1998 : Res. 570 l/d per person

Environmental Indicators

Monitoring Trends in the City of Kelowna

On February 1, 1999, City Council authorized staff to monitor environmental indicators identified in the 1998 State of Environment Report. The purpose of reporting Environmental Indicators is to inform the public about environmental conditions in the City of Kelowna. Environmental Indicators are intended for use by educators, community groups, business people, individual citizens, and elected officials.

Indicators highlight trends to show whether things are getting worse, getting better, or staying the same. If there is a problem, an indicator may help us determine what direction to take to solve the problem. They can also tell us whether the City's planning processes and strategies are leading towards desired goals.

As information on each of the selected indicators is collected and is available for publishing, it will be placed on the City's web site. In addition, we will publish environmental indicators in an annual report. The first annual report should be available early in the year 2000.

Other work will involve target setting and development of action plans to ensure targets are met. As a starting point, the City will consider using some of the targets already chosen by the respective City departments or Senior Agencies, or their technical specialists responsible for the data collection. For example, in the case of drinking water quality, we intend to continue to ensure the City of Kelowna's drinking water surpasses the limits set by the Canadian Water Quality Guidelines—for Drinking Water.

Continued monitoring will ensure that the City makes good progress in meeting its targets. To ensure that we stay on track, we intend to reassess the indicators monitored every three to five years.

To view selected indicators, click on the respective Category hyperlink listed below:

Air Quality
Drinking Water
Ecology & Biodiversity
Land Use
Solid Waste Management
Surface Water Quality
Transportation
Wastewater Management

Development of new indicators may also to help broaden our understanding of our environmental health.

Suggestions for ways of improving the list of indicators may be sent to:

Fred Schaad
Environmental Division
Works & Utilities
City of Kelowna
1435 Water Street
Kelowna, British Columbia
V1Y 1J4

For general information please call (250)862-3341
Send eMail to envirowater@city.kelowna.bc.ca

Drinking Water Quantity

Why is it Important?

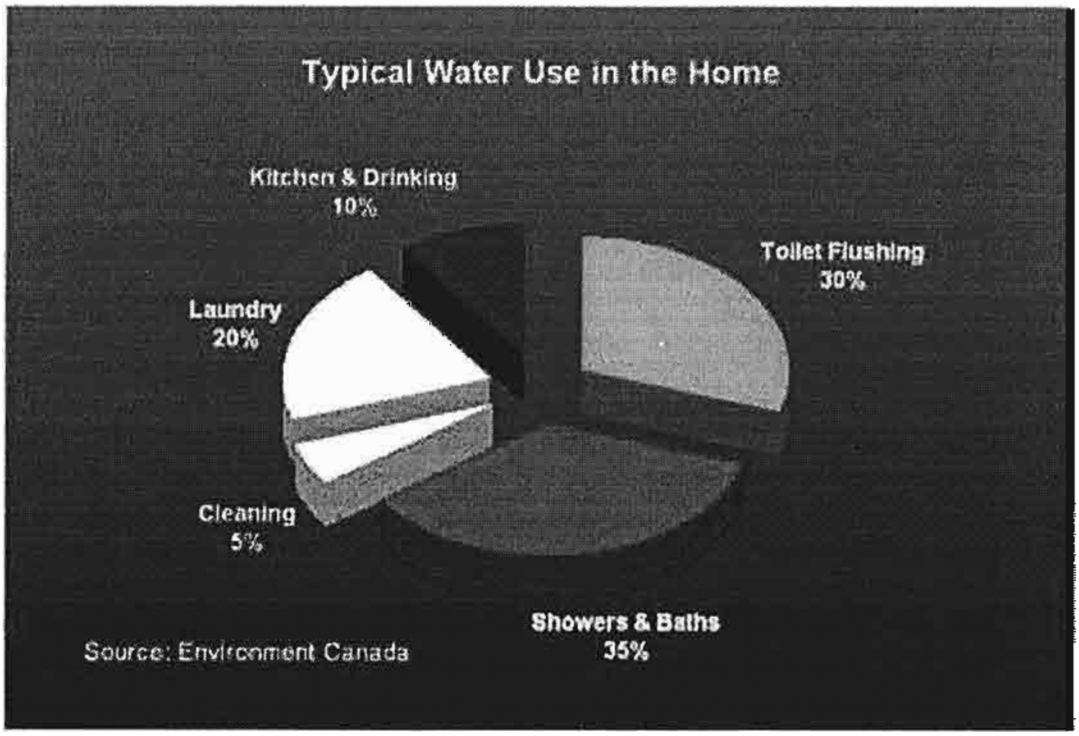
Water is the necessity of life, not only for people but for every type of plant and animal as well. Water is essential not only for survival but also contributes immeasurably to the quality of our lives.

