



Simply Water?

Who Owns It? Can You Trust It? Is There Enough?

Sheperd Family Workshop

Presented By

*The Environmental and Resource Studies Program
and The Watershed Science Centre, Trent University*

Feb 18-21, 2002

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Final Report

February, 2004

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Dedication

David Sheperd was a great inspiration and benefactor to the Environmental and Resource Studies Program at Trent University. The Simply Water? Workshop celebrated the tenth anniversary of David's gift to Trent, an endowment fund enabling the Program to host annual public lectures by renowned experts in a variety of environmental fields.

Sadly, David Sheperd passed away in the fall of 2003. The Final Report of the Simply Water? Workshop is dedicated to his memory and to all the outstanding participants who contributed to the success of the workshop.

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Stephen Bocking, Magda Havas, Don Mackay, Robert Paehlke, Tom Whillans, – faculty of the Environmental Resource Studies Program, Trent University
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Executive Summary

INTRODUCTION

The Simply Water? Workshop was a forum in which experts from North America and the local Peterborough area gathered to discuss some of the major challenges we face regarding supply and quality of water. The discussion also centred on water policy and regulatory approaches. The focus was at several levels, i.e. global, regional and local scales. Participants represented all levels of government, NGO's, academics, those involved in the water industry, students, and interested citizens. This document summarizes the proceedings of the workshop and subsequent recommendations for both policy and management of our freshwater resources. The discussions centred around three challenges, posed as the questions: Who Owns It?, Can You Trust It? and Is There Enough?.

In Canada, water related issues have become a high priority for all levels of government. The impacts of free trade (NAFTA) on our ability to manage our own freshwater supplies, the state of our groundwater sources, the impact of drought and low water conditions regionally, the recent focus on water-borne illnesses, and the crumbling of our water and wastewater infrastructure have all become priority issues for Canadians.

The Plenary presentations of the Simply Water? Workshop illustrated some of the issues and problems with current management of global freshwater supplies. Climate change and changes in the hydrologic cycle along with massive growth in the human population are creating significant pressures on these supplies. Potable water and water for agricultural purposes are becoming more scarce, while large private corporations are profiting from the sale of bottled water and the control of water distribution and treatment infrastructure for a large segment of the human population. Globally, freshwater resources are becoming increasingly degraded. Recycling of water is already crucial but very costly if quality deteriorates while health risks increase.

The need for a new paradigm that manages demand for water, instead of supply, from local to global scales was highlighted. Protection of water resources at their source, and long-term stable monitoring of both quantity and quality are required to manage and reduce the amount of contamination of our water resources. The needs of the ecosystem as well as human needs must be met. Water policy at all levels must reflect this new model and manage our water as a finite resource.

RECOMMENDATIONS

The three working groups at the Simply Water? Workshop were charged with discussing and recommending actions with respect to questions of water ownership, water quality and water quantity. From the documents produced by these breakout

sessions, common themes and recommendations developed. The key recommendations follow.

Governance and Management:

- Water availability must be made a global basic human right
- Water must be removed or exempted from international trade agreements such as NAFTA. It must not become a commodity
- Publicly controlled institutions, not private, profit driven, corporations should control water policy, management and infrastructure
- Water consumption information should be collected and reported for large industrial, commercial and institutional users

Monitoring:

- Long-term, stable funding by all levels of government is essential for consistent monitoring water quality and quantity
- Monitoring of both groundwater and surface water sources must be increased
- A water quality index, similar to the already implemented air quality index, should be adopted at some level of management, for consumer awareness and public information

Water Supply and Wastewater Infrastructure:

- More accurate “true cost accounting” for water use must be implemented to fund the maintenance and upgrading of water infrastructure
- Water use should be metered in all jurisdictions with distribution systems

Public Education:

- There is a strong need for education of the general public on the conservation and wise use of water
- Core curricula on environmental resource studies, notably on water, should be developed for elementary and secondary schools

Research and Policy:

- Funding for basic, publicly funded, research on freshwater resources must be increased
- Interdisciplinary research is necessary – modelling of water quality and quantity is a useful research direction to enhance predicability of future trends
- A multidisciplinary Water Policy Centre should be created at Trent University.

Plenary Presentations

INTRODUCTION

The Simply Water? Workshop marked the tenth anniversary of the David Sheperd Family Lecture Series, hosted by the Environmental Resource Studies Program at Trent University. It provided a forum to discuss the current management and state of our freshwater supplies at a global, regional and local level. The workshop consisted of both Plenary presentations and 3 breakout sessions, each with four speakers and a moderated discussion among the presenters and participants. Registrant participation was crucial to the outcome of the workshop and the diversity of views and opinions expressed by many individuals allowed for excellent debate and knowledge sharing. This document summarizes the proceedings of the workshop and the subsequent recommendations for both policy and management of our freshwater resources from the three workshop breakout sessions entitled Who Owns It?, Can You Trust It? and Is There Enough?.

THE GLOBAL CONTEXT

There are massive pressures on the world's finite freshwater supplies. Industry, agriculture, and the needs of the world's growing human population are continuing to expand almost exponentially. Much of our freshwater is used multiple times and is seriously degraded. The movement of water in the hydrologic cycle is being impacted by climate change, environmental pollution and water diversion. These major changes in hydrology along with the ability of water to solubilize a large number of chemicals, and to carry and disperse pathogenic organisms, nutrients and toxins, all create a challenge for the human population and entire ecosystems.

Water is essential for all life on earth. It can dissolve oxygen to a concentration suitable to support an amazing diversity of aquatic life. It is, however, often depleted by microorganisms feeding on accumulated organic matter, including human wastes, agricultural run-off, food products, fecal material and organic humus added through sewage and erosion. This organic matter depletes the oxygen in the water to levels that fall below those suitable for the aerobic respiration of aquatic plants and animals. "Dead" lake bottoms and sections of rivers are caused by creation of these anaerobic conditions.

Freshwater ecosystems provide a wide variety of food for terrestrial organisms as well as plants and animals which form the beginning of the food chain for both aquatic and terrestrial life. Severe degradation of these systems has serious implications for much of the life on earth. The larger the human population grows, with its increasing demands on agriculture, industrial expansion, and creation of urban landscapes, the more impact humans will have on the Earth's freshwater ecosystems and consequently our own water and food supplies. Although it has seemed that there is an unlimited supply of

freshwater, especially in some regions of the earth, the fact is that less than one half of one percent of the total water on earth is available freshwater.

In her plenary presentation, Maude Barlow pointed out that the human population is increasing at the rate of 85 million people per year and, at the same time, per capita consumption of water is growing at more than twice the rate of human population growth. This growing need for more water is increasingly impacting on the finite supply. The actual amount of freshwater on the earth has not changed over time. However, in places more readily accessible to human populations, the water supply is progressively more degraded. Expanding urban environments do not allow precipitation to enter the terrestrial ecosystem or groundwater reservoirs due to large areas of impermeable surfaces. Surface run-off is collected in drains and taken from the surface to the closest watercourse for removal. It cannot be absorbed and filtered through this shortened, often impermeable route to the nearest large water body. Ms. Barlow submits that a study done in Slovakia shows that surface precipitation exiting from urban environments directly to salt water seas may be changing the amount of available freshwater in the hydrologic cycle for the first time in all of history. Significant amounts of precipitation are no longer available to re-charge groundwater reservoirs and aquifers, or for long-term storage and gradual release to surface watercourses.

Ancient aquifers throughout the world are being rapidly depleted and polluted. We are leaving a legacy of inadequate supply and unacceptable and often unsafe water quality for the coming generations. Millions are dying each year because of lack of water, waterborne diseases, failed agriculture, or of toxic accumulations and biomagnification of toxins in the food chain.

Global warming, driving climate change is also contributing to the altering of the hydrologic cycle, as well as the speed of water recycling. Freshwater glaciers and ice packs are melting at an unprecedented rate and much of the freshwater they are losing is going straight into the salt-water marine system. Globally, smaller seas are evaporating as some of their freshwater source rivers are depleted before they reach the sea. Increasing salinity of the groundwater is making artesian well water undrinkable and unsuitable for irrigation in some regions. In North America the Great Lakes water levels have dropped significantly due to decreased precipitation, a greater rate of evaporation from lack of ice cover and decreasing groundwater sources.

Maude Barlow also pointed out that supplying human populations with filtered, bottled water has assumed a major place in many countries, providing large profits for the suppliers. Perhaps the biggest growth industry in the world is the sale of bottled water. This business is now dominated by a small number of mega-corporations, most of which were initially in the business of providing soft drinks. Schools, universities, cities and nations are entering into contracts with these companies to provide bottled water to their citizens, generally the water which was already available to them, but now degraded by

contamination. Large corporations such as Nestlé and Coca Cola take water freely from the resource, put it through reverse osmosis filtration, add minerals, and sell it at profits close to 200%. The 21st century may be the one remembered for competition for water, aptly described by Maude Barlow as “blue gold”, similar to “black gold” (oil) of the twentieth century.

Alluding to the same theme of global water shortage, David Brooks, in his presentation, focused on the dilemma that finding adequate water for growing food is now a bigger challenge than providing safe water for human consumption. The import-export of food is also an import-export of water, since very large quantities of water are needed to grow a kilogram of food, be it fruit, vegetable or livestock. He emphasized that sound management is necessary in order to maximize use of the water we have. Per capita demand for water needs to be reduced - which involves governments rewarding conservation, penalizing waste, and encouraging innovation. However, he says, the actual work required to conserve water, is done at the local level, by households, farms, factories and communities. Demand management, he pointed out, is the key to more effective water use, but is a low priority with most governments. Technological fixes and mega projects are the norm, with supply management for increasing demand as the driving force. The parallel to other finite resources, such as fossil fuels and minerals is striking.

