</b> Implement a five-year action plan for modern management.</p>	<p><b>Strengthening Decision-Making</b></p> <ul style="list-style-type: none"> <li>Develop an internal control framework.</li> <li>Develop a framework and tools to integrate risk management in decision-making.</li> </ul>
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#### Area of Focus #8: Managing for Results – reported on this planning period

<ul style="list-style-type: none"> <li>Provide support to managers in the development of results-based management and accountability frameworks.</li> </ul>	<p><b>Indicator:</b> Environment Canada's managers integrate results-based management in their decision-making.</p> <p><b>Target:</b> Decisions on strategic commitments of the Department supported by results-based implementation plans and reporting strategies by 2003.</p>	<p>✓ <b>Modern Management Action Plan</b></p> <ul style="list-style-type: none"> <li>Complete the development of a five-year action plan for modern management and modern comptrollership at Environment Canada in 2001–2002.</li> <li>Communication of the Management Framework to build awareness and ownership to all staff by March 2002.</li> </ul>
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#### Area of Focus #9: Values and Ethics – not reported in detail on this planning period

<ul style="list-style-type: none"> <li>Continue to be guided by the highest professional and ethical values.</li> </ul>	<p><b>Indicator:</b> Under development.</p> <p><b>Target:</b> Communicate Environment Canada's vision, values and directions to staff consistently.</p>	<p><b>Values and Ethics</b></p> <ul style="list-style-type: none"> <li>Continue dialogue on values and ethics, community dialogues in 2001–2002.</li> </ul>
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**Note:** Highlighted initiatives (✓) were selected for detailed reporting in this year's report. Initiatives were selected based on significant achievements occurring during the reporting period and/or the issue being of interest to Canadians and Parliamentarians.

\* Sustainable Development Strategy/Target or Initiative

## Area of Focus #5 – Citizen Focus



### e-Government: Knowledge in the Service of Canadians

#### What is the issue?

The Government of Canada is committed to designing, funding and delivering its programs and services, and assessing their results, from the perspective of citizens. Citizens want the government to respond to their needs and provide one-stop, integrated access via the web, telephone or mail or in person.

Within Environment Canada, there are pockets of excellent accessible and connected services, such as weather information, which have been recognized for their citizen focus. However, there is a need for a clear understanding throughout the Department of the needs and expectations of citizens with respect to the environment to ensure that programs and services are designed and delivered from a citizen perspective.

#### What are we doing about it?

Environment Canada is committed to delivering effective, citizen-focused services and programs to Canadians and to seeking out partnerships where this make sense. An integrated service strategy is being developed to obtain comprehensive information on the needs and expectations of citizens, how these needs can be met and how working with partners could optimize the provision of high-quality, innovative services.

In parallel to the development of a service strategy, Environment Canada is proceeding with a Service Improvement Initiative. This effort will identify key Environment Canada services to the public, report on service standards and measure progress on client satisfaction against a 10% improvement target.

Intimately tied to the service agenda, e-Government is a key lever for transforming the way in which we do business. Business lines are embedding e-Government approaches in the core of their business planning and delivery whenever it makes sense. This effort is about achieving the Department's vision through effective use of electronic tools to transform the way we conduct our business and better engage and serve people, generally through the delivery channel of their choice.

Broadly defined, e-Government can subsume everything government does. Its true mark of success will be when there is no longer a need for the “e” in front of the “government” because it is so much a part of how we do business. To get us to that point, Environment Canada has committed to “*achieving the Department’s vision through the effective use of electronic tools that enable us to transform the way we conduct our business, to better engage and serve people.*”

In 2001–2002, we took significant steps towards meeting our e-Government commitments. Activities can be grouped in two broad areas:

- improving and transforming services to Canadians; and
- building and maintaining the infrastructure that we need to succeed in meeting our commitment (people, technologies and tools).



### Accomplishments

#### Enhancing Services to Canadians

#### Email from a Grade 7 student

*“Hi I’m a grade 7 student and my assignment was to find a site that I thought was good at showing people to help or notify them about the environment and I picked you. You have a thing about sustainable development which is what we’re learning about and things about keeping the air clean. I think you should be very proud of what your doing with this website on behalf of every one in my class and in Canada.”*

Juliana

The primary goal of e-Government is to improve services to Canadians, through all delivery channels. We are concentrating on harnessing our knowledge to benefit our clients. This year, our efforts have focused on gaining a better understanding of our clients’ needs and concerns and on partnering with others (both inside and outside the Department) to respond. A major initiative with respect to the Internet service delivery channel is the review of how the Department is managing its Internet assets to best respond to client needs. Several components of this initiative are already under way:

- To support our Green Lane Renewal efforts, extensive market research was conducted in 2001–2002. In total, 16 brainstorming sessions were held across Canada with youth, business managers, educators and the general public, and an online survey was conducted to identify why Canadians visit the Green Lane site and what they want in terms of information, content, level of detail and presentation.
- To better meet the information needs of Canadians, the Department is making progress in better integrating and highlighting the extensive content on the Green Lane to provide easy-to-access, user-friendly information in a

timely fashion. By adopting a more journalistic style and including links to other sites, the science, environmental and health impacts can be brought together to tell a complete story. In the last year, the Department received positive feedback on a number of such efforts, including its information package on the road salts issue, the introduction of the new wind chill measurement, the seasonal forecasts page and the consumer information regularly available in EnviroZine, Environment Canada's online magazine.

## Providing Canadians with a Single Window on the Weather

In spring 2001, the MSC undertook the task of amalgamating a number of weather web sites across Canada into a Single Window on the Weather. Pacific and Yukon Region MSC filled the role for primary site developer. The site was launched in July 2001, and development is ongoing to create a more comprehensive national weather web service.

The web site represents a major Government of Canada web service, attracting millions of visitors each month, demonstrating a key e-Government service and providing high visibility to the Government of Canada. In June 2002, the site received over eight million visits; the number of visits is increasing by 12% each month. Over the past year, the site has quadrupled its reach to the Canadian public. The timely displays of weather warnings, forecasts and weather maps enable Canadians to make weather-related decisions that impact their personal safety, the security of their property and their economic well-being.

- The Sustaining the Environment and Resources for Canadians (SERC) cluster on the Canada site illustrates the importance of partnerships to the e-Government agenda and to the delivery of better services to Canadians. Led by Environment Canada, in a partnership with the four other natural resource departments, SERC efforts in the first year have focused on those issues that are top of mind for Canadians (clean air, clean water and climate change) and on the sustainable development of Canada's resources. The SERC effort will be broadened next year to involve more departments, add new issues (e.g., land management) and broaden the scope of the information services that are provided (e.g., social dimensions of sustainable development).
- In 2001, an Internet Policy was developed that confirmed and reinforced the Treasury Board policy and added departmental-specific pieces. The policy was approved in March 2002, and information sessions for staff are now under way.

*"Virtually all government services can be classified under one of three fundamental categories: informational, interactive and transactional. The first, informational, is by far the most significant. Information is at the heart of every policy decision, response, activity, initiative, interaction and transaction between government and citizens, government and businesses and among governments themselves. How information is collected, processed, analyzed, packaged and disseminated is in itself a specialized industry."*

**Global Survey of e-Government,  
United Nations Division for Public Economics  
& Public Administration**

## Building and Maintaining the e-Government Infrastructure

Infrastructure includes systems, tools and people considerations and is the foundation upon which e-Government initiatives are built. Without the appropriate technology and the capacity of employees to apply e-Government concepts and principles into programs and services, our e-Government goals will not be met.

## Innovative Desktop Computer Leasing Arrangement

Through the National Master Standing Offer (NMSO) of PWGSC a leasing arrangement was conceived to allow for an affordable, sustainable and immediate replacement of all of the below standard Atlantic Region PC equipment. The Region is now able to immediately replace the entire current set of sub standard Personal Computers at an average savings of 25%. Managers can budget precise future costs and provide up to date equipment, employees can benefit from a transparent process for updating technology and IT can provide efficient, reliable quality service.

The Department's Informatics Management/Information Technology Strategy is a multi-year program for *restoring* the IM/IT infrastructure across the Department, *transforming* information and people, and *sustaining* IM/IT processes and structures throughout the Department. In 2001–2002, \$14 million was invested in over 30 IM/IT restoration and transformation projects. These investments have resulted in reliable and secure connectivity for all employees, access by employees to all corporate resources and fast and accurate information retrieval.

The focus of activities targeted at our people has been to build awareness, foster the sharing of information on e-Government initiatives across the Department and provide basic tools to achieve these goals. In 2001–2002, one national and three regional learning events were held. As well, the Department's Intranet site on e-Government was extensively rebuilt to provide a better virtual meeting place for all employees.