Water is a precious and limited resource in the Okanagan, where the average precipitation is less than 14 inches per year, and summertime temperatures typically exceed 35 Celsius. Most of the annual precipitation arrives in the form of snow, largely, in the upper reaches of the watershed. Spring snowmelt provides the surplus water that sustains Okanagan Lake and watershed reservoirs.

Results and Trends

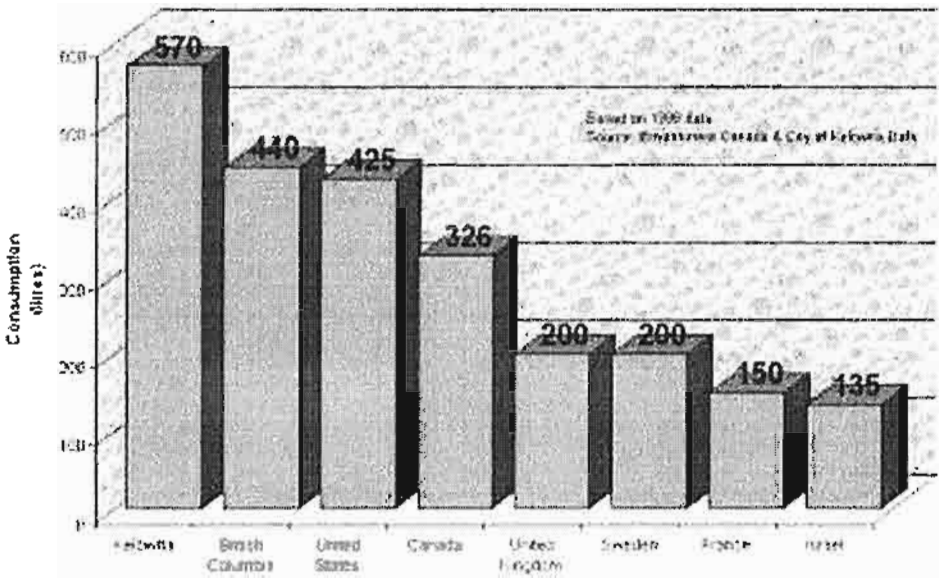
Residential Use

Can you imagine our city without water? We use it for drinking, cooking, and for other household needs. Water is also needed to fight fires, fill swimming pools, and irrigate lawns and gardens. In 1996, Canadians, on average, used 326 litres of water per person per day. In Kelowna, the 1998 average consumption of water, per person, was over 570 litres per day.