Brooks also noted that water management projects with NGO participation have tended to perform better than those controlled by government at any level. He stated that a key reason for this is that NGO's devote many years to their projects, whereas governments commit for short-term outcomes. As well, he noted, NGO's typically work to help the poorest and weakest in the community, while governments inevitably rely on the existing power structures within the country.

In his presentation, Don Mackay argued that the public distrust of governments and industry to protect water sources from contaminants is a consequence of the lack of long-term will of regulatory bodies and governments. This relates to monitoring, reporting and modelling of contaminants within the aquatic environment, and remediation of potentially harmful situations prior to environmental or human health problems. Complacency regarding pollutants not directly affecting human health over the short term, has resulted in the scenarios of long term contaminant bioaccumulation, and global transport of harmful substances.

Water is often used multiple times as it travels through a watershed or water body, so that upstream/up watershed uses can adversely alter the supply and quality for downstream users. The fact that water flows through ecosystems, and its use or misuse affects ecosystems and human populations over long distances, was emphasized during the course of the workshop. The flow of water through watersheds, through groundwater,

seas, and the atmosphere, and the distant transport of contaminants in global aquatic systems has been demonstrated.

Mackay emphasized the value and potential of the use of models in gaining a better understanding of the movement of contaminants into and out of water bodies. He noted that reservoirs of persistent organic pollutants (POPs), and their movement and bioaccumulation in aquatic food chains are predictable, and that as a result of fugacity models, the anticipated concentrations of POPs entering terminal trophic levels and the human food chain can be assessed with a limited number of measurements. Mackay also pointed out that many environmental monitoring systems have been proven effective and have been implemented for a range of pollutants in different ecosystems and climates. Among these are the use of zebra and quagga mussels in determining exposure to metals and POPs, and to monitor changes over time. Sediment samples are also widely used to determine the degree of benthic challenge from pollution sources entering water bodies.

Mackay used the example of organic contamination of the Great Lakes and the need for better hydrological models for understanding the Walkerton, Ontario water contamination tragedy of May, 2000. This example demonstrates the need more focused research and a wider use of models to determine pollutant pathways and impacts in aquatic systems. We have the ability to predict and therefore take action with respect to dangerous chemical contaminants in our global water supplies. Mackay noted that The Canadian Environmental Modelling Centre at Trent University is an example of a focused research organization. It extends the possibility of research collaboration in attempting to model a wide range of contaminant fates within a variety of ecosystems, allowing for accurate predictions of outcomes. Tools developed from such collaborative efforts can be used to predict the fates of the ever increasing number of both natural and man-made pollutants entering our freshwater sources. These tools can be useful in the management planning required for protection of not only our freshwater ecosystems, but human health as well.

THE CANADIAN CONTEXT

Bob Page, who presented an Alberta perspective on climate change, drought and water availability, described how extensive upstream use is affecting users in Alberta and Saskatchewan. Albertans faced their most severe water crisis in 20 years during the 2001 summer drought, which acted as a wake-up call to possible future low water crises. He noted that the glacier-fed Bow, North and South Saskatchewan Rivers flow through the cities of Edmonton and Calgary and supply municipal, industrial, and agricultural needs before joining the Saskatchewan River across the provincial border. There is a growing crisis in water supply downstream for those requiring the river water in the dry landscapes in south east Alberta and in Saskatchewan. Per capita water use in Alberta is among the highest in the world despite the dry climate and landscape in the southern part of the province. Agriculture, which uses 84% of the available water for irrigation, is the biggest user of river water prior to it flowing into Saskatchewan. Population growth and

industrial expansion are also stressing the water supplies in Alberta and placing strain on the quality and quantity of water which passes downstream to other users in Saskatchewan.

Page uses the Bow Valley as a case study. Climate change and the retreat of the glaciers feeding the Bow River are depleting the water supply. Snow making operations for ski resorts remove large amounts of water from the watershed in the upstream regions. There has been a reduction in snow pack- the lowest in 50 years. Increased population and economic growth in the region are stressing the river ecosystem, yet vast quantities of water are being removed for agricultural irrigation. Municipal water use is only metered in 50% of homes. Water conservation is not practiced and with changing climate the use is unsustainable. There is a growing potential for conflict between provinces regarding rights of access to water if dry climate conditions persist and water shortages downstream in the large river watersheds become a reality. Page stated that water policy in Alberta is not conservation oriented but is concerned with meeting the increasing demand for water. Water availability is fast becoming the most critical political and environmental issue in Alberta.

Gordon Miller, the Environmental Commissioner for Ontario, presented his views of how poor water management is affecting the quantity and quality of freshwater supplies in Ontario. Ontario is blessed with a myriad of lakes and rivers as well as the Great Lakes. Ontario has a significant percentage of all the freshwater in Canada. By using a large number of policy and action contradictions from the Province of Ontario, Miller outlined our irrational approach to water management. He grouped these under “the dominant myths that have guided and continue to influence water policy in Ontario”. Although Ontario has many lakes, rivers, streams and large portions of the Great Lakes within its boundaries, the first myth Miller referred to is the myth of abundance.

This perception that Ontario has very large quantities of freshwater, guides government policy and public attitude, which seem to be based on the principle that any individual, group or industry should be able to use as much water as they want for any purpose. This attitude, Miller stated, asserts that if water is so abundant, there is little purpose in measuring its quantity and quality, a wasteful and expensive exercise that might restrict industrial location and expansion. Why restrict population growth and associated housing, transportation and economic expansion to take into account water availability? Why restrict the embedded practices of using excess water or diluting pollutants and organic wastes, when there is abundant water available, free for the taking?

The second myth addressed is that of constancy. If the ecosystems have delivered abundant water in the past, why take notice of naysayers who say or demonstrate that the ecosystems are not as the once were, and indeed are seriously altered and damaged? If

this is true, we will simply fix it when we have to, and meanwhile plan on nature's continued abundance.

The third myth that Miller highlighted is that of detachment. Both in urban and rural areas, we believe we are separate, not part of the world's natural ecosystem. The ecosystems are there for our use, as are the species in them. This detachment from reality, widely accepted, is at the root of many policy errors and contradictions. Similarly, the view often acted on is that climate change may be occurring, but we do not need to plan for our future water use. We are a dominant species and will simply adapt to change both socially and economically. Droughts, heat waves, and depleted aquifer water will right itself in due course. After all, Canada was once a lot warmer, and colder, than it is now, so why plan to better manage the water resources when a) it costs money and b) nature is, in any event, uncontrollable? He suggested that these myths need to be shattered so that long-term policies take account of reality and change.

As outlined by these plenary presentations, management of freshwater resources at all levels not only requires monitoring and control of pollutants entering the system but also needs to aim at controlling demand throughout a watershed. Excess upstream demand and its associated degradation of the water quality adds large costs downstream to cope with reduced, contaminated or unpredictable supply.

The concept of global freshwater shortage has only been widely accepted recently, and in First World nations, this was considered a Third World problem. Now developed nations, including Canada, are realizing that they are susceptible and indeed beginning to suffer the effects of depletion or degradation of available freshwater supplies. In an increasingly urbanizing and "factory-farming" society, we must be kept aware of the finite supply of the Earth's freshwater.

This Workshop was developed to highlight the current issues impacting on freshwater globally, and locally. Working within the context and information presented in the Plenary discussions, the Simply Water? Workshop Working Groups: Who Owns It?, Can You Trust It? and Is There Enough? explored, discussed and reported back recommendations on ways to effectively manage our freshwater supplies. Through moderated discussion among expert speakers and participants, each session produced a document that summarized the main discussion points and recommendations for action. These documents, written by Rapporteurs from each group were endorsed by the session participants and presented to the entire assembly at the end of the Workshop. These documents are appended at the end of this report. The main recommendations are summarized in the following section.

Summary of Recommendations

The three working groups were asked to approach issues regarding our freshwater resources from different perspectives; ownership and management (Who Owns It?), water quality (Can You Trust It?), and water quantity (Is There Enough?). Throughout the Workshop common themes developed regarding the recommendations and suggested actions that were the outcomes of the group discussions. Recommendations from all groups can be related to key themes:

- ⇒ governance and management of our water resources
- ⇒ monitoring of water quality and quantity
- ⇒ water and wastewater infrastructure and associated costs
- ⇒ public education regarding the values and functions of our freshwater supplies for ecosystem and human needs
- ⇒ basic research and public policy

GOVERNANCE AND MANAGEMENT

The Global Perspective:

Recommendation: Water must be considered a basic human right. Water should not be considered a commodity.

The question of who actually “owns” the world’s freshwater resources developed into a question of governance and management. As water flows through artificial jurisdictional boundaries, it cannot be truly owned by any one political jurisdiction, company, or person. Water is a basic requirement for all life on earth. Questions about its ownership are highly contentious. Due to its essentiality for all life on earth, some cultures regard water in a spiritual manner. The Who Owns It? group acknowledged this fact, emphasizing that this spiritual connection to water must be recognized and respected by all who use the resource. The profound spiritual connection to water is evident in the Declaration of Indigenous Peoples, signed at the “Water for People and Nature Summit”, organized by the Council of Canadians in July, 2001. (Appendix B).