## Impacts and Benefits

e-Government continues to transform public sector internal and external relationships through net-enabled operations, IT and communications. Benefits include improved service delivery, greater constituency participation and more cost-effective operations. Through the use of relevant, easy-to-access services, Canadians will increasingly be able to make better informed and timely decisions related to the environment.

## Next Steps/Future Challenges

The next steps will build on the lessons learned in the early stages of implementation of our e-Government strategy. The SERC initiative has highlighted the fact that Environment Canada and others have a lot of knowledge to share and that a partnered effort not only will lead to a better result, it will lead to the creation of new knowledge by bringing together the various pieces held by each partner. The success of the Single Window on the Weather initiative has illustrated the importance of aligning service delivery across all regions and programs in order to provide more responsive, consistent and efficient services to our clients.

A further \$2.3 million will be spent to finish the planned upgrade of the Department's IM/IT technical backbone. A "learning strategy" targeting all of our employees will be developed and implemented; its goal will be to move beyond awareness to competency building and the extensive sharing of best practices and lessons learned.

- ■ ■ To find out more about Environment Canada online and the Department's strategy, visit: [www.ec.gc.ca/egov-cgouv/egov-report.html](http://www.ec.gc.ca/egov-cgouv/egov-report.html)
- ■ ■ To access the SERC cluster, visit: [www.environmentandresources.gc.ca](http://www.environmentandresources.gc.ca)
- ■ ■ To access the Single Window on the Weather, visit: [www.weatheroffice.ec.gc.ca](http://www.weatheroffice.ec.gc.ca)

## *Area of Focus #6 – Exemplary Workforce*

### *What is the issue?*

The human resources of the Department represent the key element in our knowledge management and service delivery strategy. It is well known that there is a direct correlation between how employees are dealt with and treated and the quality of service that they deliver to their clients.

### *What are we doing about it?*

Efforts have been made to renew, supplement and revitalize our human resources management approach in a way that will improve morale and build upon the existing dedication of EC employees to their work and the mandate of the Department. The key drivers for this new approach are the need to advance our renewal of the workforce, the recognition that more proactive measures were needed to make our workforce truly representative of the public that it serves and the results of the Public Service Employee Survey.

## Human Resource Capacity Building: Supporting Better Knowledge Management and Facilitating the Delivery of Enhanced Services to Canadians

The fiscal year 2001–2002 has been one where the critical infrastructure and investment strategies were put in place to help the Department move forward on both its knowledge management and service delivery agendas.

## Accomplishments

The Employment Equity and Diversity Management Plan was put in place and moved forward by the allocation of funds (for a three-year time span) for awareness and harassment training as well as to support special recruitment initiatives. A new Employment Systems Review was conducted to identify systemic barriers to the employment and promotion of designated group members. Special Advisory Groups were formed for certain designated groups and for youth to facilitate the development and implementation of more proactive measures to recruit, promote and retain employees. A Strategic Hiring Plan was developed to refocus, better co-ordinate and concentrate our outreach and recruitment efforts for the Department. Departmental marketing tools were developed, including branded materials, brochures, kiosks and a video. Management and career development were made a priority, with the implementation of succession/replacement planning for the EX Community and the EC Management Development Policy, the introduction of Personal Development Plans, and the development of a National Career Development Site.

## Impacts and Benefits

There is a recognition by managers and employees alike that we have for too long taken the quality and dedication of our workforce for granted and now is the time to get engaged and do something to prepare for the future. Managers are increasingly assuming ownership of the issues related to developing and sustaining the workforce. Employees are becoming more proactive in the management of their own careers and personal development. A departmental approach to succession planning for senior management positions and the development of managers is already showing benefits both in the quality of HR management and in the interest of EC employees to join the management cadre. We are making steady, but gradual, progress in making our workforce more representative and diverse.





## Next Steps/Future Challenges

Succession/replacement planning will need to be taken to new levels to ensure the longer term viability of the Department and the management cadre. We will need to update our Employment Equity and Diversity Management Plan and commitments to reflect lessons learned over the last two years, particularly, what we have discovered through the Employment Systems Review. The Strategic Hiring Plan will also be updated and made more prescriptive to reflect evolving program needs and a greater urgency to improve the representativeness of the Department. Orientation programs and sites will need to be developed or enhanced to support new employees and students joining the Department. Initiatives will have to be undertaken to facilitate the transfer of key knowledge from departing employees and managers to the existing and augmented workforce. In particular, efforts will have to be made to develop and promote both mentoring and coaching throughout the Department.

## Area of Focus #8 – Managing for Results

### What is the issue?

*Results for Canadians: A Management Framework*, issued by Treasury Board in March 2000, is about responsive government and putting the needs of citizens first. It calls for modernizing government management in order to respond to the changing expectations and priorities of Canadians. It provides a framework and agenda to guide public service managers as they implement required changes in the way departments and agencies manage and deliver their programs and services.

### What are we doing about it?

Environment Canada’s MMAP is modelled after *Results for Canadians*. The Plan is a commitment to excellence in five management areas: responsible spending, managing for results, exemplary workplace, values and citizen focus. It brings together new and existing departmental management improvement initiatives within a coherent and integrated approach to improving a range of organizational capabilities—from day-to-day decision-making to accountability to Parliament. The Action Plan will, over time, improve our corporate capacity to better serve Canadians.



## Modern Management Action Plan: Improving our Corporate Capacity to Better Serve Canadians

Environment Canada’s MMAP focuses on ensuring sound management of public resources and effective decision-making through better performance information, appropriate risk management and control systems, reinforcing values and improved accountability of government to Parliament and citizens. It will provide departmental managers with enhanced information and new tools to manage government programs and services in an increasingly complex environment. The MMAP will enhance managers’ ability to make decisions and understand their work in relation to departmental and government-wide goals and the needs of Canadians.



## Accomplishments

The development and approval of the MMAP in 2001–2002 represent a significant accomplishment on the road to modernizing management approaches within the Department.

The three-year MMAP responds directly to comments received from the Office of the Auditor General, addresses Treasury Board’s list of desired outcomes for the modernization of comptrollership and incorporates improvement opportunities identified in Environment Canada’s management capacity self-assessment report completed in 2000. In spring 2001, information sessions were held within the Department (regions and National Capital Region) to validate and complement the findings.

### MMAP Elements

<b>Responsible Spending</b>	Performance information Risk management Stewardship of departmental resources
<b>Managing for Results</b>	Accountability regime Performance management
<b>Exemplary Workplace</b>	Capacity building Improving the workplace
<b>Values</b>	Support and dialogue on Public Service values
<b>Citizen Focus</b>	Accessible, connected services Partnership strategies

In fall 2001, a draft MMAP was developed, and internal and external consultations on the plan continued into winter 2002. A Modern Management Internal Communication Strategy, a MMAP Management and Reporting structure and some communication products, such as the MMAP Intranet site, were also developed in preparation for MMAP launch.

The final Plan was approved in April 2002.

Progress made in 2001–2002 on modern management initiatives includes development of a common reporting structure; deployment of an IM/IT Strategy; implementation of the first phase of the Financial Information Strategy; establishment of a Departmental Resource Committee; and deployment of some elements of the Treasury Board Integrated Management Risk Management Framework in MSC's review exercise. Progress on two other modern management initiatives is discussed elsewhere in this business line—see related performance stories on e-Government and CISE.

## **Impacts and Benefits**

To date, the MMAP has increased managers' focus on key management issues and helped to illustrate the linkages between various government management initiatives. The Plan also provides managers throughout the department (i.e., Finance, Human Resources, e-Government) with a framework within which to position their upcoming management activities.

The MMAP design is also promoting a culture change within the Department; the strategies and actions for achieving success move all employees towards a culture of managing for results.

The benefits of our modern management initiatives will be seen throughout the Department. With successful implementation of the MMAP, Environment Canada will ensure that:

- improved linkages between financial and non-financial information allow the Department to report on the costs of results achieved;
- timely performance information is available and used to strategically manage and plan upcoming programs;
- the departmental vision, directions and values are understood by all employees;
- human resources management leads to a sustainable and representative workforce;
- the Department's management culture supports continuous learning; and
- Environment Canada management practices are consistent with the highest public service standards.

Ultimately, the greatest benefits of the Plan will be the assurance afforded to Environment Canada's managers and staff and Parliamentarians and Canadians that resources are being used in the best way possible to provide programs and services to meet Canadians' needs.

## **Next Steps/Future Challenges**

Implementation of the MMAP will take place over the next three years. In order to meet the management commitments described in Results for Canadians, some initiatives necessarily take precedence. One of the first steps is the development of an appropriate management infrastructure (e.g., reporting structure, data management frameworks) that contributes to the foundation for improving Environment Canada's management capabilities.

Other upcoming efforts to support implementation will include the deployment of an internal communication strategy, the identification of strategies to promote teamwork to meet the MMAP targets and deliverables, and the implementation of an integrated MMAP management and reporting mechanism to track the progress and results of MMAP activities.

