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CAPITAL REGIONAL DISTRICT WATER SERVICES

REVIEW OF LANDSCAPE

ORDINANCES REPORT

APRIL 2007

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EXECUTIVE SUMMARY

BACKGROUND

This research project was initiated by a request from the Water Advisory Committee to ascertain if any communities have ordinances requiring micro-drip irrigation only for trees, shrubs, vegetable and flower gardens for new installations on municipal properties, specifically boulevards/medians. Staff was further requested to find out about micro-drip irrigation ordinances for all sectors, including business and residential.

PROJECT OBJECTIVES

The purpose of this study was to provide information about current outdoor water management ordinances and other non-ordinance outdoor water management programs, determine what they are, and how they were created, promoted and enforced. Particular emphasis was paid to the issue of no in-ground watering on medians that was requested from the Water Advisory Committee. In addition, CRD Water Services hoped to learn from others and use this information to develop outdoor landscaping ordinances for CRD.

The primary objectives of the project were to:

- Uncover if any ordinances/bylaws exist requiring micro-drip irrigation in new installations specifically on municipal properties but also in other parts of the community.
- Determine what other landscaping ordinances exist (i.e., native and/or drought tolerant plantings, permits, backflow prevention, etc.).
- Ascertain what non-ordinance outdoor water management residential and ICI programs exist.

These objectives were accomplished by selecting a sample of 56 North American communities for the completion of a detailed survey, reviewing on-line ordinances, and conducting a literature review.

Following are the key findings of the CRD Water Services Landscape Ordinances research. Detailed findings are available in the body of the report but results for the specifically requested information and other general findings include the following.

RESULTS: SURVEY

Fifty-six communities were requested to fill out the information. Fifty-two (almost 93%) completed the survey.

Section A – Outdoor Water Management Ordinances/Bylaws

Findings Specific to the Water Advisory Committee’s Request

- Seven (16.7%) of surveyed municipalities indicated that they have an ordinance prohibiting in-ground sprinklers in specific areas. In two of these cases turf is totally prohibited in medians. All of the communities with this ordinance were found in the United States.
- This ordinance prohibiting in-ground sprinklers applied to 7.3% of respondents’ residential customers, 9.8% of respondents’ multi-residential customers, and 14.6% of respondents’ ICI customers. In no instances were there specific references to municipalities.
- In only 2 (4.8%) instances did respondents indicate that they had ordinance specifying the use of micro-drip irrigation only for any new landscape installations.

General Summary of Communities and Ordinances

- Fifty-two communities responded to the survey. They varied in size from small communities such as Sechelt, BC (7,700), to large communities such as Los Angeles, California (3.8 million). Forty-two (80.8%) of these communities indicated they had some type of outdoor water management ordinance/bylaw in place.
- Fifty-four percent of the responding communities indicated they had one ordinance which contained numerous sections.
- The most prominent ordinances (by set survey categories) were for backflow preventers (71.4%) and water bylaws/schedules (61.9%) followed by permits to put in an in-ground irrigation system (35.7%) and limitation on the amount of lawn area per property (33.3%)
- There was little consistency in which customer groups were targeted to follow the ordinance. In only a few instances were all customer groups targeted the same – these were micro-drip only for any new landscape installations, landscaping audits and five in the other ordinance category.
- A majority of the respondents indicated that they had these ordinances for more than 10 years.

- Thirty-seven (88%) of respondents who had ordinances promoted them. A variety of promotional methods were used, with brochure/flyers/pamphlets (81.1%), websites (92%) and newspapers (78.4%) being used most prominently.

Goals of the Ordinance

- Few specific, measurable goals were given for any of the ordinances. The most frequent goal given for the use of ordinances is water conservation/water efficiency or reducing water use. In only three instances were specific, measurable goals indicated.

Process for Creation of Ordinance

- Interestingly the development of the ordinances seems to be equally split between public/stakeholder consultation and internal staff/politician review.

Ordinance Enforcement

- There appears to be little enforcement of most the ordinances except for contravention of watering bylaws/schedules which usually ends in warning and then fines.

Effective Measurement/Results

- Because there are few measurable goals/objectives for most of these ordinances it is difficult to say how effective they are with any degree of certainty. Measures considered effective or highly effective are supported by enforcement, inspections or codes.

Section B – Non-Ordinance Voluntary programs to Encourage Outdoor Water Conservation

General Summary of Non-Ordinance Programs

- Forty-eight (92.3%) of the surveyed respondents indicated they have non-ordinance outdoor water conservation programs.
- The predominant outdoor program used by respondents is education (93.8%).
- There is more consistency in target groups in the non-ordinance programs than in the ordinance programs.
- Forty-five respondents indicated that they promote these programs. A variety of promotional methods were used, with brochure/flyers/pamphlets (84.4%), websites (91.1%) and newspapers (82.2%) being used most prominently.

RESULTS: EXPANDED REVIEW AND LITERATURE REVIEW

- Eight communities require landscape plans.
- Nine communities require irrigation plans.
- Ten communities have minimum mulching requirements.
- Four communities have an ordinance specifying micro/drip only.
- Five communities have an ordinance prohibiting in-ground sprinklers in specific areas.
- A major Ontario Region has voted to make temporary watering restrictions permanent, allowing lawn watering only one day a week.

1.0 INTRODUCTION

1.1 BACKGROUND

This research project was initiated by a request from the Water Advisory committee to ascertain if any communities have ordinances requiring micro-drip irrigation only for trees, shrubs, vegetable and flower gardens for new installations on municipal properties, specifically boulevards/medians. Staff was further requested to find out about micro-drip irrigation ordinances for all sectors, including business and residential.

To capture a fuller overview of outdoor water management programs, CRD Water Services staff created a survey questionnaire which would uncover the requested information but which also uncover detailed information about all outdoor water management ordinance and non-ordinance programs from selected communities.

1.2 PROJECT OBJECTIVES

The purpose of this study was to provide information about current outdoor water management ordinances and other non-ordinance outdoor water management programs, determine what they are, and how they were created, promoted and enforced. Particular emphasis was paid to the issue of no in-ground watering on medians that was requested from the Water Advisory committee as well as what can CRD Water Services learn from others and how can this information be used to develop outdoor landscaping ordinances for CRD.

The primary objectives of the project were to:

- Uncover if any ordinances/bylaws exist requiring micro-drip irrigation in new installations specifically on municipal properties but also in other parts of the community.
- Determine what other landscaping ordinances exist (i.e., native and/or drought tolerant plantings, permits, backflow prevention, etc.).
- Ascertain what non-ordinance outdoor water management residential and ICI programs exist.

2.0 METHODOLOGY

The methodology used to conduct this research is described in this section.

2.1 SURVEY

Communities were chosen by information gleaned through web searches and from staff knowledge. Fifty-six communities were contacted and fifty-two communities responded to the survey query. To ensure a diverse sample, communities were selected to represent both large and small communities, and geographically, in both Canada and the United States.

Three versions of the survey were created – one for mailing, one for administration by CRD Water Services summer students, and one allowing respondents to answer by e-mail.

While many questions in the survey offered specific ordinance choices, these options captured only some of the ordinances. Over 50% of respondents indicated that they had only one ordinance which resulted in many “Other” categories for all questions. Where possible, these multi-faceted ordinances were examined in greater detail in the expanded ordinance review.

2.2 EXPANDED ORDINANCE REVIEW

Several survey participants and one non-respondent’s ordinances were reviewed in more detail. This review, conducted through online sources and supplied ordinance material, uncovered additional ordinance information which expands on responses.

2.3 LITERATURE REVIEW

A literature review was conducted for additional information about ordinances in other areas of the United States not necessarily covered by the survey.

3.0 RESULTS: SURVEY

3.1 ORDINANCE PROGRAMS

Question 1 – *Do you currently have any outdoor water management ordinances/bylaws?*

All of the communities who returned surveys answered this question. Forty-two (80.7%) of the 52 municipalities indicated that they have some type of outdoor water management ordinance/bylaw in place.

