

ICI RESEARCH

FINAL REPORT



CAPITAL REGIONAL DISTRICT
WATER DEPARTMENT

2003

Prepared by:



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EXECUTIVE SUMMARY

In November of 2002, CRD Water commissioned Commexus Inc. to conduct a research study of the Industrial, Commercial and Institutional (ICI) sector of the community. This study had four objectives:

- To explore the currently held knowledge, perceptions, attitudes, and practices of this sector with respect to water use.
- To determine what measures and initiatives, if any, had been undertaken by the ICI sector to reduce water use or conserve water.
- To determine the types of measures that CRD could make to enhance water conservation within the sector.
- To ascertain the percentage of once-through coolant use and the prevalence of water-cooled appliances and fixtures.

The study consisted of three distinct components:

- 1) A mail survey with 253 businesses/organizations within the CRD.
- 2) Five (5) focus groups with medium to large water users.
- 3) In-person interviews with 5 of the largest water-using organizations/businesses within CRD.

Each component contained questions that probed for the respondent's knowledge of their business/organization's water usage and their current water-conserving actions, motivators to initiate conservation, and willingness to participate in water-conserving initiatives. Respondents were also asked about the best source and method of reaching organizations with water-conserving information.

A. KEY RESEARCH FINDINGS

Survey

1. Knowledge of or interest in water usage volumes is low. Although respondents were able to look up information, over 50% did not do so.
2. The largest average use of water is for domestic use (44.9%), followed by cleaning and maintenance (19.6%).
3. Seventy-eight percent (78%) of respondents indicated they had no single pass coolant, and 85% indicated they had no water-cooled fixtures or appliances.
4. Thirty-five percent (35%) of respondents indicated an acceptable payback period for capital expenditures was more than 3 years.
5. Almost 55% of respondents indicated that their business or organization had taken steps to reduce water use. Of this percentage, almost 10% indicated that the steps taken were due to the 2001 water restrictions.

6. When given a choice of the prime benefit for making organizations more water efficient, 68% of respondents strongly agreed or agreed that helping the environment was the number one reason. This response is not reflected in answers received from larger water users in focus groups and interviews.
7. The most effective way to encourage organizations to increase water efficiency was with financial incentives, followed closely by demonstrated water/energy savings.
8. Respondents who were very willing or willing to participate in a defined series of water-conserving measures, both with and without CRD financial support, indicated employee education as their number one choice. Following closely as their second highest choice was fixture change programs.
9. The preferred information source (78%) was by printed material.
10. Best way to reach them was overwhelmingly (70%) through direct mail or e-mail (18%).

Focus Groups – Medium to Large User Organizations

11. The majority of focus group members were unaware of the volume; the types of treatments used; or even the discharge points of their water.
12. Unprompted, focus group members had little awareness of the concept of single pass or once-through coolant water and were certain their organizations did not have single pass. After discussion, a majority changed their belief to state it was possible that single pass systems were in place in their organizations, especially when they considered their air conditioning.
13. Except in two cases, all focus group members felt that water was a commodity and, therefore, it should be available at all times and in all seasons in sufficient quantity to meet all needs without restriction.
14. Organizations represented in the focus group sessions indicated that their organizations had taken some water-conserving steps. However, 90% had taken these steps because of the 2001 water restrictions.
15. Most effective way to increase water efficiency is through education and information (how to) programs, followed closely by incentive programs.
16. Costs savings and financial assistance are the prime motivators for undertaking water-efficiency initiatives.
17. Focus group member organizations are most likely to support education and financial assistance measures.
18. Focus group members gave a wide range of options for the best information methods. These were workshops/seminars and written information.
19. Best method for reaching these people is by e-mail, followed closely by direct mail.

Interview Organizations – Largest Water Using Organizations

20. All organizations were aware of their water use volumes.
21. Interviewees indicated that most organizations have some single pass use, in air conditioning units or chillers.
22. All of the interviewed organizations had undertaken some water reduction initiatives in a variety of ways, from audits to replacement of toilets. The initiatives undertaken by larger water-using organizations were not directly related to the 2001 restrictions.
23. The primary motivator to undertake more or additional water-efficiency measures in their organizations is a financial saving.
24. Large organizations are most likely to support education and financial assistance measures.
25. CRD could assist this group best through training, financial assistance, the provision of measurement tools and education materials for tenants.
25. Best way to reach them is through personal contact or e-mail.

B. POTENTIAL OBSTACLES FOR A CRD ICI PROGRAM

Knowledge Levels

- One of the key obstacles to participation in any CRD proposed program is the low level of topic awareness among members of the target audience. In some cases this related to not knowing all the specific operations water is used for or in throughout the operation – not knowing why, how much, or even how it is used. Overall knowledge about water conservation, and even water uses in general within the operation is quite low.
- The awareness of how, why, and how much water is used is not a priority or focus. In fact, until the drought it is unlikely that any of the organizations not governed by a parent company policy or focused on an industry standard had ever investigated water uses or tracked consumption.
- Their understanding about the source and nature of water supply in the area. For example, many people in the focus groups had not thought about the notion that no matter how large the reservoir a dry season makes for a shortage of water.
- General knowledge about the “how-to’s” of conserving was also low among focus group members. They lacked information access concerning fixtures, equipment and processes, and systems adjustments that reduce water consumption effectively and without loss of quality. Some simple innovations such as “cool sticks” – used in chilling sauces and stocks in kitchens – were unknown by most food services people. Examples or cases where people in a similar business had experienced savings and benefits were largely unknown. The relationship between water savings and energy use reduction were not readily apparent to all the participants.

The exception to this lack of knowledge was found under two conditions. First, organizations such as DND, Cadillac Fairview, The Empress Hotel, other hotels, and Island Farms – all with corporate or parent organizations with water efficiency in their corporate mandate – had high levels of water knowledge. For the hospitality sector the “green rooms” policy is environmental protection driven primarily by cost savings, and water use reduction is a part of that policy. Island Farms, as a high volume user in a very competitive business, was also aware of water and a high level of knowledge about conservation potential. DND has a policy of conservation and reduction of resource uses in all facilities. The knowledge levels with respect to water and water uses among these organizations was quite high and differed greatly from other ICI sector members.

Another differentiation in the focus groups was membership in professional organizations where individuals had been exposed to conservation and resource use reduction ideas, and how they were carried out elsewhere. As well, some individuals interviewed had more information and a greater water-related knowledge base due to having worked in another part of Canada where water conservation programs are already in place. Many had skills related to conservation that they had developed while working in another organization and another jurisdiction. For example, one interviewee was a European chef whose background and experience in areas where water was always less abundant made his knowledge of conserving very high.

Attitudes

A number of attitudinal issues were evidenced through the survey, focus group discussions and interviews. These attitudes may be the most powerful obstacles to a successful conservation program, and certainly need to be understood, acknowledged and addressed. The key attitudinal issues include:

- Commodity thinking.
- Viewing water supply as the right of the customer and seeing restrictions as a failure on the part of the supplier.
- Poor opinion of the fixtures and equipment designed to save water.
- A view that saving water does not mean saving money.
- Perception of the ICI users that Regional government is inefficient and that the multi-tiered system is wasteful. The feeling is that CRD should be in charge of water supply totally – eliminating the retailers. This would simplify and unify the billing process as well as the overall water system.
- Small users believe that water-conserving actions are not applicable or feasible.

Skills and Tools

- Lack of understanding of the skills required promoting and maintaining conservation through simple steps and everyday actions.
- Lack of knowledge about what others have done to conserve, and the success and benefits that they have achieved.

- Some ICI members were familiar with the concept of a resource use audit. Many had not heard of a water audit or had an incomplete understanding of what that entailed. An understanding of this tool is essential in breaking the “business case” barrier in many organizations where cost savings are a vital part of accepting conservation practices.
- When asked about what the CRD Water Department could provide to assist them in implementing water conservation efforts, most focus group members did not mention an audit, and when asked about whether or not they would see an audit as useful, asked for information about what an audit would do and what it would entail. Survey results placed water audits as the second lowest ranked measure in willingness to participate.

Payback Time

The average acceptable payback time is 2 to 3 years. Some organizations had a 5-year window for larger capital cost projects, especially where there were factors other than cost at work. For example, where environmental benefits, public image or other factors were considered to be important in the decision-making process, the cost factor might be mitigated.

Time/Personnel

In contrast, some of the larger organizations were well aware of the potential for savings but had no time, budgets, or enough expertise among staff to carry out a program to make change. Some were hampered by other constraints such as the reality that reducing water use meant increasing costs for effluent quality surcharges.

C. RECOMMENDATIONS

Develop an Implementation Plan

A fully detailed implementation plan should be developed for the ICI sector. This plan should offer approaches, timing and budgets.

Co-Ordinator

The ICI sector offers many challenges and opportunities for CRD Water. However, the level of effort required to carry out an ICI initiative that is meaningful and effective in reducing water use is quite significant. Therefore, it is recommended that a co-ordinator be hired to undertake the role of working with the ICI sector users to develop an effective outreach program. It is also important that the individual co-ordinating the effort have some solid experience within the sector, as well as a solid understanding of the water conservation tools, methods, and potential related to ICI users’ situations and good communication skills.

Budgets

The ICI sector initiative requires budget allocations to be successful. A budget needs to be established for working with this sector, providing a co-ordinator, and providing programs, tools and materials to reach out to this group and foster water conservation among these users.

Internal Co-Operation

CRD and the retailers need to co-operate to make any outreach to this sector effective. It is recommended that the CRD Water Department, the Environmental Services group (as they affect wastewater issues), and the retailing municipalities form a team to harmonize the water supplier's approach to conservation and to the outreach initiative. This would ensure that situations such as the sewage issues at Island Farms and the overall concerns and feedback about billing issues are addressed.

Education

First a widespread education effort is recommended. The education effort should begin with basic awareness – the water system, the limitations of the source of supply, and other basic water facts. The effort also needs to address attitudinal components and should be focused on making people in the ICI sector aware of the specific benefits of conservation, including cost reductions due not only to water savings but reductions in energy uses as well.

Education needs to focus on conservation benefits, including cost reductions and environmental and community benefits. All these need to be illustrated by real-world examples from a wide range of ICI users. Where local user reductions are available, this would be advisable since many users expressed that what made a solution valid was its relevance to their industry and its appropriateness or acceptance locally. The education efforts must focus on three areas:

1. the potential users of facilities such as the public,
2. frontline users within organizations such as staff and employees of the operation,
3. and the management and executive groups within this sector.

Smaller Users: Sector specific fact sheets (i.e. Food Services) should be created. These fact sheets should include case studies.

Medium to Large Water Users: Offer opportunities for employee habit change seminars. Information – what to look for, technologies available for water reducing, such as water efficient dishwashers, what they are and where to get them and case studies of their use.

Fixture Replacement Program

A fixture replacement rebate program, similar to the CRD's residential program, should be designed and implemented, especially for small users.

Policy

Communications: A policy needs to be developed by CRD governing communications with the ICI users; this should be accompanied by a communications plan. Details such as who will communicate, how, when and why need to be clearly identified for any communications initiative to be successful. These elements are critical to ensuring that the currently adversarial relationship becomes co-operative and mutually beneficial.

This communications policy needs to determine details such as what situations will trigger a specific communication to customers, not only ICI but also all customers. A water quality and quantity advisory program needs to be developed within the policy to allow ICI users adequate lead times to anticipate potential shortfalls and restrictions, as well as potential changes in particulate levels or other quality issues.

The policy and communications plan will help reduce the friction between users and supplier, and will ensure better and more co-operative interactions between CRD Water and the high volume customer group.

Single Pass Coolant Bylaw/Water-cooled Fixtures and Appliances: A policy should be developed concerning the removal of water-cooled appliances/fixtures, such as air conditioners, and the use of once through coolant by either a bylaw or through voluntary measures.

Water Buy Back: A policy needs to be established for the determination of buy-back opportunities.

A Voice for ICI Customers

A panel of advisors from the ICI sector needs to be created to allow the participation of this sector in the development of water-conservation related outreach and action plans. This would offer CRD numerous benefits in terms of building trust, co-operation, and involvement with this sector. As well, they can offer practical and insightful ideas to help CRD Water foster conservation among all higher volume users.