# Appendix A: Consolidated Reporting

## A.1 Sustainable Development Strategy

Under the *Auditor General Act*, selected federal departments and agencies were first required to prepare Sustainable Development Strategies (SDSs) in 1997. The initial strategies represented a first effort to systematically consider departmental policy, program and operational impacts on sustainable development. Under the Act, there is also a requirement for departments to update their strategies at least every three years.

Environment Canada's second SDS, tabled in the House of Commons in February 2001, covers the period 2001–2003. The Department's updated Strategy builds on our strengths while delivering an agenda for innovation which will provide the basis for creative and viable long-term solutions to ensure Canada's ecological legacy for future generations. The Strategy identifies goals and objectives under four areas that the Department feels are critical for making

progress on sustainable development: Knowledge for Decision Making; Incentives; Partnerships and Sustainable Communities; and Managing for Sustainable Development. The Strategy also reinforces Environment Canada's roles of showing leadership by example and of building capacity and commitment with its partners in all sectors of Canadian society. A key element of the Strategy is Environment Canada's commitment to federal government-wide coordinated planning initiatives.

### *Environment Canada's SDS and Business Lines*

Environment Canada delivers on its SDS commitments through the Department's Business Line structure. The following table aligns Strategy goals and objectives with the Business Lines responsible for specific commitments. The key commitments from the Strategy have been identified in the "performance frameworks" shown for each Business Line in Section 3 of this report.

SDS Goal	Business Line
1 The capacity of Canadian institutions and individuals to make decisions that support Sustainable Development is enhanced through the development and sharing of new knowledge and tools.	<ul style="list-style-type: none"> <li>Nature (SDS Objective 1.1)</li> <li>Management, Administration &amp; Policy (SDS Objectives 1.2 and 1.3)</li> <li>Clean Environment (SDS Objective 1.3)</li> <li>Weather &amp; Environmental Predictions (SDS Objective 1.4)</li> </ul>
2 Market signals are gradually corrected so that they more accurately reflect the true value of Canada's natural capital, such as water, air, nature and wetlands.	<ul style="list-style-type: none"> <li>Nature (SDS Objective 2.1)</li> <li>Management, Administration &amp; Policy (SDS Objective 2.1)</li> </ul>
3 Productivity and environmental performance of Canadian industry are improved through the adoption of innovative practices and tools.	<ul style="list-style-type: none"> <li>Management, Administration &amp; Policy (SDS Objective 3.1)</li> <li>Clean Environment (SDS Objective 3.1)</li> </ul>
4 Progress towards, sustainable development is enhanced through the development and implementation of innovative approaches for working with key partners.	<ul style="list-style-type: none"> <li>Management, Administration &amp; Policy (SDS Objective 4.1)</li> </ul>
5 Canadian communities are supported in their transition to sustainable development.	<ul style="list-style-type: none"> <li>Nature (SDS Objectives 5.1, 5.2, 5.3 and 5.4)</li> <li>Management, Administration &amp; Policy (SDS Objectives 5.1, 5.2 and 5.4)</li> <li>Clean Environment (SDS Objective 5.2)</li> <li>Weather &amp; Environmental Predictions (SDS Objective 5.2)</li> </ul>
6 Environment Canada provides a model to others by reducing the environmental impact of its operations.	<ul style="list-style-type: none"> <li>Management, Administration &amp; Policy (SDS Objectives 6.1, 6.2, 6.3, 6.4 and 6.5)</li> <li>Weather &amp; Environmental Predictions (SDS Objective 6.4)</li> </ul>
7 Environment Canada staff understand sustainable development and EMS principles and are able to make decisions and act in ways that promote sustainable development.	<ul style="list-style-type: none"> <li>Management, Administration &amp; Policy (SDS Objective 7.1)</li> </ul>
8 Horizontal policy coordination across government on sustainable development is improved.	<ul style="list-style-type: none"> <li>Management, Administration &amp; Policy (SDS Objectives 8.1, 8.2 and 8.3)</li> <li>Nature (SDS Objective 8.3)</li> </ul>

## *Progress in Implementing Environment Canada's SDS*

Environment Canada has committed to measure and report on its performance in implementing its SDS on an annual basis. Through this report, we have made summary comments on the Department's progress by Strategy theme area. In addition, performance stories included in Section 3 that pertain to SDS commitments are cross-referenced below. Finally, a separate progress report on SDS implementation has been prepared for the period 2001–2002. The web link for access to this more detailed account is [www.ec.gc.ca/sd-dd\\_consult/DPR2002Table\\_e.html](http://www.ec.gc.ca/sd-dd_consult/DPR2002Table_e.html)

### **Theme 1: Knowledge for Decision-Making**

- The final report of the Canadian Information System for the Environment (CISE) Task Force was presented to Minister Anderson on October 23, 2001. The Task Force was created as a result of the Budget 2000 decision relating to environment and sustainable development indicators to address the need to more fully integrate economic and environmental policy decisions. In response to the report's recommendations, work is proceeding through the CISE Secretariat to build a national, more shared and strategic approach to collecting, managing, assessing and disseminating environmental information.
- The Department is focusing on improvements to water quality monitoring. A three-year CCME action plan has been developed which received support from all federal, provincial and territorial jurisdictions. Progress is being made to build the concept of a Canadian Water Research Network and the integration of federal research into a Federal Water Research Network.
- MSC infrastructure for warnings continues to be upgraded and there have been significant improvements in services to the media. Citizen access to real time weather information has been facilitated through a new Single Window Website. A new standard windchill index was implemented in fall of 2001. Last year, during an exceptionally dry period, Environment Canada was called upon to provide water data to support provincial, local and US partner initiatives.

### **Theme 2: Incentives**

- Environment Canada is participating in NRTEE's Ecological Fiscal Reform Initiative which is exploring how a strategy of fiscal instruments might support sustainable development goals in Canada.
- Landowners across Canada are able to receive tax assistance for protecting ecologically sensitive lands. Improved income tax rules covering these "Ecogifts" were put in place during 2001–2002.
- In June 2001, Environment Canada issued a *Policy Framework for Environmental Performance Agreements (EPAs)* which specifies rigorous requirements and design

criteria for managing voluntary initiatives to reduce pollution for various industrial production processes. The Canadian Chemical Producers Association has signed the first EPA to reduce pollution from chemical production.

- Environment Canada promotes eco-efficiency measures with small and medium-sized businesses. Specific projects were undertaken with manufacturing enterprises in Quebec and Ontario to implement pollution prevention measures and improve environmental performance.

### **Theme 3: Partnerships and Sustainable Communities**

- The preparations for the World Summit on Sustainable Development have been a key opportunity for engagement of businesses, NGOs and universities on developing shared agendas and innovative approaches to achieve sustainable development goals.
- In an effort to develop ideas and enhance the relationship between Environment Canada and the environmental voluntary sector, the Department has been an active participant in the Voluntary Sector Initiative. With funding from the initiative, the Department is working with partners to address children's environmental health and climate change issues.
- In September 2001, Environment Ministers committed to the development of a Canadian Stewardship Agenda. The Agenda will provide a flexible plan to advance stewardship across Canada by fostering continued collaboration amongst jurisdictions and the voluntary sector.
- The involvement of Aboriginal peoples in conservation initiatives is significant for the sustainability of their communities. Environment Canada has established a number of partnership arrangements whereby Aboriginal peoples are engaged in migratory bird studies, wildlife and plant inventories, endangered species issues, and other habitat stewardship programs.
- Environment Canada, as Chair of the "Interdepartmental Working Group on Promoting Sustainable Communities," has advanced a sustainable communities thematic for inclusion in a federal sustainable development strategy, to be developed by 2003.

### **Theme 4: Managing for Sustainable Development**

- Environment Canada continues to promote sustainable development coordination across the federal government. Work under the eight themes organized for coordinated action has now, for the most part, been encompassed under the initiative to prepare a federal sustainable development strategy. This strategy will provide an updated overarching federal policy framework to promote a shared vision and coordinated action on sustainable development across the federal system.

- As “Cluster” champion, Environment Canada launched with its partners the portal “Sustaining the Environment and Resources for Canadians” under the Canadian’s Gateway. The project is proving to be a successful partnership effort among the five natural resource departments and allows the Canadian public to find information on sustainable development, with an emphasis on the first targeted subjects of Water, Clean Air and Climate/Weather.
- The focus in 2001–2002 has been developing the necessary frameworks, tools and critical partnerships that are required to make greening operations a reality. Major initiatives include: Federal House in Order (FHIO), Sustainable Development in Government Operations (SDGO), and the continued implementation of an environmental management system (EMS) within our own operations. Details on these initiatives can be found in other parts of this report and in the report on Environment Canada’s progress in implementing its SDS.