Question 2 – *How many do you have?*

Thirty-seven of the potential 42 surveyed communities who responded in Question 1 that they had an ordinance answered this question. Fifty-four percent indicated that they have one ordinance, while 24.3% indicated they had two. The remainder were divided between three, four, five and one twelve.

The five communities who did not answer this question either left it blank, missed the question, or were confused about how to answer because all five communities did go on to fill in the information (types of ordinances) requested in Question 3.

All but three of the respondents who indicated they had only one ordinance went on in Question 3 to tick multi ordinance choices not just one. This result, plus a more in-depth review of actual ordinances found that these communities have one major ordinance which contains numerous sections.

Question 3 – *Please tick all of the outdoor water management ordinances/bylaws you currently have.*

As Table 1 shows, the most prominent ordinances or bylaws are for backflow preventers (71.4%) and water bylaws/schedules (62%). Specific to the original information sought by the committee, seven (16.7%) of surveyed municipalities indicated that they have an ordinance prohibiting in-ground sprinklers in specific areas. In two of these communities turf is totally prohibited in medians.

In only two cases (4.8%) did a community indicate they had an ordinance that only micro-drip may be used.

Interestingly the choice of backflow preventer was considered by 10% of the survey respondents as being a matter of building code not a water management ordinance.

Fifteen surveyed communities chose the “other” category with 18 ordinances. In four instances “other” was their only ordinance, and in the remaining 14 “other” was in addition to those chosen from the choices offered in the survey question.

Table 1 – Number of Ordinances/Bylaws

Ordinance/Bylaw	% of respondents
Micro-drip irrigation <u>only</u> for any new landscape installations	4.8%
Turf grass soil depth requirements	11.9%
Require installation of an irrigation controller	21.4%
Rain sensors for in-ground sprinkler systems	16.7%
Prohibition of in-ground sprinklers in specific areas (e.g., medians)	16.7%
Limitation on the amount of lawn area per property	33.3%
Set percentage of plant material that must be native/drought species	28.6%
Landscape water budgets based on percentage of Evapotranspiration (ET)	11.9%
Watering bylaws/schedules	61.9%
Irrigation audits	21.4%
Landscaping audits	16.7%
Permits to put in an in-ground irrigation system	35.7%
Requirement for backflow prevention devices	71.4%
Separate meters for landscape	26.2%
Other (Please specify) – Water Wasting Prohibition (8), Landscape Ordinance (4), Certified water managed sites , Drought plan (2), Repairing uncontrolled water leaks, Water management plans, Conservation measures	42.9%
Valid responses 42	

Question 4 – Which of the following customer groups were targeted by the ordinances/bylaws you indicated in the previous question?

One community did not reply to this question leaving 41 valid responses.

Table 2 – Ordinance Targeted Customer Groups

Ordinance(s)/Bylaw(s)	Single Family Residential	Multi Family Residential	ICI	Other
Micro-drip irrigation <u>only</u> for any new landscape installations	4.9%	4.9%	4.9%	--
Turf grass soil depth requirements	12.2%	9.8%	12.2%	--
Require installation of an irrigation controller	9.8%	14.6%	19.5%	--
Rain sensors for in-ground sprinkler systems	4.9%	14.6%	19.5%	--
Prohibition of in-ground sprinklers in specific areas (e.g. medians)	7.3%	9.8%	14.6%	--
Limitation on the amount of lawn area per property	19.5%	24.4%	31.7%	2.4%
Set percentage of plant material that must be native/drought species	12.2%	12.2%	22.0%	2.4%
Landscape water budgets based on percentage of Evapotranspiration (ET)	4.9%	7.3%	9.8%	--
Watering bylaws/schedules	56.1%	51.2%	19.5%	2.4%
Irrigation audits	19.5%	26.8%	34.1%	2.4%
Landscaping audits	14.6%	12.2%	14.6%	--
Permits to put in an in-ground irrigation system	22.0%	26.8%	34.1%	--
Requirement for backflow prevention devices	53.6%	61.0%	75.6%	--
Separate meters for landscape	14.6%	19.5%	29.3%	2.4%

Table 2 – Ordinance Targeted Customer Groups (Others) – Continued

Ordinance(s)/Bylaw(s)	Single Family Residential	Multi Family Residential	ICI	Other
Percentages				
Other (Please specify)				
Water Wasting Prohibition (8)	19.5%	19.5%	19.5%	2.4%
Landscape Ordinance (3)	4.9%	4.9%	7.3%	2.4%
Certified water managed sites	2.4%	2.4%	2.4%	--
Drought plan (2)	4.9%	4.9%	4.9%	--
Repairing uncontrolled water leaks,	--	--	2.4%	--
Landscape ordinance for commercial	--	--	2.4%	--
Conservation measures	2.4%	2.4%	2.4%	--
Water management plans	2.4%	2.4%	2.4%	2.4%

Valid responses 41

In the “other” category (indicating who) one was government, and another parks and schools. It is interesting that ordinances are in most cases not applied uniformly across all sectors of the community.

Question 5 – What was the goal(s) of the ordinance(s)/bylaw(s)?

This was an open-focused question. Respondents were asked to record the ordinance name and state the goal.

Responses to this question have been organized first into the survey suggested categories used in other questions of the survey, and the remainder into other ordinances. Responses under each ordinance have been grouped into similar categories where appropriate. Numbers beside a statement indicate how many respondents offered a similar comment.

The most frequent and understandable goal given for the use of ordinances is water conservation/water efficiency or reduce water use. In only three instances were specific, measurable goals indicated.

Table 3 – Goal of Ordinance (Survey Suggested Ordinances)

ORDINANCE	GOAL OF ORDINANCE
Micro-drip irrigation <u>only</u> for any new landscape installations	<ul style="list-style-type: none"> • Encourage drip irrigation to save water and prevent runoff to streets/etc.
Turf grass soil depth requirements	<ul style="list-style-type: none"> • Reduce ground water pumping • Erosion and storm water control, built into building code
Require installation of an irrigation controller	<ul style="list-style-type: none"> • Done because of weather conditions • Put in a controller that will conform with day watering time • Part of building code services, making sure irrigation is allowed on one's designated days
Rain sensors for in-ground sprinklers	<ul style="list-style-type: none"> • Reduce pumping of groundwater
Prohibition of in-ground sprinklers in specific areas (e.g., medians)	<ul style="list-style-type: none"> • Prevent fugitive water waste
Limitation on the amount of lawn area	<ul style="list-style-type: none"> • Efficiency, water conservation/water reduction measure
Set percentage of plant material that must be native/drought species	<ul style="list-style-type: none"> • Reduce pumping of ground water • Water conservation • To reduce peak demand and split demand • Reduce erosion
Watering bylaws/schedules	<ul style="list-style-type: none"> • Reduce water consumption (5) • Provide info for people • To reduce peak demand of water (8) • To be able to set restrictions in emergency (2) • Minimize waste of water and dry weather runoff in heat of the day and conservation issue • Reduce reduction 40% (research showed over watering by 40%)
Irrigation audits	<ul style="list-style-type: none"> • To help customers reduce water consumption and peak demand • Target top 10% of water users and help them comply with bylaw • Conservation
Landscaping audits	<ul style="list-style-type: none"> • Reduce water consumption for irrigation • To help customers reduce water consumption and peak demand • Reduce losses from inefficient irrigation systems • Teach people how to water properly and reduce water use
Permits to put in an in-ground irrigation system	<ul style="list-style-type: none"> • Supply protection/increase efficiency
Requirement for backflow prevention devices	<ul style="list-style-type: none"> • Public health & safety (4) • Safety of water supply/system (13)
Separate meters for landscape	<ul style="list-style-type: none"> • For water billing purposes • It recognizes that the water will not go back in the sewer system • Promote accountability and efficiency

Table 4 – Goal of Ordinance (Others)