The concept of potential private ownership of water and its classification as a commodity, versus its universal ownership as a basic human necessity and right, resulted in the Who Owns It? group endorsing the “Treaty Initiative of the Blue Planet Project to Share and Protect the Global Water Commons” (Appendix C). This Treaty was drafted at the Council of Canadians Summit “Water for People and Nature”, July, 2001. It was unanimously endorsed by over 1,000 delegates from 40 countries in attendance and proclaims the Earth’s freshwater supplies as part of the “global commons” and not to be treated as a private commodity. It was also endorsed by over 100 NGO’s and social movements at the “Our World is Not For Sale Network” in December, 2001 (1). The Treaty was to act as a focal point for civil society opposition, and an alternate vision tool, to the interests of private water corporations and international trade and financial interests

at the World Summit on Sustainable Development in Johannesburg, South Africa in 2002. The proponents of the Treaty ask that government organizations and Indigenous Peoples agree to administer the world's water as a trust for future generations and the environment (1). The participants in the Simply Water? Workshop agreed that human use of water does not mean ownership, and all life on earth must be considered when freshwater resources are used. The Treaty Initiative was endorsed by the entire Workshop at the final plenary session.

The Canadian Perspective

The need to clarify who has the ability to control access and use of water resources in Canada was emphasized. There are many outstanding issues regarding aboriginal rights to water and its use as an economic resource. Treaty rights and the question of whether these rights were ever extinguished to the Crown in many parts of Canada are growing and becoming contentious. Aboriginal rights to the jurisdiction over water and its resources within traditional areas are becoming an increasingly important issue. Who has the responsibility for water quality and how the water is to be used, for waterpower, fisheries, or industry, and who is responsible for the treatment of this water are all issues being challenged. These jurisdictional conflicts must be resolved in a timely manner.

Recommendation: Public institutions or governments should control water policy, infrastructure and management.

It was agreed that ideally, national, regional and local institutions or governments should control water policy, infrastructure and management. International corporations with profit driven agenda and little or no local regulation or involvement must be avoided, although the pressures of their lobbies are very strong. Local users were considered the best stewards of a local resource. Conflicts among users can best be addressed at the local level. International control of a resource has been shown to disregard local community or environmental needs in many instances. The logging practices of international forestry corporations have had devastating consequences to both the environment and social well being of communities in the Amazon Rainforest of South America. Gold mining in northern Canada has resulted in large areas of contaminated land, poisoned with toxic mining byproducts resulting in some aboriginal traditional lands being unfit for habitation or resource use. A similar situation has occurred along hundreds of kilometres of the Amazon River in Brazil and Venezuela, where gold mining utilizes mercury extraction technology of a primitive kind, resulting in mercury poisoning of miners and indigenous populations and contaminated river sediments.

Recommendation: The federal government should be lobbied to remove water resources from any trade agreements.

The ramifications of international trade agreements to control access to water supplies was discussed. Public governance of Canada's freshwater supply and the possible

“commodification” of our water resources under the terms of the North American Free Trade Agreement (NAFTA) led to the consensus that the federal policy must be changed to exempt Canada’s water resources from the trade agreement. Control of, and access to, Canada’s freshwater must remain in Canadian hands. The Who Owns It? working group strongly recommended that the federal government be lobbied to remove water resources specifically from any trade agreements. This was based on the assertion that water not be deemed a commodity for sale and profit.

The policies of all levels of government in Canada for both governance and management of water resources were considered critical as jurisdiction over water resources and infrastructure is a shared responsibility. For example, those in the Can You Trust It? session recommended a reinvestment in the Ontario Ministry of the Environment (MOE). This provincial ministry has responsibility for several aspects of management and governance of water resources, including regulating and issuing Permits To Take Water, keeping water well records, performing water quality testing and enforcement of laws prohibiting pollution of waterways and groundwater. The ministry was drastically reduced in size in recent years (30%, 750 personnel), during downsizing initiatives of the government of Ontario in the 1990’s (2). The Walkerton Inquiry, Part I found that the provincial government, through the Ministry of the Environment, was partially responsible for the water contamination episode in Walkerton in 2002, due to lack of personnel for inspection and testing (2).

Deficiencies at the local level of responsibility for drinking water management in Walkerton were primarily responsible for the bacterial contamination of the water supply, however, this would have been noticed and corrected by the provincial level of government through inspection and quality testing procedures if there were appropriate numbers of personnel. This break in the chain of management and responsibility caused a tragic loss of life and illness for several thousand citizens. The Walkerton episode underscores the need for continuous vigilance and monitoring of the state of our drinking water resources from both ground and surface supplies.

Recommendation: There should be public disclosure of water withdrawal and consumption by major industrial, commercial and institutional users.

The working group on water quantity (Is There Enough?) recommended that government require the public disclosure of water consumption and withdrawal by municipal, commercial and industrial users. The requirement to keep a record of water consumption was based on the need for better information on overall human water use. This same concept was raised by the Who Owns It? group as a measure of transparency in water management. This group felt all water users should incorporate water use as part of a “triple bottom-line” in water management, pertaining to financial, social, and environmental factors. This action would encourage sound water management practices as there would be public accountability.

Industrial and commercial users often use a vast amount of water in their manufacturing or processing facilities. As pointed out in the Is There Enough? session summary, however, there is no accurate database to track water consumption or net use for these processes. Legislation is already in place for Permits to Take Water through the Ministry of the Environment and the Ontario Water Resources Act, and these may only require amendment and appropriate monitoring and enforcement for actual water use records to be available. Transparent record keeping by large water users, as part of an annual reporting would also be a source of information for consumption records.

It was proposed that large urban centers should be publicly ranked, based on the water quality both upstream and downstream of the community. This public ranking and disclosure of some measure of water management practices within a city would have economic and social consequences and environmental payoffs. Net use records, including water quality data, from large institutional, industrial and commercial water users could be a source of information for a public ranking system.

A record of good environmental health would encourage community growth, but that growth could be managed in the context of maintaining high quality water through local planning policies. Individual and corporate water users would best be served if the water quality rating of their community was high, attracting growth and social and economic advantages. The need for monitoring is central to any of these above actions and the issues around monitoring were discussed in all three working groups.

MONITORING

Recommendation: All levels of government must ensure long-term, stable funding for monitoring of both water quality and quantity for ecosystem and human needs.

How to monitor the quality and quantity of water resources was a question raised in both the Can You Trust It? and Is There Enough? working groups. It was stressed that there is a requirement for long-term stable funding to enable organizations or governments to properly carry out this role. There was a strong recommendation for the implementation of long-term, stable funding, involving all jurisdictions, for both water quality and water quantity monitoring at the ecosystem and human use levels. Monitoring of water quality and quantity should be done for our drinking water sources, during treatment of our water and after wastewater treatment. Both quality and quantity monitoring needs to be increased for surface and groundwater sources. As well, environmental monitoring for flood control and low water conditions was considered essential. Gauges monitoring for stream and river flows will become increasingly important as regional storm events, and low water drought conditions may become unpredictable and more common within the context of climate change.

Decisions based on short-term fiscal goals and a patchwork of funding methods and amounts, across provincial and national boundaries, have resulted in variations and gaps in long-term records for water quality or quantity both temporally and spatially. Over time the number of gauging stations in Canada has increased or decreased based on budgetary constraints at the federal, provincial and municipal levels. This is relevant for both groundwater and surface water supplies. For example, records of how much water is actually being removed from Ontario groundwater resources is not available. (Gord Miller, plenary presentation) There is very little understanding of the actual volumes and recharge capacities of underground aquifers. Permits to Take Water information in Ontario is often not verified and is not able to be quantified. The actual capacity of a given watershed to replenish water, and cumulative withdrawal and consumption are not effectively measured when new permits for water use or withdrawal are issued within watersheds. Water taking for bottling businesses and industrial use may be severely impacting local watersheds, but without the tools to track this impact, local agencies, for example Conservation Authorities in Ontario, cannot monitor the effects of these uses. An example of this contentious issue recently came to the fore in Eastern Ontario on the relatively small Tay River. A large multinational mining corporation (OMYA Canada Inc.) applied for an increase for its Permit To Take Water from the river for its calcium carbonate mining operation. However, neither the local Conservation Authority nor the provincial government have a water budget for the watershed nor do they have information on the capacity of the system to handle this large scale water removal (4,500 cubic metres/ day). At issue is the very fact that the environmental impacts of such removal are not known. The issue is currently before the Ontario courts.

Monitoring of surface water sources has not been consistent across the country. Some watersheds have excellent long-term records, whereas others, especially in the north have patchy records at best. Inconsistent funding federally and provincially has resulted in the “mothballing” or removal of water gauging stations throughout the country. As funding is available, some stations are made functional once again, but there are gaps in the records. Good historical data from gauging stations that have been operating on a consistent basis allows for detection of trends over the long-term, relating to both the quality and quantity of water in a given area. This information is becoming increasingly more relevant as there may be hydrologic changes in large regions due to climate change.

Recommendation: A standardized public “water quality index” for community water supply systems should be investigated.

Although the impacts of large industrial, institutional and commercial users was recognized, participants also recognized that individuals within society must be made more aware of the impacts they have on the water supply. It was recommended that there should be investigation into the possibility of implementing a form of water quality index for community water supply systems, similar to that used for air quality. Public access to such a system would act as a reminder to consumers that their water supply is monitored for safety, and instill the connection between human impacts on the

environment and the water available for human consumption. A system of water quality indexing for municipalities may have prevented the Walkerton tragedy. The lack of chlorination of the water supply together with the presence of bacteria would have been public before the deadly outbreak of disease within the community.

Monitoring of the state of the water supply infrastructure, suggested by the Who Owns It? group, should be done by arms length organizations, separate from the ownership of the infrastructure itself. Although “out of sight-out of mind”, the systems in place for the movement, treatment and removal of water in our urban environments are enormous and costly to maintain. The shortfalls in the long-term maintenance of these systems are now becoming evident in many large and small municipalities throughout the country.

WATER SUPPLY AND WASTEWATER INFRASTRUCTURE

Recommendation: Water use should be metered for all households served by a municipal water supply system. Water pricing should reflect the “true cost” of supplying clean, safe drinking water and should encourage conservation.