## A.2 Status of Key Legislative and Regulatory Initiatives

### CLEAN ENVIRONMENT BUSINESS LINE

Purpose of key legislative or regulatory initiative	Expected results	Performance measurement criteria	Progress to date
<i>Clean Air Agenda</i>			
<p><b>On-Road Vehicle and Engine Emission Regulations</b></p> <p>The proposed On-Road Vehicle and Engine Emission Regulations introduce more stringent national emission standards for on-road vehicles and engines and a new regulatory framework under the <i>Canadian Environmental Protection Act, 1999</i> (CEPA 1999).</p>	<p>As the new cleaner vehicles and engines enter the Canadian market, the proposed regulations will result in considerable reductions in air pollutants emitted from the in-use fleet of on-road vehicles.</p>	<p>Compliance with regulations.</p>	<p>The proposed On-Road Vehicles regulations were published in the <i>Canada Gazette</i> Part 1 on March 30<sup>th</sup>, 2002.</p>
<i>Regulations Controlling the Release of Substances</i>			
<p><b>Metal Mining Effluent Regulations (Fisheries Act)</b></p> <p>The fundamental objective of the proposed new MMER is to improve the management of metal mine effluents with a view toward improving the protection of fish, fish habitat and fisheries.</p>	<p>Then number of regulated mines will increase from ~30 to ~100. There will be more comprehensive and stringent effluent quality standards and new requirements for Environmental Effects Monitoring Programs.</p>	<p>Compliance with regulations.</p>	<p>The regulations were published in the <i>Canada Gazette</i> Part 2 on June 19<sup>th</sup>, 2002.</p>
<i>Regulations Required to Implement International Agreements Canada Has or Will be Party to</i>			
<p><b>Export of Substances Under the Rotterdam Convention Regulations – Formerly the Prior Informed Consent Regulations.</b></p> <p>The main purpose of the proposed Regulations is to ensure that chemicals and pesticides subject to the PIC procedure are not exported to parties to the Convention, unless the importing Party has provided its prior informed consent to the shipment.</p>	<p>Meet our obligations under the Rotterdam convention.</p>	<p>Compliance with regulations.</p>	<p>The proposed regulations were published in the <i>Canada Gazette</i> Part 2 on August 28<sup>th</sup>, 2002 .</p>

## CLEAN ENVIRONMENT BUSINESS LINE (Continued)

Purpose of key legislative or regulatory initiative	Expected results	Performance measurement criteria	Progress to date
<i>Miscellaneous</i>			
<p><b>Listing of Other Acts &amp; Regulations - Schedules 2 &amp; 4 of CEPA 1999</b></p> <p>Establishes that Other Acts &amp; Regulations provide the same process and result as the CEPA 1999 New Substances Notification Regulations.</p>	Efficient and effective use of government expertise to conduct risk assessments in a manner that is consistent with CEPA 1999.	Clarity of federal new substances assessment scheme.	The regulations were published in the <i>Canada Gazette</i> Part 2 on August 1 <sup>st</sup> , 2001.

## NATURE BUSINESS LINE

Purpose of key legislative or regulatory initiative	Expected results	Performance measurement criteria	Progress to date
<p><b>Species at Risk Act</b></p> <p>To protect species at risk and their critical habitats.</p>	The proposed <i>Species at Risk Act</i> and its accompanying regulations will provide a framework to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from becoming extirpated or extinct.	Compliance with regulations.	Bill C-5 is still before Parliament. Regulations delayed.
<p><b>Migratory Birds Regulations — Annual Hunting Regulations</b></p> <p>To make annual adjustments to season dates and bag and possession limits, and to redefine permissible hunting districts in certain provinces, in order to maintain adequate population levels of migratory game birds so that species do not become threatened or endangered.</p>	Conservation of migratory game bird populations.	Compliance with regulations.	The regulations were published in the <i>Canada Gazette</i> , Part II on June 19, 2001.

## A.3 Statutory Annual Reports

### A.3.1 International River Improvements Act

**Purpose:** The *International River Improvements Act* received assent on July 11, 1955. It provides for licensing international river improvements to ensure that Canada's water resources are developed and utilized in the best national interest. The Act does not apply to international river improvements built under the authority of an Act of the Parliament of Canada or situated within boundary waters as defined in the Boundary Waters Treaty of January 11, 1909, or those constructed, operated and maintained solely for domestic, sanitary or irrigation purposes.

**Administration:** Regulations for administering this Act were passed by Order-in-Council P.C. 1955-1899 dated December 29, 1955, and amended P.C. 1987-1943, dated

September 17, 1987, and P.C. 1993-764 dated April 20, 1993. The Department of Environment has administered this Act since June 1971.

**Activity:** During 2001, no licenses were issued under the Regulations of the *International River Improvements Act*.

The Minister received formal notification and project documents from Brilliant Expansion Power Corporation regarding a proposal to build another powerhouse adjacent to the existing Brilliant dam and powerhouse on the Kootenay River near Castlegar, British Columbia. The project involves the construction of the powerhouse and short intake and tailrace canals to be excavated from rock. This correspondence for the Brilliant Powerplant Expansion Project was provided as required under the Regulations to make the case for an exception to the application of the Act. Departmental officers continued with a thorough review of the application documents to determine the applicability of the Act and provided technical assistance as a scientific authority regarding river

flow and level effects at the Canada/U.S. boundary for the screening study performed under the *Canadian Environmental Assessment Act*.

### **A.3.2 Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRIITA)**

**Purpose:** The *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRIITA) received royal assent on 17 December 1992 and came into force on 14 May 1996 when the Wild Animal and Plant Trade Regulations took effect. The purpose of WAPPRIITA is to protect Canadian and foreign species of animals and plants that may be at risk of overexploitation because of poaching or illegal trade and to safeguard Canadian ecosystems from the introduction of species designated as harmful. It accomplishes these objectives by controlling the international trade and interprovincial transport of wild animals and plants, as well as their parts and derivatives, and by making it an offence to transport illegally obtained wildlife between provinces or territories or between Canada and other countries.

WAPPRIITA is the legislative vehicle by which Canada meets its obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, commonly called CITES.

#### **Administration:**

**Authorities:** Environment Canada administers WAPPRIITA through its national office, where the national CITES management and scientific authorities are located. CITES management and scientific authorities are also located in Fisheries and Oceans Canada for fish and marine mammals and in each province or territory (except Alberta) for provincially or territorially managed species. The Canadian Food Inspection Agency assists Environment Canada by processing CITES documentation for the export of artificially propagated plants as an attachment to documents required under the *Plant Protection Act*, which it administers.

Enforcement of WAPPRIITA is overseen by the Enforcement Branch in Environment Canada and carried out by five regional offices (Pacific and Yukon, Prairie and Northern, Ontario, Québec, and Atlantic) in cooperation with other federal agencies, including the Canada Customs and Revenue Agency (CCRA), the Royal Canadian Mounted Police (RCMP), and Fisheries and Oceans Canada, as well as with provincial and territorial wildlife agencies.

**Agreements with the Provinces and Territories:** Memoranda of Understanding (MOUs) to support cooperative management, administration, and enforcement of WAPPRIITA have been established with Saskatchewan and Yukon (1997); Alberta, Manitoba, and the Northwest Territories (1998); and British Columbia and Prince Edward Island (1999). Similar MOUs are currently being negotiated with most of the remaining jurisdictions, including Canada's new territory, Nunavut. Agreements with Ontario (1996), Prince Edward Island and New-Brunswick (1997), Manitoba (1998), Nova Scotia and Québec (2000) have been reached by the Department of Justice to permit ticketing for WAPPRIITA offences under the *Contraventions Act*. Ticketing agreements with other provinces are being negotiated.

**Permits:** Currently, all permits issued under the Act are to implement CITES. All CITES import permits are issued by Environment Canada, as are all temporary movement certificates for live animals and scientific certificates. Fisheries and Oceans Canada issues CITES export permits for fish and marine mammals. The provinces and territories (except Alberta for all items and British Columbia for exotic species) issue CITES export permits for items leaving their jurisdictions. Environment Canada issues CITES export permits valid for multiple shipments by certified nurseries of artificially propagated plants and permits on behalf of Alberta and of British Columbia with respect to exotic species.

**Regulatory Development:** The *Wild Animal and Plant Trade Regulations* (1996) designate the species protected by the Act and detail the Act's requirements with respect to import, export, and possession of wild species.

Effective January 15, 2000, the *Wild Animal and Plant Trade Regulations* were amended to allow exemptions from CITES permit requirements for certain personal and household effects, as provided for under Article VII, Paragraph 3 of the Convention, and authorize other measures to improve the administration and enforcement of the Convention in Canada.