ORDINANCE	GOAL OF ORDINANCE
Landscape Ordinance	<ul style="list-style-type: none"> • Reduce water consumption • Response to legislation from Bill 325 (2) • Reduce landscape water use(3) • Water conservation/efficiency(2)
Emergency Water Conservation Ordinance	<ul style="list-style-type: none"> • Acute system outage/reduce demand
Drought Plan	<ul style="list-style-type: none"> • To mitigate any water shortage issues encountered due to climate • Maximize water supply and ensure water needs for health and safety
Water Waste	<ul style="list-style-type: none"> • Destruction of sidewalks and streets • Don't want people wasting water (4) • Use water efficiently (2) • Make sure to use water to comply with beneficial use under federal, state and local laws
Water Conservation Bylaw	<ul style="list-style-type: none"> • Regulate/reduce water use (4) • To reduce water use by 30% over a 10-year period • Reduce peak day consumption and overall reduce usage
Water Shortage Response Plan	<ul style="list-style-type: none"> • Manage demand for drinking water during the summer months
Drinking Water Management Plan	<ul style="list-style-type: none"> • Provide clean safe drinking water • Ensure the sustainable use of water • Ensure the efficient supply of water
Repairing Leaks	<ul style="list-style-type: none"> • Save water and prevent problems
List of Conservation Measures	<ul style="list-style-type: none"> • To reduce water waste and reduce peak water use
The Right to Impose Water Restrictions	<ul style="list-style-type: none"> • To be able to set restrictions in emergency

Question 6 – How did you/do you measure the effectiveness of your ordinances/bylaws?

Question 6b) – How effective has this ordinance(s)/bylaws been?

Responses for questions 6a & 6b have been combined for ease of comparison. Forty communities answered this question

Only three respondents actually used any formal methods to measure the effectiveness of their ordinances. Because there are few measurable goals/objectives for most of these ordinances it is difficult to say how effective they are with any degree of certainty. Measures considered effective or highly effective are supported by enforcement, inspections or codes.

Table 5 – How Effectiveness Measured/Actual Effectiveness (Survey Suggested Ordinances)

ORDINANCE	HOW ORDINANCE MEASURED?	EFFECTIVENESS OF ORDINANCE?
Micro-drip irrigation <u>only</u>	Rebate program and uses that to measure – about a water savings of 370 million gallons per year for 9.5 million sq ft of land	Good – part of code and inspections
Turf grass soil depth requirements	Building inspector makes sure it works	Lots of people complying
Require installation of an irrigation controller	Built into engineering standards Requirement to conform to watering times No response	New industry standard Very effective – all new commercial properties have them Very effective – part of code
Limitation on the amount of lawn area	List that store keeps and can plant what is on list Compliance to standards measured by gallons per capita per day & analyzed Any new property have gotten rid of grass and taken grass out of sidewalks	Don't know Highly effective By code
Set percentage of plant material that must be native/drought species	Contractors for city landscape Percentages of native plants left in lots and left alone Never been done	Don't know numbers Lots of compliance – if they don't they won't get building permit New bylaw, no time to examine

Table 5 – How Effectiveness Measured/Actual Effectiveness (Survey Suggested Ordinances) – Continued

ORDINANCE	HOW ORDINANCE MEASURED?	EFFECTIVENESS OF ORDINANCE?
Watering bylaws/ schedules	Sprinkling patrols and calls from public Reduce in peak use/general Summer program with audits, patrols but no enforcement Research looking at compliance rates. Finding compliance where it exists. Examining water meters and comparing consumption patterns from every user Metering and daily pumpages to monitor if necessary. Reservoir elevations. Database with analysis. 12% use is for outdoor. Don't, not enforcing now, when in enforcement mode people checking around city, visual inspection of compliance. Don't really measure – as long as capacity has not been exceeded Inspectors look at drinking water consumption volume per year? Not sure No response Looking at overall water use Peak demand has been stable	Relatively effective. A lot of people know about regulations and we have been patrolling more to increase visibility. However, there have not yet been any tickets given out before this summer. Water shortage in 2003 - was a reduction in peak use Not sure Moderately effective – still find non-compliance, percentages 30-40 following regularly, the rest periodically. Made people aware of water conservation Effective – in 1988 drought made it through When enforced quite effective by word of mouth and violations Very good, no problems at present Can still do more to conserve Not very – water bills still high because people trying to keep lawns green Good tool – has not imposed restrictions since 2000 No idea due to different municipalities Very effective – defer capital improvements
Irrigation audits	Look at overall consumption and past data Reports sent in to state at end of year Goals on amount of audits done per year	Hard to measure but generally an irrigation audit can reduce 25% of use Not sure but studies being done Good outreach tool
Landscaping audits	Look at overall consumption and past data Examination of water use records before and after audit	Hard to measure but generally an irrigation audit can reduce 25% of use 12-25% reduction shown in study by Utah State U (who we contracted)

Table 5 – How Effectiveness Measured/Actual Effectiveness (Survey Suggested Ordinances) – Continued

ORDINANCE	HOW ORDINANCE MEASURED?	EFFECTIVENESS OF ORDINANCE?
Permits to put in an in-ground irrigation	Part of building code Inspections	Part of code Not too effective at review level
Requirement for backflow prevention	Regular testing required and reviewed – misc. spot testing City has full-time backflow coordinator that does inspections Compliance, number of violations and upgrades Inspections Number of reportable backflow events per year General checks and testing on locations on a routine timetable. Number of illnesses in city Track number of permits issued per year We do not actively measure the effectiveness of this ordinance Don't know Part of building code	Effective Very effective Not sure Effective No response Security of systems no problems, getting devices in locations & monitoring Very effective No one getting hurt, no reports Number of reportable backflow events per year No idea but seems to be no water contamination By code
Separate meters for landscape	Read by the meter readers Service for customers – a service for their benefit Don't have one	No effect on water conservation but a billing issue Effective from customer service standpoint Good tool for water management

Table 6 – How Effectiveness Measured/Actual Effectiveness (Other Ordinances)

ORDINANCE	HOW ORDINANCE MEASURED?	EFFECTIVENESS OF ORDINANCE?
Landscape Ordinance	<p>Most businesses have separate water meters for commercial irrigation, converting to Xeriscape will show lower consumption.</p> <p>Plan reviews in permit phase, water budgets for irrigation meters. 2007 tiered rate system (3 tier). Measure of budgets.</p> <p>Calculate water budget to approve irrigation, track use, if using more letter sent.</p> <p>Function of building and safety plan, measures implemented in plans of construction.</p> <p>Not measured, require landscape architect to sign off on plan, no follow-up after installation.</p> <p>Compare water wise landscape vs. non-water wise & collect data.</p>	<p>Very effective for all new developments.</p> <p>Has been effective, improved site design efficiency, no current stats.</p> <p>Saved since 2000 – 9.9 million gallons.</p> <p>Very effective, water savings have not been quantified but demand has been reduced.</p> <p>Greatly reduced percentage of turf in area.</p> <p>Save 40% target, results unknown – new ordinance.</p>
Water Waste Ordinance	<p>Track those that are cited and make sure they do not violate again.</p> <p>The amount of violations and making people aware.</p> <p>Issues resolved, tracking database, work with contractors.</p> <p>Don't measure</p> <p>Monitor per capita consumption and peak demand</p> <p>Mostly voluntary</p> <p>Staff measuring violations, changing techniques. Measure run-off but system not in place.</p> <p>Use water efficiently</p> <p>We do not actively measure the effectiveness of this ordinance.</p> <p>Never used – usually people fix their leaks and comply</p>	<p>Very effective in reducing waste, lowering infrastructure destruction and lowering health hazards.</p> <p>Depends on area – recycled water areas are worst – older areas don't have landscape ordinances because not in place at time of development.</p> <p>Very effective, never had to cut off water, usually quick resolve.</p> <p>Don't keep track</p> <p>Don't know but in general water use has been stable.</p> <p>Good to tell individuals to fix inefficiency problems because of bylaw.</p> <p>Not sure, no percentages</p> <p>2002 was drought and was effective, reduces consumption during periods of mandatory consumption.</p> <p>Don't measure</p> <p>Educational tool and public awareness</p>
Drought Plan	<p>Haven't had to implement plan past Stage 1. Triggered by water supply loss.</p> <p>Not measured, meet overall health and safety requirements.</p>	<p>So far so good, haven't really had to enforce.</p> <p>Drought in 90's is being updated to make a new plan to be approved.</p>