In addition, people from each of the major categories of ICI users should be asked to sit on a committee, possibly a sub-committee of the existing Water Conservation Advisory group. This sub committee would be focused on ICI issues relative to water conservation. It is possible that the committee might focus on a wider range of water issues related to the ICI sector such as pollution prevention, water quality and other topics relevant to the sector.

Building Relationships in the Community

A liaison with local organizations, such as BBB, Hotel Association, and various associations and similar organizations needs to be established. The relationships should focus on using these organizations as a means of disseminating communications and information, and as a way to continue to foster communications from these sectors to the CRD organization.

Local Cases

A plan needs to be developed for utilizing the larger organizations who would make good case study locations or whose facilities offer an opportunity to pilot test some technologies and systems needs. This plan needs to include the ways in which CRD Water would use the results and a prioritizing of the potential projects based on their long-term value to the water system, and their value in educating and informing similar organizations.

Outreach Program Plan – Outdoor Users

To ensure conservation is effective in the CRD area a plan for outreach to all sectors must be established. Outdoor users form a large part of the high volume uses in the area. Their uses are most likely to affect peak use periods, and are the most visible uses of water in the area. There is a great deal of resentment on the part of these users overall towards the notion of restrictions and conservation. There is also a lot of resistance among these users towards the notion of conservation and outdoor use reduction efforts. Some of this resistance stems from concerns about how to reduce water use without destroying the quality of the outdoor landscapes. These users generally lack the skills and tools to make good water use reduction decisions.

A program to foster both willingness and capability for water use reductions for the outdoor users, both large and small, needs to be established. This program should offer intensive and practical education in the ways to reduce outdoor water use that are applicable to the CRD setting. A liaison with large public facilities, such as government buildings operated by BCBC, is essential to the success of this initiative. As well, a successful liaison with the local parks authority is essential. Demonstration plots highlighting native plantings, seminars to develop outdoor use reduction skills, and other educational efforts need to be practical, accessible to all users and local in their flavour.

Tools and Resources

A number of skills and simple tools are needed to ensure that any organization is able to undertake a resource efficiency initiative. Even if the organization wants to reduce water consumption and supports the idea throughout the organization, there must still be some skills and tools at their disposal to make that desire a reality.

It is recommended that CRD provide some of these tools such as technical tools – portable meters, data logging devices, auditing guidelines and other devices – that organizations could rent or borrow from CRD or from a local supply company. These devices could be owned by CRD and loaned to area users, or could be subsidized as rentals where the devices are available.

In addition, tools such as education for staff, print materials to help ICI users educate internally, and broader tools such as audit guides and case examples need to be considered. Although it is important to provide awareness and general water-related education, it is also important to provide “how-to” skills information and education as an important tool for change.

SECTION 1 – BACKGROUNDER & STUDY OBJECTIVES

1.1 BACKGROUND INTRODUCTION

Primary water conservation initiatives have been developed for the residential sector within the Capital Regional District Water (CRD). Little has been undertaken with the Industrial, Commercial and Institutional (ICI) sector. CRD Water has determined to include the ICI sector in water conservation efforts. This research project, initiated in November of 2002 by CRD Water, was commissioned as the first major study of the ICI sector.

ICI water users are generally acknowledged by water suppliers around the world as the user group with the highest potential for water use reduction. ICI facilities often have older equipment, as well as equipment that uses high volumes of water. The priorities for these organizations are usually focused on production, overall cost reductions, and reducing highly visible resource uses. The costs and cost-saving potential related to water-conserving systems, equipment and practices may not be known to the ICI sector members, especially when their locale has not been conservation-focused in the past.

In fact, ICI sector uses are frequently found to have little or no awareness of the volume of water used by their operation, and although they may have taken action to reduce water use, it is likely only where higher profile costs, such as energy costs, are the conservation target.

The ICI sector is generally acknowledged as the group with the greatest potential for water volume demand reductions associated with an increased efficiency in their use of water. The efficiency may come from equipment or process changes that greatly reduce the volume used, such as process coolant re-circulation.

However, in areas where ICI sector programs have been undertaken, it is generally acknowledged that while the motivation to participate in conservation programs is often predictable, the willingness or action triggers, the level of awareness, and the baseline understanding of the value of water-conserving actions differs from one industry to another, and one area of the continent to another.

To determine the best way to reach out to the ICI sector within the CRD requires having a clear understanding of what this group of water users needs and wants from CRD in order to motivate them to participate in any conservation efforts.

This research project is then a key required element in the development of an action plan to allow CRD Water to reach out to this group of water users.

1.2 RESEARCH OBJECTIVES

This study had four objectives:

- To explore the currently held knowledge, perceptions, attitudes and practices of this sector with respect to water use.
- To determine what measures and initiatives, if any, had been undertaken by the ICI sector to reduce water use or conserve water.
- To determine the types of measures that CRD could make to enhance water conservation within the sector.
- To ascertain the percentage of once through coolant use and the prevalence of water-cooled appliances and fixtures.

SECTION 2 – RESEARCH SCOPE & DESIGN

2.1 STUDY COMPONENTS

The study consisted of three components, which are as follow. The use of three allowed for an expansion of data collection. Each component augmented the information of others, in an effort to look for as many different explanations or interpretations as possible.

2.1.1 Mail Survey

Surveys were mailed to a random sampling of businesses in the ICI sector. Mailed surveys were decided upon by CRD as the preferred method of collection as the questionnaire was lengthy and a mailed survey would hopefully allow for more accurate information response. It was felt that mailing would allow respondents the opportunity to respond without time pressure and allow for more accuracy in responses. Names and addresses from 1,949 businesses were drawn from CRD's Year 2000 retail water database. This database is compiled from information supplied by individual municipalities within CRD.

2.1.2 Focus Groups

Five focus groups were held with a total of 32 representatives from medium and large water users. Representation in the focus groups covered the hospitality (hotels and restaurants), golf courses, parks, schools, and health care operations sectors.

2.1.3 Individual Organization Interviews

Five in-depth interviews were conducted in person with pre-selected large water users.

2.2 SURVEY DESIGN & METHODOLOGY

2.2.1 Sample Size

The original sample size allocated for the ICI survey was 400 respondents. However, due to miscoded and out-of-date information drawn from the CRD database, which is supplied, by area municipalities, of the original 1,949 names drawn, 555 were returned as undeliverable. This reduced the mail-out to 1,394. The total number of returns was 274 however, due to incompleteness or inappropriate target audience (householder), valid survey cases were 253.

The survey sample size of 253 respondents has a 95% confidence level with a margin of error of +/- 6.4%.

2.2.2 Sample Frame

The sampling frame was drawn from the CRD Water's 2000 retail water billing database. A systematic sampling with a computer-generated random number start was used to select the 1,949 names and addresses.

2.2.3 Data Collection Methods

The original survey was mailed in November of 2002. The original contact package included a cover letter and a copy of the questionnaire. Letters were addressed in each selected organization to the person deemed most likely to deal with water within the organization.

When the high non-deliverable return rate was discovered early in the mailing, several steps were taken to increase responses from the remaining original sample group. These steps were a follow-up prompting post card and a second mailing of the questionnaire. Also an extension of the return deadline from the end of November to the beginning of January 2003 was given in the second mailing.

CRD Water personnel arranged all focus groups and one-on-one interviews. Each focus group was for approximately 1.5 to 2 hours in length and followed the key questions of the survey while expanding on the issues.

The five in-person interviews were conducted at the premises of each organization.

2.2.4 Data Analysis

All completed questionnaires were entered into a customized database. Analyses of the results were conducted in the NCSS statistical package. Analysis of the survey results consists largely of frequency counts for each of the questionnaire variables as well as relevant cross-tabulations between water use and other questions.

SECTION 3 – SURVEY RESEARCH FINDINGS

3.1 PRE-SURVEY QUESTIONS

Two pre-survey questions were asked. First, respondents were asked for their job title and second, they were asked to describe the areas of responsibility they have relative to water uses in their organization. Job titles responses were categorized into eight areas. The results follow.

Table 1 – Respondent’s Job Title

Title	Count	%
Owner	70	27.7%
Senior Management	53	20.9%
Financial	16	6.3%
Facilities/Operations Management	22	8.7%
Property Management	12	4.7%
Maintenance	10	4.0%
Manager	48	19.0%
Outdoor Water Use	1	0.4%
No Answer	21	8.3%
Total	253	

The purpose of asking about areas of water use responsibility was to determine if the person responding to the survey was making day-to-day water use decisions. The majority – 161 of 253, or almost 64% – did not answer this question. Of those that did answer, a number gave answers that fit in more than one area. All answers were categorized into ten general areas.

Table 2 – Responsibility for Organization’s Water Use

Areas of Responsibility	Count	%
Financial	25	9.3%
General/Managerial	33	12.3%
Housekeeping	4	1.5%
Maintenance/Repairs	10	3.7%
Outdoor Use	10	3.7%
Utilities Management	9	3.3%
Fire Fighting	2	0.7%
Agricultural/Farm Uses	8	3.0%
Communications	5	1.9%
Misc./Personal	2	0.7%
No Answer	161	59.9%
Total	269	

3.2 SURVEY RESULTS

Question 1 – Please check the category that best describes your organization.

All ICI categories were taken from CRD’s water billing user codes. All responses were coded under the existing categories. One respondent did not answer this question.

The random generation used to select respondents captured a wide variety of businesses within the CRD. Responses were received from every sector except “Marinas”. The largest returns were from the retail/general sales, followed by agriculture, offices, and restaurant/pub.

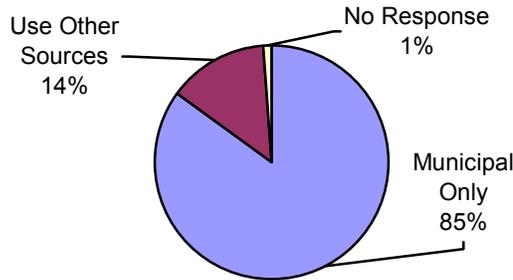
**Table 3 – Businesses Surveyed
by CRD Water Billing User Code**

CRD Code	Organization	Count	%
70	Restaurant/Pub	20	7.9%
78	Car Wash	2	0.8%
71	Laundry	3	1.2%
80	Manufacturing/Construction	12	4.7%
72	Retail/General Sales	54	21.3%
81	Transportation	5	2.0%
73	Hotel/Motel/Campground	9	3.6%
82	Food Processing	2	0.8%
74	Service Station	16	6.3%
83	Agriculture	31	12.2%
75	Office/Bank/Doctor/Vet	26	10.3%
84	Utilities/Communications	1	0.4%
76/96	Golf Course, Parks,	4	1.6%
93	Recreation Centre/Hall/Arena	8	3.2%
77	Marina	0	0.0%
95/99	Public Works	2	0.8%
94	Government Office	5	2.0%
65	Nursing Home/Care	1	0.4%
90	School, University, Technical	10	3.9%
92	Hospital	2	0.8%
97	Fire Hall	2	0.8%
98	Church/Cemetery	21	8.3%
---	Other Various Organizations	16	6.3%
---	No Response	1	0.4%
Total		253	

Question 2 – Does your organization use other sources of water besides municipal?

Eighty-five percent (85%) of businesses indicated that their only source of water is municipal.

Figure 1 – Sources of Water



Question 2a – Please specify what other sources of water you use.

The 34 respondents who indicated in question 2 that they did use other sources of water besides municipal were asked to specify these other sources. One respondent gave two answers for a total of 35 responses.

Table 4 – Other Water Sources

Other Water Sources	% of respondents
Groundwater / Pond / Run-off	17.1%
Rainwater, water barrels	11.4%
Well	25.7%
Reservoirs	2.9%
Static Sources (Thetis Lake)	2.9%
Stored Water	2.9%
Bottled Water	37.1%
Valid Responses 35	

The highest response for other sources was bottled water, which is not a true water source but rather used in drinking water coolers.

Question 3 – How much water does your organization use annually?

Respondents were asked to indicate the annual amount of water their organizations used, as well as how that use was measured (cubic metres, gallons, litres, or units). All amounts were converted to cubic metres.

A total of 159 respondents (62.8%) gave this information although over 16% of these respondents indicated it was a guess. A number of those who did not answer suggested looking it up using their account numbers (which they were asked for in question 4 of the survey).

Although respondents were able to review water bills, over 50% were unable or unwilling to give water use numbers. This would seem to indicate that water use numbers do not come easily to the minds of the respondents, and although given the opportunity they chose not to look up the answer to this question. An organization where water use is a high priority issue would likely be able to respond to this without looking up the number or would have running totals of consumption.