**Activity:** WAPPRIITA requires the Minister to prepare annual reports to Parliament with respect to the administration of the Act during the preceding calendar year. Information concerning the most recent developments related permits, regulatory development, compliance, enforcement and international cooperation will be made available with the completion and tabling of the 2001 Annual Report which is required by January 2003.

■ ■ ■ The latest annual report can be accessed by reference to the following web site:  
[www.cites.ec.gc.ca/eng/sct4/sct4\\_4\\_e.cfm](http://www.cites.ec.gc.ca/eng/sct4/sct4_4_e.cfm)

### A.3.3 Canadian Environmental Protection Act, 1999 (CEPA 1999)

**Purpose:** The *Canadian Environmental Protection Act, 1999* (CEPA 1999), which came into force on March 31, 2000, gives the government stronger powers and new tools to protect the environment and human health. The Act emphasizes pollution prevention as the preferred approach to environmental protection, imposes tough new deadlines for action on toxic substances, and places a new emphasis on public accountability and transparency.

The CEPA Annual report responds to the requirement under CEPA 1999 to present an annual report to Parliament on the administration, enforcement, and research conducted under the Act. The chapters in the report are organized along CEPA 1999's 11 major Parts with each chapter containing an introductory section on the provisions, followed by a detailed description of the CEPA 1999 related activities listed in the DPR and the results achieved for those activities.

**Administration:** Although both the Minister of the Environment and the Minister of Health have responsibilities under CEPA 1999, Environment Canada is responsible for the administration and enforcement of the Act.

**Activity:** Activities undertaken pursuant to CEPA 1999 are designed to protect the environment and human health through meeting one or more of the following commitments:

- **Decrease** reliance on toxic or harmful substances in products and processes
  - **Manage** waste more effectively
  - **Improve** Emergency Preparedness, Prevention and Response
  - **Prevent or Reduce** the Releases of Toxic or Harmful Substances
  - **Virtually eliminate** PBT releases
  - **Reduce** Transborder pollution
  - **Improve** the environmental awareness and behaviour of Canadian or International Partners.
- ■ ■ All necessary information on the commitments listed above and the associated activities can be found in the CEPA Annual Reports or at [www.ec.gc.ca/CEPARegistry](http://www.ec.gc.ca/CEPARegistry)

### A.3.4 Other Statutory Reports

- *Canada Water Act* - legislation which contains provision for formal consultation and agreements with the provinces. Under the provisions of the Canada Water Act, Section 38 requires that a report on operations under the Act be laid before Parliament as soon as possible after the end of each fiscal year.
  - ■ ■ The annual reports on operations under the Canada Water Act are available at the following web site: [www.ec.gc.ca/water/en/policy/legreg/e\\_legis.htm](http://www.ec.gc.ca/water/en/policy/legreg/e_legis.htm)
- *Access to Information Act* provides a right of access to information in records under the control of a government institution. Information about government institutions is to be published and made available at least annually, including description of each institution's organisation and responsibilities, all classes of records under its control (in sufficient detail to facilitate the exercise of the right of access), and all manuals used by its employees. Pursuant to section 72 of the *Access to Information Act*, an annual report on the administration of the Act must be submitted to Parliament by each government institution.
- *Privacy Act* extends the present laws of Canada that protect the privacy of individuals with respect to personal information about them that is held by a government institution and provides them with a right of access to that information. Descriptions of personal information banks held by government institutions are to be published and made available at least annually, including the purpose of the collection, the consistent uses, the retention period and the disposal standards for the personal information. Pursuant to section 72 of the *Privacy Act*, an annual report on the administration of the Act must be submitted to Parliament by each government institution.

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## A.4 Foundations

### a) Canadian Foundation for Climate and Atmospheric Sciences

The Canadian Foundation for Climate and Atmospheric Sciences was incorporated as a non-profit corporation in February 2000 and began operations that April, when it received \$60 million in federal funding for a six-year period. The purpose of the foundation is to fund research in the climate and atmospheric sciences, including research into extreme weather and air quality. In February 2001, the foundation announced that it would provide funding of \$3.9 million for 15 research projects in Canadian universities. By October 2001, the foundation had approved additional projects, bringing the total commitment to \$25.3 million.



## **b) Foundation for Sustainable Development Technology in Canada**

This foundation was announced in the 2000 Budget and incorporated in March 2001 as non-profit corporation; it will be continued as the Canada Foundation for Sustainable Development Technology through legislation. The Government of Canada provided a total of \$100 million (\$50M through EC and \$50M through NRCan) to the Foundation in April 2001.

The foundation's purpose is to fund the development and demonstration of technologies and, in particular, to respond to climate change and protect air quality. The foundation will also foster collaboration among interested parties in the private sector and in academic and non-profit organizations. The federal government appoints 7 of the 15 members of the Board of Directors, including the chair.

## **c) Green Municipal Enabling Fund and Green Municipal Investment Fund**

The Green Municipal Enabling (GMEF) and the Green Municipal Investment Fund (GMIF) were announced in the 2000 Budget to support municipal investments in innovative environmental projects and green infrastructure. In April 2000, the federal government paid \$125 million (\$25 million for the Enabling Fund and \$100 million for the Investment Fund) to the Federation of Canadian Municipalities (FCM), the organization responsible for the funds, and operations began. The December 2001 Budget committed another \$125 million for the funds in the same proportions. The funds were provided by Environment Canada and Natural Resources Canada, each contributing half.

The GMEF is a five-year fund providing grants to support feasibility studies to increase municipal expertise and knowledge of leading-edge environmental technologies and practices. The GMIF is a \$200 million revolving fund providing loans and loan guarantees to leverage municipal investment in innovative environmental infrastructure projects. Interest accumulated by the fund may also be used to provide grants for a small number of highly innovative pilot projects.

The FCM, comprising 1,000 municipal members and 18 provincial and territorial associations, is a non-profit corporation registered under the federal Lobbyists Registration Act. The FCM Board of Directors, formally designated as the decision-making body for the funds, is advised by a 15-member council with five federal appointees.

The Council plays a key role, supported by the FCM secretariat and the GMF Peer Review Committee. For more information on the GMF, including the 2001-2002 Annual Report and an overview of GMF projects, consult the FCM's website at [www.fcm.ca](http://www.fcm.ca)

# ■ ■ Appendix B: Financial Performance

## B.1 Financial Performance Overview

This section contains a summary of the financial performance of Environment Canada for the fiscal year 2001–2002.

The Department spent \$841.4 million in the 2001–2002 fiscal year. This amount is greater than the planned spending identified in the 2001–2002 RPP due to additional resources received during the fiscal year.

The change is mostly due to the following items:

- \$62.5 million increase for a one-time grant to the Federation of Canadian Municipalities towards the Green Municipal Investment Fund and the Green Municipal Enabling Fund;
- \$31.5 million increase for workload related to the implementation of the *Canadian Environmental Protection Act, 1999* (CEPA 1999), health and safety capital costs and Informatics Management/Information Technology (IM/IT) pressures;
- \$30.1 million increase to compensate for salary increases related to the signing of new collective agreements;
- \$7.9 million increase for initiatives tied to Climate Change under the Climate Change Action Fund and the Climate Change Action Plan 2000;
- \$5.4 million increase to prepare Canada for the World Summit on Sustainable Development (WSSD);
- \$4.0 million increase to support the Canadian Shellfish Sanitation Program;
- \$2.1 million increase to implement Canada's security arrangements for the prevention of environmental emergencies; and
- (\$11.8 million) reduction for the carryforward to 2002–2003 of unspent funds related to the remediation of the Sydney Tar Ponds and Coke Ovens Site.

## B.2 Financial Summary Tables

Summary financial data, such as the information presented in Table 1, are displayed using three separate headings. For clarity, these headings are defined as:

- **Planned Spending**—Amounts shown in the Report on Plans and Priorities in 2001–2002;
- **Total Authorities**—Planned spending plus any additional amounts Parliament has approved for departments to reflect changing priorities and unforeseen events; and
- **2001–2002 Actual Spending**—The amounts actually spent for the fiscal year.

**Note:** Some totals may differ from one table to another due to the rounding of the figures.

## Table 1: Financial Requirements by Authority (\$ millions)

This table explains the way Parliament votes resources to the department.