Table 6 – How Effectiveness Measured/Actual Effectiveness (Other Ordinances) – Continued

ORDINANCE	HOW ORDINANCE MEASURED?	EFFECTIVENESS OF ORDINANCE?
Emergency Water Conservation Ord. Land Use Code – limit on amount of lawn area per property / set percentage of plants must be native/ drought resistant	Never had to implement. Can look at demand & set up process to look at complaints. Inspections to verify to see if plants planted are on list.	Never had to implement. Changed peoples attitudes on what landscapes should look like.
Water Conservation Bylaw	Use flow volumes and have graph that shows water use and compare from year to year. No performance indicators. Track water use – looks at gallon per use, looking at account types, single and multi-family residential & ICI, water being pumped out of the ground. Been in drought for 17 months yet using less water per capita even though population increases, still using less than before (2000).	Just came into effect this year so hard to judge. Saving water by reducing watering times – no hard data. Achieve goal in 2005, a year before slated – effective. Goal to reduce 1% a year – on track, possibly 3% decrease.
1) Bylaw No. 2867 Water Use Regulation 2) Town of Comox Building Bylaw	# of complaints and warnings/tickets issued; volume of water consumed. No performance measures applied	Poor – note Comox has no water meter on residential
Water Shortage Response Plan Drinking Water Mgmt Plan	Through reduction in per capita per day water use. Per capita water use.	Comparison of pre & post 1993 demand data for region shows a reduction in peak day per capita demand of about 30%. Performance to be measured in coming years.
Ordinance 385 – Water Cons. Requirements	Water budgets associated with each account and compare water use with calculated use amount; also landscape and single family audits.	Good – there is a reduction in water use even with increase in population.
List of Conservation Measures	Report to group "Water Forum" use gallons per day tracking to measure performance.	Good response rate – response after 1st notice (low water rates make waste reduction difficult).
Ordinance #4 Landscape Standards	Water audits to system and noting red flags/high usage places/names.	Relatively effective
Outdoor Water Use Bylaw	Water demand & measuring it.	Very effective
Esplanade Program	Have inspectors that monitor the esplanades and if there is one, then audits, then send note to owner re problem.	Very popular
Right to impose water restrictions	Never had to use	Never been used

Question 7 – How long has this ordinance(s)/bylaw(s) been in place?

Thirty-seven (88.0%) of the 42 surveyed respondents who indicated that they had ordinances answered or partially answered this question. In some instances respondents did not complete length of time for all of the ordinances they indicated having in Question 3. The majority of ordinances have been in effect for 10 years or more.

Table 7 – Length Ordinance in Place

Ordinance/Bylaw	≤1 yr	1-5 Yrs.	6-10 Yrs.	≥10 Yrs.
Micro-drip irrigation <u>only</u> for any new landscape installations	--	2.7%	--	2.7%
Turf grass soil depth requirements	--	--	--	5.4%
Require installation of an irrigation controller	--	--	5.4%	2.7%
Rain sensors for in-ground sprinkler systems	2.7%	--	--	2.7%
Prohibition of in-ground sprinklers in specific areas (e.g. medians)	2.7%	--	--	2.7%
Limitation on the amount of lawn area per property	--	5.4%	--	10.8%
Set percentage of plant material that must be native/drought species	--	5.4%	--	8.1%
Landscape water budgets based on percentage of Evapotranspiration (ET)	--	--	--	2.7%
Watering bylaws/schedules	--	10.8%	8.1%	32.4%
Irrigation audits	--	--	--	5.4%
Landscaping audits	--	--	--	2.7%
Permits to put in an in-ground irrigation system	--	--	--	8.1%
Requirement for backflow prevention devices	--	8.1%	--	18.9%
Separate meters for landscape	--	5.4%	--	2.7%
Other (Please specify)	2.7%	16.2%	13.5%	29.7%
Water Wasting Prohibition (8), Landscape Ordinance (4), Certified managed water sites, drought plan (2), repairing uncontrolled water leaks, conservation measures, water management plans				
Valid responses 37				

Question 8a – What process did you use for creating this ordinance(s)/bylaw(s)?

This was an open-focused question. Respondents were asked to record the ordinance and then indicate the goal.

For ease, the answers have been organized into the survey suggested categories and the remainder into actual other responses. The process for creating an ordinance is evenly split between public committees or staff/politicians. In some instances a combination of the two is used.

Table 8 – Process Used To Create Ordinance (Survey Suggested Ordinances)

ORDINANCE	PROCESS USED
Micro-drip irrigation <u>only</u>	<ul style="list-style-type: none"> • Committee task force, then water utilities public board and then to city hall
Turf grass soil depth requirements	<ul style="list-style-type: none"> • Press proposed to city – driven by storm water and erosion
Require installation of an irrigation controller	<ul style="list-style-type: none"> • Goes through engineering standards • Part of commercial landscape ordinance • Committee task force, then water utilities public board and then to city hall
Rain sensors for in-ground sprinklers	<ul style="list-style-type: none"> • No response
Prohibition of in-ground sprinklers in specific areas (e.g. medians)	<ul style="list-style-type: none"> • Committee task force, then water utilities public board and then to city hall
Limitation on the amount of lawn area	<ul style="list-style-type: none"> • Goes through engineering program and planning approval • Identify and meet with stakeholders, golf courses, landscape industry, developers, provide information, facts and figures. Advisory groups, they come to same logical conclusion and this creates credibility through stakeholder's connection. • Committee task force, then water utilities public board and then to city hall
Set percentage of plant material that must be native/drought species	<ul style="list-style-type: none"> • Press proposed to city • Goes through engineering program and planning approval • Planting plan reviewed by landscape designer staff
Watering bylaws/schedules	<ul style="list-style-type: none"> • Came from elected officials. Required by province. Public open houses and commercials letters. • Put together by landscape and water conservation experts. • Identify and meet with stakeholders, golf courses, landscape industry, developers, provide information, facts and figures. Advisory groups, they come to same logical conclusion and this creates credibility through stakeholder's connection. • Legal drafting and passed, enforced by code • Recommendations from horticulture experts • Staff administration • Executive committee, vote on measure and prior to vote there is public consultation with their recommendations and then vote and regulations
Irrigation audits	<ul style="list-style-type: none"> • State program implemented in 1998 to save water
Landscaping audits	<ul style="list-style-type: none"> • Developed after research by Utah State
Permits to put in an in-ground irrigation	<ul style="list-style-type: none"> • No response
Requirement for backflow prevention	<ul style="list-style-type: none"> • Survey for communities and public hearings • Through building safety • Internally driven • Passed by city hall
Separate meters for landscape	<ul style="list-style-type: none"> • Amended waste water and utility manual to conform to irrigation on new property

Table 9 – Process Used To Create Ordinance (Other Ordinances)

