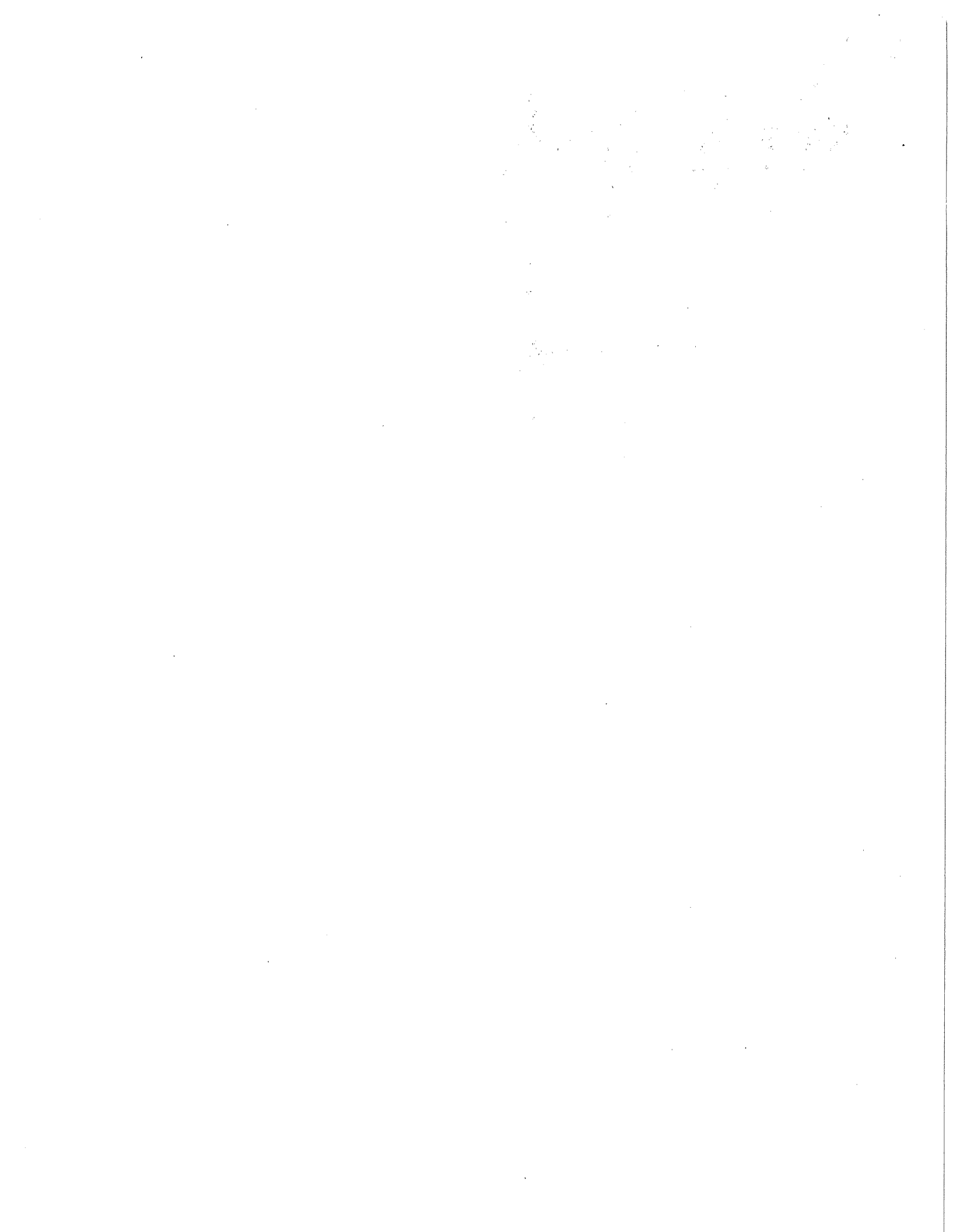


SUMMARY OF WATER EFFICIENCY CASE STUDIES

Water Efficiency Strategy for Ontario
October, 1991



INTRODUCTION

This document contains short descriptions of water conservation measures initiated in Ontario and several states in the United States conserve water. In many cases the measures were initiated in response to critical water shortages, to avoid expensive investment in new infrastructure or to facilitate the building of additional housing.

In all the case studies referenced, the water authority was able to reduce water consumption and do so economically.