Vote		2001–2002		
		Planned Spending	Total Authorities	Actual Spending
	<b>Environment Program</b>			
1	Operating expenditures	479.6	566.1	<b>550.0</b>
5	Capital expenditures	43.1	62.1	<b>58.7</b>
10	Grants and contributions	124.2	176.7	<b>175.9</b>
(S)	Minister of the Environment - Salary and motor car allowance	0.1	0.1	<b>0.1</b>
(S)	Contributions to employee benefit plans	55.5	56.2	<b>56.2</b>
(S)	Spending of proceeds from the disposal of surplus Crown assets	0.0	0.4	<b>0.4</b>
	<b>Total Department</b>	<b>702.6</b>	<b>861.7</b>	<b>841.4</b>

**Note:** Excludes responsible revenues.

### EXPLANATION OF CHANGE FROM PLANNED SPENDING:

The \$138.8 million increase is mainly due to the following:

	\$ Millions
<b>• Major increases included in the Actual Spending but not in the Planned Spending</b>	
One-time grant to the Federation of Canadian Municipalities for the Green Municipal Investment and Endowment Funds	62.5
Funding received for workload related to the implementation of the <i>Canadian Environmental Protection Act, 1999</i> (CEPA 1999), health and safety capital costs and IM/IT pressures	31.5
Compensation for salary increases due to the signing of collective agreements	30.1
Funding received for the Climate Change Action Fund and the Climate Change Action Plan 2000	7.9
Funding received to prepare Canada for the World Summit on Sustainable Development (WSSD)	5.4
Funding received to enhance the Canadian Shellfish Sanitation Program	4.0
Funding received to implement security arrangements for the prevention of environmental emergencies	2.1
<b>• Major decreases included in the Actual Spending but not in the Planned Spending</b>	
Funds moved to subsequent years for the remediation of the Sydney Tar Ponds and Coke Ovens Site	11.8

## Table 2: Departmental Planned versus Actual Spending by Business Line (\$ millions)

This table explains the way resources are used by the department.

Business Lines	FTEs	Operating*	Capital	Voted Grants & Contributions	Subtotal: Gross Voted Expenditures	Statutory Grants & Contributions	Total: Gross Expenditures	Less: Respendable Revenues	Total Net Expenditures
Clean Environment	1,155	167.0	16.5	92.1	275.5	-	275.5	(9.2)	266.3
		<i>184.8</i>	<i>19.8</i>	<i>138.7</i>	<i>343.3</i>	-	<i>343.3</i>	<i>(10.2)</i>	<i>333.1</i>
	<b>1,270</b>	<b>174.2</b>	<b>19.7</b>	<b>138.6</b>	<b>332.5</b>	-	<b>332.5</b>	<b>(9.1)</b>	<b>323.4</b>
Nature	1,195	155.3	4.6	25.1	185.0	-	185.0	(11.3)	173.7
		<i>156.0</i>	<i>6.1</i>	<i>28.2</i>	<i>190.3</i>	-	<i>190.3</i>	<i>(11.3)</i>	<i>179.0</i>
	<b>1,193</b>	<b>150.8</b>	<b>5.9</b>	<b>27.6</b>	<b>184.3</b>	-	<b>184.3</b>	<b>(7.3)</b>	<b>177.0</b>
Weather & Environmental Predictions	1,695	204.8	20.9	5.3	230.9	-	230.9	(68.5)	162.4
		<i>226.9</i>	<i>33.0</i>	<i>5.5</i>	<i>265.4</i>	-	<i>265.4</i>	<i>(68.5)</i>	<i>196.9</i>
	<b>1,755</b>	<b>219.1</b>	<b>29.7</b>	<b>5.5</b>	<b>254.3</b>	-	<b>254.3</b>	<b>(62.9)</b>	<b>191.4</b>
Management, Administration and Policy	1,094	97.8	1.2	1.8	100.8	-	100.8	(0.6)	100.2
		<i>145.8</i>	<i>3.3</i>	<i>4.2</i>	<i>153.3</i>	-	<i>153.3</i>	<i>(0.6)</i>	<i>152.7</i>
	<b>1,176</b>	<b>142.8</b>	<b>3.4</b>	<b>4.2</b>	<b>150.5</b>	-	<b>150.5</b>	<b>(0.9)</b>	<b>149.5</b>
Total	5,139	624.8	43.2	124.2	792.2	-	792.2	(89.6)	702.6
		<i>713.6</i>	<i>62.1</i>	<i>176.7</i>	<i>952.4</i>	-	<i>952.4</i>	<i>(90.6)</i>	<i>861.7</i>
	<b>5,394</b>	<b>686.9</b>	<b>58.7</b>	<b>175.9</b>	<b>921.5</b>	-	<b>921.5</b>	<b>(80.2)</b>	<b>841.4</b>
<b>Other Revenues and Expenditures</b>									
Non-Respendable Revenues									(9.0)
									(9.0)
									<b>(14.3)</b>
Cost of services provided by other departments									56.8
									56.8
									<b>58.9</b>
<b>Net Cost of the Program</b>									750.4
									909.5
									<b>886.0</b>

\* Operating includes contributions to employee benefit plans, minister's allowances and the disposal of Crown assets.

\*\* Total Net Expenditures excludes respendable revenues.

Note: Normal font: 2001-2002 Planned Spending

*Italic font:* 2001-2002 Total Authorities

**Bold font:** 2001-2002 Actual Spending

### EXPLANATION OF CHANGE FROM PLANNED SPENDING:

\$ Millions

The \$138.8 million increase is mainly due to the following:

<ul style="list-style-type: none"> <li><b>Operating</b></li> </ul>	<b>62.1</b>
<ul style="list-style-type: none"> <li>Funding received for workload related to the implementation of the <i>Canadian Environmental Protection Act, 1999</i> (CEPA 1999) and IM/IT pressures</li> <li>Compensation for salary increases due to the signing of collective agreements</li> <li>Funding received for the Climate Change Action Fund and the Climate Change Action Plan 2000</li> <li>Funding received to prepare Canada for the World Summit on Sustainable Development (WSSD)</li> <li>Funding received to enhance the Canadian Shellfish Sanitation Program</li> <li>Funding received to implement security arrangements for the prevention of environmental emergencies</li> </ul>	
<ul style="list-style-type: none"> <li><b>Capital</b></li> </ul>	<b>15.5</b>
<ul style="list-style-type: none"> <li>Funding received for health and safety capital costs</li> <li>Funding received for the Climate Change Action Plan 2000</li> <li>Funding received to implement security arrangements for the prevention of environmental emergencies</li> </ul>	
<ul style="list-style-type: none"> <li><b>Grants and Contributions</b></li> </ul>	<b>51.7</b>
<ul style="list-style-type: none"> <li>One-time grant to the Federation of Canadian Municipalities for the Green Municipal Investment and Endowment Funds</li> <li>Funds moved to subsequent years for the remediation of the Sydney Tar Ponds and Coke Ovens Site</li> <li>Funds moved to subsequent years for the Climate Change Action Fund</li> </ul>	
<ul style="list-style-type: none"> <li><b>Respendable Revenues</b></li> </ul>	<b>(9.4)</b>
<ul style="list-style-type: none"> <li>Decrease in revenues received for the Toxic Substances Research Initiative (TSRI), in forecasted service level to NAV CANADA, in hydrometric services, and in research and analysis</li> </ul>	

## Table 3: Historical Comparison of Departmental Planned versus Actual Spending by Business Line (\$ millions)

This table provides a historical perspective on how resources are used by the department.

Business Lines	Actual 1999–2000	Actual 2000–2001	2001–2002		
			Planned Spending	Total Authorities	Actual Spending
Clean Environment	221.9	164.5	266.3	333.1	323.4
Nature	138.1	169.8	173.7	179.0	177.0
Weather & Environmental Predictions	247.7	177.0	162.4	196.9	191.4
Management, Administration and Policy	112.3	128.8	100.2	152.7	149.5
<b>Total</b>	<b>720.0</b>	<b>640.0</b>	<b>702.6</b>	<b>861.7</b>	<b>841.4</b>

Note: Excludes spendable revenues.

### EXPLANATION OF CHANGE FROM PLANNED SPENDING:

\$ Millions

The \$138.8 million increase is mainly due to the following:

<ul style="list-style-type: none"> <li>• <b>Clean Environment</b> One-time grant to the Federation of Canadian Municipalities for the Green Municipal Investment and Endowment Funds Funding received for workload related to the implementation to CEPA 1999 Compensation for salary increases due to the signing of collective agreements Funding received for the Climate Change Action Fund and the Climate Change Action Plan 2000 Funding received to implement security arrangements for the prevention of environmental emergencies Funds moved to subsequent years for the remediation of the Sydney Tar Ponds and Coke Ovens Site</li> </ul>	<b>57.1</b>
<ul style="list-style-type: none"> <li>• <b>Nature</b> Funding received to enhance the Canadian Shellfish Sanitation Program Compensation for salary increases due to the signing of collective agreements</li> </ul>	<b>3.3</b>
<ul style="list-style-type: none"> <li>• <b>Weather &amp; Environmental Predictions</b> Funding received for health and safety capital costs Compensation for salary increases due to the signing of collective agreements Funding received for the Climate Change Action Fund and the Climate Change Action Plan 2000 Funding received to implement security arrangements for the prevention of environmental emergencies</li> </ul>	<b>29.0</b>
<ul style="list-style-type: none"> <li>• <b>Management, Administration and Policy</b> Funding received for Information Management and Technology requirements Compensation for salary increases due to the signing of collective agreements Funding received to prepare Canada for the World Summit on Sustainable Development (WSSD)</li> </ul>	<b>49.4</b>

## Table 4: Revenues by Business Line (\$ millions)

This table identifies revenues received by the department.