Water users were grouped into three categories – small (under 5,00 cubic metres), medium (greater than 5,000 but less than 10,000), and large users (more than 10,000).

Table 5 – Annual Water Use

Annual Water Use	% of respondents
0 to < 5000 cubic metres	79.9%
5000 < 10,000 cubic metres	5.7%
>= 10,000 cubic metres	14.4%
Valid responses 159	

Question 4 – Water bill account numbers? (CRD requested this information.)

Respondents were asked to supply their account number(s) and give permission to access their billing information. Information can be used by CRD Water to confirm annual water use. *Actual bill account numbers are provided under separate cover.*

Table 6 – Water Billing Accounts

	% of respondents
Gave Account # and Permission to Access	73.5%
Gave Account # but Not Permission to Access	3.6%
Did Not Give Account # but Gave Permission to Access	4.7%
Did Not Give Account # and Did Not Give Permission to Access	18.2%
Valid responses 253	

Question 5 – Please indicate what percentage of the water used is heated.

Organizations with high percentages of heated water usually have taken many conservation measures to reduce the related energy costs. In addition, often those using high volumes of heated water are well aware of the amount this represents since heated water is much more costly than municipal cold water. The majority of respondents indicated that between 10 and 30% of their water is heated, which offers some opportunities for significant savings through water conservation. Of the 253 respondents, 22 did not answer this question, and 17 indicated they did not know the answer for their organization. This means a total of 15.4% of total respondents did not give an answer. For the 214 respondents who did answer, results follow. The average for all respondents who answered is 18.8% (of water being heated), with a high of 2 indicating 100% of water being heated, and a low of 20 who said that 0% of their water was heated.

Table 7 – Heated Water Use

Percentage of Water Is Heated	% of respondents
10	38.8%
10<20	21.5%
20<30	14.5%
30<40	8.4%
40<50	4.2%
50<60	6.5%
60<70	0.9%
70<80	3.3%
80<90	0.5%
90 to 100	1.4%
Valid responses 214	

Question 6 – Percentage of water use for following applications.

A total of 28 of the 253 respondents did not answer this question. As well, not all respondents answered the question fully – that is, not all responses add up to 100% on an individual’s response. For example, an individual may have indicated that they used 85% of their water for domestic purposes, but did not indicate where the remaining 15% was used. In many cases, these percentages appear to be estimates.

Table 8 – Percentage of Water Use for Each Application

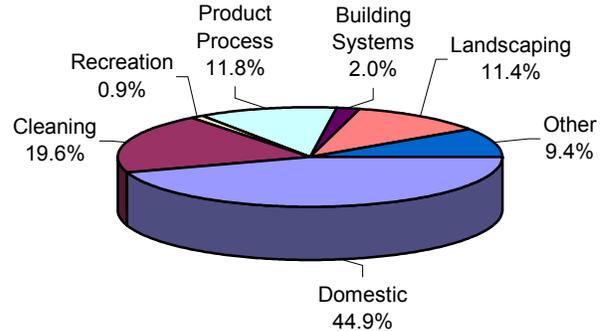
Percentage of Water Use	Domestic	Cleaning	Recreation	Product Process	Building Systems	Land-scaping	Other
Up to 25%	41.1%	75.1%	90.0%	57.5%	88.7%	80.2%	23.7%
26 to 50%	20.1%	11.9%	5.0%	15.1%	7.5%	11.9%	23.7%
51 to 75%	12.1%	6.2%	5.0%	8.2%	3.8%	3.2%	18.4%
76 to 100%	26.6%	6.7%	0.0%	19.2%	0.0%	4.8%	34.2%

Table 9 shows the **average** water use for all applications. These averages are taken from ONLY the 202 respondents who fully answered Question 6 (that is, their responses added up to 100%).

Table 9 – Application’s Average Water Use

Application	Average of 202 who fully answered Q6
Domestic	44.9%
Cleaning/Maintenance	19.6%
Recreation	0.9%
Product Process	11.8%
Building Systems	2.0%
Landscaping	11.4%
Other	9.4%

Figure 2 – Average Water Use



Question 7 – Estimate the percentage of wastewater going to the storm sewer.

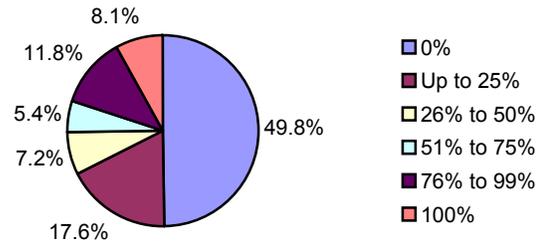
Of 253 respondents, 26 did not answer this question and a further 6 indicated they did not know the answer to this question. This left 221 valid responses.

Table 10 – Percentage of Water to Storm Sewer

To Storm Sewer	% of respondents
0%	49.8%
Up to 25%	17.7%
26% to 50%	7.2%
51% to 75%	5.4%
76% to 99%	11.8%
100%	8.1%

Valid responses 221

Figure 3 – Percentage to Storm Sewer



The responses to this question may indicate that it will be important to make people more aware of the difference between storm and sanitary sewer disposals.

NOTE: In focus groups many people were also unaware of these differences indicating a general need to make this clearer, especially if downspout connections are an issue or if some once-through water may currently be discharged to storm.

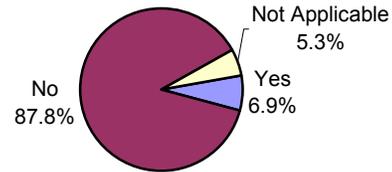
Question 8 – Does any of the water used in your operation get recycled or reused?

A total of 6 people did not answer this question, leaving 247 valid responses.

Table 11 – Percentage of Water Recycled/Reused

Recycled or Reused Water?	% of respondents
Yes	6.9%
No	87.8%
Not Applicable	5.3%
Valid responses 247	

Figure 4 – Recycle or Reuse Water



It is normal to expect that within the ICI sector about 20% of the users have the opportunity to recycle or reuse some of their water.

Question 8a – What type of treatment is given to the recycled/reused water?

Six of the 17 respondents in Question 8 who indicated that they did recycle or reuse water did not indicate how they treated this water. Of the remaining 11, one indicated two treatment methods. A total of 12 answers are not statistically significant.

The responses, however, indicate some confusion or lack of understanding relative to the concept of reused or recycled water since it is unlikely that 25% of reused or recycled water would not be treated, or that a settling pond would be considered appropriate treatment before recycling or reusing.

Table 12 – Type of Treatment

Treatment	% of respondents
Settling Pond	8.3%
Chemical/Bacterial	16.7%
Filtration	33.4%
Distilled Water Usage	8.3%
Cooling Towers	8.3%
None	25.0%
Valid responses 12	

Question 9 – Does your organization have water-cooled fixtures or appliances?

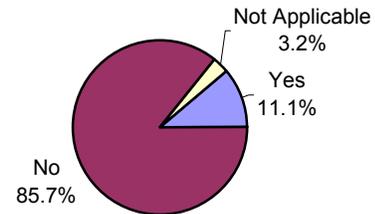
One survey did not contain a response to this question, leaving 252 valid responses. The number of respondents who indicated that they did not have any water-cooled fixtures and appliances is very high and suggests that respondents may not have thought of certain fixtures, such as air conditioning units.

NOTE: Responses given to this question by focus groups and interview members seem to indicate that a greater number of organizations have water-cooled air conditioners, ice machines, chillers and refrigeration units cooled by water than the survey results indicate. The focus groups and interview participants indicated, with few exceptions, that some of these uses existed in their operation.

Table 13 – Water-cooled Fixtures/Appliances

Water-cooled Fixtures?	%of respondents
Yes	11.1%
No	85.7%
Not Applicable	3.2%
Valid responses 252	

Figure 5 – % of Respondents who Reported Having Water-cooled Fixtures/Appliances



Question 10 – What percent of the water used is used as a single pass or once-through coolant? (The survey question defined single pass and gave examples.)

Of the 253 surveys, 3 respondents indicated they did not know the answer to this question and 43 did not answer this question, leaving 207 valid responses. It is possible that many people are unaware of their single pass uses, or simply did not consider air conditioning units. The response that indicated 100% is single pass should be discounted.

Table 14 – Percentage of Water that is Single Pass

% of Water as Single Pass	%of respondents
0%	77.8%
up to 5%	4.3%
6% to 25%	5.3%
26% to 50%	1.9%
51% to 75%	1.0%
76% to 99%	0.5%
100%	9.2%
Valid responses 207	

NOTE: Responses to this question from focus group members and interviews indicate that most organizations have some single pass use – in air conditioning units or in chillers and other equipment.

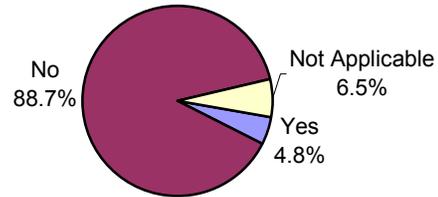
Question 11 – Does your organization make use of a cooling tower?

Five people did not answer this question, leaving 248 valid responses.

Table 15 – Cooling Tower Use

Cooling Tower?	%of respondents
Yes	4.8%
No	88.7%
Not Applicable	6.5%
Valid responses 248	

Figure 6 – Cooling Tower Use



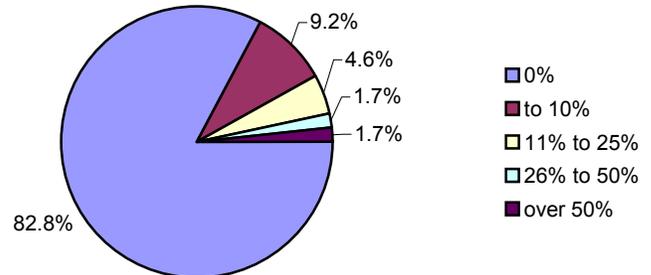
Question 12 – What percentage of water used is treated before use?

Of the 253 surveys, 11 did not answer this question, 2 indicated they didn't know an answer to this question, and 1 marked their answer "Not Applicable". This left 239 valid responses.

Table 16 – Percentage of Water Treated Before Use

% Water Treated Before Use	%of respondents
0%	82.8%
to 10%	9.2%
11% to 25%	4.6%
26% to 50%	1.7%
over 50%	1.7%
Valid responses 239	

Figure 7 – Percentage Water Pre-Treated



Question 12a – Briefly describe the type of treatment used.

Only respondents who indicated they used some type of treatment were asked to answer this question. All 41 respondents who indicated that they pre-treated water before use from question 12 answered this question. In addition, there were two responses from people who didn't know the percentage of pre-treated water (answering "DK" in question 12), but did know the type of pre-treatment used. This results in 43 responses. It is likely that the response indicating that a septic field is used as pre-treatment should be disregarded.

Table 17 – Type of Treatment Used

Type of Water Treatment	% of respondents
Boiler Conditioning	9.3%
Filters/filtration	69.8%
UV, Chlorine & Particulate Removal	4.7%
Septic Field	2.3%
Chemical	7.0%
Misc.	7.0%
Valid Responses 43	

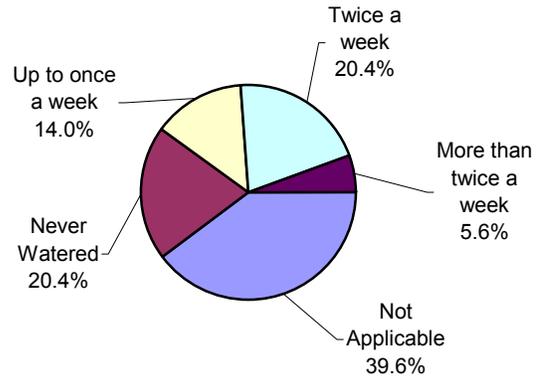
Question 13 – How many times per week is your building’s lawn normally watered?

Three respondents did not answer this question. Several stroked out “lawns” and substituted “gardens”, “flower beds” or “vegetable beds”. These were added to the “Not Applicable/Other” category.

Figure 8 – Number of Times Lawn Watered

Table 18 – Number of Times Lawn Watered

# Times Lawn Watered	% of respondents
Not Applicable/Other	39.6%
Never Watered	20.4%
Once a Week	14.0%
Twice a Week	20.4%
More than Twice a Week	5.6%
Valid responses 250	



Question 14 – What is the length of your normal lawn watering time?