A system of more accurate “true cost accounting” of water use by those served by municipal systems would help to finance the maintenance and upgrading of water distribution infrastructure. Low flat rate water pricing per unit used, and minimal funding from all government levels has resulted in water infrastructure being ignored during municipal budgeting, causing it to fall into serious disrepair throughout many jurisdictions. The result is degraded water quality and quantity in many small and large municipalities. This has become a serious financial burden as aging infrastructure replacement costs cannot be met through revenue from water consumption pricing or the municipal tax base. As Gary Scandlan pointed out, the water rates in some smaller municipalities have already doubled. It was recommended that water be metered in a manner similar to the metering of electrical consumption. This would allow for a better costing of water use by those served by municipal systems. Consumer awareness of the actual costs to deliver safe, clean drinking water to the tap would help to foster a conservation attitude. Consumers would gain a better appreciation that water does not arrive at the home from a pristine lake or river.

The issue of water availability and pricing of water use was highlighted in all groups. It was recommended that the price paid by individuals for municipally supplied water, through a water distribution system, should be such that it encourages water conservation. As Gord Miller so aptly put it: “Why does my neighbour’s sprinkler system turn on when it is raining?” Pricing based on consumption would ensure that conservation measures would be adopted by many within a municipal supply system.

PUBLIC EDUCATION

Recommendation: Environmental and water resources studies should be part of the core curricula in both elementary and secondary schools.

The need for public education on conservation and wise use of our water resources was a consistent theme throughout the Workshop. It was suggested that water distribution providers, be they public or private, are in a good position to help educate the public about water quantity and quality issues. A large percentage of households are billed for their water use. Information regarding the treatment of water, the cleaning of wastewater, and conservation can be distributed with billing information.

It was also recognized that there is a real need for basic scientific and ecological knowledge of our impact on water resources in the general public. There was a strong recommendation that a core curriculum on environmental/resource studies be developed for both elementary and secondary schools. This would ensure that the knowledge of human impacts on water resources, and the value of water for both human and ecosystem function, would become more entrenched in society. Learning tools such as the Children's Water Festivals, organized in a number of jurisdictions, are an excellent way to introduce the concepts of water conservation and human impact on water resources to children. These types of initiatives should be expanded and made more available to elementary schools, at a cost that encourages their use. In Ontario, there are currently optional courses offered in secondary schools, however only those with a direct interest benefit from these courses, which are not part of the core science or social science curricula. Including water resources education in the core science or social sciences would ensure that all secondary school students would benefit from education on human/ecosystem water issues.

A knowledgeable public would encourage decision makers at both public and private institutions to minimize negative impacts on water resources. It was noted that public empowerment is required to drive the political and corporate powers to manage our water resources in a sustainable way.

RESEARCH AND POLICY

Recommendation: Basic, publicly funded, research on freshwater resources must increase. Development of a Centre of Excellence in Water Policy at Trent University should be explored.

The need for an increase in basic scientific research on freshwater resources was highlighted. There was concern that the water industry plays too strong a role in the direction of water research. Basic, publicly funded research, is required in interdisciplinary programs that can link human water use and emerging environmental issues. The Who Owns It? working group recommended that development of a Centre of Excellence on Water Policy be explored at Trent University. Such a Centre would draw

on the environmental, social, and political science expertise that already exists at the University. The University already houses several other multidisciplinary Centres. Linkages between the research community and public policy making bodies are necessary.

Recommendation: Public policy makers must be guided by quality non-partisan research in their decisions on future policies affecting our water resources.

Recommended Workshop Follow-up Actions

The consensus overall recommendations for post Workshop actions were:

1. To maintain an ongoing discussion and debate on water issues.

A permanent Water Policy Centre, developed at Trent University would regularly re-visit and monitor policy and actions regarding water issues provincially and nationally. Its role would include organizing and hosting Workshops on a variety of water topics, liaise with the Program on Water Issues at the Munk Centre for International Studies at the University of Toronto, and seek support for research in water science and policy. It could be centered around the Watershed Science Centre and the Environmental Resource Studies Program.

2. Develop a follow-up Workshop.

Examples of possible Workshop topics include:

- Water for Sale: Policy and Problems: This discussion could include water and international trade, use of groundwater resources by bottling companies and industry, and bulk water diversion, among others.
- Water Use in Agriculture: The challenges and conflicts of water use for agricultural purposes is growing worldwide. The need for a stable food supply, especially in arid regions of the world, is conflicting with human and ecosystem needs for clean, usable water, including drink water. International food distribution is exacerbating this issue.
- Water Resources and Climate Change: The impacts of climate change worldwide, including the increased rate of glacier melt, storm events, drought, fire and shifts in vegetation patterns all effect the amount and quality of freshwater resources, and its availability.
- Water Education: Increasing the awareness and knowledge of the public, through a variety of educational approaches, in the traditional schools systems, colleges and universities, and through methods that reach a wider public, are important mechanisms to create a “water literacy” and modify societal approaches to the use and protection of our finite freshwater resources.

Relevant Water Issues Actions Subsequent to February, 2002

INTERNATIONAL ACTIONS:

The Treaty Initiative of the Blue Planet Project has grown to include over 260 groups worldwide. Project proponents, now known as the “Water for Life” coalition were present at both the World Summit on Sustainable Development in Johannesburg, 2002 and the 3rd World Water Forum (WWF), organized by the World Water Council, in Kyoto, Japan in March, 2003. The Council of Canadians, representing this coalition, were at the WWF and given the position of co-convenor for the Theme Session on Public Private Partnerships, along with the World Water Council (WWC). The WWC is a water policy think tank organization comprised of water industry association groups, the World Bank, other regional banks, and some NGO’s, which holds the WWF every 3 years. The Water for Life coalition succeeded in presenting an alternative view of water resources management, one utilizing community control, at the session on Public-Private Partnerships. There was, as a result, no consensus on the model of global private management and control of water resources infrastructure and distribution. This lack of consensus was considered a great victory for the coalition (3).

The Munk Institute for International Studies, Program on Water Issues recently released the document entitled “Managing Groundwater Resources in the Great Lakes Basin: Securing our Future” (4). This document highlights the fact that jurisdictional cooperation is required due to the interconnectedness of the entire Great Lakes watershed, both as a surface and subsurface water source.

CANADIAN ACTIONS:

The Canadian Government tabled legislation in December of 2002 to make amendments to the International Boundary Waters Treaty Act. These Amendments and Regulations include the prohibition of bulk removal from boundary waters from Canadian basins for any purpose, including export. In addition, from now on, water-related projects in Canada that affect the level or flow of waters on the United States side of the border will require licenses (5).

PROVINCIAL ACTIONS:

In Ontario, the Part Two Report of the Walkerton Commission of Inquiry, containing recommendations for the future safety of drinking water in Ontario, was received by the Attorney General of Ontario in May, 2002. This report is available to the public on the Ministry of the Attorney General website (6). The report contains many recommendations on the protection of drinking water at source and throughout distribution and treatment processes.

The Ontario government formed an Advisory Committee on Watershed-based Source Protection Planning comprised of both public and private sector water resources experts. This committee tabled their recommendations regarding source water protection in Ontario in a report released in April, 2003 (7). It contains 55 recommendations, including recommendations dealing with issues raised at this Workshop relating to public transparency of process, public education and information, monitoring and the sharing of data gathered under monitoring programs, and sustained funding for research in areas that support water source protection. The newly appointed Minister of the Environment announced the formation of two expert committees, one for implementation and one for technical expertise, to address the source protection planning recommendations outlined by the Advisory Committee (8).

Also as a result of the Walkerton Commission, Part 2 Report recommendations, The Ontario Ministry of the Environment has enacted new legislation on the regulation of drinking water in the province of Ontario entitled the Safe Drinking Water Act, 2002. This legislation deals with matters related to treatment and distribution of drinking water and gathers all drinking water legislation and regulations relating to the treatment and distribution of drinking water into a single Act (9).

On December 18, 2003, the newly elected Ontario government instituted a one year moratorium on new and expanding Permits to Take Water. This action affects the water takings by large users such as the OMYA Corporation, which would have been able to increase its water taking from the Tay River watershed in January, 2004. The government has also stated that it intends to start charging royalties to major water users (those who use more than 50,000 litres/day), and water bottling companies for the water they extract for manufacturing purposes and for sale (10). The new government is concerned about the lack of knowledge of the environmental effects of water use and removal from watersheds, and has acknowledged that there is not sufficient information regarding this removal to warrant its expansion.

The government of Alberta has recently developed a province wide strategy, known as Water for Life-Alberta's Strategy for Sustainability, November, 2003. This strategy has three main goals, safe drinking water, healthy aquatic ecosystems, and quality water supplies for a sustainable economy (11). The report acknowledges and makes recommendations on the key concerns regarding freshwater supplies outlined in this Workshop.

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APPENDIX A: WORKSHOP BREAKOUT GROUP RAPPORTEUR SUMMARIES

1. Who Owns It?

Rapporteur: Jim Madder, Principal of the School of Environment and Natural Resource Sciences, Frost Campus, Sir Sandford Fleming College.

This session explores the issues around the concept of water ownership. Speakers and Workshop participants in this session discussed a wide range of ownership issues including the rights of aboriginal peoples, the North American Free Trade Agreement, and the privatization of water management and distribution systems. Discussion was lively and passionate, with a general recognition of the inter-twining of the issues. Ownership is an interesting and often contentious issue with respect to water, so the focus on basic human rights to water underlay most of the discussion.

Six resolutions and recommendations were developed and proposed from these breakout session proceedings. These resolutions and/or recommendations are outlined below, along with major discussion points.