Business Lines	Actual 1999–2000	Actual 2000–2001	2001–2002		
			Planned Revenues	Total Authorities	Actual Revenues
<b>Responsible Revenues</b>					
Clean Environment	5.6	8.5	9.2	10.2	9.1
Nature	5.4	7.3	11.3	11.3	7.3
Weather & Environmental Predictions	60.6	60.6	68.5	68.5	62.9
Management, Administration and Policy	0.7	0.9	0.6	0.6	0.9
<b>Total Responsible Revenues</b>	<b>72.3</b>	<b>77.3</b>	<b>89.6</b>	<b>90.6</b>	<b>80.2</b>
<b>Non-Responsible Revenues</b>					
Clean Environment	0.2	0.9	0.1	0.1	1.1
Nature	4.7	4.1	4.8	4.8	4.3
Weather & Environmental Predictions	4.4	5.3	4.1	4.1	7.2
Management, Administration and Policy	1.3	0.7	-	-	1.7
<b>Total Non-Responsible Revenues</b>	<b>10.6</b>	<b>11.0</b>	<b>9.0</b>	<b>9.0</b>	<b>14.3</b>
<b>Total Revenues</b>	<b>82.9</b>	<b>88.3</b>	<b>98.6</b>	<b>99.6</b>	<b>94.5</b>

### EXPLANATION OF CHANGE FROM 2001–2002 PLANNED REVENUES

#### Responsible Revenues

The \$4.0 million decrease in Nature in Actual over Planned Revenues is primarily due to a decrease in revenues collected for research and analysis, and from the Toxic Substances Research Initiative (TSRI) managed by Health Canada.

The \$5.6 million decrease in Weather and Environmental Predictions Actual Revenues over 2001–2002 Planned Revenues is mainly due to a decrease in the forecasted service level provided to NAV CANADA and in the hydrometric services.

#### Non-Responsible Revenues

The \$0.5 million decrease in Nature in the 2001–02 Actual Revenues over the Planned Revenues is primarily due to lower than anticipated sale of Migratory Bird Hunting Permits.

The \$1.6 million increase in Management, Administration and Policy in the Actual over the Planned Revenues is related to adjustments to previous years expenditures and proceeds from sale of Surplus Assets. These amounts were unplanned.

The \$1.0 million increase in Clean Environment in Actual over Planned Revenues is related to royalties and CEPA fines. These amounts were unplanned.

The \$3.1 million increase in Weather & Environmental Predictions in Actual over Planned Revenues is mainly due to additional recoveries for the Employee Benefit Plan (EBP) and revenues received for weather forecasts, and hydrometric data and services.

## Table 5: Transfer Payments by Business Line (\$ millions)

This table explains the way resources are transferred to organizations and individuals.

Business Lines	Actual 1999–2000	Actual 2000–2001	2001–2002		
			Planned Spending	Total Authorities	Actual Spending
<b>GRANTS</b>					
Clean Environment	63.8	2.0	52.0	114.0	114.0
Nature	-	12.0	-	-	-
Weather & Environmental Predictions	60.4	0.4	0.9	0.0	0.0
Management, Administration and Policy	0.2	-	-	-	-
<b>Total Grants</b>	<b>124.4</b>	<b>14.4</b>	<b>52.9</b>	<b>114.0</b>	<b>114.0</b>
<b>CONTRIBUTIONS</b>					
Clean Environment	18.3	19.9	40.1	24.8	24.6
Nature	17.0	22.3	25.1	28.2	27.6
Weather & Environmental Predictions	5.9	4.0	4.4	5.4	5.4
Management, Administration and Policy	2.2	3.6	1.8	4.2	4.2
<b>Total Contributions</b>	<b>43.4</b>	<b>49.8</b>	<b>71.4</b>	<b>62.7</b>	<b>61.9</b>
<b>Total Transfer Payments</b>	<b>167.8</b>	<b>64.2</b>	<b>124.2</b>	<b>176.7</b>	<b>175.9</b>

### EXPLANATION OF CHANGE FROM PLANNED SPENDING:

The increase can be primarily found under the Clean Environment business line (\$46.5 million) and is mostly due to:	<b>\$ Millions</b>
One-time grant to the Federation of Canadian Municipalities for the Green Municipal Investment and Endowment Funds	<b>62.5</b>
Funds moved to subsequent years for the Climate Change Action Fund	<b>(1.8)</b>
Funds moved to subsequent years for the remediation of the Sydney Tar Ponds and Coke Ovens Site	<b>(11.8)</b>

## Table 6: Comparison of 2001–2002 Gross Planned Spending to Gross Actual Expenditures by Organization and Business Line (\$ millions)

This table explains how resources are allocated to both business lines and organizations under the matrix management system.

													Total	% of Total
	REG DIR GEN Pacific and Yukon	REG DIR GEN Ontario	REG DIR GEN Atlantic	REG DIR GEN Prairie and Northern	REG DIR GEN Québec	DIR GEN Human Resources Directorate	ADM Policy and Communi- cations	Corporate Offices	ADM Corporate Services	ADM Meteorologi- cal Service of Canada	ADM Environmental Protection Service	ADM Environmental Conservation Service		
Clean Environment	9.3 <b>12.9</b>	9.1 <b>11.2</b>	9.8 <b>10.9</b>	7.3 <b>12.0</b>	30.2 <b>24.2</b>	- -	69.9 <b>20.8</b>	- <b>0.4</b>	- -	6.3 <b>9.1</b>	126.6 <b>222.0</b>	7.0 <b>9.0</b>	275.5 <b>332.5</b>	36.1%
Nature	17.5 <b>20.9</b>	16.9 <b>20.7</b>	26.7 <b>27.5</b>	21.3 <b>26.4</b>	10.0 <b>13.6</b>	- -	- -	- -	- -	- <b>1.2</b>	1.5 <b>2.4</b>	91.1 <b>71.6</b>	185.0 <b>184.3</b>	20.0%
Weather and Environmental Predictions	17.7 <b>22.2</b>	32.7 <b>45.5</b>	15.1 <b>20.4</b>	12.2 <b>17.8</b>	12.1 <b>15.0</b>	- -	- -	- -	- -	140.7 <b>132.8</b>	- -	0.4 <b>0.6</b>	230.9 <b>254.3</b>	27.6%
Management, Administration and Policy	10.4 <b>16.4</b>	8.7 <b>10.3</b>	9.5 <b>13.0</b>	5.6 <b>7.3</b>	5.3 <b>8.9</b>	6.6 <b>6.8</b>	19.1 <b>33.3</b>	5.6 <b>5.8</b>	27.3 <b>44.6</b>	0.7 <b>1.4</b>	1.5 <b>1.9</b>	0.5 <b>0.6</b>	100.8 <b>150.5</b>	16.3%
Total-\$ Millions	54.9 <b>72.4</b>	67.4 <b>87.7</b>	61.1 <b>71.8</b>	46.4 <b>63.6</b>	57.6 <b>61.6</b>	6.6 <b>6.8</b>	89.0 <b>54.2</b>	5.6 <b>6.2</b>	27.3 <b>44.6</b>	147.7 <b>144.5</b>	129.6 <b>226.3</b>	99.0 <b>81.7</b>	792.2 <b>921.5</b>	100.0%

**Note(1):** Includes spendable revenues

**Note(2):** Normal font: 2001–2002 Planned Spending

**Bold font: 2001–2002 Actual Spending**

**Note(3):** In the Clean Environment Business Line, \$50M for a one-time payment to the Sustainable Development Technology fund is reflected in Planned Spending under Policy and Communications but was actually spent by the Environmental Protection Service

REG DIR GEN = Regional Director General

ADM = Assistant Deputy Minister



## Table 7: Capital Projects by Business Line (\$ millions)

This table identifies the department's capital projects and explains the way the resources are expended to them.