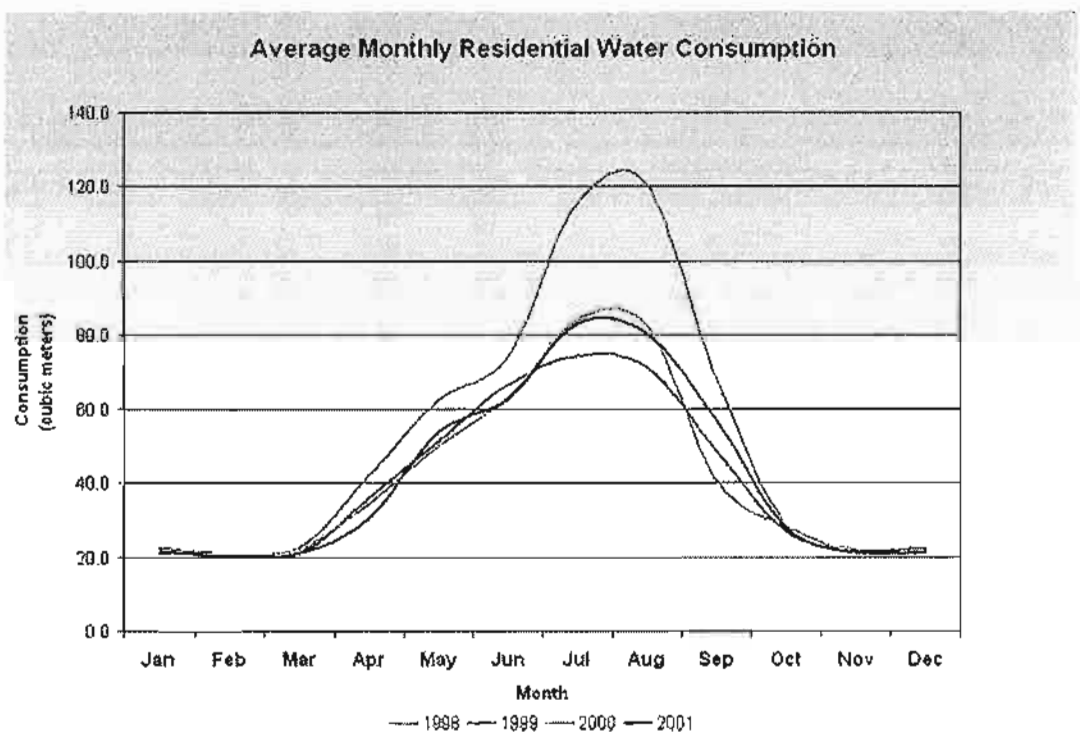


The next graph compares Kelowna's water usage with annual averages for BC, Canada, and selected nations. The demand for water in Kelowna is greatest during the summer months. Therefore, all Kelowna citizens are asked to use water wisely, especially during the summer months.

Average Daily Water Use (per capita)



The May through September period represents the season in the Okanagan where residents require additional water to irrigate lawns and gardens. Summer water consumption in 1999, 2000 & 2001 is notably down compared to the same period in 1998, despite a steady increase in accounts each year. The reduction in water consumption during this period may be due to the water-metering program and education, introduced in November 1998. The 1998 summer season was also hotter and dryer than in the subsequent summers, and this likely contributed to the elevated water consumption that year. Continued monitoring should clarify general trends for water consumption.



During the period of October through April, Kelowna residents use approximately 280 litres per person per day—based on three people per residence. From May through October, the residential use jumps to an average 967 litres per person per day. It appears that the area with the greatest potential for water savings is during the irrigation season of May through September, where water consumption is more than triple the off-season rate.

City of Kelowna Water Utility

Time Period	Average Residential Water Consumption In m^3/month			
	1998	1999	2000	2001
Annual	49.6	40.3	42.6	41.7
May – September	88.2	62.5	64.0	61.2
October – April	25.6	24.4	24.8	23.3

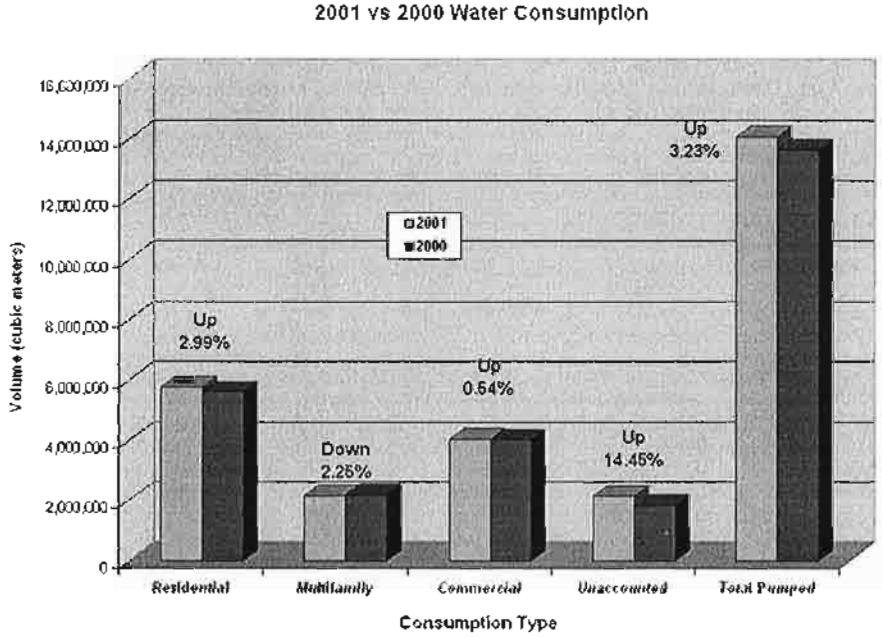
Agricultural

Agriculture depends on water for livestock and crop production. Irrigation is needed mainly during the hot dry summer months. Since so much of the water intake evaporates, only a small fraction is returned to its source. Therefore, irrigation is a highly consumptive use (Environment Canada, 1999).