From question 13, respondents who indicated that they did water their lawns were asked to answer question 14 and 15. This totals 100 respondents.

Table 19 – Length of Lawn Watering Time

Type of Water Treatment	% of respondents
30 minutes	63.0%
1 hour	14.0%
1.5 hours	8.0%
2 hours	5.0%
Other	10.0%
Valid responses 100	

Question 15 – What type of equipment is normally used when watering the lawn?

The 100 respondents who answered question 14 were also asked to answer this question. One did not, leaving 99. Five gave multiple answers, although they were asked to choose only one. These five additional answers were included, bringing the total to 104.

Table 20 – Lawn Watering Equipment

Type of Lawn Watering Equipment	% of respondents
Hose	13.4%
In-ground sprinkler	68.3%
Above-ground sprinkler	14.4%
Other	3.9%
Valid responses 104	

Question 16 – What is the normal expected payback period for capital expenditures?

Thirty-two people did not answer this question; 9 indicated they did not know the answer to this question; 16 said the question was not applicable to them. This leaves a total of 196 responses.

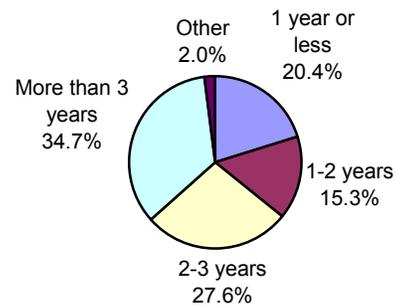
Although an “other” choice didn’t exist, 4 respondents responded that there were multiple payback periods, or that the payback period depended on either the total dollar amount or on the type of item purchased.

NOTE: Overall, the results are similar to those found in interviews and focus groups. These interviews indicated that the variation in payback time was related to other factors, such as additional benefits the expenditure might yield such as decreasing labour or enhancing public image. The majority of interviewed organizations appeared to operate on a standard 5-year payback time.

Table 21 – Capital Expenditures Payback Periods

Payback Period	% of respondents
1 year or less	20.4%
1-2 years	15.3%
2-3 years	27.6%
More than 3 years	34.7%
Other	2.0%
Valid responses 196	

Figure 9 – Payback Period



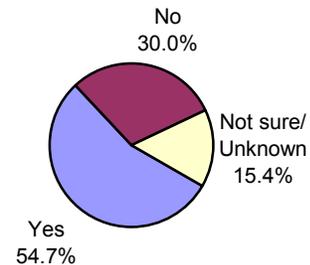
Question 17 – Has your organization taken steps in the past 5 years to reduce water use?

Six respondents did not answer this question, or indicated it was not applicable to them, leaving 247 valid responses.

Table 22 – Taken Water Reduction Steps

Steps Taken?	% of respondents
Yes	54.7%
No	30.0%
Not Sure/Unknown	15.4%
Valid responses 247	

Figure 10 – Reduction Steps Taken



Question 18 – Please describe steps taken to reduce water use.

Of the 135 respondents who indicated they had taken steps over the past five years to reduce water use (as indicated in question 17), 4 did not indicate what steps they had taken. The remaining 131 gave a variety of answers, which were categorized into eleven categories of action. Some gave more than one answer, so a total of 185 responses are listed. Some respondents indicated compliance with restrictions as a water conservation measure.

It should be noted that almost 10% of respondents indicated that the action they took was restrictions compliance. Respondents actually indicated this response in the survey. “Restrictions Compliance” isn’t a “step” as much as it is a short-term, non-permanent strategy used only when restrictions are in place. Analysis was not able to determine if some of the other steps were also predicated on the 2001 restrictions.

NOTE: In focus groups most participants indicated that most of the water-reducing activities took place during the water shortage crisis of 2001 and were motivated solely by that crisis.

Table 23 – Water Reduction Actions

Steps Taken	% of respondents
Landscaping/Irrigation Changes	24.9%
Equipment Changes/Efficiencies	7.0%
Restrictions Compliance	9.7%
Education/Staff Awareness	8.1%
Conserving Devices/Fixture Changes	18.4%
Regular Maintenance	5.9%
Agricultural Irrigation Changes	5.9%
Reduce/Recycle	6.5%
Process Changes	4.3%
Policy/Procedure Changes	6.5%
Miscellaneous	2.7%
Valid responses 185	

Question 19 – Making our organization more water efficient would ... (agree or disagree)

The table below shows percentages. “No Answers” and “Not Applicable” were not included.

Table 24 – Benefits of Water Efficiency to Organization

Making our organization more water efficient would:	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
Save us substantial money	10.1%	37.1%	30.6%	7.3%	14.9%
Help our public image	9.0%	36.3%	25.7%	6.1%	22.9%
Improve our competitiveness	2.9%	20.2%	40.5%	12.0%	24.4%
Help protect the environment	18.0%	49.8%	13.5%	3.3%	15.5%

The highest agreement to this question (67.8%) indicates the belief that the only true benefit of making organizations more water efficient is to “help protect the environment”. Although many see the relationship between environment and conservation or efficient water use, this is clearly not enough to motivate them to make change. Clearly the target group would need to be convinced that the other options, especially cost savings, could be realized through efficiency.

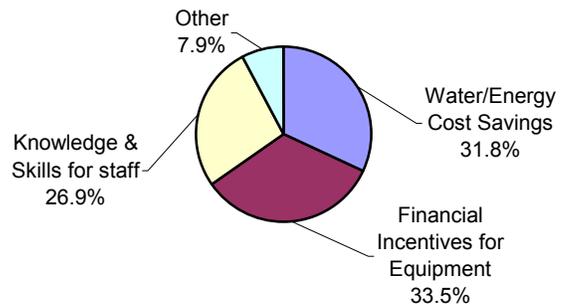
Question 20 – The most effective way to encourage increase in water efficiency efforts.

A total of 28 did not answer this question (or indicated it was not applicable, or they didn’t know an answer), leaving 225 surveys that contained a response. Even though only asked for a single response, 13 chose to give two answers, and 2 gave three answers. These answers were counted, for a total of 242.

Table 25 – Ways to Encourage Water Efficiency

Effective Ways	% of respondents
Water/Energy Cost Savings	31.8%
Financial Incentives for Equipment	33.5%
Knowledge & Skills for Staff	26.9%
Other	7.8%
Valid responses 242	

Figure 11 – Ways to Encourage Water Efficiency



Question 21 – How willing are you to participate in the following water-saving measures, where your organization pays the cost but there are clear cost-savings?

In all cases, almost 50% or higher indicated they were willing or very willing to participate in the measures. Those not sure account for 25-30%, leaving 20-25% who are unwilling or very unwilling. There were 253 valid responses to this question. The highest ranked measure was employee education.

Table 26 – Willingness to Voluntarily Participate in Water-Saving Measures

Measures to Help	Very Willing	Willing	Unwilling	Very Unwilling	Not Sure
Water audits	9.6%	39.5%	18.0%	7.5%	25.4%
Fixture changes	9.2%	48.0%	13.1%	3.9%	25.8%
Low water use landscaping	10.3%	39.7%	17.6%	6.9%	25.5%
Water-use system changes	5.5%	40.9%	16.4%	4.5%	32.7%
Employee education	14.0%	47.5%	10.4%	4.1%	24.0%
Irrigation system efficiencies	11.6%	43.5%	12.6%	4.8%	27.5%

Question 22 – How willing would your organization be to participate in the following if CRD pays part of the cost and there are clear cost-savings?

In all cases, indicating that CRD would share the initial cost increased the percentage of respondents who would participate in these programs. In all but two programs, willingness to participate increased to over 60%. There were 253 valid responses to this question.

Table 27 – Willingness to Participate in Water-Saving Measures With Financial Incentive

Program / CRD Pays Part	Very Willing	Willing	Unwilling	Very Unwilling	Not Sure
Water audits	21.5%	35.6%	15.5%	3.4%	24.0%
Fixture changes	22.5%	43.3%	10.4%	1.7%	22.1%
Low water use landscaping	20.1%	38.3%	13.4%	3.8%	24.4%
Water-use system changes	19.7%	40.6%	10.5%	2.2%	27.1%
Employee education	24.6%	46.1%	8.8%	1.8%	18.9%
Irrigation system efficiencies	22.2%	39.6%	10.1%	2.9%	25.1%

The following chart shows how the percentage differences of respondents increased or decreased when the answers to questions 21 (voluntary) and 22 (CRD financial support) are compared. This table shows the impact of CRD sharing initial costs to participants' willingness to participate in each program.

Table 28 – Willingness Comparison Q21 & Q22

Program	Very Willing / Willing	Unwilling / Very Unwilling	Not Sure
Water audits	8.0%	-6.6%	-1.4%
Fixture changes	8.6%	-4.9%	-3.7%
Low water use landscaping	8.4%	-7.3%	-1.1%
Water-use system changes	13.9%	-8.2%	-5.7%
Employee education	9.1%	-4.0%	-5.1%
Irrigation system efficiencies	6.8%	-4.3%	-2.4%

There is a substantial increase in respondents' willingness to participate in these measures when a financial incentive is added. Those who indicated they were unwilling or unsure to participate on a voluntary basis still remained unwilling even with a financial incentive.

Question 23 – Why did you indicate your organization would be unwilling or very unwilling to participate in the program, even with financial incentive?

The numbers that indicated unwillingness to participate in question 22 were quite small. The answers presented indicate that the majority who would not participate believes that the specific program is not applicable to their circumstance, is not appropriate to them, requires too much time, or just had no opinion.

Question 24 – Your preferred format for receiving information?

Six respondents gave more than one answer to this question, although they were asked for a single response. These additional six responses were included in the table below, increasing the total to 259.

NOTE: The focus groups and other interviews gave similar responses with some in-depth additional information. They stated that mailings from CRD might not reach the right people in a larger organization. Since the CRD mailing list would likely be associated with billing, a conservation message mailed to that address would not be likely to reach the right people. In addition, most people said that e-mail was the quickest and best way to reach them in their busy workday.

As well, the notion that local media could provide a broader range of people with some information was discussed. Many interviewed people felt that it was critical to get the message to everyone from the most senior staff to frontline workers, and that using the media might be an effective way to do this.

Table 29 – Preferred Method of Receiving Information

Preferred Information Source	% of respondents
Printed Information	78.0%
Verbal Presentations	5.8%
Advertising	3.1%
Articles	3.5%
Other Organizations	0.4%
Email/Website	5.8%
Other	1.2%
No Answer	2.3%
Valid responses 259	

Question 25 – Which is the best medium to reach you with information?

Again, 7 respondents gave two answers to this question. These additional 7 answers were included, giving a total of 260 responses.

Table 30 – Best Information Medium

Best Way to Reach	% of respondents
Direct Mail	70.4%
Media	2.3%
Industry Publications	0.8%
CRD Website	3.8%
Email	18.8%
Personal Visit/Phone	1.5%
Insert in Water/Utility Bill	0.8%
No Answer	1.5%
Valid responses 260	

SECTION 4 – FOCUS GROUPS & INTERVIEWS

4.1 INTRODUCTION

Five focus groups and five in-person interviews were conducted. These groups represented the larger volume users. The five focus groups were conducted with the hospitality sector (restaurants and hotels), health care, golf courses, parks and cemeteries, and institutional organizations). The in-person interviews were conducted with five of the largest water-using businesses and organizations in the CRD Water area.

The questionnaires, scripts, observation sheets, and focus group content used to gather the information contained in this section of the report were designed with similar or common questions, aimed at gathering foundation information about the key issues or concepts explored through the mail-in survey. Content was, however, tailored to address the perspective, experience, and understanding of each group. This methodology of using common questions and dynamic or location-specific questions allows for two interpretations of the results.

First the results add depth and dimension to the results of the mail-in survey where the common questions are explored using the focus group or in-person interview. Second, the results of the dynamic interviews offer a deeper understanding of the key concerns and issues prevalent among the members of a cross section of ICI community. This is especially important information to have when preparing a plan to gain the assistance, co-operation, and understanding of the sector in future outreach efforts, since many of these key concerns are difficult to capture and explore using another methodology.

