September 5, 2001

The Honourable Dennis R. O'Connor
Commissioner
The Walkerton Inquiry
180 Dundas Street West, 22nd Floor
Toronto, Ontario
M5G 1Z8

Re: Submission by Pollution Probe to Walkerton Inquiry Public Hearing 7 and 8;
Sustainable Asset Management

Dear Commissioner O'Connor

Pollution Probe believes that we are not paying the full cost of providing safe water and managing our water assets on a sustainable basis. Based on research into the management and financing of drinking water systems undertaken for the Walkerton Inquiry, we have found that our water is cheap, compared to all other countries. We have concluded that it is becoming increasingly difficult for water system managers to provide safe drinking water to consumers in the face of pressures to maintain and operate a deteriorating infrastructure while responding to expansion demands for water, and being faced with unstable subsidy and funding programs.

Pollution Probe believes that the reliance of a community on its water services is absolute. Adequate supplies of clean source water and an effective and efficient treatment system and distribution network are critical to the health, security and prosperity of a community, large or small. The provision of safe drinking water is an essential service that must be put on a steady, sustainable, long-term funding basis.

In *Submission by Pollution Probe: Walkerton Inquiry Public Hearing Number 7 and 8: The Management and Financing of Drinking Water Systems: Sustainable Asset Management*, dated September 5, 2001, attached, we call for a new approach to the financing of drinking water systems in Ontario and make the following recommendations.

The Ontario Government should:

1. Make Full Cost Accounting a fundamental principle for the management and financing of drinking water systems, in Ontario. The Province of Ontario should work with stakeholders to develop and disseminate a set of standardized accounting practices that would guide water system managers in putting this principle into practice.

2. Adopt a Sustainable Asset Management model to guide decision-making about the present and future funding needs of drinking water systems in Ontario. Based on the principle of Full Cost Accounting, such a model would, in a systematic, step-wise fashion, help a manager to assess the long-term life-cycle value of the assets included in a water system and help determine the level of funding needed to keep a drinking water system on a steady, sustainable, long-term (100 year) funding basis.

3. Work with stakeholders to do the development work needed to make the model more operational and a practical planning and decision-making tool. Pollution Probe and its partners have developed the concept of Sustainable Asset Management as a conceptual framework; more stakeholders need to be involved in further developing it as a planning tool so that Sustainable Asset Management Plans will be recognized, accepted and used throughout the Province.

4. A publicly accessible registry of drinking water assets, together with Sustainable Asset Management Plans, should be provided for all drinking water systems in Ontario.

5. In accordance with the principle of Full Cost Accounting, recognize that source water itself is an asset that has value and that also needs to be included in the basic inventory of water system infrastructure assets undertaken in a Sustainable Asset Management plan. An assured supply of clean water is a fundamental prerequisite to having safe drinking water and in the long-term planning of a system consideration must be given to the conservation and protection of the source water resource upon which the system is based. (See also Pollution Probe's Source Protection Submission to Walkerton Inquiry Hearing Number 4; *Pollution Probe,* July, 2001.)

Sincerely,

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Submission by Pollution Probe

Walkerton Inquiry Public Hearing Number 7 and 8

The Management and Financing of Drinking Water Systems:

Sustainable Asset Management

INTRODUCTION

Pollution Probe is a Canadian charitable organization that defines environmental problems through research, promotes understanding through education and presses for practical solutions through advocacy. Pollution Probe is dedicated to achieving positive and tangible environmental change.

Pollution Probe works in partnership with all sectors of society to protect health by promoting clean air and clean water. We are supported by an active donor-base of approximately 10,000 Canadians.

From its inception over 30 years ago, Pollution Probe has been a strong voice for Canadians, pushing hard for enforceable environmental policies and sustainable environmental practices. We currently have a full-time employee complement of approximately 20 with additional consultants and part-time workers.

Pollution Probe in coalition with several other grass-roots environmental groups, the Canadian Environmental Defence Fund (CEDF) and a first nations group has formed the Safe Water Coalition to facilitate the involvement of coalition members in the Walkerton Inquiry and to further the interests of the public.

The CEDF and Pollution Probe are active participants in all parts of the Walkerton Inquiry, seeking to assist the commissioner in finding positive and practical solutions to providing clean, safe drinking water to Ontarians.