Commercial and Industrial

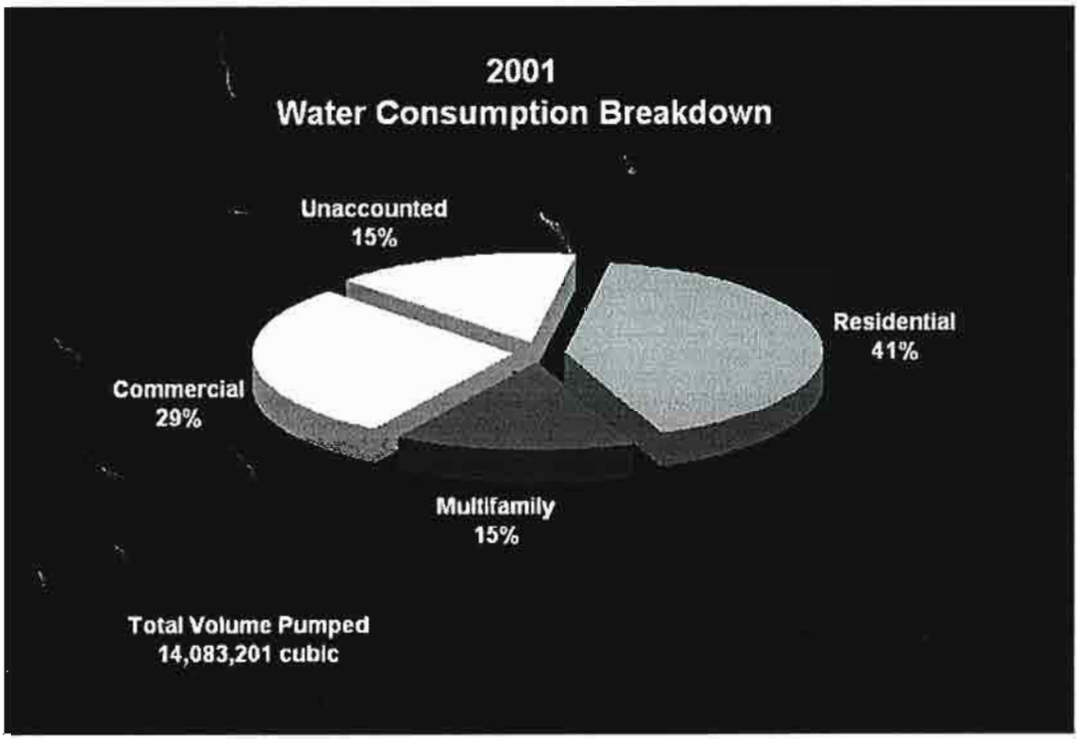
Water is the lifeblood of manufacturing and industry. It is used as a raw material, a coolant, a solvent, a transport agent, and as a source of energy. For example, an automobile coming off the assembly line will have used at least 120,000 litres of water—80,000 to produce its tonne of steel and 40,000 more for the actual fabrication process. Many thousands more litres of water are involved in the manufacture of its plastic, glass, fabric components (Environment Canada, 1999).

Industrial, commercial & institutional uses now account for approximately 20.3% of the total water pumped by the City water utility. Continued monitoring should clarify general trends for water consumption.



Recreational

People in Kelowna have traditionally valued opportunities for outdoor recreation and in recent years have sought the outdoors as never before. Activities such as swimming, boating, canoeing, fishing, and camping allow us to experience the beauty of our lakes and streams. While not all outdoor recreation requires water, the presence of water tends to enhance the experience. Expenditures on water-related recreational activities and tourism also contribute millions of dollars per year to the regional economy.