Therefore, the responses obtained from the common questions in these interpersonal dialogue settings allow ample opportunity to compare the perspectives, experiences, and motivations issues discussed with these individuals to the results of the written survey. In some detailed or very specific questions, the written survey allowed individuals to consult others and gather specific data, making their answers more complete and more detailed than those provided through the more impromptu discussions and interviews. In addition, the written survey allowed individual respondents to gather data or assistance from others in their organization; therefore, some of the responses may represent a collaborative effort.

The more dynamic interview setting eliminates the collaborative approach and is not aimed at gathering the individual's knowledge of specific data, but rather the attitudes, knowledge, and focus of the organization with respect to water resources and water use issues.

The responses on a written survey to issues such as "protecting the environment" are much more likely to be positive than the responses that do not directly solicit that information in a group dynamic. Therefore, the group setting dialogue offers participants an opportunity to comment or include issues such as environmental protection. How soon, or even if, these are raised indicates only how "top of mind" such issues are among the group members.

The type of information gathered using the group or individual dynamic interviews falls under broad headings. The areas of information sought in these settings were selected to help define and focus an understanding of the profile of local ICI sector members with respect to water resource issues and water use knowledge, general attitude relative to water, water supply and water uses, and possible motivation relative to fostering change among this group. This information is vital to the foundation of a plan that will have the most success in translating the CRD Water Department's desire for ICI water conservation into a practical and accepted reality.

Each area of understanding (knowledge, attitude, and motivation) represents the key components that are addressed in any outreach program. Both the inherent supports for and barriers to water-conserving ICI actions have their foundations in the conservation and water issues knowledge, conserving skills, water resource and community attitudes, and positive motivations of the members of the sector. This section of the report outlines the findings under these key headings.

4.2 FOCUS GROUPS

4.2.1 Knowledge Base

Several questions were asked to gather information about the current level of knowledge and understanding among the focus group participants with respect to water, conservation, and water supply issues. As well, the skills and understanding relative to conservation are a focus of the questions.

The intent was to develop a clear understanding of the information base and foundation understandings present among local ICI water users. Since a broad-based knowledge and understanding of these issues is required for any conservation or outreach issue to be successful, it is imperative that the target audience share a common level of awareness, knowledge, and understanding about these critical issues.

Question 1 How much water does your organization use annually?

Responses: While a few of the people questioned had some specific knowledge about water uses, many were unaware of the volume, the types of treatments used, or even the discharge points.

Of all the individuals and organizations present, only two expressed their water use in units of their work or product – per occupied room in a hotel and per registered guest on a golf course.

Question 2 What percentage of water used is heated? Treated? Or discharged after a single pass?

Intent of Question: The responses to this question offer some specific information about the way water resources are handled within an organization. In part the response indicates if there are likely to be significant savings as a result of water use reductions, but primarily the response illustrates the level of tracking and detail the organization assigns to the flow of water from intake to outflow points. The question was used not to get an actual number but rather to determine participants' awareness or knowledge of volume used.

Responses: There was little awareness of the concept of single pass or once-through coolant water. When questioned in more detail, respondents who stated that none of their water was single pass, amended to state that it was possible that single pass systems were in place. Many people expressed a second thought about this question when they considered that their air conditioning systems were single pass coolant.

A few of the organizations had cooling towers, and some of the more complex users, such as larger buildings and a large hotel, readily agreed that there were many areas where single pass was in operation, and that their cooling towers were used for only a small part of their operation's recyclable water.

Most of those questioned were not aware of the actual or estimated amount or percentage of their water being heated before use. The cost to heat water had not been investigated. The water treatment used by participants was made up of primarily pre-use filtration and the addition of boiler chemicals. Without this specific knowledge among the target group, a program undertaken to reduce costs is simply unlikely to begin since it is unlikely that staff could effectively make a business case for the required investments and capital costs. Often it is the recouping of energy and treatment costs that makes a water conservation strategy attractive to the ICI sector, since these cost reductions greatly shorten the payback period for the investments in systems or equipment changes.

Question 3 Where does your wastewater discharge to – sanitary or storm sewer?

Intent of Question: This question addresses the level of knowledge about the ways in which water is used and discarded after use, and responses may also point to some other issues that can be addressed. For example, if water is being discharged to the storm sewer it is often because it is used as an uncontaminated coolant in a once-through flow. Also, the use of storm sewers as discharge may indicate misuse of these collections systems, often when the user is unaware of the difference between what happens to the flow from each system.

Responses: About half of the people in the focus groups were aware of the differences between storm and sanitary sewer releases. Many expressed that they were unaware that anything would be discharged to the storm sewer. Even surface runoff in parking areas or other obvious storm water discharges were not considered as access to storm sewer systems. Many individuals expressed that the two systems were interchangeable.

4.2.2 Attitudes

Questions dealing with attitudinal issues were also included. These questions aimed at developing a clearer understanding of the current attitudes toward water, conservation, and supply issues.

While current knowledge levels within the target audience affect the ways in which outreach programs are developed, attitudes toward water and water-related issues can be beneficial or detrimental in the success of the outreach initiatives. It is essential before embarking on any outreach to be aware of how the target audience feels about water, and the attitudes they have about the resource and its conservation that may have a profound impact on their actions.

Question 1 “Water is a commodity and we should be able to use as much as we can afford any time we wish without restriction.”

Intent of Question: This key or pivotal question was asked in the form of a thought-provoking statement which the groups were asked to comment on and specifically explain if they agreed or disagreed, and why or why not.

The question is focused on understanding the individual and organizational view of water. When seen as a commodity, the resource is more likely to be used as such, with regard only to the availability and not to the wise or efficient use. In these settings the motivation for changing to a water-conserving policy and procedure style is much different than in organizations where water is already viewed as a valuable natural resource.

The other aspect of the question deals with paying for whatever you use and having the right to use it as you wish because you have paid for the commodity. How organizations respond to this portion of the question indicates how well they will respond or have responded to restrictions, quality loss incidents, and other interruptions in standard services.

Responses: The responses and statements arising from this question were focused primarily on the commodity aspects of water. Of all the individuals in the focus groups, only twice was the notion of water as a natural resource the primary reaction. Most focused on the notion that this is an important commodity and that it should be available for use at all times. Further, people saw that the CRD Water Department is the supplier of this important commodity and, therefore, has a responsibility to provide the product in the volume and quality adequate for the needs and desired uses of all customers at all times. Commodity thinking and concern are generally incompatible unless the cost of the commodity is high or climbing.

Many comments made reflected dissatisfaction with the supply system, with a majority of people feeling that the summer shortages of recent years were preventable with planning and proper system management. In addition, the comments indicated an intolerance of a system of water supply that is not in touch with the consumer, and that a representative number of large volume ICI customers should be on the water board or participate in some way in water supply decisions.

Essential indicators of the thinking of the sector were shown in the comments made with respect to restrictions on water use. A majority of individuals stated that water should be available at all times and in all seasons. The customer should be making use decisions, outdoor or otherwise, and that CRD needs to provide an adequate supply for all customers. However, some participants mentioned that flagrant waste of water should be discouraged through education and information programs, or through incentive programs to encourage the elimination of wasteful practices.

Overall, the ICI community expressed that water is indeed a commodity to them, one that they feel they should have access to at all times and should be able to use at their discretion with respect to quantity used and time of use. From the ICI perspective, anything less represents a situation where a supplier of an important product is failing to do the job properly.

Question 2 How important a role does water play in your organization’s service or product?

Intent of Question: The response to this question will explain what value they place on water as a resource.

Responses: Without exception, respondents indicated that only two things could shut down their organizations – having no water and having no electricity. They concluded that water was vital to their operation and that, in many cases, it was either a primary support of or an integral part of their service or product.

Question 3 What makes an organization inefficient in the way they use resources, including water?

Intent of Question: Responses to this question show the attitudes that are currently held about water conservation and efficient use by this sector.

Responses: There was a wide range of viewpoints on the causes of water waste or inefficient uses of water. The causes cited included the following:

- Poor building design.
- Poor decisions made during the construction of a facility where water use efficiencies are not considered in planning or specifications.
- Regulations that do not encourage or permit the reuse or recycle of water such as grey water for watering or flushing toilets.
- Weather plays a role – watering outdoors in a drought to bring back or keep alive grass for the image of the facility or for a recreational use area such as playing fields and golf courses that depend on healthy grass.
- Perception of the value of water and the way it is used in the operation.
- Awareness of what can be done to conserve.
- Billing – water bill does not offer any information to help a user compare the volume used in past to current uses. Bills are not expressed in an easy to understand measure; units have to be changed to another more common measurement to allow an understanding of how much water is used. Bills are too infrequent which is a problem when trying to make change and see results or when trying to keep water costs a top of mind issue.

- Metering contributes to lack of efficiency in use since there are too few – one meter for a whole facility means there is no way to tell which area is using most water. More meters for larger properties would help people monitor water uses better.
- Funding is often an issue for organizations since no one has money to spend on equipment or other changes unless they can prove that there is a reasonable payback period associated with change. There is no time or staff available to carry out an audit or to calculate the cost savings or other steps that require funds.
- Many organizations are sorely understaffed and people are just too busy to care about water or anything beyond their daily workload.
- The cost of water is too low for it to be a high priority for any organization.
- Lack of incentive to increase efficiency of water use.
- Most people have no idea what to do or where to start to reduce water waste or be more efficient in uses, so nothing changes.
- For some places the public or staff members or tenants mostly use the water. They have no interest in water and attach no importance to reducing the use. It is very difficult to change the practices and habits of a constantly changing group of users.

Analysis of these responses indicate that participants understand the common reasons for failing to conserve water or be efficient in water use and most see the key challenges as being related to lack of knowledge and skills.

4.2.3 Motivation

A series of questions were asked of the groups to help determine the key motivating factors among the ICI water users. Questions were focused on determining what might motivate ICI members to conserve, and when, how and why those motivations might be activated. Since motivation is a key element in moving a group or individual from awareness to action, it is critical to understand the full scope of motivations the group may experience.

Motivational questions were asked in two ways, first by asking about what had already been done to conserve or reduce water use in their workplaces, and why the action was taken.

Question In the past 5 years what actions have your organization taken to reduce the amount of water used daily?

- a. Why did you take this action?**
- b. What is the most important benefit of this action?**

A range of responses were given but, with a few exceptions where organizational policy dictated water use reductions or where cost-saving measures had been taken, the majority of the reductions were the result of the 2001 summer use restrictions during drought conditions. Most other water-saving actions were related to outdoor use as prompted by the water use restrictions in the bylaw.

The pilot urinal initiative sponsored and instigated by CRD Water was the most comprehensive example of year-round water use reductions.

a) Actions Taken and Why

The following are actions that were taken by the focus group organizations. Note that most of these actions were prompted by the 2001 water shortage.

The “bolded” statements below were actions taken without the water restrictions.

Clearly the implementation of restrictions has placed a significant spotlight on water that was not there before the water crisis. The restrictions made people aware of their water uses, and actually prompted them to find ways to reduce water uses, most of which remained in place long after restrictions were no longer an issue.

- **Installed low-flow showerheads – as part of a BC Hydro energy saving initiative.** *(This initiative pre-dated restrictions and was undertaken as an energy saving measure.)*
- **Hotels with head office policy for “green rooms” have undertaken a variety of water use reductions in rooms – motivated by cost reductions and environmental benefits and prompted by corporate policy. These efficiencies are in place permanently.** *(This is the second measure reported that was not directly related to restrictions.)*
- **A health care organization tried installing 6-litre toilet but found that they were not efficient since they required too many flushes and so they replaced the models – the use of low-flush was prompted by potential for cost savings.** *(Again, this action was not directly related to the drought.)*
- Stopped irrigating – because of water shortage and never went back because they found cost savings as a result.
- Went to drip irrigation for plants and shrubs – because of restrictions.
- Replaced some auto flush and auto-on water using equipment – due to shortage and motivated by the water crisis.
- Upgraded computer system to monitor water needs closely – because of restrictions and shortage of water.
- Audited landscape care to ensure no over-watering – during time when use was restricted.
- Added soil amendments to help poorer soils retain more water – because of outdoor use restrictions.
- Over-seeded grass areas with drought resistant species where possible to reduce water demands in the future – prompted to do this by drought and restrictions.
- Let “rough” areas of grass go without water – due to restrictions; environmentally beneficial; good corporate citizens.
- Let some areas of property go to a naturalized state eliminating some plantings and high maintenance grass areas to reduce irrigation demands – during the drought due to restrictions.
- Did distribution and irrigation audits – due to drought and restrictions.
- School had testing done to find ways to save water and piloted urinal sensors and undertook some toilet replacements – due to a CRD initiative.
- Micro irrigations, timers on playing fields, regulate water use to times when evaporation is low, i.e. watered at night – prompted by restrictions but also did night use to prevent negative public reaction to seeing fields being watered.
- Added flushometers – due to drought.
- Stopped designing landscapes with plants that need a lot of water – due to drought.
- Reduced irrigation temporarily – due to restrictions and drought.