CONTENTS

- A. Installation of Water Efficient Fixtures
in Residences
- B. Industrial Water Saving Measures
- C. Commercial/Institutional Water Saving Measures
- D. Water Efficient Billing Techniques
- E. Water Efficient Education
- F. Water Efficient Plumbing/Building Codes
- G. Water Efficient Metering Practices
- H. Water Efficient Landscaping Measures
Xeriscaping
- I. Leak Detection Programs
- J. Infrastructure Deferment Measures/
Wastewater Recycling
- K. Water Pressure Reduction Measures

A. INSTALLATION OF WATER EFFICIENT FIXTURES IN RESIDENCES

1. The Regional Municipality of Waterloo, Ontario delivered to all residents in single and semi-detached homes water efficient fixtures free of charge. This kit contained a water efficient showerhead, a toilet dam, faucet aerators, and leak detection tablets. A total of 17,000 kits were distributed to households. In a more passive program, 36,000 kits were made available.
2. Ayres Associates compared the per-household water use of two Phoenix subdivisions, one employing ordinary "water saving" toilets with a nominal 13 litre flush, the other using 3 litre-per-flush (LPF) ultra-low-flush toilets. The subdivision fitted with 3 LPF toilets used 19 to 28 percent less indoor water monthly per household than the subdivision fitted with 13 LPF toilets. Average reduction was 23 percent. Statistical tests confirmed the significance of the reduction.

Responses from residents did not show a strong preference of one type of toilet over another. Users of the 13 LPF toilets reported a need for additional cleaning in 28 percent of the responses in contrast to 45 percent of respondents in the 3 LPF subdivision. Occasional double-flushing was reported as a problem by 67 percent of those using 13 LPF toilets by comparison with 52 percent of those using 3 LPF toilets. Of those using the 13 LPF toilets, 65 percent reported clogging problems by comparison with 15 percent of those using 3 LPF toilets.

Municipal sewer inspection records confirmed that both types of toilets move the waste satisfactorily through the sewers.

3. The Dublin San Ramon Services District, California in 1983 installed 6 LPF toilets and 7.5 litre per minute (LPM) showerheads in 46 homes within its service area. Although the homes were all built before a 1979 plumbing code required 13 LPF toilets in new construction, it is possible that many of the original toilets were of the 13 LPF type, rather than 19 LPF conventional toilets.

Compared to a control group, indoor water use of homes equipped with efficient fixtures was reduced by 21 percent, total residential water use -- indoor and outdoor -- by 14 percent. Total per-household cost of the small-scale fixture replacement program was estimated at \$520 in 1986 dollars.

4. The Stevens Institute of Technology conducted a study of eight Columbia, Maryland homes. The Institute compared, over a 77-day period, the water use of four homes equipped with 13 LPF "water saving toilets" with four homes equipped with 4 LPF. Homes with the 4 LPF toilets were found to use 21 percent less water than those homes with conventional "water saving" toilets.

A mercury switch on each toilet's float arm recorded each flush. Double-flushing was not a substantial problem for either group: double-flushing occurred 1.6 percent of the time with the 13 LPF toilets, 2.3 percent of the time for the 4 LPF toilets, roughly once per person every 10 days.

5. Brown and Caldwell engineers in 1983 measured the savings of "advanced water-saving fixtures" over "conventional conserving" equipment and "standard" equipment. The engineers installed 2 LPM showerheads and 2 LPF toilets in a 240-occupant residential building at the Stevens Institute of Technology.

The fixtures were found to reduce indoor residential water use by 29 percent below dwellings with "conventional conserving" equipment (13 LPF toilets, 7.5 LPM showerheads) and 44 percent below dwellings with "standard" equipment including 19 LPF toilets and 19 LPM showerheads.

6. Environmental Control Technology Corporation tested 4-6 LPF "ultra-low-flush" and 13 LPF "water-saving" toilets for drainline carry performance according to ANSI standard A112.19.2. The tests involved flushing 100 plastic balls down each toilet and into a 60' pipe sloped at 1/4" per foot. Flush performance was determined by the distances which toilets moved the balls.

Of four brands of 4-6 LPF toilets tested, two outperformed the average of five 13 LPF toilets, three outperformed the least effective 13 LPF toilet, and one outperformed all the 13 LPF toilets. Instantaneous peak discharge of the 13 LPF toilets varied from 112-144 LPM - up to 276 LPM for the 6 LPF models.