ORDINANCE	PROCESS USED
Landscape Ordinance	<ul style="list-style-type: none"> • Review committees, residential & commercial advisory board, regular meetings. • Put together committee, landscape contractor, landscape architect, and staff from community development and water conservation, member of plants and nursery, member of board of public utilities. • State law requires, modified version to fit area, goes through public review and public panel. • Series of public meetings (10-20), interested parties, irrigation contractors, sod growers, citizens, environmental groups, construction. 29 drafts and then passed by County Council.
Emergency Water Conservation Ordinance Land Use Code Building Code	<ul style="list-style-type: none"> • Internal review and development • Public participation process • Public participation process
Drought Plan	<ul style="list-style-type: none"> • Public meetings, media attention, used other city's plans. Draft using municipal info, City council approval 6 mos. • Approved by City Council
Regional Bylaw No. 2867-Water Use Regulation Building Bylaw	<ul style="list-style-type: none"> • Consolidation of previous municipal bylaws. Staff and politician driven. Advertised after enactment. Staff/politician.
Water Shortage Response Plan Drinking Water Mgmt Plan	<ul style="list-style-type: none"> • Consultation with municipalities, as well as public. • Extensive public consultation, as well as with municipalities.
Ordinance 385 Water Cons. Requirements	<ul style="list-style-type: none"> • Went to board and spoke to many cities and public agencies.
Water Waste	<ul style="list-style-type: none"> • State had model, it was modified and under review by city council and was adopted. • Approved by City Council • Elected board who makes recommendations to the water board / staff can also make recommendations. • Original code creation/involvement unknown; update to code June 2006 done by Water Conservation Specialist, through research of other municipal codes, and put before City Council for adoption/update of new code. • Water department developed and proposed to City Council. • Identify and meet with stakeholders, golf courses, landscape industry, developers, provide information, facts and figures. Advisory groups, they come to same logical conclusion and this creates credibility through stakeholder's connection. • Community 7. Presented to utility advisory committee and to City Council – drought in 2001 made it easier to pass.
Water Conservation Bylaw	<ul style="list-style-type: none"> • Public meetings, passed by City Council, a resolution calling for a plan. Look at data for water use and public surveys. • Staff (water development), city council, approval of Dallas. • Mainly in-house. State rule in place, adopted state rule with public meeting then county council passed.
Outdoor Water Use Bylaw	<ul style="list-style-type: none"> • Researched other ordinances in NA, committee review process, legal department wrote.
Adopt an Esplanade	<ul style="list-style-type: none"> • Discussions with public, meetings with developers.

Question 8b – Please indicate what costs you incurred and what these costs were for when creating the ordinance(s)/bylaw(s).

This was a very poorly answered question as most communities did not consider any costs to have been expended, or they didn't know or weren't in the position when the ordinance was created. The three responses to this question follow.

Table 10 – Costs Incurred For Creation?

Ordinance	Costs Incurred	Costs For
Emergency water conservation ordinance	\$5,000	Staff Time
Regional Bylaw #2867	\$10,000	Advertising
Backflow Prevention (2)	\$20,000 \$5,000-\$10,000	Consultant/mechanisms for process Survey

Question 9 – Do you/did you promote these ordinance(s)/bylaw(s)?

Forty-one of the potential 42 respondents who indicated that they had ordinances answered this question. Of the 41, 37 (71.2%) indicated that they currently promote or did promote their indicated ordinance(s)/bylaw(s).

Question 10 – Please tick all of the promotional methods you use/used to promote your ordinance(s)/bylaw(s).

The most commonly used promotional method was brochures/flyers followed by newspaper advertisements.

Table 11 – Promotional Methods Used

Promotional Method	% of Respondents Who Used This Method
Brochure/flyer/pamphlets	81.1%
Public Service announcements	67.6%
Commercials on radio	54.1%
Commercials on TV	35.1%
Newspaper/magazines/newsletters advertisements	78.4%
On your website	92.0%
Public open houses, town hall meetings	37.8%
Television or radio talk shows	48.6%
Displays in malls schools, etc.	43.2%
Presentations to associations, service clubs, etc.	73.0%
Press Releases	73.0%
Other (See following)	29.7%

Valid responses 37

Other – Industry & Trade groups, demo areas, direct mail to targeted groups and word of mouth, mail out ,Farmers Market and materials at City Offices, during water education month, Regional Water Authority, Fridge magnets, DVD/VHS as self help, explain policy, monthly TV show on cable access, specially marked vehicles/water waste inspector designation, school districts, bill inserts school curriculum.

Question 11 – What are your enforcement policies on this ordinance(s)/bylaw(s)? How are these policies enforced?

This was an open-focused question. Respondents were asked to record the ordinance and the enforcement policies. For ease the answers have been organized into the CRD suggested categories and the remainder into actual other responses. The most prominent enforcing system appears to be for contravening watering bylaws. This usually means warnings and fines.

Table 12 – Enforcement Policies(Survey Suggested Ordinances)

ORDINANCE	ENFORCEMENT POLICIES
Require installation of controller	<ul style="list-style-type: none"> • Part of inspection process.
Rain sensors for in-ground sprinklers	<ul style="list-style-type: none"> • Enforcement during building permit inspections.
Prohibition of in-ground sprinklers in specific areas (e.g. medians)	<ul style="list-style-type: none"> • Enforcement during building permit inspections.
Limitation on the amount of lawn area	<ul style="list-style-type: none"> • Mandatory compliance, violation will result in lawn being torn out and replacement.
Set percentage of plant material that must be native/drought species	<ul style="list-style-type: none"> • Enforcement during building permit inspections.
Watering Bylaws/Schedules	<ul style="list-style-type: none"> • No enforcement • Water conservation patrols (magnets on side of vehicles). Follow up on complaints made by public. Give 1 warning notice, on 2nd infraction a ticket is issued. • Varies from year to year – last year had 7 member bike team. This year ¼ of students' time. Talks to offender or leave info. 2nd mail warning letter, 3rd turn water off. • Letter of warning to comply then fine of \$25, however a long process (12 mo. to comply). • 1st violation written warning and education, 2nd assessed to bill, 3rd doubling of fine assessed to bill. • Depends on which stage – right now voluntary water use written warnings / water waste – fines for year round. • Not enforced Inspectors and patrols – also a phone line for reports – fines \$50-500 depending. • Through bylaw enforcement officer – 1st inform of violation and provide notice and correct, 2nd – fine or shut off water.
Irrigation audits	<ul style="list-style-type: none"> • No enforcement
Landscaping audits	<ul style="list-style-type: none"> • No enforcement
Permits to put in an in-ground irrigation	<ul style="list-style-type: none"> • No response
Requirement for backflow prevention	<ul style="list-style-type: none"> • New buildings and homes require it – fines and jail time. • 1st violation written warning and education, 2nd assessed to bill, 3rd doubling of fine assessed to bill. • 2 or 3 warnings before water is turned off. • Annual testing for each service; tracking system that determines annual test date. • Annual testing for each service; tracking system that determines annual test date.
Separate meters for landscape	<ul style="list-style-type: none"> • No enforcement

Table 13 – Enforcement Policies (Other Ordinances)

ORDINANCE	ENFORCEMENT POLICIES
Emergency Water Conservation Ordinance Land Use Code Building Code	<ul style="list-style-type: none"> • Warnings and fines. • Request people fix problem and if fail to do so penalties/fines issued, delay of issuing certificate of occupancy. • No policy.
Drought Plan	<ul style="list-style-type: none"> • Fine for not following. Stage 4 has watering schedule, if in violation \$2500 fine. City code enforcers if necessary.
Water Waste	<ul style="list-style-type: none"> • Complaint is checked out and if person does not fix problem City code enforcers sent out and give fine. • \$75 fine, if don't pay it doubles and flow restrictions. Commercial \$500 fine, if not repaired \$1,000 fine. • Field crews identify or residents call in. • Violation letters, shut-off water if necessary. Phone in by civil servants and concerned public. • Can restrict water. Conditional water service if capacity is there. Water can be shut off. Limited enforcement – rare that fines are given. • No active enforcement; if water wasting observed, notice sent to residence warning of code and further action if continued wasting of water occurs. • . Meter reading staff, then would send out info to people and leave info – if don't comply penalty of \$20 or shut off water.
Water Conservation Bylaw	<ul style="list-style-type: none"> • Under MTI (municipal ticketing information) – warning first then eye is kept on them, and if they are repeat offenders a fine up to \$2,000.
Regional Bylaw 2867 to regulate water	<ul style="list-style-type: none"> • By complaint.
Water Shortage Response Plan	<ul style="list-style-type: none"> • Through municipal (17 separate municipalities) water shortage response plan bylaws/waterworks regulation bylaws and municipal ticket information bylaws (where fines imposed for unauthorized watering during various stages).
Water Conservation Requirements Ordinance 385	<ul style="list-style-type: none"> • Bill on tier system. If homeowner refuses inspection then will be billed on tier 3. Also won't get building permit if new property.
Landscape Ordinance	<ul style="list-style-type: none"> • Plan review, building review, enforcement with field inspection not yet. • New construction needs acceptance through billing application of landscape. • Violation letters, shut-off water if necessary. Phone in by civil servants and concerned public. • Sign off by architect that it was installed; construction plans can be disapproved if landscape architect has not submitted plans. • Monetary penalties if not in compliance. Field personnel of Department of Health. • Connects with building permits and if they don't comply, permit denied.
Drought	<ul style="list-style-type: none"> • Found wasting water, turn off, put in pipe restrictor, reducing water flow. Escalates depending on severity of drought.
Repairing Water Leaks	<ul style="list-style-type: none"> • Have summer patrols and do quick follow-ups.
List of Conservation Measures	<ul style="list-style-type: none"> • Leave notices (3) for violations, letter after 3rd, if still don't comply they can meter bill them, usually flat rate.
Water Conservation	<ul style="list-style-type: none"> • Education program, penalties exist but are not enforced. • City has different ordinance department – fund 2 full-time employees, must catch “red handed” – 1st time warning, 2nd \$250 and fine doubles thereafter.
Adopt an Esplanade	<ul style="list-style-type: none"> • After auditor inspects an area a letter with things the developer has to do to correct problem is issued then continue to monitor – if don't comply after a few times auditor sees same level a warning issued and water will be shut off.
Right to Impose Water Restrictions	<ul style="list-style-type: none"> • Shut off water and customer would have to pay to turn it on again.