- A local hotel reduced number of hanging baskets by 50% – in response to water use restrictions.
- A new school facility was built with water efficiency in the design, including landscape and fixtures – this attention to water considerations as part of the design was prompted by a drought during the planning phase.

b) Benefits

Participants cited a wide range of benefits related to their water efficiency or conservation initiatives. Most frequently they mentioned cost savings, but public image – being seen as good corporate citizens – and meeting the guidelines of a parent organization were also frequently given as important benefits.

- Benefited by saving money on reduced outdoor irrigation – not just water but labour costs, which was the source of most savings.
- Costs reduced, government funding for some projects such as drip irrigation or other savings efforts.
- When our conservation efforts were made public there was a huge benefit in public relations – when publicized for failing to meet the restrictions on water use there was a huge outcry from the public with angry calls and other negative feedback.
- Some organizations felt that setting an example and being good corporate citizens provided a benefit for their efforts.
- Found out that members' expectations were not what we expected and that they accepted some areas of rough not being watered, etc. Got to know members better (golf courses).

4.2.4 Motivations/Barriers

Additional questions were asked to determine what the organizations and individuals think are the things which might motivate change in the future and what barriers there might be to getting any organization to take conservation actions.

Questions

- 1. What are all the things that you feel work to motivate an organization to become efficient in the way they use resources, including water?**
- 2. What are all the things that would get in the way of making your organization efficient in the way you use water?**

Table 31 – Motivations & Barriers

Motivations	Barriers
<ul style="list-style-type: none"> ▪ Aware of need and concern about water supplies. ▪ Cost savings. ▪ Tools and skills to know how to conserve. ▪ Awareness of how much is used – meters and information on bills using measurements for volume used that everyone understands ▪ Frequent billing and comparative data on the bills – how much you used this month and in the same month last year, etc. ▪ Communications about water – information and education to get people to act. ▪ Educating kids. ▪ Public image – being a good corporate citizen. ▪ A specific need such as a shortage or drought. ▪ Fear of fines or bad publicity. ▪ Corporate policy. ▪ Environmental benefits – important to organizations with care of environment or environmental image to uphold. ▪ Realizing that there are benefits and being able to prove that they are there. 	<ul style="list-style-type: none"> ▪ No concern among executives or those making decisions at higher levels. ▪ Too expensive to change out equipment/fixtures. ▪ Poor performance from equipment or fixtures – need to be reliable. ▪ Reduced quality of service to customer due to reduced water use. ▪ No one knows about water – it is just something we get and use, that that is a barrier. ▪ Public perception is the biggest barrier – right now everyone is focused on “why should I have to reduce use?” Not, “how can I reduce?” And until that changes, the attitude is a big barrier. ▪ ICI users are angry at lack of planning on part of supplier that caused the need to conserve. ▪ Public perception of our business/industry if we have brown lawns and dead flowers – we don’t want that image and so it is hard to say we would conserve until that is not a factor. ▪ Expectations of customers have to be met – when they are not met, i.e., showers too little spray or toilets need too many flushes, that is a barrier. ▪ Fear that reducing water use may jeopardize the health or well being of patients. ▪ Anything that might annoy the customer, such as having to ask for water with meals. ▪ Regulations that mandate water uses, such as health regulations, will certainly be a barrier to conserving. ▪ No ideas about what can be done, any time or money to do anything. ▪ Poor water quality – it is not useful to conserve water with high levels of particulate matter, sand, etc., in the water. ▪ Regulations re effluent quality where the more water we put in the sewer the better it is for reducing surcharges. ▪ Not aware of savings potential.

NOTE: It is interesting to note in the table that although participants were asked to generalize ideas, their particular CRD focused problems came through. (See “bolded” statements.)

4.2.5 Specific Water Reduction Needs

After exploring general motivational issues and barriers, focus group members were asked for specifics.

Question **What would prompt your organization to improve its water use efficiency?**

If CRD water wanted to get your organization involved in a water efficient use or conservation program, what would be the best ways for them to go about getting your co-operation?

This question addresses the skill base of the respondents with respect to conserving actions. If the respondents are aware of what needs to be done to conserve, their responses often target the action that they know needs to be taken.

For example, responses such as “help pay for a cooling tower” indicate that money is an issue, but the organization has already investigated water uses and has determined that efficiency could be improved by eliminating once through coolant. When the responses are not immediately linked to specific conserving actions, the responses become an indicator of willingness to participate in conservation and a catalogue of the most immediate barriers to conservation.

Moving from the general to the specific, participants move to much more pinpointed information. These responses are more likely to be a reflection of exactly how they feel and perhaps how their organization feels about water conservation.

Note that respondents mentioned sitting on a “Water Board”, and it was not clear what Board or what role they envisioned. It is important to note, however, that whenever one person raised this issue in a focus group, other group members quickly echoed the idea. Clearly this type of response indicates that the respondents feel out of touch with water supply issues and feel that their voice is not being heard. Since water is vital to their continued prosperity and stability, it is not surprising that they want more involvement in water supply.

Assuming that when they said “Water Board” they were referencing the Water Supply Commission which is not open to public members but is instead made up of political representatives, then it is also clear that the ICI sector is totally unaware of the nature of the Board and its composition. This indicates just how much basic system related information the sector requires.

When asked about the Water Advisory Committee (WAC) as a possible option for their involvement rather than the “Board”, the groups uniformly expressed surprise to hear that there was an Advisory Committee. However, since the sector should have a voice in water related issues, perhaps a sub-committee of the WAC group could be created for ICI representation. Although the existing committee has a member who is part of the business community, it is likely that their role is one of interested citizen rather than as an ICI voice. A sub-committee focused entirely on water issues relevant to the ICI sector may help educate, inform and involve this sector in future plans and actions.

What would prompt your organization to undertake a conservation/efficiency program?

- Get our industry involved in water issues by having us sit on the board.
- Don't tell us to do – tell us how to do it and how you will help.
- Prove there is a need to save water, not just a crisis where we have to respond to make up for a mismanaged supply system.
- Lead by example, show what CRD can do to reduce water use – tell us what you are doing and what you have saved.
- Educate us about conserving and give simple ideas and easy ways to save money and water.
- Follow BC Hydro's Power Smart model and show savings potential to conserve water and energy would get us involved. They offer users education, information, proven technologies, audits and even some help with costs for changes.
- The only way we would be involved is if we were assured we would save money and still keep customers happy.
- Show us that we will have cost savings even if water costs rise.
- Invite ICI to be involved in water saving program plans, make us part of the solution and give us credit in public for our efforts.
- Offer incentives to us to make change and help with people or wages for others to do the required work.
- Pay for the time or provide paid local people who can help with this process – our staff can't do this without help from CRD for their time costs.
- The whole community needs to know and get involved to make it fair and help people accept the changes restrictions bring.
- Make cost effective suggestions.
- Offer information.
- Low interest rate loans for water efficient improvements.
- Offer rebates on technologies, fixtures and other conservation devices.
- Start slowly.
- Pressure retailers to make change in how they bill – bill more often – tell more about billing, i.e., compare, bill in common volume measures such as gallons.
- Make the issue public – tell people what is happening – offer ideas about uses and values elsewhere – show what is possible to do to save and conserve.
- Offer people case studies from other areas and offer some technical seminars – help us educate our people as well.
- Explain what is in it for us in simple terms we understand in the business world.
- Show us a proven value – not some pie in the sky ideas, but what really works and why and where.

4.2.6 Best Ways for CRD to Encourage Conservation?

- Tell us about the pre-tested equipment and pre-proven technology – give us local, qualified experts who can be there any time to help.
- Focus on getting conversions in the future to water efficient equipment – fixtures, etc. through changes made as maintenance replacements and in new structures.
- Provide money for studies/audits.
- Pay for replacement fees so staff can work with consultant.
- Give us 3-year payback ideas – financing approved.
- Show us how to meet the accountability loop – can we prove it worked as planned?
- Any programs must be operationally feasible as well as financially feasible.
- Provide savings in every way – even people or labour hours.
- We need help with low water use landscapes.
- Give us workshops, seminars, facts, quick facts, show goals, concrete actions – use publicity and offer things that are concrete and achievable.
- Messages show quick look at some fact – a visual, i.e., the graph showing when we would run out and then quick ideas for change.
- Incentives / grants / rebates.
- Ads – brochures-triggers – ideas celebrate successes and help users to do so as well.
- Have an awareness week – put spotlight on and not just in a crisis.
- Give us a plan what we can do – targets and goals / tell us what we can do.
- A partnership – you supply materials we supply labour.
- Do audits, give rebates.
- Program planning to help us budget.
- Help consultants and architects to spec water efficient – make a higher profile with suppliers of equipment.
- Help defray costs to retrofit and change.
- Support practical initiatives that show balance and realism.

4.2.7 Getting Messages Out – Best Way to Reach You Is ...

Participants suggested a variety of methods. The most common response was by e-mail, followed by mail. This matches very closely with responses from the survey.

- All media.
- Trade organization associations.
- Presentations to us.
- Raise profile of this issue locally in all media.
- WWW sites – common information on line and on-line training.
- Use water bills to show comparisons, quick facts, spot trends, and bill more often. Would like to be reached by e-mail at work and through water bill.
- Mail.
- Use fax/e-mail to send messages to work/e-mail at work effective.

4.2.8 A Message to CRD

Respondents were asked to share a single message for CRD, something that they felt was the key or most important thing for CRD to hear from the ICI sector. As is clear in the responses that follow, the predominant message that is being sent to CRD is the need for better and more consistent communications.

Communications

- ICI deserves attention and respect as customers.
- Send clear, correct and consistent messages; inconsistent messages hurt credibility.
- Better communications.
- Do a better job with communicating to customers.
- Get closer to community and users to avoid isolation.
- Improve your communications.

It is worth noting that there may be some confusion about the role of CRD as the wholesaler and the level of control CRD has over the retailing of water. However, when this issue was made clearer in focus groups, the overwhelming response was indifference to the problems faced within the bureaucratic structure. The customer simply wants CRD to take charge and be the sole source of information and communications. This is supported by their concerns about billing uniformity and regularity and other related issues. They simply want one supplier to deal with, and one that is willing to communicate with them regularly and clearly.

Praise for the Focus Groups

- Continue communicating – this session is the start of something good – reach out to us for ideas, input, etc., get us involved in the process – it is our livelihood too.
- Nice change to have CRD approach us positively – going in a good direction, keep it up.
- We'd like you to “walk a mile on our greens” – understand us and teach us about your concerns – mutual respect and dialogue – education is important and is a two-way street.

Additional Concerns

- Give us (ICI customers) a seat on the water board.
- Lead by example and show your leadership by undertaking conservation on your own properties and in your water supply buildings and operations. Demonstrate some vision by ensuring that our water supply is sufficient for future growth. Prepare for a growth in this community and be ready to supply needed water.
- Investigate the notion that grey water can be reused outdoors and plan that into new developments. **These more future-thinking initiatives show leadership.**
- Put in storm water management ponds in new areas.
- Ensure that all new developments are constructed to be as water efficient as possible. Take a leadership role.

4.3 INTERVIEWS

Five interviews were conducted with a variety of organizations within the CRD area. These companies were chosen because they are some of the largest water users in the CRD area, and also were businesses or organizations that offered diverse water usage. All in-person interviews were conducted at the respective organization's premises.

All of the interviewed organizations were aware of their water use volumes, but more importantly was the energy use in their facilities.

4.3.1 Empress Hotel

The Empress is part of the Fairmont chain and is therefore part of the corporate "champions" program, where environmentally friendly initiatives are welcomed and rewarded by the corporation.

During an interview at the Empress Hotel, staff indicated that an audit was being conducted by an engineering firm contracted to audit resource uses to spot opportunities to reduce resource costs such as energy uses. The audit pinpointed an excellent water use reduction opportunity. A large number of refrigeration units were found to be using a single pass or once-through coolant. Currently freezers, ice machines and air conditioning systems use a single pass of water as coolant. By closing the loop in strategic locations throughout the facility the water could be chilled and reused, dramatically reducing water use.

