

WATER CONSERVATION IN ONTARIO:
Implementing the User Pay System to Finance a Cleaner Environment

HIGHLIGHTS

Problems

- Ontario municipalities will double their per capita use of water and related energy by 2011 if current use patterns continue. This will create not only an economic crisis for Ontario water and wastewater utilities, but even worse an environmental disaster.
- Already, pollution of the Province's water resources has reached a level that challenges the capability of our water supply utilities to meet current allowable toxic contaminant levels in their treated supply. The public are clamouring for lower risk levels to be set.
- 415 municipal wastewater treatment plants are discharging more than 90 tonnes of suspended solids and BOD every day to Ontario waterways. In addition, a myriad of toxic pollutants are contributed, primarily by the 11,000 industries using municipal sewer systems. Indeed, it is estimated that more than 70 tonnes of total heavy metals alone are discharged daily from these plants.
- The current pollution emanating from these municipal sources can be attributed in some degree to poor enforcement of existing control requirements over the past several years. More than 100 of the plants currently fail to meet regulatory requirements with 49 having failed for more than three years running.
- Ontario's water and sewage systems have an average age of about 50 years, and many contain components which are older than Confederation. Their current physical condition is deteriorating rapidly. Yet they represent an enormous investment, currently estimated at \$50 billion in capital replacement. Annual spending on water and sewage system operation, restoration and expansion represents more than 1% of the Gross Provincial Domestic Product, making this one of Ontario's most significant industries.
- Values of this magnitude warrant improved management and operating procedures to assure that design capacities are adequate, that the systems

operate to the maximum benefit of the public health and the environment, and that they are fail-safe and efficient in customer service.

- Urban storm runoff through combined sewer overflows contributes more conventional and toxic pollution (including heavy metals) to Ontario's receiving waters than several of the industrial sectors. In addition, their contribution of bacteria to receiving waters causes an acute threat to human health and impairs recreational water use.
- Similarly, in some urban areas, non-point source pollution from urban storm runoff contributes more lead, copper, cadmium and PCBs to the waterways than municipal and industrial sources combined.
- Canada uses more water per capita (360 litres per day for domestic use) than any other country except the U.S., but its municipal utilities sell water at a cheaper rate than utilities in any other country (30 cents per 1,000 litres). The crisis in Canadian water utilities and wastewater systems is created by two major defects:
 - water is sold to customers and wastewater service provided at substantially less than cost.
 - this subsidy when combined with a lack of metering is resulting in wasteful use of water.

This situation leads to:

- overuse of our water resources, and coincidentally to its increased pollution.
- continuing deterioration of the physical integrity of our water and sewer infrastructure.
- non-productive government spending through subsidizing wasteful practices.

- need for oversizing water supply and pollution control works.
 - unfairness and irregularity in pricing of service among customer types.
- The Ontario Government does not have a formal water conservation policy and, therefore, has no coherent framework to mandate or encourage water conservation. It does, however, have several mechanisms to establish water conservation at the municipal level through appropriate pricing and metering of the commodity.

THE IMPLICATIONS OF A "USER PAY" SYSTEM

- All of the foregoing will require considerable increases in water and wastewater service charges to Ontario municipal customers. Today these rates supply only 65% of the monies spent on these services, the difference coming from provincial subsidies, property taxes and subdivision charges.

This "hodge-podge" of arrangements is inconsistent with the concept of sustainable development which was stated by our National Task Force on Environment and the Economy in September 1987 as:

"Current practices should not diminish the possibility of maintaining or improving living standards in the future. This means that our economic systems should be managed to maintain or improve our resource and environmental base so that generations to follow will be able to live equally or better".

- Instead, if we intend to meet both our obligations under the Great Lakes Water Quality Agreement and our societal desire for a toxic free environment, we must charge users the full cost of water and wastewater services on a metered basis, as recommended by the Ontario Round Table, the Federal Water Policy, the Canadian Water and Wastewater Association and all its affiliates and the United States Environmental Protection Agency.
- Since capital expenditures in excess of \$12 billion will be required over the next 10 to 15 year period, charges for water and sewage services will probably have to increase on the average from about \$70 per capita per year to about \$250 per year, a compounding increase of 8% annually over that timeframe based on constant dollars. These increases equate to those anticipated in the United States where some households are already paying \$800 per year as certain areas move to a "no discharge" concept.
- Charges of this order may still be less than 2% of household income and considerably less than energy charges now encountered by the average individual.