7. 1985 Austin, Texas residents were asked to pick up a three-part water conservation kit at a neighbourhood location and install the components in their homes. The result: a 115 million litre yearly reduction in wastewater flow, at a cost to the city of only \$105,000.
8. Glendale, Arizona's program rebates \$100 of the cost of installing a new water-efficient toilet.
9. The City of San Jose, California, adopted an ambitious conservation program to reduce wastewater flows and defer a \$180 million wastewater plant expansion by four years or more. Door to door delivery of a three-part residential conservation kit (toilet dam, showerhead, and leak detection tablets) to 210,000 households, along with installation of this kit on request, dropped water use in those neighbourhoods by over 10%, and saved 44 litres per person daily in participating households.
10. In East Brunswick Township, New Jersey, 564 packets of water-saving devices were purchased and distributed at municipal expense. Two-thirds of the contacted households installed at least one device. An average home saved 23

cubic meters of water per year at a cost to the township of 12 cents per cubic meter saved (in 1980 dollars). Projecting these results to the entire town of 37,000 suggests a potential savings of 160,000 cubic metres per year, or 438 cubic metres per day. This figure, not counting production for outdoor use, is 3.4 percent of daily production and would permit the building of 400 to 450 new homes.

11. Amherst, Mass., in a state-funded pilot program, offered low-flow showerheads to a group of home owners. Those homes decreased water use by 16.4 percent.
12. In another state-funded demonstration project in Massachusetts, the town of North Reading provided low-flow showerheads, toilet dams and faucet aerators to 180 homes. Average water use in the households decreased by 15 percent. Expanding the program to the entire town was estimated to cost (U.S.) \$18 per household; the value of the saved water alone would recover the costs within 31 months.
13. A recent case study of water supply and demand in Aspen, Colorado illustrates the tremendous potential for saving money by saving water, particularly hot water. The study concluded that four fixtures chosen from the catalog (toilets, showerheads, and bathroom and kitchen faucet aerators) installed in every Aspen dwelling would save enough energy in hot water to repay their purchase price and installation cost, while also increasing the wealth of the city by \$400,000. These energy savings are in addition to the money saved by smaller residential water bills, and in addition to the money and environment values saved by not damming another stream, a current proposal to serve Aspen's growing population.
14. A Princeton, New Jersey community housing corporation installed water efficient fixtures in a 88-unit multifamily building with 3 litres per flush toilets at a cost of \$28,000 but has saved \$9,100 a year.

B. INDUSTRIAL WATER SAVING MEASURES

1. In the mid-1970s, Long Manufacturing of Cambridge, Ontario formed a water and energy conservation committee. This committee implemented a large number of water saving systems including a recirculated water system consisting of a reservoir, cooling towers and backflow preventers.

In the first year of operation, water consumption was reduced from 129,500 cubic meters to 44,424 cubic meters. This was a reduction of almost two-thirds of total annual water use. The plant water bill, in 1983, was reduced by \$3,000 per month. Between 1979 and 1984, the plant had realized a total savings of over \$120,000.

2. Canadian General-Tower Ltd. of Cambridge, Ontario reduced water consumption in 1987 to 82,000 cubic meters. This is about a 95% savings from their 1975 volume of 1.5 million cubic meters. Also, production has increased more than 100% in the same time frame.

A water recirculating system, which reused municipally supplied process cooling water, was designed, installed and operational within 12 months. The total installed cost was about \$300,000 with an annual savings of \$562,000 (1987 dollars). This represents a payback at current costs of less than one year.

3. J.M. Schneider Inc. of Kitchener, Ontario has several progressive environmental initiatives in place. They include:

- The distribution of 2,000 water conservation kits to employees for use in their own homes.
- The use of water efficient fixtures in all washrooms throughout the plant and office.
- The recycling of rinse water and cooling water.
- The utilization of wastewater to clean settling tanks.
- The use of restrictors in defrosting rooms.

In total from 1989 to 1990, Schneiders has reduced its annual water consumption in their plant by 94 million gallons or 20%.

4. A water audit sponsored by the Ontario Ministry of Natural Resources for Paperboard Industries of Toronto, Ontario outlined several areas for potential water savings including:

- The use of sand filter reconditioning.
- The installation of a chiller and cooling tower.
- Water reuse at the decker shower.
- The reuse of coater blade rinse water.