Resolutions:

1. Water is a living spirit central to life. Water belongs to no single species including the human species, rather it belongs to the planet earth. For others who prefer a less spiritual approach this view is expressed by the statement: "Water like air is essential for life and thus cannot ethically be owned. Access to clean (potable) water is a basic right. Water use is not ownership."

The topic of water ownership has many diverse views. While the above statement expresses the general consensus of those present, there was considerable discussion concerning the inherent value of water, the spiritual and philosophical belief of Canadian aboriginal society regarding water and its place as an essential component of life on earth, aboriginal rights to water and jurisdiction over water management, discussed by Dr. Janet Armstrong and Chief Robert Lovelace. While water ownership was deemed to be a violation of ethics and perhaps not actually possible, the ownership or management of the water collection and distribution infrastructure may essentially provide "de facto" ownership of the resource. There was greater support for the privatization of the management rather than the infrastructure itself, although there were significant concerns raised by many over any privatization. The concerns focused on the likelihood that privatization was based on an exploitation short-term model rather than long-term resource stability and sustainability. There was general agreement that

jurisdiction of management of water should rest with the public through local and regional levels of government. Local control of water, on a watershed basis, was desirable for many decisions, although there is a need for regional and national control for decisions that involve multiple adjacent watersheds.

Discussions as to how the ownership of water infrastructure and its associated management could be controlled resulted in the realization that Canada is at a juncture where we may lose (or may have already lost) control over significant aspects of water "ownership" and management. As the North America Free Trade Agreement (NAFTA) does not expressly exclude water from its provisions, water can easily become a commodity. Under the provisions of NAFTA once done this action cannot be reversed. As a result we propose resolutions "2" and "3".

2. Since the terms of NAFTA compromise all sources of water within the national boundaries of Canada, we ask the government of Canada to negotiate the specific exemption of water from the terms of NAFTA and further that water be exempted from any future treaties to which Canada may be a party including GATS and FTAA.

This is a specific request of the Canadian government to ensure that the jurisdiction to manage water resources rests within the public rather than industry. This issue is especially significant due to the growing trend to privatize water infrastructure and or water management. This trend is well established internationally and is growing within Canada. This increases the difficulty of local or even national control of water infrastructure and its management. This sentiment on a global view is embodied in "The Treaty Initiative" endorsed by resolution 3. Some delegates saw parallels between NAFTA and many of the historical treaties negotiated between aboriginal peoples and colonial powers. Essentially, negotiation between parties with significant imbalance of power results in the elimination of rights to resources fundamental to life.

3. We endorse "The Treaty Initiative" (Appendix C) with the following caveats: a) salt water, most notably oceans, should also be included in the resolution; and b) the last sentence of the final paragraph should be excluded.

On the basis of the above three resolutions, local resident peoples of the world shall establish the principles under which water infrastructure is owned and water managed. The principles in resolution 4 are based on economic, ecological and social principles to provide for the long-term sustainability of the resource and its use for the social good. These principles shall apply whether the ownership of water infrastructure or management is in public or private hands.

4. Whether or not the infrastructure or management of water is in government or private hands the following principles shall apply:

- Water is a natural social good
 - i. Personal water needs shall be filled
 - ii. Ecosystem needs shall be filled
 - iii. The user shall ensure that water is returned to its original state after use

- Water shall be managed based on principles of: sound economics; ecosystem sustainability; and social responsibility
 - i. Pricing shall be fair and reasonable based on social and ecosystem sustainability.
 - ii Pricing of water use must be directly associated with principles to protect the resource and maintain infrastructure.
 - iii. Significant investment is required through pricing and/or tax resources to support renewal and upgrade of water infrastructure.
 - iv. Rate increases will be linked to specific infrastructure improvements and ecological sustainability

- Water shall be managed so as to encourage conservation
 - i. Focus of water management must shift from supply to demand, i.e. conservation rather than developing/ importing new supplies of water to feed demand.
 - ii. Large new investments will be avoided, rather efforts shall focus on conservation or, if necessary, expansion of existing facilities.
 - iii. Pricing and access shall be used to encourage conservation
 - iv. All use (surface and ground water) must be monitored and regulated.

- Ownership of water infrastructure shall be public or under public control
 - i. Close monitoring is required by an arm's length organization using objective standards.
 - ii. Results of monitoring will be made public.

- Transparency is a premise in all aspects of water management
 - i. Management will embody dispute resolution processes.
 - ii. There will be open negotiation of contracts and independent contract review.

- iii. All users of water will report on their water use as part of a "triple bottom line" (financial, social, environmental).

Recommendations:

1. We recommend the establishment of a centre for excellence in water policy at Trent University. It would build upon the expertise of the Watershed Science Centre and focus on the public management of water including economic, ecological and social aspects. It would provide technical, legal and policy advice to government and the public. The centre would also support education concerning water in kindergarten through grade 12.

Concern was raised that as water policy involved politics, power and profit it is difficult to find unbiased information concerning water policy. As a result discussion focused on the question "How do we change policy given this is the case?"

The following recommendation is the result of that discussion.

2. We recommend the development of a communication strategy for the findings of this Workshop based on: what we wish to communicate to defined audiences, through the best mechanism, with a cohesive and coordinated series of messages from all interested parties.

Delegates wished to have the resolutions and principles endorsed by the Workshop presented to those involved with water policy development and implementation. Concern was raised that these resolutions and principles required overt political support to be adopted. Given the reactive nature of politics a social movement may be necessary to produce significant changes in water policy. Concern was also raised that the legal system including, supreme court decisions, that supported improved water policy were not being implemented.

Perhaps there are other social movements that can inform this process, i.e. can we borrow from the anti-smoking movement to apply to water issues?

2. Can You Trust It?

Rapporteur: Stephen Bocking, Environmental and Resource Studies Program, Trent University.

The following summary outlines the discussions on trust in our freshwater supplies. Although the question and discussions in this group generally focused on trust in water supplies in general, much of the discussion became focused on Canadian issues and specifically those in Ontario, as the majority of participants were either directly or indirectly involved in agencies and industries in this region.

1. Getting to the right question.

The committee began by considering the question itself: "Can you trust it [i.e., water]?" It was concluded that the question needs to be revised. Yes, water itself can be trusted: it has existed for millions of years, and will continue to exist, providing its essential services to all living things. The key question is whether humans can be trusted: both those who provide it (including those operating, regulating, or otherwise responsible for water supply and disposal systems); and, more generally, all members of society, who use and abuse water in a range of ways.

On this question, there was less agreement. Evidence was presented indicating that yes, we can trust our water systems: for most people, most of the time in Canada, the water supply is safe. Peterborough, for example, has one of the safest water supply systems in Canada. Water is also becoming safer in Canada, especially in the aftermath of the Walkerton water contamination incident. Safety of water systems should also, it was argued, be placed in context: much less risk is posed by using water systems, than using other public services, such as roads, electricity, or hospitals.

But strong doubts were also expressed regarding whether trust is appropriate. It was noted that Walkerton was not an isolated case, as incidents in North Battleford (Saskatchewan) and elsewhere indicate. There are major water problems in native communities across Canada, particularly because of inadequate funding formulas imposed by the federal native affairs ministry.

In a recent study, one quarter of U.S. communities were found to have recently violated water standards. There is considerable evidence indicating that water supply systems are deteriorating, particularly in areas where the systems are aged, toxic contaminants have accumulated in major bodies of water, especially the Great Lakes. Human activities are still having major ecological impacts on ecosystems; and globally,

there are huge health and ecological problems arising from the contamination of misuse of water. In addition, polls have shown that there is widespread public concern and uncertainty regarding the safety of water supplies; these concerns are also implied in the fact that there is a large, and growing, market for bottled water, even at costs many times that available through public water supply systems.

2. Understanding this lack of trust.

It was noted that concerns, and distrust regarding water supply has a long history. It is, in part, a product of the growth of cities, industries, and human populations, and the resulting environmental impacts of this growth. It is also the product of, more recently, the rise of environmental concerns in western society since the 1960s. Part of these concerns relate to uncertainties regarding environmental quality, as well as distrust of those agencies responsible for protecting and managing the environment, and attitudes towards water have been part of this. Since the 1980s there have been a series of events: the appearance of toxic contaminants at Love Canal on the Niagara River; the discovery of toxic blobs on the bottom of the St. Clair River; evidence of carcinogens in Great Lakes water; and observation of impacts of toxic contaminants on Great Lakes wildlife (tumours in fish, crossed beaks in cormorants, as two examples), that have led to a lack of trust.

In the face of these events, a common government response has been to cut back on environmental agencies, particularly in Ontario, the federal government, and now, in British Columbia. This has also led to distrust of authorities responsible for water quality. Then there was the Walkerton incident in Ontario, the impact of which was undoubtedly heightened by all these pre-existing conditions. Since then, there has been some recovery of public trust of water supply systems, at least in the sense that there is less perception of complacency. At the same time, there is much uncertainty as to the appropriate, long-term response to these concerns and lack of trust.

The result, then, is a "patchwork" crisis: there are not problems everywhere, but there are nevertheless enough in scattered locations that there is reason for concern, and reason to suspect that more problems might arise in the future. These problems are rooted in a long history, however, indicating that solutions will not be immediate.

It was also pointed out that this must be placed in a broader political context: concerns and distrust reflect not just perspectives on water, but wider attitudes towards government, business and other authoritative agencies: a general distrust, bred from cutbacks, failures to communicate, and lack of transparency.