The organization requires a payback within 5 years and the costs for alterations and system changes required to reduce the number of once-through or single-pass cooling runs exceeds that payback period by several months coming in at 5.6 years. Other once-through areas are more difficult to address since the facility is large and the water system is not centralized but has been added to over time.

However, the potential water use reduction associated with closing the loop for a large percentage of current water use is quite significant. The closed loop identified by the engineering consultant would yield 8.7 MIG per year in water use reduction. The cost of these changes would be an estimated \$240,000.

Reducing the payback period to the required 5-year window would involve defraying the 0.6 portion of the estimated alterations, at a cost of \$30,000.00. This reduces the payback time to the corporate approval time of 5 years and allows the Empress to undertake these changes within their normal capital cost budgets. In exchange for the cost assistance, the Empress would allow CRD to write a detailed case study to explain the savings and the systems changes, and publish this case as CRD sees fit.

The organization noted that water efficiency could be improved at the Empress through staff training, rebates and help with basic general water use reduction information. Water conservation efforts must in no way compromise the hotel guest's experience.

4.3.2 Island Farm Dairies

This large dairy production company is a high volume water and energy user. Currently 60% of their water is heated before use. They have once through coolant use in their ice cream plant compressor, which uses about 10 gallons per minute. Their effluent quality can exceed the levels set by CRD for suspended solids and other measured effluent quality parameters. This organization explained in the interview that they had noted a number of areas where water savings were possible. In particular was the opportunity to eliminate once through coolant. However, since their loading rate would increase with water use reduction, they are reluctant to reduce the volume of water flowing through the plant and into sewers.

By altering the way effluent quality and loading is measured, CRD Water can encourage the organization to undertake water use reduction measures without encouraging any increase in pollutant levels within released effluent. When the sewage surcharge is based on the percentage of pollutants or the concentration of pollutants in effluent or waste water, organizations benefit by diluting the outflow of effluent as much as possible. The more water flowing into sewer the lower the concentration of pollutants. By charging sewage surcharges based on the weight of pollutants or volume of pollutants discharged the amount of water used to dilute the weight becomes irrelevant. This encourages companies to reduce their water uses without fear of surcharge penalties.

It is possible that the cost savings from water billing reductions could be internally applied to methods to improve the quality of effluent. It has been found frequently in similar situations that the overall auditing done to pinpoint water use reduction opportunities results in discovery of many other cost savings and pollution prevention opportunities throughout an operation.

Water efficiency efforts would be assisted with support for internal audits, capital-financing assistance, measurement tools, and improved billing information and style and a greater frequency in billing. They also indicated that efficiency efforts from CRD should be year-round not just seasonal.

4.3.3 CFB Esquimalt

This large armed forces base is a huge water consumer. Ten members of the organization representing all areas of base operations were present at this interview. The properties associated with CFB Esquimalt include a wide range of water uses, similar in scope to the water uses found in a small city. Housing, both multi-residential and single family homes, restaurants, hospitality centres operating like hotels, institutional operations, industry and commercial facilities are all part of the profile of this large water user. The base has a federal mandate to operate using resource use reductions, and has investigated diverse technologies such as waterless urinals.

They have made some efforts in water efficiency such as testing waterless toilets, however, their primary focus has been on high cost resource reduction such as energy performance. The barriers to greater water reduction efforts for the base include lack of information, time constraints, and maintenance concerns.

The base is likely to be a co-operative partner for CRD Water since they are interested in reducing water waste, and they have internal expertise and resources that can be focused on the issues of water savings. They are also focused on reducing costs and may therefore be an excellent candidate for some audits and action strategies, such as studies and pilot testing. Base staff indicated a willingness to co-operate with any CRD Water use reduction initiatives that can be approved internally. The most helpful assistance CRD can give is leak detection tools, expert advice, urinal testing, software support systems, portable meters, and remote reading technology.

4.3.4 BCBC

British Columbia Building Corporation, with more than 300 facilities, has a wide range of buildings within the CRD under their control. Six members of the facilities team met during this interview.

The organization wishes to reduce costs, and all resource uses, including water use, are being considered as environmental benefits and as cost reduction opportunities. They have a mandate to reduce greenhouse gas emissions, leading to a focus on water heating as part of their reduction plan.

Their buildings have a wide range of water uses – domestic, ornamental, irrigation and, in some instances, intensive irrigation – and contain diverse technologies such as boilers, irrigation systems and many food preparation areas, chillers, ice machines, and other typical commercial uses.

Although the organization has undertaken several water efficiency measures in the past years, including the use of efficient irrigation, the removal of numerous once through, water cooled air-conditioning units and the automation of continuously flushing urinals, they do not believe that they have exhausted all possibilities for water savings.

The organization would be open to general supporting information to help building tenants accept and adopt water-conserving methods, and for the operations staff the type of information required is focused on technologies, equipment and processes available to create “automatic” or design specific changes to reduce water consumption. A reasonable payback period for equipment change out is set at 5 years.

BCBC would be open to a partnership with CRD Water where they would participate in some audits, some interventions, and example or pilot study activities to monitor and prove the value of some specific conservation actions and changes. They would also value some assistance in making individual and frequent public and transitory users aware and active in conservation efforts. This organization would readily agree to use their results in a public information and education program and as an example or case study for other ICI users.

Barriers and Possible Solutions

Barrier: The cost of water audits remains a barrier.

Solution: Financial assistance with the cost of water audits or the provision of water auditing from the CRD would increase the number of facilities that could be examined in detail.

Barrier: Lack of availability of portable water meters among the contracting community in order to conduct detailed audits.

Solution: The availability of portable meters that could be borrowed for water auditing could overcome this difficulty.

Barrier: Awareness among commercial building tenants remains low.

Solution: Develop education campaigns that inform our clients of the reasoning behind water conservation initiatives. This would reduce the need for explanations from our staff and increase our clients' willingness to partake in initiatives.

Barrier: Existing rebate programs for water-saving fixtures are aimed largely at residential users.

Solution: Develop programs for commercial, institutional and government users.

Barrier: Develop innovative solutions to reduce water use. For example, reuse of grey water where it makes sense, remains prohibited by the Plumbing Code and the Sewage Disposal Act.

Solution: Consider the development of a business case for changes to take to the department responsible for the Code.

4.3.5 Cadillac Fairview Corporation

This large organization has undertaken a number of major renovations in their mall facilities. Some of these renovations focused on water and energy savings. With high traffic in public areas throughout all seasons, and especially during peak retail and tourism season, the building management found that installing low-flush toilets and low-flow faucets in the mall's public washrooms was a cost effective renovation.

As is the case with many building management organizations, the Cadillac Fairview operation does not control how tenants use water or the types of fixtures or systems they use in their rented space. However, the organization was open to offering their tenants any educational or information materials that CRD might choose to provide.

This organization also would be open to hearing more about training for maintenance staff in water audit techniques.

SECTION 5 – POTENTIAL OBSTACLES FOR A CRD ICI PROGRAM

5.1 KNOWLEDGE LEVELS

- One of the key obstacles to participation in any CRD proposed program is the low level of topic awareness among members of the target audience. In some cases this is related to not knowing all the specific operations water is used for or in throughout the operation – not knowing why, how much, or even how it is used. Overall knowledge about water conservation, and even water uses in general within the operation is quite low.
- The awareness of how, why and how much water is used is not a priority or a focus. In fact, until the drought it is unlikely that any of the organizations not governed by a parent company policy or focused on an industry standard, had ever investigated water uses or tracked consumption.
- Their understanding about the source and nature of water supply in the area. For example, many people in the focus groups had not thought about the notion that no matter how large the reservoir a dry season makes for a shortage of water.
- General knowledge about the “how-to’s” of conserving was also low among focus group members. They lacked information access concerning fixtures, equipment and processes, and systems adjustments that reduce water consumption effectively and without loss of quality. Some simple innovations such as “cool sticks” – used in chilling sauces and stocks in kitchens – were unknown by most food services people. Examples or cases where people in a similar business had experienced savings and benefits were largely unknown. The relationship between water savings and energy use reduction were not readily apparent to all the participants.

The exception to this lack of knowledge was found under two conditions. First organizations such as DND, Cadillac Fairview, The Empress Hotel, other hotels, and Island Farms – all with corporate or parent organizations with water efficiency in their corporate mandate – had high levels of water knowledge. For the hospitality sector the “green rooms” policy is environmental protection driven primarily by cost savings, and water use reduction is a part of that policy. Island Farms, as a high volume user in a very competitive business, was also aware of water and a high level of knowledge about conservation potential. DND has a policy of conservation and reduction of resource uses in all facilities. The knowledge levels with respect to water and water uses among these organizations was quite high and differed greatly from other ICI sector members.

Another differentiation found in the focus groups was membership in professional organizations where individuals had been exposed to conservation and resource use reduction ideas and how they were carried out elsewhere. As well, some individuals interviewed had more information and a greater water-related knowledge base due to having worked in another part of Canada where water conservation programs are already in place. Many had skills related to conservation that they had developed while working in another organization and another jurisdiction. For example, one interviewee was a European chef whose background and experience in areas where water was always less abundant made his knowledge of conserving very high.

5.2 ATTITUDES

A number of attitudinal issues were evidenced through the survey, focus group discussions and interviews. These attitudes may be the most powerful obstacles to a successful conservation program and certainly need to be understood, acknowledged and addressed. The key attitudinal issues include:

- Commodity thinking.
- Viewing water supply as the right of the customer and seeing restrictions as a failure on the part of the supplier.
- Poor opinion of the fixtures and equipment designed to save water.
- A view that saving water does not mean saving money.
- Perception of the ICI users that Regional government is inefficient and that the multi-tiered system is wasteful. The feeling is that CRD should be in charge of water supply totally – eliminating the retailers. This would simplify and unify the billing process as well as the overall water system.
- Small users believe that water-conserving actions are not applicable or feasible.

5.3 SKILLS AND TOOLS

- Lack of understanding of the skills required promoting and maintaining conservation through simple steps and everyday actions.
- Lack of knowledge about what others have done to conserve and the success and benefits they have achieved.
- Some ICI members were familiar with the concept of a resource use audit. Many had not heard of a water audit or had an incomplete understanding of what that entailed. An understanding of this tool is essential in breaking the “business case” barrier in many organizations where cost savings are a vital part of accepting conservation practices.
- When asked about what the CRD Water Department could provide to assist them in implementing water conservation efforts, most focus group members did not mention an audit. Further, when asked about whether or not they would see an audit as useful, asked for information about what an audit would do and what it would entail. Survey results placed water audits as the second lowest ranked measure in willingness to participate.

5.4 PAYBACK TIME

The average acceptable payback time is 2 to 3 years. Some organizations had a 5-year window for larger capital cost projects, especially where there were factors other than cost at work. For example, where environmental benefits, public image or other factors were considered to be important in the decision-making process, the cost factor might be mitigated.

5.5 TIME/PERSONNEL

Although some of the larger organizations were well aware of the potential for savings they had no time, budgets or enough expertise among staff to carry out a program to make change. Some were hampered by other constraints such as the reality that reducing water use meant increasing costs for effluent quality surcharges.

SECTION 6 – RECOMMENDATIONS

6.1 DEVELOP AN IMPLEMENTATION PLAN

A fully detailed implementation plan should be developed for the ICI sector. This plan should offer approaches, timing and budgets.

6.2 CO-ORDINATOR

The ICI sector offers many challenges and opportunities for CRD Water. However, the level of effort required to carry out an ICI initiative that is meaningful and effective in reducing water use is quite significant. Therefore, it is recommended that a co-ordinator be hired to undertake the role of working with the ICI sector users to develop an effective outreach program.

It is also important that the individual co-ordinating the effort have some solid experience within the sector, as well as a solid understanding of the water conservation tools, methods, and potential related to ICI users' situations and good communications skills.

6.3 BUDGETS

The ICI sector initiative requires budget allocations to be successful. A budget needs to be established for working with this sector, providing a co-ordinator, and providing programs, tools and materials to reach out to this group and foster water conservation among these users.