Business Lines	Current Estimate Total Cost	Actual 1999–2000	Actual 2000–2001	2001–2002		
				Planned Spending	Total Authorities	Actual Spending
<b>Clean Environment</b>						
Ozone — Construction of a Vehicle and Fuel Testing Facility	13.3	-	-	-	5.4	5.4
Ozone — National Air Pollution Surveillance Network and Canadian Air and Precipitation Monitoring Network (NAPS and CAPMoN)	16.8	-	-	-	4.8	4.8
<b>Weather &amp; Environmental Predictions</b>						
Doppler upgrade — Radar Network Modernization	39.2	7.0	8.7	5.0	7.8	7.8
Modernization of the Climate Observing Program	8.6	0.8	0.1	0.3	0.9	0.9
Weather station construction Eureka, N.W.T.	9.9	0.2	1.1	2.5	2.5	0.8
Modernization of Equipment – NAVCAN	2.4	-	0.6	1.0	1.0	0.8
Ocean Data Acquisition System (ODAS)—Buoy Payload Replacement	1.7	0.2	0.2	0.1	0.1	0.1
MSC - Single Window Web site	2.1	-	-	-	1.1	1.1
DSAT Replacement Project	1.9	-	-	-	0.1	0.1
Upper Air Hydrogen Generator Replacement Project	1.8	-	-	-	0.1	0.1
Aircraft Meteorological Data Relay (AMDAR)	2.1	-	-	-	0.1	0.1
Canadian Meteorological Centre — Facility Extension	7.2	-	-	-	0.8	0.8
Sable Island Weather Station	3.0	-	0.1	0.5	0.6	0.6
Hydrometric Program	10.0	-	0.2	3.0	3.0	2.3
Operational Computer Hardware Infrastructure Renewal	2.4	-	0.8	0.5	0.6	0.6

## Table 8: Contingent Liabilities (\$ millions)

As of March 31, 2002, Environment Canada was facing 23 litigation cases. The total amount of contingent liabilities for these 23 cases is unknown. These cases are in various stages of litigation and it is not EC's policy to comment on their expected outcomes. They must, however, be recognized as potential liabilities against the Crown.

List of Contingent Liabilities	March 31, 2000		March 31, 2001		Current as of March 31, 2002	
	# of cases	\$ million	# of cases	\$ million	# of cases	\$ million
Claims, and Pending & Threatened Litigation	21	136.0	22	unknown	23	unknown

# Appendix C: Other Information

## C.1 Contacts at Environment Canada

Headquarters Directors of Communications	Regional Managers of Communications
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## C.2 List of Acronyms

<b>5NR</b>	Five natural resource departments	<b>CWRP</b>	Canadian Weather Research Program
<b>ADM</b>	Assistant Deputy Minister	<b>CWS</b>	Canada-wide Standard; also Canadian Wildlife Service
<b>AP2000</b>	Action Plan 2000	<b>DSL</b>	Domestic Substances List
<b>AQ2001</b>	First National Workshop on Air Quality Prediction and Applications	<b>E2</b>	Environmental Emergency
<b>AQP</b>	Air Quality Prediction Program	<b>EEM</b>	Environmental Effects Monitoring
<b>ASD</b>	Alternative Service Delivery	<b>EMAN</b>	Ecological Monitoring and Assessment Network
<b>AVOS</b>	Automated Voluntary Observing Ship	<b>EMP</b>	Environmental management plan
<b>BATEA</b>	Best available technologies economically achievable	<b>EMS</b>	Environmental Management System
<b>BEST</b>	Better Environmentally Sound Transportation	<b>EPA</b>	Environmental performance agreement
<b>CAPMoN</b>	Canadian Air and Precipitation Monitoring Network	<b>EPG</b>	Electric power generation
<b>CCAF</b>	Climate Change Action Fund	<b>ES&amp;T</b>	Ecosystem Status and Trends
<b>CCME</b>	Canadian Council of Ministers of the Environment	<b>ESDI</b>	Environmental and Sustainable Development Indicators
<b>CCPA</b>	Canadian Chemical Producers' Association	<b>FHIO</b>	Federal House in Order
<b>CCRA</b>	Canada Customs and Revenue Agency	<b>GAF</b>	Graphic Area Forecase
<b>CEPA 1999</b>	<i>Canadian Environmental Protection Act, 1999</i>	<b>GDP</b>	Gross domestic product
<b>CESCC</b>	Canadian Endangered Species Conservation Council	<b>GHG</b>	Greenhouse gas
<b>CFCAS</b>	Canadian Foundation for Climate and Atmospheric Sciences	<b>GHGVC</b>	Greenhouse Gas Verification Centre
<b>CIDA</b>	Canadian International Development Agency	<b>GLSF</b>	Great Lakes Sustainability Fund
<b>CISE</b>	Canadian Information System for the Environment	<b>GLWQA</b>	Great Lakes Water Quality Agreement
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Fauna and Flora	<b>GPA</b>	Global Program of Action
<b>CMC</b>	Canadian Meteorological Centre	<b>HEMA</b>	Health and Environment Ministers of the Americas
<b>CMOS</b>	Canadian Meteorological & Oceanographic Society	<b>HSP</b>	Habitat Stewardship Program for Species at Risk
<b>COA</b>	Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem	<b>IEG</b>	International Environmental Governance
<b>COMET</b>	Cooperative Program for Operational Meteorology, Education and Training	<b>IM/IT</b>	Informatics Management/Information Technology
<b>COSEWIC</b>	Committee on the Status of Endangered Wildlife in Canada	<b>IT</b>	Information technology
<b>CSAP</b>	Corporate Smog Action Plan	<b>LUTE</b>	<i>Laboratoire universitaire sur le temps extrême</i>
<b>CSIS</b>	Canadian Security Intelligence Service	<b>MERAF</b>	Multi-pollutant Emission Reduction Analysis Foundation
		<b>MERS</b>	Multi-pollutant emission reduction strategy
		<b>MMAP</b>	Modern Management Action Plan
		<b>MMER</b>	Metal Mining Effluent Regulations
		<b>MOU</b>	Memorandum of Understanding
		<b>MSC</b>	Meteorological Service of Canada
		<b>NABCI</b>	North American Bird Conservation Initiative

<b>NAICC-CC</b>	National Air Issues Coordinating Committee on Climate Change	<b>SDGO</b>	Sustainable Development in Government Operations
<b>NAPS</b>	National Air Pollution Surveillance	<b>SDS</b>	Sustainable Development Strategy
<b>NAQPP</b>	National Air Quality Prediction Program	<b>SERC</b>	Sustaining the Environment and Resources for Canadians
<b>NAWMP</b>	North American Waterfowl Management Plan	<b>SIA</b>	Science, Innovation and Adaptation
<b>ncm<sub>2</sub></b>	Network for Computing and Mathematical Modelling	<b>SLRA</b>	Screening-Level Risk Assessment
<b>NGO</b>	Non-government organization	<b>SLV 2000</b>	St. Lawrence Vision 2000
<b>NO<sub>x</sub></b>	Nitrogen oxides	<b>SOE</b>	State of the Environment
<b>NPEs</b>	Nonylphenol and its ethoxylates	<b>SO<sub>x</sub></b>	Sulphur oxides
<b>NPRI</b>	National Pollutant Release Inventory	<b>S&amp;T</b>	Science and technology
<b>NRTEE</b>	National Round Table on the Environment and the Economy	<b>TEAM</b>	Technology Early Action Measures
<b>NSERC</b>	Natural Sciences and Engineering Research Council	<b>UNEP</b>	United Nations Environment Programme
<b>NWRC</b>	National Wildlife Research Centre	<b>VCR</b>	Voluntary Challenge Registry Inc.
<b>NWRI</b>	National Water Research Institute	<b>VI</b>	Ventilation index
<b>OECD</b>	Organisation for Economic Co-operation and Development	<b>VOC</b>	Volatile organic compound
<b>P/B &amp; iT</b>	Persistent and/or bioaccumulative and inherently toxic	<b>WAPPRIITA</b>	<i>Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act</i>
<b>PBT</b>	Persistent, bioaccumulative toxic substance	<b>WHO</b>	World Health Organization
<b>PEO</b>	Public Education and Outreach	<b>WSD</b>	Water Survey Division
<b>PERRL</b>	Pilot Emission Removals, Reductions and Learnings	<b>WSSD</b>	World Summit on Sustainable Development
<b>PM</b>	Particulate Matter	<b>ZIP</b>	Zone d'intervention prioritaire
<b>PM<sub>2.5</sub></b>	Particular matter less than or equal to 2.5 microns in diameter		
<b>PM<sub>10</sub></b>	Particular matter less than 10 microns in diameter		
<b>PNR</b>	Prairie and Northern Region		
<b>POP</b>	Persistent organic pollutant		
<b>PSL</b>	Priority Substances List		
<b>PSL2</b>	Second Priority Substances List		
<b>ppb</b>	Parts per billion		
<b>ppm</b>	Parts per million		
<b>RAIC</b>	Royal Architecture Institute of Canada		
<b>RCF</b>	Refractory ceramic fibre		
<b>RCMP</b>	Royal Canadian Mounted Police		
<b>R&amp;D</b>	Research and development		
<b>RENEW</b>	Recovery of Nationally Endangered Wildlife		
<b>RPP</b>	Report on Plans and Priorities		