3. It's not easy: problems are complex.

It was stressed that water problems must be seen in context: all things are related, and nothing exists in isolation. For example, water problems are the product of activities that are central to the modern economy: agriculture (the impacts of irrigation, fertilizers, and large livestock farms, for example); urban sprawl (which exerts its impact both through exaggerated demands on water, and as a major source of contaminants); and industry (particularly small and medium industries [such as gas stations and drycleaners], that frequently lack expertise, and that are not yet effectively regulated). Water quality problems are also often closely related to water quantity issues: when quantity decreases, so (often) does quality.

Two definitions were provided:

Water quality: Comprises the physical, chemical and biological characteristics of water that make suitable for continued use by living organisms, and especially human beings.

Water pollution: Any physical, chemical or biological change in water quality that affects humans or other living organisms adversely. The term is usually restricted to changes caused by human activities.

The broader context was also emphasized in terms of the need for an ecological perspective: water issues are not just about drinking water for humans, but about habitat for aquatic species. Impacts on aquatic habitats and biodiversity are reflected in estimates that 20 percent of freshwater fish are either extinct, or are threatened. The complexity of pollution was also noted: it includes disease organisms, inorganic and organic toxins, sediment, organic wastes, salts, exotic organisms, and other substances. Pollution also comes from a variety of sources: both point and non-point sources; and they are the result of both intentional and unintentional releases. Many factors affect the vulnerability of water bodies to pollution: climate, soil, topography, presence or absence of certain organisms, and the renewal time of water bodies. It is also noteworthy how concerns regarding water have evolved over time: from a focus on human health to a broader concern with ecosystem health; from acute to chronic toxicity, from point to non-point sources, from local sources of contamination to the long-range transport of pollutants, from surface to ground waters, and from simply crisis management, to anticipation of problems before they arise. A variety of strategies can be used in pollution control, including: mitigation, prevention, true cost accounting, anticipatory action (regulation), legislation, and monitoring.

The complexity of water pollution problems is exemplified at Akwesasne: a First Nations Reserve along the shores of the St. Lawrence River, which bridges the Canada/U.S. border. This location has many overlapping jurisdictions from the federal to the local level; the local ecosystem is used and valued by the people in a wide variety of ways; and there are many environmental problems, from contaminants, to loss of the traditional fishing and trapping economy, to dropping water levels on the St. Lawrence. Since 1976 the Akwesasne Environment Department has worked on these problems.

Another element of this complexity that was noted was the problem of defining what is "natural," and worth protecting or restoring, given that ecosystems have been so heavily modified by humans. For example, the Great Lakes ecosystem cannot be returned to its original state. What, then, should be the goal of remediation efforts?

4. What are the obstacles to trust?

Attitudes:

Several obstacles to trust in water supplies were noted. Some of these are rooted in attitudes. These included the persistent preference for reacting to problems, and seeking to cure them, after they have occurred, rather than anticipating and preventing problems before they occur. Another obstacle is that city governments (unlike public utilities, whose sole job may be the supply of water) tend not to see water and sewer systems as a high spending priority; instead the preference more often is for more visible investments, such as "swing sets and fire trucks". A third obstacle is the frequent misdirection of concerns regarding water: while concern is usually focused on public water systems, often the largest water quality problems are in the home, as a result of poor hygiene, untested wells, the use of hoses for drinking, and do-it-yourself plumbing. Water sold in bottles also often has quality problems.

Information:

Lack of trust in water supplies are rooted in problems in obtaining or communicating information. There is an apparent lack of interest in information about water quality; this is suggested by the observation that only 1 percent of those who have wells drilled also have the water tested, even though this is a free service. It is also indicated by the lack of uptake of water information provided by water utilities. On the other hand, efforts to inform the public about water are not considered adequate: while those who use natural gas receive every year a flyer explaining issues and risks (such as CO), there is no analogous information effort for the water supply. In particular, governments are now less willing to fund extension services for farmers, and hence less information is available to them on water quality management. A third problem is that there is too little support for basic research, which is needed to identify and anticipate emerging problems. There is also too little support available for interdisciplinary studies, as well as for basic environmental monitoring. In addition, there is concern that industry has too large a role in determining the water research agenda.

Resources:

Obstacles to trust also related to resources for water supply and management. Small towns and rural areas often lack funds for proper water supply management, including building infrastructure, and hiring qualified staff. There is concern that testing requirements are not designed to address specific local conditions. These requirements are the same everywhere, even when conditions vary; as a result, testing will often be done to identify substances that have not been found in a location for several years. This can be a waste of money, and the only reason for doing so is because of the need to reduce regulatory liability. More efficient testing would be possible if it was guided by knowledge of the specific risks present at each place. Finally, there are insufficient economic incentives available for conserving water, both domestically and in industry. In particular, the lack of water metering in many places means that there is no reason for water users to use less water.

5. What about privatization?

It was suggested that the privatization of water supplies has historically had a poor record. The need for profits leads either to higher prices for water, or to cuts in operations. Since water rates are often regulated, the only option for private water system operators will often be to cut operations, likely resulting in less confidence in the water supply. In addition, privatization will often result in loss of local control over the water supply. With a few global corporations seeking to control many local water supplies, access to water supply decision makers may require a trip to London or Paris, rather than to a local City Hall.

6. How do we get past these obstacles to trust?

Various steps were suggested towards the goal of ensuring trust in our water supplies. These can be summarized in terms of two principles.

1) Find common ground.

To find common ground, it is necessary to:

- reach agreement on what is important; as Henry Lickers explained, this can be thought of as "The Great Way of Peace": that all of the world, and all people, past and present, are valued.

- ensure that people want to work together; this involves creating a "Zeal to Deal", and this requires attention to building respect, equity, and empowerment among all participants.

- respect differences in local conditions, by acknowledging that not all water problems are the same everywhere: rural and urban problems differ, as do problems in wet or dry regions, or the problems created by industry or agriculture.
- emphasize the "big picture": that protecting water supplies is just part of a larger responsibility to protect ecosystems.
- take seriously our global responsibilities for water. This means, for example, assisting those in other parts of the world to manage their water in a sustainable way.

2) Think beyond "management" of water - think in terms of "responsibility" for water.

- A basic principle was expressed during the session, regarding the responsibilities of individuals as consumers and as citizens: We are not just consumers, pursuing our individual interests (by, for example, buying bottled water), but citizens, with collective responsibilities (including protection of our water supplies). This has implications for both individuals and institutions.

Responsibilities of individuals:

- to take personal responsibility for water supply and waste water. This requires vigilance, and for making the effort to be informed: to know where one's water comes from, and what condition it is in. It also means thinking more carefully about water conservation, and about what is dumped down the drain.
- to view democracy as not just voting, but taking action. Taking action, in turn, requires empowerment: while people are most often willing to act, and to do the right thing, they also need to know what to do, and to have the necessary tools for action.
- individual responsibility must also be placed within a global context, through, for example, assisting other nations with their water supply problems.

Responsibilities of institutions (including government agencies):

- Institutions must provide adequate funding for water supply and water quality protection. At the same time, it should be noted that the funds required are not huge; for example, it is estimated that cleaning up the toxic "hot spots" in the Great Lakes basin would require between 12 and 25 billion USD. This is

a very small fraction of the total economic output of the Great Lakes region. It is also worth noting that people have demonstrated their willingness to pay for clean water, by their purchases of expensive bottled water.

- Source protection should be emphasized, as well as protection of the drinking water supplies themselves.
- Institutions must embrace openness and honesty. Public receptivity towards openness is reflected in how public advisories relating to water quality often raise (rather than lower) public confidence in the water supply, because they provide reassurance that there is someone there watching over the water supply. In general, readily available information serves this important trust-building function, beyond the value of the information itself.
- Institutions must consider carefully their roles, and, if necessary, adjust them. For example, while the Ministry of the Environment's enforcement function is essential, it might also be considered how the Ministry could act more effectively as a partner in improving the performance of local water supply systems, and the extent to which the enforcement function impedes its ability to act cooperatively to improve these systems.
- It is also necessary to sort out jurisdictional issues. For example, to what extent is water supply a health or an environmental issue? And what does this mean in terms of the relative responsibilities of the Ministry of Health and the Ministry of the Environment?

7. What can be done to restore trust?

Several actions should be considered, as steps towards restoring trust in water supply systems. Some of these actions or recommendations are relevant to individuals; others relate to institutions.

For individuals:

- More public education is needed, particularly to enhance the public's understanding of water systems, and potential risks to these systems. This might involve development of a water quality index, analogous to the existing air quality index; it would also likely involve closer work with the news media.
- More opportunities to participate are needed; public education can be meaningless unless it is tied to empowerment of the public.

- Better education about water is needed in schools. One option is to involve kids more in monitoring and water quality studies. This can provide benefits both in terms of education, and in terms of empowering kids to insist on action on the problems that they find.
- Higher water prices should be considered, as a way of reminding people of the value of the resource, and encouraging them to use it carefully.

For institutions:

Requirements:

- Water supply institutions should be required to disclose the results of testing, as well as other data.
- There should be stronger enforcement and punishment for violations of water standards and regulations.
- Institutions should be required to pay closer attention to monitoring, to ensure that all necessary parameters are being monitored.
- Higher standards for bottled water should be considered.

Assistance:

- It is necessary to rebuild the Ministry of the Environment, to restore its technical capacities, depleted after several years of budget cuts. A long-term plan to restore its capabilities should be implemented.
- Ways should be found to assist smaller towns and rural areas with the costs of building and operating water supply systems. One prospect of this is Bill 155, the Sustainable Water and Sewer Systems Act, which will raise water prices, in order to provide funds for building and maintaining water systems. Another prospect is a revolving fund for water supply investments.
- It is necessary to make testing affordable, through implementation of flexible regulations, appropriate to local conditions. The key point is to think in terms of local risks, not in terms of fixed, province-wide standards that may not always be relevant to local conditions. In general, there is a need for more debate about standards - about how they are set, and how they are enforced.
- More funding for basic water research is needed.