Question 12 – How may we obtain a copy of your ordinance(s)/bylaw(s)?

Forty-three of the potential 52 survey respondents completed this question. Five respondents gave more than one answer to this question giving 57 responses to 52 surveys. The predominant way of obtaining a copy of the respondent's ordinance/bylaw was on-line.

Table 14 – How to Obtain Ordinance

Method for Obtaining	%of respondents
On-line	54.4%
By Fax	12.3%
By mail	3.5%
By e-mail	14.0%
No response	15.8%
Valid responses 57	

3.2 NON-ORDINANCE VOLUNTARY PROGRAMS

Question 13 – *Do you currently have any programs besides ordinances/bylaws that promote outdoor water conservation?*

All survey respondents answered this question. Forty-eight (92.3%) of the surveyed respondents indicated that they currently have other programs besides ordinances/bylaws that promote outdoor water conservation.

Question 14 – *Would you please tell me which of the following non-ordinance/bylaw programs you currently have?*

Table 15 – Current Non-Ordinance/Bylaw Programs

Non-Ordinance Programs	% of Respondents Who Had Program
Education campaign	93.8%
Rebates for Irrigation (ET) Controller	27.1%
Rebates for rain sensors	18.8%
Rebates for soil moisture sensors	14.5%
Rebates for converting in-ground systems to micro/drip	8.3%
Rebates for specific irrigation nozzles/heads with check valves	14.5%
Rebate for irrigation controller	25.0%
Rebate/incentive for cisterns & pump systems	2.1%
Rebate/incentive for harvesting rain water	18.8%
Financial incentives for irrigation audits	31.3%
Financial incentives for landscape audits	25.0%
Other (see following)	39.6%

Valid responses 48

Other – Outdoor water saving kit, Provide landscape audits, Water use study of property 5-10 acres for water management, Rebate for grass removal, Rebate to install low water use landscapes and conversion, Reclaim 100% of wastewater and use within city boundaries for irrigation, Removal of grass into native plants rebate, Financial incentives for separate meters re landscaping, Golden Lawn Awards, Backflow prevention and cross-connection control programs, Tuna cans, Site comes in under budget of water use get rebate, Turf time, record length of time to run irrigation updated weekly, Rebate - Smart Landscape Grant, Soil moisture sensor research project, Financial incentive for water bill, Turf conversion, Rebates for native plants, Pilot projects on weather based irrigation for data collection, Xeriscape course, Soil depth & landscape rebate, Xeriscape - demo garden, tours, seminars, Pressure regulators, Demonstration Garden - consulting on energy efficient landscaping - signage and poster - targeted to general public.

The most prominent non-ordinance program is education. Several communities have moved to more aggressive and detailed non-ordinance programs. All of these communities are found in the United States. Interestingly enough some of the most developed programs are found in Olympia and Seattle Washington; areas with climate very similar to the CRD area.

Question 15 – Which of the following customer groups would be eligible for the programs you indicated in the previous question?

Table 16 – Eligible Customer Groups

Non-Ordinance Program	Single Family Residential	Multi Family Residential	ICI	Other
Education campaign	100.0%	95.6%	80.0%	12.5%
Rebates for Irrigation (ET) Controller	24.4%	17.8%	22.2%	--
Rebates for rain sensors	15.6%	13.3%	13.3%	--
Rebates for soil moisture sensors	15.6%	13.3%	11.1%	--
Rebates for converting in-ground systems to micro/drip	4.4%	6.7%	6.7%	--
Rebates for specific irrigation nozzles and heads with check valves	13.3%	8.9%	6.7%	--
Rebate for irrigation controller	20.0%	13.3%	13.3%	--
Rebate/incentive for cisterns & pump systems	2.2%	--	--	--
Rebate/incentive for harvesting rain water	15.6%	11.1%	6.7%	--
Financial incentives for irrigation audits	22.2%	24.4%	24.4%	--
Financial incentives for landscape audits	17.7%	15.6%	17.8%	--
Other (Please specify)				
Outdoor Water Saving Kit	2.2%	2.2%	2.2%	
Landscape Audits	2.2%	2.2%	2.2%	
Rebate for grass removal	2.2%	2.2%	--	
Rebate to install low water use landscapes and conversion	2.2%	2.2%	--	
Water use study of property 5-10 acres for water mgmt	--	2.2%	2.2%	
Reclaim 100% of wastewater and use within city boundaries for irrigation	--	2.2%	2.2%	
Removal of grass into native plants rebate	2.2%	2.2%	2.2%	
Financial incentives for separate meters re landscaping	--	2.2%	2.2%	
Golden Lawn Awards	2.2%	2.2%	2.2%	
Backflow prevention and cross-connection control programs	2.2%	2.2%	2.2%	
Tuna cans	2.2%	2.2%	2.2%	
Site comes in under budget of water use get rebate	--	--	2.2%	
Turf time, record length of time to run irrigation updated weekly	2.2%	2.2%	2.2%	
Rebate - Smart Landscape Grant	--	--	2.2%	
Soil moisture sensor research project	2.2%	--	--	
Financial incentive for water bill	2.2%	2.2%	2.2%	
Turf conversion	2.2%	2.2%	2.2%	
Rebates for native plants	2.2%	2.2%	2.2%	
Pilot projects on weather based irrigation for data collection	--	--	2.2%	
Xeriscape course	2.2%	2.2%	--	
Soil depth & landscape rebate	2.2%	--	--	
Xeriscape – demo garden, tours, seminars	2.2%	2.2%	2.2%	
Pressure regulators	2.2%	2.2%	2.2%	
Demonstration Garden – consulting on energy efficient landscaping	2.2%	--	--	
Valid Responses 45				

Two respondents specified who the “other” eligible customers were school/teachers and Fort White Environmental Centre.

Question 16 – Do you promote these programs?

Forty-seven out of the potential 48 survey respondents, who indicated that they have programs, answered this question. Of the valid respondents, 45 indicated that they currently promote their non-ordinance outdoor water conservation programs.

Question 17 – Please tick all of the promotional methods you use to promote your non-ordinance program(s).

Table 17 – Methods Used for Promotion of Non-Ordinance Programs

Promotional Method	% of Respondents Who Used This Method
Brochure/flyer/pamphlets	84.4%
Public Service announcements	60.0%
Commercials on radio	55.6%
Commercials on TV	33.3%
Newspaper/magazines/newsletters advertisements	82.2%
On your website	91.1%
Public open houses, town hall meetings	66.7%
Television or radio talk shows	51.1%
Displays in malls, schools, etc.	62.2%
Presentations to associations, service clubs, etc.	68.9%
Press Releases	68.9%
Other (please specify) – public libraries, Parks depts., direct mailings, water bills, irrigation companies, billing inserts (4), media person/contact, trade groups billboards(2), buses(3), grade school water festival, street banners, part of the weather report, fairs, street signs, local newspaper web site	38.2%
Valid responses 45	

This result shows that a wide variety of promotional methods are being used. Numbers beside methods in the other category indicate how many respondents used this method.