Implementation would result in a 25% reduction in municipal water use and a 32% reduction in lake water use. This results in a 30% reduction in effluent flow to the sewage treatment plant. The payback period for each of these projects is less than two years.

5. A water audit sponsored by the Ontario Ministry of Natural Resources for Colgate-Palmolive Canada in Toronto, Ontario revealed that an annual savings of 53.6 million litres of water is possible. This is a 21% reduction in total facility water use, with a cost savings of \$32,000 annually. A one-time capital cost of \$30,000 would have a payback of less than one year.

6. Blacks Photography of Markham, Ontario has introduced a water efficient form of photofinishing which utilizes a unique closed loop water system. Water is purified and reused in a continuous cycle so that the annual water usage of 60 million litres is reduced by 97%. Furthermore, the discharge of water and chemicals into the municipal sewer system is essentially eliminated.
7. Labatt's Ontario Breweries Ltd. of Waterloo, Ontario has measured a savings of 25% through the use of a grey water recover and re-use system. This water originates mostly with the bottle wash rinses, is stored in basement tankage, and reused in non-potable use such as floor washing and heat exchangers.
8. A Polaroid plant in Waltham, Massachusetts, began a program in 1980 that included raising employee awareness, mapping of pipes, metering, installing water efficient fixtures, pressure reductions, spray nozzle conversions, timers, shutoffs, process changes, and recycling of cooling water. Water use was reduced by about 50 percent, from 1.99 to 1.05 million cubic metres per year. A \$1.8 million capital saving resulted from a reduction in the size of the treatment plant needed. Annual savings comprise \$313,740 in water and sewer costs, \$50,000 in pre-treatment costs, and \$195,000 in energy costs for a total of \$569,000. The one-time program cost was \$550,000.
9. A Digital semiconductor plant in Hudson, Massachusetts instituted water conservation in 1982. The drainage system in the product rinsing area was fitted with new equipment to reuse water. Conductivity meters signal valves to divert water, depending on its quality. Only lower quality water is diverted to the plant wastewater treatment system. Annual savings of \$341,000 have been achieved from a \$20,000 investment. Annual savings include:
 - . \$22,750 in water fees, a saving increased to \$91,000 by 1984 rate hikes
 - . \$22,750 in sewer charges
 - . \$61,000 in energy costs for pumping and water heating, and
 - . \$97,142 in on-site chemical treatment costs.
10. Examples of industrial in-plant reuse of cooling water include Dow Chemical's chlor-alkali plant in Pittsburg, Pennsylvania which has reduced gross water intake 95 percent since 1972; Atlantic Richfield Company's Watson Refinery in Carson, California which cut water consumption 20 percent over 5 years; and Chevron USA, which reduced nationwide water intake 15.5 percent over a one-year span.
11. In Los Angeles, 45 businesses reduced water use an average of 45 percent during California's 1976/77 drought. Five of the firms reduced consumption 50 percent or more. They were Standard-Hickel-Chromium Plating company, 79 percent; Anheuser-Busch, 63 percent; National Standard Company, 63 percent; Tyre Brothers Glass Company, 56 percent; and Airesearch Manufacturing Company of California, 50 percent. Most of the reductions were due to recycling. Fixing leaks promptly and reducing sanitary-water use were also emphasized.

12. The Gillette Company began a water conservation program in 1973 at its plant in South Boston, and has since expanded the program to all of its plants worldwide. The Safety Razor Division reduced its water use by 70 percent, saving enough water to provide for 10,000 homes. The division installed cooling towers for plastic moulding machines, and now recirculates cooling water and reuses washing water. Total water use was cut from 2.75 million to 0.59 million cubic metres per year. The \$1.025 million program cost has resulted in \$771,000 annual savings in water and sewer charges.
13. Since 1970, Howard Johnson's frozen food processing facility in Brockton, Mass., has reduced water use from 240,000 to 28,000 cubic metres per year. The company introduced a leak detection and repair program, converted to a four-day, 40-hour work week, installed a new cooling system, installed a compressor water recirculation system, began recirculating refrigerated water for process and comfort cooling, and enacted tighter controls on equipment operating time. The \$30,000 cost resulted in \$93,000 annual savings.
14. The Augat electronics equipment plant in Attleboro, Mass., installed flow restrictors and temperature control valves, changed wet processes, and installed a custom-designed heat recovery chiller to eliminate the need for cooling water for a solvent recovery still. The total program cost was \$28,000. Water use has decreased from 62,000 to 10,000 cubic metres a year, and the wastewater treatment plant now runs only every third work day. Total annual savings equal \$36,000.