- Cities could be ranked by their performance in maintaining water quality standards, measured in terms of water quality in rivers above and below each city.

8. Learning and adapting.

Finally, several suggestions were made that relate to how water supply systems could be continually improved, through innovation and adaptation to changing conditions. These included:

- Finding examples of proven, effective policies or other practices, that could be applied in other contexts. For example, the Ontario Environmental Farm Plan provides support for farmers wishing to act as environmental stewards; requirements for nutrient management plans are also encouraging farmers to think carefully about how they use fertilizer, particularly in fields that drain into watercourses. Such models could be applied to other sectors, such as cottagers, or boaters.
- Being willing to consider novel ways of doing things.

Examples included:

A two-tier water supply system, in which pure drinking water would be available free for pick-up, and water of lower purity, for all other uses, would be delivered to homes (it was noted that such an arrangement might lessen public commitment to protecting aquatic ecosystem quality).

Action on regulating domestic hygiene, given that this is the source of many problems with water quality.

3. Is There Enough?

Rapporteur: Michael Fox, Environmental and Resource Studies Program, Trent University.

The concept of water quantity was explored and related to the issues of regional drought, specifically in the Great Lakes Basin of North America, human and ecosystem water use, and quality degradation.

This group was asked to focus upon the quantity of water available to meet human and ecosystem needs. The first issue faced was how to frame this broad question, both geographically and conceptually. The geographic context is very important because of the different scales used by the speakers in their presentations and the obvious fact that the issues are different depending on where one examines the problem. In the plenary, Maude Barlow made it clear that at the global scale, availability of clean water, or water of any quality, cannot be taken for granted in many parts of the world. For example, she indicated that 25 million people annually die of waterborne pathogens, and that water consumption is doubling approximately every 20 years.

Although the most serious water availability problems occur in third world countries, North America is not immune to such problems. There are large areas across the Prairies and in the Intermountain Region that have experienced acute or chronic water shortages, and water allocation questions are already high priorities on the political agenda. In the U.S., the most highly political water conflicts are being found around the allocation of water in the Colorado River Basin. In Canada, the most serious shortages are in the "Palliser Triangle" region of southwest Saskatchewan and southeastern Alberta. Despite its wealth, Alberta does have a water supply problem in the South, and according to Bob Page, water is the most critical resource issue in Alberta.

While the participants acknowledged these realities, the Workshop discussion was focused on the Great Lakes Basin on both sides of the border and on Ontario in general. The focus on this region was not a formal decision of the group, but it evolved in the discussion, and was probably due to having so many members from government agencies within Ontario with a local or regional mandate. It is important to note this regional focus at the outset because some of the resolutions coming from this Workshop may not apply to other regions of Canada, or at a global scale.

The conceptual framework is important as well. One cannot address the question, "Is there Enough", without considering: (1) what for; (2) at what quality; and (3) at what price? Much of the early discussion was focused on human versus ecosystem needs: to what extent should these be considered scarcity issues, what should be their

relative priorities and are the two really separate. While the two can and should be separated out for planning purposes, ecosystem needs are really part of human needs whether you take the position that humans are responsible for the stewardship of the Earth's ecosystems, that humans are an inseparable part of our ecosystems, or that the health of humans depends on the health of the ecosystems where they live. For all of these reasons, the group took the position that that any assessment of water requirements should consider both ecosystem needs, and human needs for personal and economic use. The group also took the position that ecosystem needs should have first priority, but recognized that (1) defining these needs would be more difficult than defining human needs; and (2) that many people outside of this conference (and some within this Workshop) would not agree with this priority.

1. Is there enough water in Ontario and other parts of the Great Lakes Basin?

A number of speakers in this Symposium referred to "The Myth of Abundance", and the participants considered the evidence that water availability is, or will become a serious issue in Ontario and the Great Lakes Basin. Because this region is blessed with a great number of lakes and streams, large bodies of stored water (in particular, the Great Lakes), and more rainfall than most regions in North America, lack of water availability here would suggest that water scarcity is going to be a more serious issue in a broader North American context.

In one sense, the most obvious evidence stems from the Walkerton Ontario tragedy, during which thousands of people were infected by *e. coli* bacteria from agricultural run-off and a malfunctioning water treatment system. Subsequent investigations have shown that drinking water has been contaminated or at least suspect in a number of other Ontario municipalities. However, even if one thinks of this as a quality, rather than quantity issue, there is other evidence that quantity is a problem in parts of Ontario, or that it will be in the near future. Such evidence includes:

- Recent Level 2 ("Conservation") low water/drought warnings in southwestern and eastern Ontario. Although no Level 3 ("Use Restrictions") warnings have been issued yet, Ontario was close to one last year. There are already watershed-based Drought Response Teams in place in Ontario.

- Sharp decline of Net Basin Water Supply (NBS, an indicator of the amount of water entering a lake and not lost to evaporation in a given year) in the Great Lakes to near historic lows in the last three years). There was some debate as to whether the current decline in NBS is the result of global warming, or is due to a combination of a drought cycle and an increase in lake evaporation rates related to

the decline in aerosol concentration in the atmosphere but there are reasons to suspect that these low lake levels will continue.

-Increases in population and per capita water use in the Great Lakes Basin. U.S. figures show a near-doubling of per-capita water withdrawals from 1980-2000.

From an ecosystem perspective, the great decline in wetlands in the Great Lakes Basin that has been documented in a number of studies is also an indicator of the loss of water available for ecosystem function

Based on all of this evidence, it seems clear that local water shortages are already occurring in Ontario, that low water levels on the Great Lakes are a concern, and that water shortage problems in Ontario and the rest of the Great Lakes Basin are likely to increase over time due to a combination of demographic and environmental factors.

Can we identify and predict water shortages in Ontario and other parts of the Great Lakes Basin? Given that water shortage problems are real, the next question confronted was our ability to identify and predict water needs and the capacity of aquatic resources to meet them; a necessary prerequisite to being able to take action. Participants focused on two aspects of the problem: monitoring human water use, and monitoring ecosystem function.

With regard to the former, it is evident that good, reliable data on either the amount of water withdrawn or the amount of water consumed for municipal, commercial and industrial use is not generally available, at least in Ontario. This is not to say there are no data at all, but rather that there are only "pockets" of data from some municipalities that meter water and some industries that keep water withdrawal records. In fact, the overall picture of water use in Ontario comes from withdrawal permits issued under the Ontario Water Resources Act. These permits only cover requested withdrawals in excess of 50,000 litres per day, so many smaller users are not even covered. Furthermore, we do not know how much of what is requested on these permits is actually taken or returned.

Given the poor database available upon which to assess human water needs, we recommend that governments require municipal, commercial and industrial users to report water withdrawals and consumptive use. We recognize that where systems are not metered, consumption and/or total withdrawals may have to be estimated by the use of subsampling or models, but nevertheless, this would provide a better basis of water resource planning and management than we currently have.

With regard to ecosystem function, participants spent a lot of time debating the basis for defining a "healthy" ecosystem and the water requirements for such. Participants acknowledged that whatever baseline is set for ecosystem function must take into account the current state of a water body and not just its original state prior to settlement. There are plenty of indicators of aquatic ecosystem health and integrity in the literature, and a number of examples in Ontario (including the Don River – 40 steps to a new Don, the Hamilton Harbour Remedial Action Program and the Bowmanville Creek subwatershed plan), which can be used as models. The participants agreed that there is no need to "reinvent the wheel" with regard to these indicators. These programs are also good examples of processes that can be used to get public involvement in the process and provide a mechanism for successful collaboration of government agencies, interest groups and local stakeholders. However, participants also acknowledged the potential importance of using a set of standard indicators in the assessment and monitoring process, as these make it possible to obtain a larger scale picture of water availability and water needs in the region and province.

Workshop participants also discussed the importance of ongoing monitoring to obtaining an accurate temporal picture of the need for and use of water. In this regard, concern was expressed with the annual cycling of government funding for projects such as monitoring. The group recommends that aquatic ecosystem monitoring projects be allocated stable, long-term funding so that they can successfully achieve their purpose without interruption.

2. How do economic and water quality issues affect the assessment of availability?

We return here to the questions raised earlier of cost and quality, and how they affect water scarcity. Gary Scandlan focused his talk on the cost of ensuring municipal water safety, given the new provincial regulations that have arisen following the Walkerton Inquiry (specifically, Ontario Regulation 459 and Bill 155, the Sustainable Water and Sewage Systems Act), or are expected to arise following the Walkerton Commission Part II Report. Municipalities mandated to provide drinking water to residents provide "source to tap" services, including water supply provision, water storage, treatment, pumping, transmission and distribution. This requires municipalities to build the infrastructure, treat the water, test its quality, and maintain the system, and most of the money to do all of this comes from local water rates, charges levied on new developments and municipal reserves.

Mr. Scandlan showed, using an example of a small (Central Elgin Township) and medium-sized municipality (St. Thomas), that the costs of operating and maintaining a municipal water supply system will virtually double as a result of the new regulations, and that individual households will be spending \$600 or more annually just for water. This will have an adverse effect on some households that are operating close to the limit

of their finances, and this raises the issue of whether municipalities should pay all of the costs of water delivery.

It is important to note that the municipal water costs discussed includes only the cost of delivering good quality water to residents and maintaining the system; this does not include the cost of protecting water at its source or ensuring it is of sufficient quality to support ecosystems. Our concern here is that the cost of maintaining sufficient, good-quality in-situ water not be treated as an externality. We need to consider the value of maintaining sufficient good water at source, and not just the cost of delivery, but other than acknowledging that municipalities can't pay for all that alone, participants did not resolve how this should be paid for.