4.0 RESULTS: EXPANDED ORDINANCE REVIEW

Several survey participants and one non-respondent's ordinances were reviewed in more detail. This review, conducted through online sources and supplied ordinance material, uncovered additional ordinance information which expands on responses.

4.1 YUMA, AZ – LANDSCAPE ORDINANCE

Ordinance Applies To

- Any existing building proposed for renovation, alteration or addition by 50% or more.
- When a lot, building, etc. has a zoning change, or after two years of vacancy.
- Upon all new construction.

Key Sections of the Ordinance

- Prohibition of certain plant types.
- Landscape plan required.
- Commercial – A maximum of thirty (30%) of the landscaped area may be turf.
- Industrial - A maximum of twenty-five (25%) percent of the landscape area may be turf.
- Multi-residential - A maximum of thirty (30%) of the landscaped area may be turf.
- All vegetative planting must follow the Plant Matrix compiled from the Arizona Department of Water Resources' Low Water Use/Drought Tolerant Plant List.
- Permit required to install an irrigation system.

Compliance

- A copy of the landscape plan must be submitted to the Department of Community Development at the time of building permit application.
- All completed landscaped areas are inspected by the Zoning Administrator before a certificate of occupancy is authorized.

4.2 FAIRFIELD, CA

Additional Sections of the Ordinance

- Landscape documentation package which includes soils report, annual water budget and compliance chart, a grading plan, landscape design plan, an irrigation design plan and an irrigation maintenance procedure manual.
- Separate irrigation meter.
- Automatic controller must be installed.
- No overhead spray may be used in areas less than 2.4 m (8 feet) wide.

- Plants must be grouped together into similar water needs.
- Turf shall not exceed 25% of the total landscape area in commercial or residential projects.
- Minimum of 76 mm thick (3 inches) organic mulch required in all planting areas except low groundcovers and turf.

Model Home Landscape Criteria

- For subdivisions with eight or more homes, the developer must demonstrate via signs and information, the principle of water efficient landscapes.
- Signs shall be used to identify the model as an example of a water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme. The developer must place interior and exterior signs (specific visibility criteria) around the model home identifying that the model is landscaped with water conserving plants, and irrigation systems and any other features that contribute to the overall water conserving theme.
- Information shall be provided about designing, installing and maintaining water efficient landscapes.

Compliance

- A copy of the approved landscape documentation package must be submitted prior to issuance of an occupancy permit.

4.3 MARIAN, CA

Additional Sections of the Ordinance

- Requires a landscaping plan which includes a planting plan showing hydrozones.
- A separate irrigation plan is required.
- Soil amendments required in specific conditions.

4.4 SACRAMENTO, CA – WATER CONSERVING LANDSCAPE ORDINANCE

Sacramento did respond to the survey request. Their responses are included in the overall survey results. The following information, supplied by the County, is additional information about their landscape ordinance.

Ordinance Applies To

- New and rehabilitated landscaping for industrial, commercial and institutional developments.
- Parks and other public recreational areas.

- Multi-family residential common areas and model homes.
- County road medians and corridors.

Additional Sections of the Ordinance

- Landscape/Planting plan required.
- Irrigation plan required.
- A soil report will be prepared by a soil testing company and submitted with the planting and irrigation plans. Soil amendments will be added to correct for problems as noted in the soils report.
- Estimated water use calculations for each planting area to be submitted with the landscape/planting plan.

Turf

- Not permitted in planted areas 3 m (10 feet) or less in width or in median strips.
- Not permitted on slopes greater than 20%.
- Areas which exceed 232 m² (2,500 square feet) are required to use soil moisture sensors and rain shut-off devices.
- Not permitted within 3 m (10 feet) of the drip line of native oak trees.
- Must be of a variety well suited to the local climate (i.e. tall fescue).

Non-turf Sections

- Plants selected for non-turf areas must be suited or adaptable to the climate of the region.
- Plants must be grouped according to their water needs and irrigated separately.
- Low and high water use species may not be used in the same irrigation area.
- Minimum of 76 mm thick (3 inches) organic mulch required in shrub areas.

Model Home Landscape Criteria

- For subdivisions with three or more model homes, the developer must submit a landscape plan and install landscaping for one model home which incorporates the County's Water Conserving Landscape Requirements.
- The developer must place interior and exterior signs (specific visibility criteria) around the model home identifying that the model is landscaped with water conserving plants, and irrigation systems and any other features that contribute to the overall water conserving theme.
- Literature describing water conserving landscapes must be made available to individuals touring the model.

Compliance

- A certificate of compliance must be submitted by the designer upon completion of the landscaping stating that the landscape complies with all County Water Conserving Landscape Requirements. Failure to submit certificate will delay final approval of the project and/or discontinue water service.

4.5 SANTA CRUZ, CA

Additional Section of the Ordinance

- Landscape plan must be submitted before an application for water service and the installation of a new water meter is approved.

4.6 SANTA ROSA, CA

Additional Section of the Ordinance

- Landscape and irrigation plans required.

4.7 SARASOTA COUNTY, FL – WATER EFFICIENT LANDSCAPE ORDINANCE NO. 2001-081

Sarasota County was one of the communities to whom the survey was sent but who did not respond. Their ordinance was found on-line and the key information from the ordinance follows.

Ordinance Applies To

- New site and development plans.
- New single and multi-family structures.
- Landscapes for new subdivisions and commercial/institutional sites.
- New landscaping for renovations exceeding 50% of the value of the structure or dimensions of the horizontal footprint where horizontal footprint is altered.
- In all common areas in new subdivisions and commercial building sites.

Key Sections of the Ordinance

- Grass/annual lower limitations to less than 50% of irrigated area.
- Separate irrigation zones required for grass and tree/shrub/groundcover beds.
- Micro-irrigation for tree/shrub/groundcover beds.
- Minimum of 76 mm thick (3 inches) organic mulch required.
- No plants planted or irrigation spray applied under roof overhangs.
- Lawn spray patterns must overlap 75%-100%.
- No grass allows in areas narrower than 1.22 m (4 feet).
- A filter required for all micro-irrigation systems.
- No popup spray heads and rotors mixed in same zone.
- No excessive water sprayed onto paved surfaces.
- Building contractor must leave as built drawing of irrigation system for homeowner.
- Building contractor must provide the homeowner with a landscape maintenance checklist and information on current water restrictions.

Compliance

- A certificate of compliance and as-built drawing of the irrigation system must be provided to the county and the property owner by a licensed contractor or landscape architect before a certificate of occupancy will be issued.
- A compliance certification checklist is required to be signed by the contractor.

4.8 ALBUQUERQUE, NM

Additional Section of the Ordinance

- No high water use plants for new City developments expecting parks and golf courses or as allowed through water budget formula to achieve comparable low use.

4.9 SANTE FE, NM

Additional Sections of the Ordinance

- Turf grass sod or turf grass seed mixes installed within the city limits shall contain 25% or less Kentucky bluegrass.
- A permit is required for all new irrigation system installations.
- A UPC approved backflow prevention device is required for all irrigation systems.
- Overhead spray irrigation is prohibited for watering trees and shrubs.
- Wasting water is prohibited.

4.10 INCLINE VILLAGE, NV

Additional Section of the Ordinance

- A landscaping plan is required. The plan must include irrigation design, a plant selection and a maintenance schedule.

4.11 LEANDER, TX

Additional Sections of the Ordinance

All new residential and nonresidential automatic irrigation system installations must follow these requirements:

- Contractors must be licensed by the Texas Commission on Environmental Quality.
- The irrigation controller must have a rain sensor to prevent watering during and after rains.
- System must have a controller with multiple cycle, rain sensor capability and irrigation water budget.
- Landscape and irrigation plans required. Landscape design and plans must include the seven basic principles of Water Wise Landscaping.