- At full cost pricing levels, the percentage of total municipal expenditures directed to water and sewage services will rise from the current level of 8% to approximately 12%, but the source of funds will be entirely from revenue. This will have the effect of reducing pressure on the property tax base and eliminating the need for inadequate provincial subsidy. The consumer for the first time will be able to see the real cost of water and sewage services to the individual household and the consumer's personal contribution to restoring the water resources of the Province.
- A program of this enormity cannot be contemplated without a massive program of public involvement, because few issues evoke more public resentment and vitriolic comment than unexplained increases in taxes and utility charges. A well informed public and clearly defined structures to channel their participation in the full cost pricing of water and sewage services provide the only reasonable assurance that management decisions will take into account the full spectrum of public values. Such an approach not only contributes to more effective resource management but also motivates consumers to accept personal responsibility for the way they use their water resources.
- The Remedial Action Plan (RAP) process has demonstrated that adaptability and flexibility in designing public participation programs of a regional nature were significant ingredients to success. On that basis, a wide range of approaches including stakeholder groups, advisory committees, public information meetings and the use of consultant specialists as facilitators is needed, together with a broad media awareness program and sound educational courses in schools.

CONCLUSIONS

- We have reached a critical stage in attempting to manage appropriate municipal use of our water resources. Current management strategies are inadequate to cope with continuing wasteful practices. The environment is in a dangerous state of degradation. Current levels of pollution are already unacceptable, but are compounded annually through the continuing discharge of persistent toxics and heavy metals to receiving waters.

- Uncoordinated management and inadequate financing are blocking our ability to proceed with desperately needed solutions. Publicly acceptable methods must be found to change the status quo of this \$50 billion industry and simultaneously provide:
 1. Finance required for municipal utility capital expenditures.
 2. Effective management of municipal service costs.
 3. Reduction of water consumption and use, and of waste generation.
 4. Improvement of the effectiveness of water treatment and wastewater management systems.
 5. Generation of revenues at or above costs to cover new capital and interest costs, and allowances for depreciation.

- Provincial authorities should move now to adopt and implement a Municipal Water Conservation Plan for Ontario. The plan would be fully implemented over a 10 to 15 year period and would be similar to those currently in place in California and other American States. At the root of the plan should be the conservation of water and the requirement that the user pay the full cost of service. Full cost pricing of universally metered customers would:
 - permit restoration of all systems before staggering replacement costs become a reality.

- permit and provide for, on a budgeted basis, the desperately needed treatment improvements to protect our water resources.
 - reduce fiscal pressures on senior government budgets.
 - reduce water use and thereby reduce pollution.
 - ease demands on the physical capacity of water and sewage works.
 - permit fair and equitable pricing among customers.
- The Plan should be developed over the next year by a Joint Program Committee comprising representatives of government ministries including Treasury and Economics, Municipal Affairs, Environment and Natural Resources, together with participants from municipalities, industry and public interest groups to:
 1. Establish a major provincial water conservation information program for Ontario citizens.
 2. Set minimum standards for adequate management and operation of water supply and wastewater control systems in Ontario.
 3. Revise the Ontario Plumbing Code to require plumbing fixtures that conserve water.
 4. Establish or designate a provincial board or agency to receive and hear applications from municipal utilities on rate revisions.
 5. Prepare and enact an Ontario Drinking Water Act.
 6. Broaden the current MISA Program to embody not only the upgrading of wastewater treatment plants, but the control of toxic sludges, the implementation of the Combined Sewer Overflow Program and research into stormwater overflow control.

The Ministry of Natural Resources' current draft plan for water conservation embodies much of the foregoing.

- The foregoing plan should result in a requirement that each municipal supplier of water and wastewater service in this Province develop individually or regionally with others an Urban Water Resources Management Plan using the background and experience of the RAP process that would include provisions for metering, water recycling, wastewater reclamation, water fixture and appliance retrofits, pricing, rate selling and customer regulations. The recently enacted Water Conservation Plan of the City of Toronto embodies much of the intent of the recommended plan.
- The foregoing actions will require a capital outlay of \$12 billion or more in constant dollars over the next 10 to 15 years. The revenues to pay for these programs must come directly from the water users. No longer will provincial subsidies disguise the real and growing need of the environmental protection industry: finance.
- Nevertheless, there will be a need for the Province to support, as U.S. E.P.A. and the American States have done, revolving loan funds and public/private partnerships to give some flexibility in financing and to assure municipalities of a source of borrowing at reasonable rates.
- Hardship cases will no doubt be revealed according to already established Municipal Board Guidelines and these can be dealt with through special borrowing arrangements.