C. COMMERCIAL/INSTITUTIONAL WATER SAVING MEASURES

1. The Kitchener-Waterloo Hospital in Kitchener, Ontario has saved a great deal of water in its laundry facility. The facility purchased new "Tunnel" washers, which are manufactured in Europe, and have a number of water saving features in their design. The washer works on a recirculating process. The clean, hot rinse water is sent back to the beginning of the cycle where it is used to rinse the incoming soiled goods. Even water wrung out of the clean linens is returned to the beginning of the cycle.

The new washer uses only 4.5 litres of water per kilo of laundry, compared to 18 litres of water per kilo used in the old washer. Water costs have been reduced by 50%. Energy costs have also been reduced.

2. The Waterloo County Board of Education has initiated a water conservation program that will save over 100 million litres of water per year. Over 80 schools have been equipped with a special valve that regulates the flow of water in urinal-flush tanks and cuts off the flow of water when the facilities are not in use. A one-time investment of \$72,000 has resulted in a 30% water reduction Board-wide and a savings of \$100,000 per year. The system can be installed in most public buildings, offices and hotels.

3. The Delta-Chelsea Inn in Toronto, Ontario installed 1,000 low-flow aerators in their hotel rooms. Water use has since dropped 20%. A capital expenditure of \$13,000 was recovered in 5 months of water and energy savings.
4. The Sheraton Centre in Toronto, Ontario has initiated several water management measures including:
 - The use of water efficient showerheads, bathroom sink mixing valves, and restrictors in the toilet tanks of all the guest rooms.
 - The condensate collected in reclaim tanks is now diverted away from the sewer drains and instead sent into the laundry hot water tanks.
 - A three-storey waterfall was outfitted with a condensate pipe from the steam condensate to recirculate the water.
 - The cooling towers are computer-operated to control the amount of evaporation.

These measures have resulted in a savings of \$250,000 per year in water and an average of \$1.2 million per year in energy.

5. The Holiday Inn in Kitchener, Ontario replaced all showerheads in guest accommodations with low flow showerheads. In addition, simple toilet dams have been installed. The results have been a total saving of \$14,000 per year in energy and water and sewer charges.
6. Hawk Mountain Corporation measures indoor water use in its 36-home, 39-condominium, four-star resort community. Standard equipment includes 7.5 LPM showerheads, 7.5 LPM faucet aerators, and 6 LPF toilets.

Data from four years of "peak week" occupancy show that average metered per capita indoor water use is less than 190 litres per day, well below the 265-300 litre per day U.S. national average. A 20 percent reduction in leachfield size more than balanced the additional cost of the efficient fixtures.
7. The Lenox Hotel in Boston replaced its old showerheads and 26.5 LPF toilets with low-flow fixtures, saving about 15%. A Dover, Delaware office building replaced ten toilets for its 165 employees, and reduced water use 47%.
8. Boston's Prudential Center complex realized savings of 9,000 cubic metres of water and 227,000 kilograms of steam a year from a 1973 program to install water efficient toilets and sinks.
9. Pennsylvania State University installed low-flow showerheads in dormitories at a cost of \$15,000. The university has since saved over \$100,000 per year in water and energy costs.

10. At Gettysburg (Penn.) State College, a water efficient faucet and shower replacement program, with an initial investment of \$5,000 resulted in a first-year reduction of 32 percent of total water use and an annual saving of \$13,550.
11. The Park Plaza Hotel in Boston achieved first-year savings of \$30,000 to \$50,000 by installing rooms with 9.5 litres-per-minute showerheads. The cost of the program was recovered in 30 days.
12. Iyanough Hills Motor Lodge, also in Massachusetts, reported 35 percent savings in fuel and water costs from installing low-flow showerheads, toilet tank inserts and faucet aerators in rooms. No guest complaints resulted from the changes.

D. WATER EFFICIENT BILLING TECHNIQUES

1. Flat, or even declining rates, where water costs less as consumption increases, are still common. Increasing block rates, which charge more per cubic metre the more water you use, are now in effect in about 15% of the major cities across the United States. Increasing block rates for homes in Tucson, Arizona reduced water use by 7% over 5 years, for the residential customers that use the most water in their homes.