Total Water Pumped

The City of Kelowna Water Utility sources water from Okanagan Lake at several locations. The majority of the water is pumped from the Poplar Point intakes; typically, 90% of the total pumped into the distribution system. Pumphouses located near Eldorado, Cedar Creek, and Swick Roads make up the balance.

Water production by the water utility is variable and can be affected by several factors including:

- Community growth patterns
- Seasonal and annual weather fluctuations
- Efficient water use

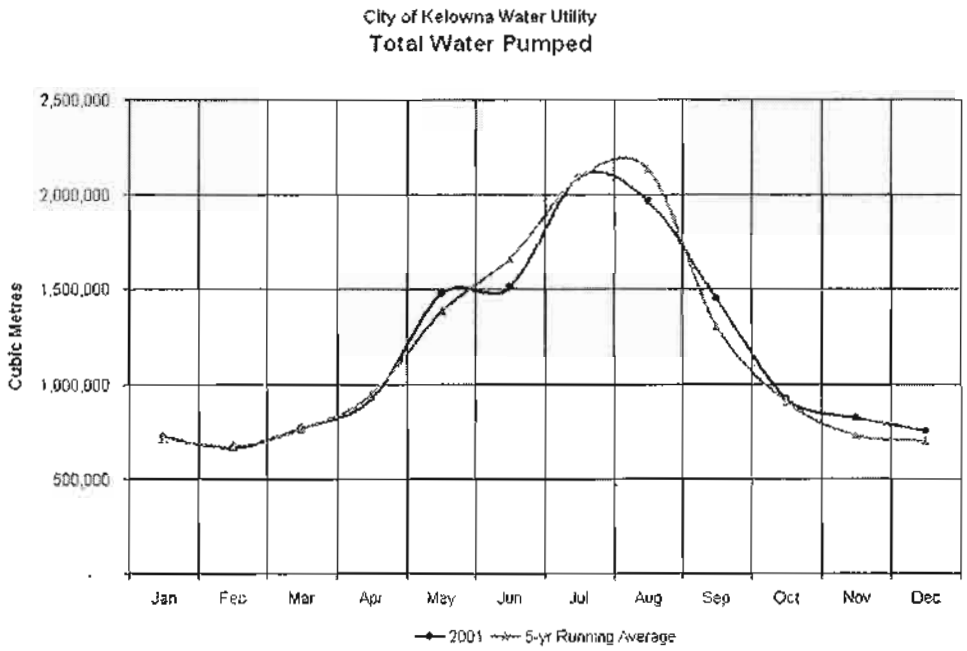
The table below illustrates the total water pumped each month by the city water utility since 1996.

Water Production						
	1996	1997	1998	1999	2000	2001
Jan	719,949	693,443	675,193	734,772	756,450	725,215
Feb	665,748	630,898	650,639	674,045	723,108	664,996
Mar	793,449	714,748	730,666	786,526	789,678	768,893
Apr	899,897	951,241	889,623	1,050,426	943,151	922,623
May	1,302,745	1,423,660	1,502,572	1,376,417	1,333,145	1,481,621
Jun	1,857,098	1,454,882	1,661,051	1,711,657	1,634,356	1,513,200
Jul	2,516,983	1,761,741	2,439,496	1,879,829	1,853248	2,095,104
Aug	2,240,996	1,982,408	2,536,046	1,882,588	2,031,776	1,967,942
Sep	1,184,760	1,215,678	1,768,694	1,613,969	1,126,686	1,449,378
Oct	851,907	856,444	925,551	951,621	948,059	922,157
Nov	705,205	682,981	757,189	769,335	724,919	817,980
Dec	674,161	662,420	722,892	749,721	688,404	752,091
Totals	**14,414,892**	**13,032,539**	**15,261,611**	**12,300,660**	**13,554,980**	**14,083,201**

Source: City of Kelowna

The above data is graphically shown in the chart below. Water use in 1999 appears to be considerably reduced from 1996 & 1998. Wet June weather can delay irrigation needs as evidenced in 1997. Continued monitoring should clarify general trends for over-all water consumption.

Total water pumped continues to maintain the same general trend over the past 5 years, with some variability most likely due to changing annual weather conditions.



What is Being Done?

The City is promoting water conservation, using a multi-tiered approach; to defer costly infrastructure improvements and reduce inefficient use of treated water.