RECOMMENDATIONS

1. Ontario must commit itself to the principle of water conservation to achieve several key goals:
 - to meet its obligations under the Great Lakes Water Quality Agreement, including the goal of virtual elimination
 - to rebuild crumbling infrastructures
 - to implement remedial actions in the Areas of Concern
2. MOE and the Ministry of Health should establish a Provincial Drinking Water Act and set maximum contaminant levels which are equivalent to internationally recognized acceptable levels of risk. Utilities should modify their treatment facilities accordingly.
3. We must respond now to the philosophy and requirements of the Great Lakes Water Quality Agreement by improving treatment levels and operation in municipal sewage treatment plants. Implementation of the MISA Program at the municipal level has been slowed by lack of finance. But with full cost pricing there need be no lack of funds. So we must move now to:
 - immediately implement and/or upgrade secondary treatment at all municipal sewage treatment plants (MSTP's) in the Province not providing equivalent treatment now, or inadequate in capacity to properly provide it.
 - protect the efficient operation of these plants by the introduction of municipal pretreatment programs to limit toxics discharged to these plants. (Demonstration programs will soon provide direction).
 - provide nitrification or nutrient removal facilities in instances where specific water quality objectives will be exceeded by secondary STP effluents.
 - introduce whole effluent toxicity testing (WET) of industrial and municipal effluents.
 - adequately treat the removed sludges to control the contained toxics including heavy metals.
 - improve the management and operation of wastewater control facilities to ensure a continuously acceptable effluent,

through the training and certification of all levels of plant managers and operators.

4. The current MISA Program should be expanded to provide for the control and treatment of combined sewer overflows. This program should be integrated with current regulations under development for municipal sewer use and municipal sewage treatment plant effluent limits.
5. Initiate a provincial-wide analysis of the impacts of rural and urban stormwater overflows on Ontario waterways and devise a staged improvement program.
6. Support and expand the current draft initiative of the Ministry of Natural Resources to institute water conservation practices as an Ontario Government initiative, including:
 - municipal water conservation plans using the experience of the RAP process
 - mandatory metering and full cost pricing of customers, and
 - introduction of the use of water conserving practices and fixtures.
7. The Ministry of the Environment should set minimum standards for adequate management and operation of water supply and wastewater control systems in Ontario.
8. The Ontario Plumbing Code should be revised immediately to require plumbing fixtures that conserve water.
9. A Provincial board or agency should be established to receive and hear applications from municipal utilities on rate revisions.
10. Ontario should develop and implement a province-wide Municipal Water Conservation Plan, to be implemented over a 10 to 15 year period, and to include provisions for water conservation and full-cost pricing of water and sewerage.

11. The Plan should be developed over the next year by a Joint Program Committee comprising representatives of government ministries including Treasury and Economics, Municipal Affairs, Environment and Natural Resources, together with participants from municipalities, industry and public interest groups to:
12. In conjunction with the Plan, the Province should establish a major provincial water conservation information program for Ontario citizens.
13. In conjunction with the Plan, each municipal supplier of water and wastewater service in this Province should develop individually or regionally with others an Urban Water Resources Management Plan in response to the Ontario Municipal Water Conservation Plan, with provisions for metering, water recycling, wastewater reclamation, water fixture and appliance retrofits, pricing, rate setting and customer regulations. The Urban Water Resources Management Plan should contain the following specific elements:
 - (a) An integration of current land use development, re-development and future development to provide guidance to the water management study.
 - (b) An estimate of past, current and projected water use and wastewater generation responding to land use.
 - (c) An estimate of current urban runoff conditions and future impacts according to current and projected land use.
 - (d) Identification of the current conditions of water resources within the planning region and the various uses and impacts relating to differing land use and water consumer types.
 - (e) Water conservation measures currently practiced by municipal water and wastewater utilities, direct industrial users, and urban authorities to control water use, point and non-point water pollution discharges and ground water pollution.
 - (f) The needed water management programs required to meet

the Provincial Water Conservation Plan and Provincial Water Quality Objectives.

- (g) The relative environmental and economic impacts of these programs.
- (h) A schedule for implementation.
- (i) The public education and involvement program that was undertaken to develop and improve the plan prior to submitting the plan for provincial approval.
- (j) A commitment to a regular 5-year review of the Plan.

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MISA ADVISORY COMMITTEE