CHALLENGES, EMERGING ISSUES AND TRENDS

We are not Paying the Full Cost of our Water

We are not paying the full cost of providing safe water and managing our water assets on a sustainable basis. Current rates charged to consumers in Canada are relatively low when compared to other jurisdictions. While it is very difficult to come up with a standard accounting formula for estimating costs amongst and within various jurisdictions, including Ontario, broad conclusions such as are

drawn by National Utility Service Inc. (*National Utility Service*, 1999) demonstrate that Canadians, on average, are charged significantly less for their municipal water supply and water services than other developed countries. Water prices in Germany and Denmark, for example, are about four times greater than Canada's prices — and this is after Canada posted a 100% increase from 1987 to 1999. The Netherlands, France and the United Kingdom have relatively similar water prices, and all are approximately three times higher than those in Canada. Australia and the United States have water prices that are more comparable to Canada's; however, they are still about 10% higher.

A report on the performance and challenges facing water management systems in OECD countries (*OECD*, 1998) indicated that several jurisdictions have adopted a full-cost pricing scheme to recover costs associated with water and water services. According to the OECD report, Australia, Germany, the Netherlands, the UK, France and the USA[1] all use full-cost pricing to determine the appropriate rates for water supply; Canada and New Zealand do not.

The principle of *full cost accounting* was one of six principles of sustainable development endorsed by the Ontario Round Table on Environment and Economy. Full cost accounting demands that "natural assets be fully valued to ensure proper use and allocation, and to make certain that the beneficiary of the activity pays the full price including the cost of any environmental damage and resource use" (O*RTEE,* 1990). Application of this principle should realize greater economic efficiencies and protection of the resource base (or system) for future generations. It should also lead to better use of existing water management infrastructure and provide a basis for rational assessment and informed decision-making about the need for new or expanded infrastructure.

Pressures on New and Existing Infrastructure

Population growth and associated urban sprawl are hardly emerging issues, as they have been an influential factor in water services planning for many decades. Rapid population growth and urbanization continue to require large investments in new water supply and treatment systems, at the same time that we face the need to repair and renew existing aging water systems. As a system ages, annual investments need to increase to deal with more frequent breakdown of services. The cost of renewing and modernizing water and wastewater infrastructure will be enormous. The National Round Table on the Environment and the Economy estimates that total capital requirements for maintaining, refurbishing and meeting the demands for new water and wastewater infrastructure will be in the order of $79–90 billion by the year 2015 (*NRTEE*, 1996).

[1] Although this paper has referred only to the states of California, Wisconsin, and New York, looking at the USA as a whole remains valid for this comparison.

The concept of sustainability suggests the consideration of the investment needs of water distribution and treatment facilities to the end of their useful life, which, as illustrated by historical records (*Pollution Probe, Annex A,* 2001), can be in the order of 100 years for components of the system, such as piping.

In urban and suburban areas that are expected to experience intense population pressures and increased demand for water, delaying future capacity-building decisions could create significant problems for succeeding generations.

A Steady, Predictable, Long-Term Funding Approach is Needed

Especially in recent years, infrastructure funding has been constrained by the fiscal problems facing all levels of government. As the growth in suburban areas places pressure on municipalities to expand municipal infrastructure to serve these areas, the maintenance, repair and replacement of existing infrastructure increasingly has to compete for scarce resources. In addition, the politically inspired up and down provision of infrastructure funding from both federal and provincial governments during the past two decades has added to the difficulties of long-term financial planning by municipalities and to the uncertainty of funding availability for all competing municipal service sectors, including water services.

With respect to water services, the challenge facing the deliverers of these services, principally municipal governments, is twofold: to provide the service and its associated infrastructure at the lowest cost possible and to secure the fiscal resources to pay for it. Municipalities use various revenue sources to finance services and infrastructure, including property taxes, provincial and federal grants, user fees (water rates), development charges and borrowing. However, in Ontario, cutbacks at all levels of government, redistribution of responsibilities among provincial and municipal governments, increased demand for water services, and need for expensive infrastructure improvements have forced municipalities to seek new and innovative means to obtain the necessary fiscal resources.

Within water management systems themselves there is competition for fiscal resources between the operations and maintenance responsibilities and the capital spending elements. Traditionally, municipal financial managers determine the budget allocations for operational and capital spending according to broad corporate policy objectives and the availability of funds. Water system managers are constrained to undertake only those capital works that the funding will allow in the budget period. Continuity of funding for multi-year capital programs or for projected needs in future years (if such projections have been encouraged) is not assured by this short-term approach. Application of long-term planning to ensure sufficient capacity in the system for future years requires the more innovative fiscal approach provided by a sustainable asset management strategy.