Since water is in most demand at peak seasons (usually summer), water supplied at that time should be priced higher. In Tucson, summer pricing which was 16%-29% higher, depending on the customer's use, reduced residential demand by 11%, primarily by discouraging excess or careless outdoor water use.

2. Related to the concept of water efficient pricing techniques is the notion of increased billing frequency. Water suppliers, in contrast to electric, gas, and telephone companies, most often bill quarterly or semi-annually. Coachella Valley Water District in California bills customers monthly, and adds a bar chart comparing current monthly use with the last 24 months. With this kind of information, it is easier for customers to track their water use and the effectiveness of their conservation efforts. Customers who are billed more frequently have added incentive to act promptly to curb excessive use.

E. WATER EFFICIENT EDUCATION

1. The City of Windsor, Ontario introduced the "Be Water Smart" program to enhance student knowledge in effective water conservation techniques, practices and related technologies. The program, geared towards Grade 5 students provides in-class water conservation education followed by a tour of the local water treatment plant. Each student is given a fluorescent "Be Water Smart" baseball cap. There is also an interactive video system available to the students.

2. The Regional Municipality of Waterloo introduced a water awareness component to the County public school curriculum. A total of 105 schools participated in a program that included the distribution of 35,000 water conservation kits. A savings of over one billion litres of water per year was estimated as a result of the program.
3. The American Water Works Association has a complete school program available to its members through its Denver office. Other utilities with programs of note include:
 - . East Bay Municipal Water District - originators of Captain Hydro and Water Play
 - . Los Angeles Department of Water and Power - originators of Water Fun
 - . Denver Water Department
 - . Metropolitan Water District of Southern California
 - . Dallas Water Department
 - . Washington Suburban Sanitary Commission
 - . Municipal Water District of Orange County, California
 - . Soquel Creek County Water District, California and
 - . Phoenix Water and Wastewater Dept., Phoenix, Arizona

Most of the above programs focus on the fourth to sixth grades. In this way, all students are exposed to the material at least once. The materials available include workbooks and teachers' guides, which can be purchased or reprinted. Some utilities are starting to use computer software. The AWWA California-Nevada Section is developing a water-education computer software program in cooperation with other water utilities and the California Department of Water Resources.

F. WATER EFFICIENT PLUMBING/BUILDING CODES

1. In January of 1990, The Regional Municipality of Waterloo enacted by-law 1-90. This by-law is directed at the control of industrial discharges to the sanitary and storm sewer systems. To that end it has been made illegal to use water for once through cooling of process equipment. It is estimated that this action will curb the wastage of a minimum of 6 million litres of water per day.
2. A total of 14 U.S. states have now enacted water efficient plumbing codes for all new building construction. As well, there is a bill currently being considered in the U.S. House of Representatives that will compel all states to enforce water efficient plumbing codes in all new construction.
3. Readily available water efficient toilets use about 6 litres per flush or less, instead of the conventional 13 litres or the older models using 19 litres or more. That will mean savings of up to 66,200 litres per year per household in Santa Monica, California which adopted a 6 LPF standard in 1987.

4. Applying these standards to commercial buildings, such as hotels, can save even more. For the city of Los Angeles, plumbing standards adopted in 1988 to introduce 6 LPF toilets for new construction and installation of water efficient fixtures in all types of buildings will mean water savings of up to 10% or more over 5 years, with reduced waste water flows, a cleaner receiving bay, and a longer life for the current wastewater treatment facility.
5. A 1989 change to the Massachusetts code, to require 6 litre flush toilets for new construction and renovations, is expected to ultimately save about 170 litres of water a day in homes statewide.

G. WATER EFFICIENT METERING PRACTICES

1. Per capita average water consumption for Edmonton, Alberta, which is totally metered, is approximately one-half that of Calgary, Alberta, which is non-metered. Daily consumption demands, excluding large industries, was 734 litres per person in Edmonton. This compares favourably with Calgary which has daily consumption demands of 1433 litres per person. The comparison becomes even more relevant when one considers the size, population and regional similarities between the two cities.
2. Meters allow the water supplier to charge based on use. When people learn how much water they are using, use often drops. Universal metering reduced water use in the 1970s in Troy, N.Y. by 25%; in Kingston, N.Y. by 20%.
3. The Denver Water Department, faced with justifying a large-scale metering project, decided to conduct a long-term, carefully constructed metering demonstration project. Special flow-monitoring equipment was installed to compare water use by 65 metered single-family homes with 77 unmetered single-family homes that pay for water on a flat-rate basis. The comparison was an especially good case study because the homes were nearly identical, often located in adjoining blocks on the same street, and all at least 20 years old, so water-use patterns were well established.