6.4 INTERNAL CO-OPERATION

CRD and the retailers need to co-operate to make any outreach to this sector effective. It is recommended that the CRD Water Department, the Environmental Services group (as they affect wastewater issues) and the retailing municipalities form a team to harmonize the water suppliers approach to conservation and to the outreach initiative. This would ensure that situations such as the sewage issues at Island Farms and the overall concerns and feedback about billing issues are addressed.

6.5 EDUCATION

First a widespread education effort is recommended. The education effort should begin with basic awareness – the water system, the limitations of the source of supply and other basic water facts. The effort also needs to address attitudinal components and should be focused on making people in the ICI sector aware of the specific benefits of conservation, including cost reductions due not only to water savings but reductions in energy uses as well.

Education needs to focus on conservation benefits, including cost reductions and environmental and community benefits. All these need to be illustrated by real-world examples from a wide range of ICI users. Where local user reductions are available, this would be advisable since many users expressed that what made a solution valid was its relevance to their industry and its appropriateness or acceptance locally. The education efforts must focus on three areas – the potential users of facilities such as the public, the frontline users within organizations such as staff and employees of the operation, and on the management and executive groups within this sector.

Smaller Users: Sector specific fact sheets (i.e. Food Services) should be created. These fact sheets should include case studies.

Medium to Large Water Users: Offer opportunities for employee habit change seminars. Information – what to look for, technologies available for water reducing, such as water efficient dishwashers, what they are and where to get them and case studies of their use.

6.6 POLICY

Communications: A policy needs to be developed by CRD governing communications with the ICI users; this should be accompanied by a communications plan. Details such as who will communicate, how, when, and why need to be clearly identified for any communications initiative to be successful. These elements are critical to ensuring that the currently adversarial relationship becomes co-operative and mutually beneficial.

This communications policy needs to determine details such as what situations will trigger a specific communication to customers, not only ICI but also all customers. A water quality and quantity advisory program needs to be developed within the policy to allow ICI users adequate lead times to anticipate potential shortfalls and restrictions, as well as potential changes in particulate levels or other quality issues.

The policy and communications plan will help reduce the friction between users and supplier, and will ensure better and more co-operative interactions between CRD Water and the high volume customer group.

Single Pass Coolant Bylaw/Water-cooled Fixtures and Appliances: A policy should be developed concerning the removal of water-cooled appliances/fixtures, such as air conditioners, and the use of once through coolant by either a bylaw or through voluntary measures.

Water Buy Back: A policy needs to be established for the determination of buy-back opportunities.

6.7 FIXTURE REPLACEMENT PROGRAM

A fixture replacement rebate program, similar to the CRD's residential program, should be designed and implemented, especially for small users.

6.8 A VOICE FOR ICI CUSTOMERS

A panel of advisors from the ICI sector needs to be created to allow for the participation of this sector in the development of water-conservation related outreach and action plans. This would offer CRD numerous benefits in terms of building trust, co-operation, and involvement with this sector. As well, they can offer practical and insightful ideas to help CRD Water foster conservation especially among all higher volume users. In addition, people from each of the major categories of ICI users should be asked to sit on a Water Conservation committee, perhaps as a Sub-committee of the existing WAC.

6.9 BUILDING RELATIONSHIPS IN THE COMMUNITY

A liaison with local organizations, such as BBB, Hotel Association, and various associations and similar organizations needs to be established. The relationships should focus on using these organizations as a means of disseminating communications and information, and as a way to continue to foster communications from these sectors to the CRD organization.

6.10 LOCAL CASES

A plan needs to be developed for utilizing larger organizations who would make good case study locations or whose facilities offer an opportunity to pilot test some technologies and systems. This plan needs to include the ways in which CRD Water would use the results and a prioritizing of the potential projects based on their long-term value to the water system and their value in educating and informing similar organizations.

6.11 OUTREACH PROGRAM PLAN – OUTDOOR USERS

To ensure conservation is effective in the CRD area, a plan for outreach to all sectors must be established. Outdoor users form a large part of the high volume uses in the area. Their uses are most likely to affect peak use periods, and are the most visible uses of water in the area. There is a great deal of resentment on the part of these users overall towards the notion of restrictions and conservation. There is also a lot of resistance among these users towards the notion of conservation and outdoor use reduction efforts. Some of this resistance stems from concerns about how to reduce water use without destroying the quality of outdoor landscapes. These users generally lack the skills and tools to make good water use reduction decisions.

A program to foster both willingness and capability for water use reductions for the outdoor users, both large and small, needs to be established. This program should offer intensive and practical education in the ways to reduce outdoor water use that are applicable to the CRD setting. A liaison with large public facilities, such as government buildings operated by BCBC, is essential to the success of this initiative. As well, a successful liaison with the CRD Parks Department, and Municipal Parks Departments is essential. Demonstration plots highlighting native plantings, seminars to develop outdoor use reduction skills, and other educational efforts need to be practical, accessible to all users, and local in their flavour.

6.12 TOOLS AND RESOURCES

A number of skills and simple tools are needed to ensure that any organization is able to undertake a resource efficiency initiative. Even if the organization wants to reduce water consumption and supports the idea throughout the organization, there must still be some skills and tools at their disposal to make that desire a reality.

It is recommended that CRD provide some of these tools, such as technical tools – portable meters, data logging devices, auditing guidelines – and other devices that organizations could rent or borrow from CRD or from a local supply company. These devices could be owned by CRD and loaned to area users, or could be subsidized as rentals where the devices are available.

In addition, tools such as education for staff, print materials to help ICI users educate internally, and broader tools such as audit guides and case examples need to be considered. Although it is important to provide awareness and general water related education, it is also important to provide “how-to” skills information and education as an important tool for change.

APPENDIX A

SURVEY QUESTIONNAIRE

This survey is best answered by someone with full knowledge of how your organization uses water in all aspects of your operations. The questionnaire will take about 15 minutes to complete. Your answers will be kept strictly confidential.

When you have completed the questionnaire, please return it in the enclosed pre-paid envelope by November 29, 2002.

What is your Title: _____ (Please print or type in your response)

Briefly describe the areas of responsibility you have relative to water uses in the organization:

Q.1) Please check the category that best describes your organization:

- Restaurant/Pub
 - Car Wash
 - Laundry
 - Manufacturing/Construction
 - Retail/General Sales
 - Transportation
 - Hotel/Motel/Campground
 - Food Processing
 - Service Station
 - Agriculture
 - Office/Bank/Doctor/Vet
 - Utilities/Communications
 - Golf Course, Parks, Cemetery
 - Recreation Centre/Hall/Arena
 - Marina
 - Public Works
 - Government Office
 - Nursing Home/Care
 - School, University, Technical
 - Hospital
 - Fire Hall
 - Church/Cemetery
 - Other (*please specify*)
- _____

Q.2) Does your organization use other sources of water besides municipal?

- Yes (Continue to Q.2A)
- No (Go to Q.3)

Q.2A) Please specify what other sources of water you use:

Q.3) How much water does your organization use annually? (*Please fill in one only*)

_____ cubic metres _____ gallons

_____ litres _____ units

Q.4) In the following form would you please supply your water bill account number(s) and sign your permission to access this information.

Billing account number(s) _____,

_____, _____.

I give my permission to access this account information.

Signature: _____

Q.5) Please indicate what percentage of the water used in your organization is heated:

_____ %

Q.6) What is the approximate percentage of total water usage within your organization for each of the following applications? (Please indicate for all even if 0 percent)

- Domestic (toilets, showers, drinking fountains, etc.) _____%
- Cleaning and maintenance _____%
- Recreational (pools, spas, etc.) _____%
- Product processes _____%
- Building systems _____%
- Landscaping _____%
- Other Uses (please specify) _____%

Q.7) Estimate the percentage of wastewater going to storm sewer? (Please indicate even if 0 percent) _____%

Q.8) Does any of the water used in your operation get recycled or reused?

- Yes (Continue to Q.8A)
- No (Go to Q.9)
- NA (Go to Q.9)

Q.8A) What type of treatment is given to the recycled/reused water (i.e., chiller, filtration, etc.)?

Q.9) Does your organization have water-cooled fixtures or appliances?

- Yes No NA

Q.10) What percentage of the water used in your operation is used as a single pass or once through coolant? (Single pass/once through cooling water is municipal cold water, used once and then discarded – usually because the temperature exceeds its useful level although the water itself has not necessarily been contaminated in any way.) (Please indicate even if 0 percent) _____%

Q.11) Does your organization make use of a cooling tower?

- Yes No NA

Q.12) What percentage of the water used in your organization is treated before use (i.e., softened, filtered, etc.)? (Please indicate even if 0 percent) _____%

Q.12A) Briefly describe the type of treatment used:

Q.13) How many times per week is the lawn around your building normally watered?

- Not Applicable (Go to Q.16)
- Never watered (Go to Q.16)
- Once a week (Continue)
- Twice a week (Continue)
- More than twice a week (Continue)

Q.14) What is the length of your normal watering time? (Please check one time frame only)

- 30 minutes
- 1 hour
- An hour and a half
- Two hours
- Other (please specify)

Q.15) What type of equipment is normally used when watering the lawn? (Please check one type only)

- A hose
- An in-ground sprinkler system
- An above-ground sprinkler
- Other (please specify)

Q.16) When your organization undertakes a capital expenditure for equipment or improvements, what is the normal accepted payback period?

- 1 year or less
- 1-2 years
- 2-3 years
- More than 3 years

Q.17) Has your organization taken steps in the past five years to reduce your water use?

- Yes (Go to Q.18) No (Go to Q.19) Not sure/Unknown (Go to Q.19)

Q.18) Please describe these steps:

Q.19) Please read each of the following statements and determine the degree to which you agree or disagree. Check the one that most closely reflects the way each statement would apply to your organization.

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
1. Making our organization more water efficient would save us substantial money.	<input type="checkbox"/>				
2. Making our organization more water efficient would help our public image.	<input type="checkbox"/>				
3. Making our organization more water efficient would improve our competitiveness.	<input type="checkbox"/>				
4. Making our organization more water efficient would help to protect the environment.	<input type="checkbox"/>				

Q.20) Which of the following would be the most effective way to encourage your organization to increase its efforts to use water more efficiently? (Please check one only)

1. Savings on water or energy costs
 2. Financial incentives to help pay for equipment changes
 3. Knowledge and skills to help internal staff implement water use reduction strategies
 4. Other (please specify) _____

Q.21) CRD Water is considering a variety of measures to help encourage efficient water use in the Industrial, Commercial, Institutional sector. Please indicate, in your opinion, how willing your organization would be to participate in the following water use reduction efforts, where your organization pays the costs but there are clear cost-saving benefits.

	Very Willing	Willing	Unwilling	Very Unwilling	Not Sure
1. Water audits	<input type="checkbox"/>				
2. Fixture changes	<input type="checkbox"/>				
3. Low water use landscaping	<input type="checkbox"/>				
4. Water-use system changes	<input type="checkbox"/>				
5. Employee education	<input type="checkbox"/>				
6. Irrigation system efficiencies	<input type="checkbox"/>				

Q.22) How willing, in your opinion, would your organization be to participate in each of the following programs if CRD Water picked up part of the cost and there were clear cost-saving benefits?

	Very Willing	Willing	Unwilling	Very Unwilling	Not Sure
1. Water audits	<input type="checkbox"/>				
2. Fixture changes	<input type="checkbox"/>				
3. Low water use landscaping	<input type="checkbox"/>				
4. Water-use system changes	<input type="checkbox"/>				
5. Employee education	<input type="checkbox"/>				
6. Irrigation system efficiencies	<input type="checkbox"/>				

Q.23) If you indicated that your organization would be unwilling or very unwilling to participate in the program suggestions above, even with financial incentive, would you please tell us why?

1. Doing water audits: _____
2. Making fixture changes: _____
3. Implementing low water use landscaping: _____
4. Water-use system changes: _____
5. Educating employees: _____
6. Making irrigation system efficiencies: _____

Q.24) Which of the following is your preferred format for receiving information? (Please check one only)

- Printed information (brochures, newsletters, etc.)
- Verbal presentations
- Advertising
- Articles
- From other organizations
- Other (please specify) _____

Q.25) Which of the following is the best medium for CRD Water to reach you with information? (Please check one only)

- Direct mail to your organization
- Through the media
- Industry publications
- CRD web site
- Email
- Other (please specify) _____

Thank you for participating in this survey!
Please place your questionnaire in the envelope provided and return it to us by November 29, 2002.