Source Water is itself an Asset That Needs to be Sustained

As is stated in Pollution Probe's submission to Public Hearing #4 on the subject of source protection (*Pollution Probe*, July, 2001) there is increasing pressure on both the quantity and quality of Ontario's drinking water sources. Some factors include demographic trends such as population growth and urban sprawl. Other factors include industrialization, agricultural intensification, local weather patterns and global climatic change, as well as other changes in land use patterns and practices. Because of this environment of constant change, assumptions regarding Ontario drinking water quality must be examined regularly for their current and future validity (*Pollution Probe*, 1999).

Managing water system assets for the long haul has requirements and implications that extend beyond the planning, inventory and analysis of the physical and financial capabilities of the facilities and institutions responsible for delivering water services. The source water itself is an asset that has value and needs to be included in the basic inventory of infrastructure assets. An assured supply of clean water is a fundamental prerequisite and, in the long-term planning of a system, consideration must be given to the conservation and protection of the water resource upon which the system is based.

Climate Change - a 100 Year Issue

Climate change is an emerging, long-term issue that is expected to have a major impact on the quantity and quality of Ontario's water resources over the coming 100 years. Over the past century, climates of most regions around the world have been getting warmer. The increase in temperature in the last century is likely the largest of any century in the past 1000 years. The Intergovernmental Panel on Climate Change (*IPCC,* 2001) has concluded that these trends reflect a growing influence of human activities, particularly increased emissions of greenhouse gases such as carbon dioxide and methane. Notwithstanding current national and international efforts to reduce greenhouse gas emissions, if the world continues on its present course, the globally averaged surface temperature is projected to increase by 1.4 to 5.8 degrees Celsius by the end of the 21st century. Temperatures are projected to increase even more in Canada over the same period. These changes are predicted to accompany increases and decreases in precipitation and changes in the frequency and intensity of extreme climate phenomena. Water quality and quantity are expected to be particularly vulnerable to climate change, with decreased water availability for populations in many water scarce regions due to changes in precipitation and evaporation.

Great Lakes levels may fall significantly and water flow between the lakes may decrease by as much as 20 percent. While supply is likely to drop under these conditions, the demand for water may increase, not only because of increased population and its associated needs in the warmer climate, but also due to the

need for increased electricity generation and other competing municipal and agricultural uses.

Clearly, climate change is a long-term issue that requires long-term planning and such consideration is consistent with a long-term sustainable asset management strategy.

SUSTAINABLE ASSET MANAGEMENT

The provision of safe drinking water is an essential service that must be put on a steady, sustainable, long-term funding basis. Based on the principle of full-cost accounting, a **Sustainable Asset Management** model is proposed for the financing of drinking water systems in Ontario. This conceptual model provides a more systematic, long-term, anticipative and transparent approach to planning and decision-making.

In Annex A of Pollution Probe's *The Management and Financing of Drinking Water Systems: Sustainable Asset Management (Pollution Probe,* 2001); R.V. Anderson describes the concept of Sustainable Asset Management and, more specifically, a sustainable infrastructure investment program that helps describe how to walk through the steps of developing a sustainable asset management plan. Pollution Probe realizes that the Sustainable Asset Management concept requires more development and detail to become an everyday operational tool, but we believe that both the concept and the term Sustainable Asset Management are timely and practical and represent a new approach to managing and financing drinking water systems

The *Sustainable Infrastructure Investment Program* walks through the evaluation of the full life- cycle of a water system by asking six basic questions about both the "hard" infrastructure assets as well as the source water itself:

- What do we have? — an inventory of infrastructure assets
- What is it worth? — total asset value (valuation and replacement value)
- What condition is it in? — relationship of asset condition to age
- What do we need to do to it? — maintenance/rehabilitation/replacement
- When do we have to do it? — life expectancies of system assets
- How much will it cost? — sustainable funding levels

With this approach the impact of annual or at least short-term budgetary decisions on the sustainability of a municipal water service can be assessed. The corollary is that long-term financial planning is also undertaken to understand future funding needs and to propose ongoing revenue streams that will be necessary to satisfy these needs.

The Consumer Has an Important Role

Water consumers include the public, as well as commercial, industrial and institutional users, and they all have a role in helping make wise decisions regarding the long-term sustainability of our water systems. Their involvement is necessary throughout the complete cycle of source protection, water supply access, water distribution and use, and, finally, the treatment of wastewater discharges.