3. How do we get out the message that action is required to ensure a sufficient supply of good quality water for present and future needs?

Participants discussed the importance of getting the water issue into the forefront of the political agenda, and that this entails, for starters, getting the citizenry to recognize that water abundance is a myth. The group discussed the importance of stewardship processes as a means of making people aware of the problem, but also, we discussed the importance of educating young people about this issue. The best way to educate the public, especially young people is to have the myth of water abundance and other environmental issues at the core of the academic curriculum from elementary school onward. Unfortunately, environmental science/studies has been taken out of the Ontario Curriculum, and it is urgent that this mistake be rectified. We recommend the institution of environmental science/studies as a core curriculum in the Ontario Curriculum. It is interesting in this regard that last year, Ontario's Environmental Commissioner was requested to review the need for environmentally significant decisions of the Ministry of Education to be brought under the Environmental Bill of Rights. This request was turned down by the Ministry of Environment, despite widespread decisions of school boards to cancel environmental science and outdoor education programs in light of the dropping of environmental science/studies from the Ontario Curriculum. In the words of the Environmental Commissioner:

"I am gravely concerned that at a time when there is a critical need for the people of Ontario to understand complex environmental issues, and at a time when a majority of Ontario's youth are growing up in urban settings more detached from the natural environment than ever before ... we are decoupling environmental science from the education system and denying the public the right to participate in decisions regarding the environmental education of our children. I do not see how this serves the long-term interests of a sustainable environment."

Gord Miller, Environmental Commissioner of Ontario

2000/2001 Annual Report - "Having Regard"

With regard to getting the water issue on the political agenda we recommend , that the results of this conference be publicized and used to reinforce Justice O'Connor's Phase II report from the Walkerton Inquiry, which is already high on the political agenda. Finally, Ontarians do have a mechanism, The Environmental Bill of Rights request, to get the attention of the Ontario Environmental Commissioner to water availability issues. The results of his investigations can help to give these issues the publicity they need.

APPENDIX B:

INDIGENOUS PEOPLES DECLARATION: (DRAFTED AND ENDORSED AT THE “WATER FOR PEOPLE AND NATURE” SUMMIT, JULY, 2001.

INTERIOR ALLIANCE

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WATER IS LIFE: PROTECT WATER NOW!

Indigenous Declaration on Water

July 8th, 2001 Musqueam Territory

As Indigenous Peoples, we raise our voices in solidarity to speak for the protection of Water. The Creator placed us on this earth, each in our own sacred and traditional lands, to care for all of creation. We have always governed ourselves as Peoples to ensure the protection and purity of Water. We stand united to follow and implement our knowledge, laws and self-determination to preserve Water, to preserve life. Our message is clear: Protect Water Now! As Indigenous Peoples, we recognize, honour and respect Water as a sacred and powerful gift from the Creator. Water, the first living spirit on this earth, gives life to all creation. Water, powerful and pristine, is the lifeblood that sustains life for all peoples, lands and creation. We know that by listening to the songs of the Water, all creation will continue to breathe. Our knowledge, laws and ways of life teach us to be responsible at all times in caring for this sacred gift that connects all life. In ceremony and as time comes, the Water sings. Her songs begin in the tiniest of streams, transforms to flowing rivers, travels to majestic oceans, and thundering clouds, and back to the earth, to begin again. When Water is threatened, all living things are threatened. Our hearts cry when we see the ways in which people, through governments and multinational corporations, destroy the Water in their greed. As Water has given us life, we must fight for the life of Water. We must continue to hear her songs and protect this sacred gift from the Creator. We must be prepared. In this time, we see that our Waters are being polluted with chemicals, pesticides, sewage, disease and nuclear waste. We see our Waters being depleted or converted into destructive uses through the diversion of Water systems to different lands, unsustainable economic, resource and recreational development, the transformation of excessive amounts of Water into energy, and the treatment of Water as a commodity, a property interest, that can be bought, sold and traded in global and domestic economies. We see our Waters governed by imposed foreign, colonial and inhumane laws and practices that disconnect us as Peoples from the ecosystem. These laws do not respect that life is sacred, that Water is sacred. Throughout Indigenous territories worldwide, we are witnessing the increasing scarcity of fresh Waters and the lack of access that we and other life forms such as the land, forests, animals, plants, marine life, and air have to our Waters. In these times of scarcity, we see governments

creating commercial interests in Water that lead to inequities in distribution and prevent our access to the life giving nature of Water. When Water is disrespected, misused and poorly managed, we see the life threatening impacts on all of creation. We know that our Rights to Self-Determination, jurisdiction, knowledge and laws to protect the Water are being disregarded, violated and disrespected. We hear the sad and painful songs of the Water, of the land and our peoples. We hear the Waters call for protection now. As Indigenous Peoples, we express our power, to protect the Water and call on all others concerned to open your minds and hearts and listen to our protection song, our message and support the calls for actions that follow:

We recognize that Water is a sacred gift from the Creator that gives, sustains and nurtures all life on earth.

We recognize the need to share our understanding that Water is sacred and essential for the survival of all life on earth.

We recognize that as stewards of the lands and waters, and as sovereign peoples who will never sell nor trade their rights to Water, we Indigenous peoples retain inherent rights and responsibilities to protect Water.

We recognize that our knowledge and sustainable practices are essential links to the protection of Water.

We recognize Indigenous governments and their jurisdiction to develop laws and treaties to protect Water.

We support the implementation of Indigenous legal systems in this effort. To retain our connection to our Waters, we must have the right to make decisions about Waters at all levels.

We resolve to communicate and express our power, our common interest to protect Water and life, through the building of Water alliances and networks worldwide.

We support all Indigenous peoples and grass roots movements that organize to protect Water based on their ancestral teachings and laws, and who also respect the role of Indigenous elders, women and youth to protect Water.

We call for the creation of an international monitoring body to track the trade of Water in relation to Indigenous peoples.

We resolve to use and develop indigenous, domestic and international mechanisms to hold corporations, domestic governments and international financial institutions such as the World Bank and the International Monetary Fund accountable for their actions that threaten the integrity of Water, our land and our peoples. Systems of restoration and compensation have to be put in place to restore the integrity of water and eco-systems.

We seek support and solidarity for the opposition to any free trade agreements that purport to privatize Water and trade Water as a commodity, including the North American Free Trade Agreement and the proposed Free Trade Area of the Americas.

We endorse declarations and treaties that enshrine the goals stated above such as the Cochabamba Declaration and the Treaty Initiative of the Council of Canadians representing genuine efforts by concerned citizens, communities and grass-roots peoples to protect water.

On this 8th day of July, 2001, the international community and indigenous peoples assembled at the

International Conference on Water for People and Nature organized by the Council of Canadians, endorsed the Indigenous Declaration on Water.

The Preparatory Workshop on Free Trade with Indigenous Property and the Workshop on Indigenous Peoples and Water at the Water for People and Nature Conference were organized by:

Council of Canadians

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APPENDIX C:

THE TREATY INITIATIVE BY BLUE PLANET PROJECT TO SHARE AND PROTECT THE GLOBAL WATER COMMONS

Introduction

The following pledge is offered as a tool for a common call to protect water as something we all share. Increasingly we are realizing that economic globalization is at its heart a threat to the global commons, those things that we all depend on and share together: water, air, our own genetic code.

It is a solemn, undeniable commitment to recognize water as one of those common elements that are too precious to turn over to private greed and the faceless global marketplace. Going forward to Rio + 10 we must unite to enforce one simple demand that at its core protects the earth's common heritage. This demand is present in many of the Declarations that have appeared around the world. Some of them have been included in these materials in the Tools section.

This Pledge is a commitment for ourselves, our communities, and our representatives to pursue new and better solutions than those that threaten the earth and our fundamental human rights. The following treaty initiative was unanimously adopted by the conference participants on July 8, 2001.

THE TREATY INITIATIVE TO SHARE AND PROTECT THE GLOBAL WATER COMMONS

We proclaim these truths to be universal and indivisible:

That the intrinsic value of the Earth's fresh water precedes its utility and commercial value, and therefore must be respected and safeguarded by all political, commercial and social institutions,

That the Earth's fresh water belongs to the earth and all species and therefore, must not be treated as a private commodity to be bought, sold and traded for profit,

That the global fresh water supply is a shared legacy, a public trust and a fundamental human right and, therefore, a collective responsibility,

And,

Whereas, the world's finite supply of available fresh water is being polluted, diverted and depleted so fast that millions of people and species are now deprived of water for life and,

Whereas governments around the world have failed to protect their precious fresh water legacies,

Therefore, the nations of the world declare the Earth's fresh water supply to be a global commons, to be protected and nurtured by all peoples, communities and governments of all levels and further declare that fresh water will not be allowed to be privatized, commodified, traded or exported for commercial purpose and must immediately be exempted from all existing and future international and bilateral trade and investment agreements.

The parties to this treaty - to include signatory nation states and Indigenous Peoples - further agree to administer the Earth's fresh water supply as a trust. The signatories acknowledge the sovereign right and responsibility of every nation and homeland to oversee the fresh water resources within their borders and determine how they are managed and shared. Governments all over the world must take immediate action to declare that the waters in their territories are a public good and enact strong regulatory structures to protect them. However, because the world's fresh water supply is a global commons, it cannot be sold by any institution, government, individual or corporation for profit.

APPENDIX D: LIST OF INVITED SPEAKERS

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Who Owns It? Session

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Can You Trust It?

Bob Paehlke, Moderator

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Is There Enough?

Leon Carl, Moderator

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Research Scientist
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Michael Fox, Rapporteur

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Dan Gibson
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Dave Ireland
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