Data gathered in 1980, 1981 and 1982 showed that metered households use about 20 percent less water annually than unmetered households. The savings ranged from 2 percent in the winter (January through March) to 25 percent in the spring (April to June). Savings in the spring and summer (July through September) were greater because of the large amount of water required for landscape irrigation in Denver. Water savings in the winter were minimal, as virtually all water is used inside the home during winter months.

H. WATER EFFICIENT LANDSCAPING MEASURES - XERISCAPING

1. In a North Marin, CA study, water conserving landscaping cut water use by half, with 61% fertilizer reductions and 44% fuel savings.
2. Aurora, CO limits the amount of turf grass to a percentage of lot size, on a sliding scale.
3. The Cathedral City Country Club in Riverside, California, installed an automatic irrigation system that includes tensiometers and an anemometer to monitor wind speed, enabling the club to postpone irrigation until calm periods. These measures have reduced water use on the club's golf course 70 percent, saving \$32,000 per year in energy costs for groundwater pumping.
4. Contra Costa County, California, has developed a policy for landscaping new commercial developments. Under the policy, turf area is limited to 25 percent of the development's total landscaped area, and low-water-use landscaping and efficient irrigation are encouraged. Ventura County, California, has adopted special guidelines to tell developers and landscape architects how to design low-water-use landscapes.

I. LEAK DETECTION PROGRAMS

1. A survey of 58 small rural water suppliers in Alabama found 44 suppliers with fixable leaks. In Arlington, MA (population 50,000) a leak detection and repair program reduced per person use from 500 to 380 litres per person per day. The East Bay Municipal Utility District of Oakland, CA recovered 15 million litres per day in the first two years of its leak detection program, water that had simply been wasted.

In 1987, California completed a statewide leak detection program. After surveying 5100 miles of pipe in 57 communities with less than 100,000 service connections, leaks totalling 18,500 litres per minute were fixed. For every \$1 spent, the communities saved \$2.80. The statewide program was undertaken after three pilot communities of different sizes showed that finding and fixing their leaks cost less than half the value of the water saved over two years.

2. The Denver Water Department reports that in 1983 leak detection (using correlators) cost \$67,000 and saved \$93,000, mostly due to reduced repair costs for leaks that were pinpointed. Metropolitan Utilities District in Omaha, Nebraska, also justified its purchase of a leak correlator to assist in pinpointing leaks.

J. INFRASTRUCTURE DEFERMENT MEASURES / WASTEWATER RECYCLING

1. Research at Pennsylvania State University shows that reducing wastewater flows into a treatment plant can increase the detention time in the treatment plant, thereby enhancing the treatment process. This improved performance can extend the useful life of a wastewater treatment plant, especially when a plant has reached its hydraulic limit.

Subsequent research showed that installation of water-efficient hardware indoors produced a 27% to 40% reduction in indoor water use and greatly reduced septic system malfunctions, including overflow and ponding, in all home septic systems surveyed.

2. Rather than build a new water supply, the water supplier serving Palm Springs invested in a high quality wastewater treatment plant. That water is now sold to several golf courses and the city for irrigation. The city of Pompano Beach, Florida has a similar project underway, intended to reduce the city's ground water pumping.

K. WATER PRESSURE REDUCTION MEASURES

1. A 1984 federal report of a three city test showed that average water pressure in the system could be lowered as much as 30-40 pounds per square inch (psi), saving 3-6%.
2. Installing pressure reduction valves for specific neighbourhoods or large customers can achieve the same effect. An apartment complex in Amherst, MA reduced pressure from 115 psi to 45-55 psi. This reduction, together with more efficient showerheads, reduced water use by 33% and cut plumbing repairs in half when compared with neighbouring high pressured apartments.
3. In Denver, water use in homes with different water pressures were compared. Results indicate that a 30-40 psi (207-280 kPa) decrease in water pressure results in a 3-6 percent decrease in water use. The Denver results (6 percent savings) are believed to be the most reliable because water-use patterns were well established to conform with available (and unchanged) water pressure.