- July 1993, the City passed a bylaw requiring that all new construction install water-conserving fixtures.
- February 1994, the City passed a bylaw requiring all new service connections to install a water meter.
- In 1996, 3,000 commercial water meters were either repaired or replaced and 13,000 residential water meters were installed.
- In 1996, the City of Kelowna partnered with Schlumberger to implement the *Water Smart Public Education Program*. The program is designed to teach customers efficient use of water and targets three sectors of the community: residential, commercial and institutional (e.g., schools).
- Metered billing began in November 1998.

IRRIGATION INCENTIVE PROGRAM 2002

If customers of the City of Kelowna Water Utility reduce peak water consumption by just 16%, savings of up to $16.5 million for infrastructure improvements could be realized over the next 20 years.

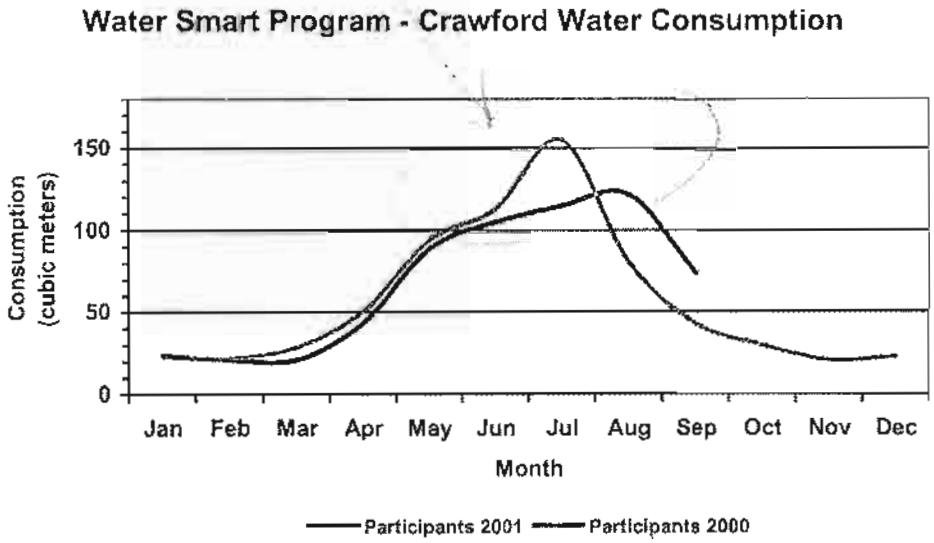
Traditionally, peak demand occurs in July when water use skyrockets due to outside water use. The entire water system has to be large enough to meet this peak demand, even though it occurs only for a few weeks every year. Reducing July water consumption will reduce the need for expensive infrastructure expansion.

With this in mind, the *Water Smart* program conducted a study last summer in Crawford Estates. Sixty residents were provided with incentives to help reduce water used for irrigation. The incentives included:

- Education:
- OGOGROW/Aeration:
- Rain Sensors:
- Sprinkler Upgrades:

Exciting Results

The graph below shows the study results, by comparing the program participants' water consumption in 2001 compared to with no conservation program in 2000. See the sharp "peak" in July 2000? Notice how the incentives helped reduce this peak in 2001 by 26%. Peak reductions like this are what the water utility needs to accomplish to reduce the need for additional infrastructure and save significant tax dollars.



Summer 2002

With the success of the Crawford Study, the *Water Smart* program is expanding the incentive program in 2002 to include Crawford Estates, Dilworth Mountain and Okaview/Timberline. These areas have been selected because they traditionally have the highest level of water use—sometimes three times as high as other areas of the city.

The incentives offered this year will differ slightly from those offered last year. Education and OGOGROW will be offered again, as they resulted in far more significant water savings than rain sensors and irrigation system upgrades. A new incentive will be the replacement of automatic irrigation timers. Many old timers are difficult to program. The replacement timer has a water budget function that makes it easy to save water. In 2001 the incentives were free to the homeowner. This year, there is a $50 cost for homeowners to participate in the program. However, this investment will be returned in savings in water bills in a relatively short period.

If the results of the 2002 study match those of the 2001 study, the *Water Smart* program may offer incentives City-wide in 2003.