Public and other consumer pressure is already being brought to bear on the political and administrative institutions that manage Ontario's drinking water systems. Such pressure is critical to the encouragement and development of new or improved policies, standards and procedures that will ensure an effective and efficient drinking water system. However, for the sort of long-range planning advocated by a sustainable asset management approach, reliance on crises to provoke public engagement may not contribute to sustainable solutions. A more orderly and predictable method of ensuring and obtaining public/consumer engagement needs to be an element of the sustainable asset management strategy.

Consumers have a right to know and should be informed regularly and periodically about their drinking water quality through consumer confidence reports. They should be provided with an opportunity to provide advice on the level of water quality or service that should be delivered, and of course the corresponding price they should therefore pay. (*Pollution Probe*, 1999)

The consumer is a user or client of the system, both as a generator of demand for water and as a subject of demand management and reduction schemes. The consumer is a financier of the system, through user fees, water rates, property taxes and other financial instruments. The consumer has an impact on the system as a producer of wastewater discharges, and needs to be aware of the impact of these discharges on water source areas.

Consumers should be aware of their role in the drinking water process and ideally should be involved in the planning, decision-making and implementation of the system. This is consistent with provisions in other jurisdictions. In the United States, the Safe Drinking Water Act mandates public participation programs; similar requirements exist within the European Union and in Australia (*Pollution Probe, Annex B,* 2001)

A Sustainable Asset Management approach should be designed to reflect and include consumer participation. The planning and administration of the system should be transparent and allow convenient access to information. System planners and managers should be proactive in the distribution of information and advice to ensure that they build consumer awareness and confidence in the water system. This also ensures that the system operators are in a position to

seek consumer support for proposed modifications or additions to the system that may require significant financial or political decisions. Consumer acceptance and support are especially critical with respect to financial decisions that involve local tax issues or increases in user fees or water rates in general.

The Sustainable Asset Management approach requires consideration of the full value of an asset and could result in increased investment in the system through higher consumer fees. Consumer awareness and acceptance of these implications are necessary for the success of a long-term fiscal approach to drinking water services.

Management and Governance Implications

Implementation of a sustainable asset management approach to the operation of municipal water systems in Ontario has several important management and governance implications.

While cost continues to be a controlling factor in the planning and operation of water systems, fragmentation of management of municipal water systems due to responsibilities of different levels of government reduces incentives to find and develop economic efficiencies. Today, as noted by Stratos Inc. (*Pollution Probe, Annex B,* 2001), a patchwork system of water management is still apparent in many jurisdictions. By taking a long-term approach and a full life-cycle view of water resource management and financing, a Sustainable Asset Management strategy has the capability of fostering the integration of the components of Ontario's water management systems.

Water system managers, while carrying out necessary day-to-day functions in running their systems to provide clean and safe water to satisfy demand, and to undertake the necessary care and upkeep of the system, must be cognizant of the longer-term pressures on the system, and the need for adaptive planning. Similarly, authorities that influence the budget allocations and investment decisions impacting on the managers and the management of the systems must also introduce a long-term perspective into their analysis and deliberations. An important benefit of the Sustainable Asset Management approach advocated in this research paper would be the implementation of an integrated policy and fiscal framework, amongst all levels of government, to enable the long-term thinking that current and future circumstances demand.

CONCLUSION

We are not paying the full cost of providing safe water and managing our water assets on a sustainable basis. Our water is cheap, compared to all other countries. It is becoming increasingly difficult for water system managers to provide safe drinking water to consumers in the face of pressures to maintain and operate a deteriorating infrastructure while responding to expansion

demands for water, and being faced with unstable subsidy and funding programs.

The reliance of a community on its water services is absolute. Adequate supplies of clean source water and an effective and efficient treatment system and distribution network are critical to the health, security and prosperity of a community, large or small.

RECOMMENDATIONS

The provision of safe drinking water is an essential service that must be put on a steady, sustainable, long-term funding basis. Pollution Probe calls for a new approach to the financing of drinking water systems in Ontario, to provide a more systematic, long-term, anticipative and transparent approach to planning and decision-making. The Ontario Government should:

1. Make Full Cost Accounting a fundamental principle for the management and financing of drinking water systems, in Ontario. The Province of Ontario should work with stakeholders to develop and disseminate a set of standardized accounting practices that would guide water system managers in putting this principle into practice.

2. Adopt a Sustainable Asset Management model to guide decision-making about the present and future funding needs of drinking water systems in Ontario. Based on the principle of Full Cost Accounting, such a model would, in a systematic, step-wise fashion, help a manager to assess the long-term life-cycle value of the assets included in a water system and help determine the level of funding needed to keep a drinking water system on a steady, sustainable, long-term (100 year) funding basis.

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September 5, 2001