5.0 RESULTS: LITERATURE REVIEW

Additional landscape and irrigation ordinance information was uncovered from research reports developed in the United States.

5.1 REPORT – “An Investigation into what Planning Departments and Water Authorities can Learn from Eleven Communities’ Water-wise Landscaping Ordinances”

Summary

The purpose of this report is to provide information on the many options available in water-wise landscaping ordinances, how various ordinance elements are enforced in real life, the advantages and disadvantages of various ordinance elements, and landscape architects’ and planners’ views and recommendations on water-wise landscaping ordinances. The author of the report focused on ordinances which encourage or require the use of water-wise plants and/or limit the area of lawns rather than water use efficiency.

Selected Research Ordinances

Eleven water-wise landscaping ordinances were analyzed. Some of the communities used in this report also responded to the CRD survey:

1. Gilbert, Arizona
2. Glendale, Arizona
3. Santa Rosa, California
4. Las Vegas, Nevada
5. Reno, Nevada
6. Albuquerque, New Mexico
7. Santa Fe, New Mexico
8. Greensboro, North Carolina
9. White City, Oregon
10. Leander, Texas
11. Pierce County, Washington

Ordinance Applies To

- Most of the ordinances apply to all new construction and major remodels. Four ordinances exempt schools, parks and cemeteries from the turf limits and water intensive plants limits, and six of the eleven exempt single family residences.

Key Elements of the Ordinances

- Eight communities set turf limits, ranging from 0% to 50% of the landscaped area.
- Four communities set limits for the minimum width of irrigated turf, which range from 1.5 m to 3.0 m (5-10 feet).
- Seven communities require mulching with minimum ranges from 50 mm to 100 mm (2-4 inches).
- Four communities require the use of warm weather drought resistant grass species.

- Six communities emphasize the use of drought tolerant or low water use plants.
- Four communities require tilling the soil in ranges from 100 mm to 305 mm (4-12 inches).
- Four communities require organic soil amendments ranging from 50 mm to 203 mm (2-8 inches).
- Four communities require the use of micro-drip irrigation on non-turf areas, parking lot landscapes and when traditional irrigation will result in overspray and/or run-off.
- Two communities require that plants with similar water needs be grouped together.
- Five communities prohibit the use of spray irrigation for watering trees and shrubs, for anything except turf and in areas ranging from 3 m to 4.5 m (10-15 feet).
- Six communities have ordinances meant to ensure efficient water use on slopes.
- Three communities require irrigation system audits by a registered landscape architect or certified irrigation auditor.
- Two communities require educational landscape information packages to be provided to the homeowner, landscape contractors, maintenance companies and title companies.

Enforcement

- Seven of the eight communities with turf limits strictly enforce the ordinance.
- The four communities who have an ordinance about minimum width of irrigated turf enforce the ordinance.
- Mulching ordinance is strongly enforced.
- Warm weather/drought resistant grass ordinance not enforced.
- Enforcement of the drought tolerant plant ordinance varied from always to occasionally.
- Enforcement of the soil tilling ordinance varied from always to never.
- Soil amending not enforced.
- Five of the six communities that have an ordinance for efficient water use on slopes enforce the ordinance.
- Irrigation audit ordinance not enforced.
- Providing information packages are distributed.

Selected Recommendations from the Report

- More detailed inspections are needed; approved plans do not reflect installed landscape, which indicates a lack of qualified inspectors. Ultimately, the approved original plan is not enforced in many ordinances.
- Seek input from a wide variety of stakeholders particularly landscaping and irrigation professionals.
- The exclusion of single family dwellings from 6 of the 11 communities negates much of the ordinance intent as single family dwellings tend to use more water for irrigation than other sectors.
- Continuing education of all sectors of the community about water-wise landscaping is important.
- Require the distribution of city-provided information water-wise landscaping information packets to home buyers, builders, developers (any entity dealing with the property).
- Restrictions on the maximum amounts of irrigated turf in the landscape should be increased.

- Landscape and irrigation auditing process should be performed before a certificate of occupancy is issued.
- Mulching requirement should be part of ordinance.

APPENDIX A

SURVEYED COMMUNITIES

CANADIAN	AMERICAN
Calgary, AB	Sierra Vista, AZ
Edmonton, AB	Yuma, AZ
Courtney, BC	Phoenix, AZ
Comox, BC	Tucson, AZ
Burnaby, BC	Chandler, AZ
Kelowna, BC	Glendale, AZ
Sechelt, BC	Marin, CA
Vernon, BC	Santa Rosa, CA
Winnipeg, MB	Santa Cruz, CA
Halifax, NS	Fairfield, CA
Ottawa, ON	San Diego, CA
Toronto, ON	Los Angeles, CA
Waterloo, ON	Southern California, CA
Montreal, QC	Sacramento, CA
Regina, SK	Oakland, CA
	Louisville, CO
	Brooksville, FL
	Volusia, FL
	Incline Village, NV
	Las Vegas, NV
	Las Cruces, NM
	Albuquerque, NM
	Sante Fe, NM
	Ashland Oregon
	Eugene, OR
	Portland, OR
	Austin, TX
	Leander, TX
	El Paso, TX
	Houston, TX
	Dallas, TX
	Central Utah Water
	Bellingham, WA
	Everett, WA
	Olympia, WA
	Seattle, WA
	Tacoma, WA

Communities included in the survey but who did not respond:

City of Gilbert, AZ
City of Denver, CL

Sarasota County, FL
City of Tampa Bay, FL

APPENDIX B

ADDITIONAL COMMENTS

Edmonton, AB – I'm presuming CRD is fully metered and charges full cost of service (this is the number one priority to any water conservation program). PS We charge \$1.16 m3 for first 60 m3 residential. One of the best methods for reducing outdoor water use is to have an inclining block rate structure. The more they use, the more they pay. You have to decide what you are trying to accomplish with your outdoor watering program – reducing peak demand or reducing overall water use. They require two different approaches. Edmonton residential outdoor water use has dropped from 20 l/p/d to 10 l/p/d over the 15 years simply due to public education about “1 hour of watering a week is all that's needed to keep your lawn at its peak”. Commercial customers actually use very little water compared to residential customers (even when you take parks and golf courses into account). Backflow prevention on irrigation systems doesn't really belong in the conservation survey. It is a water quality issue and should be a given.

This municipality can not be identified by name – This municipality is a separate legal entity that exists under the umbrella of member municipalities and currently provides water to about 2 million people who live in the region. The region brought in a Water Shortage Program (WSRP) in 1993 due to the experience of severe drought conditions during most of the summer period in 1992. After a similar experience in 2003, the Board called for a review and revision of the 1993 WSRP to reflect experience gained through implementation of the original plan. The final version of the WSRP was approved by the Board on May, 2004. Thereafter, individual municipalities adopted the new version of the WSRP. Please note that individual municipalities have best management practices regarding outdoor water use. Especially after 2003, there's been a higher awareness of water usage within municipalities (i.e. parks, road, boulevards) and in response to the WSRP, Drinking Water Management Plan, higher water prices and seasonal pricing, this is evolving. Also, individual municipalities offer programs and initiatives to promote water conservation, and these include toilet rebate/replacement program, purchase of indoor and/or outdoor water saving kits (at a subsidized price) and purchase of rain barrels (at a subsidized price). The ICI Water audit process was launched in July of 2006 and includes a Water Audit Template that can be used to conduct water audits for the ICI sector. The member municipalities of this region will, over the next five years, examine the feasibility of implementing, administering and maintaining backflow prevention and cross-connection control programs to protect the public water system from hazards originating on the customers premises or from temporary connection. Some of the municipalities already have an active program and others will be developing a program.

Sierra Vista, AZ – While we do not actually have a water shortage per se, we do have a mandate for riparian preservation. All of our water conservation codes and ordinances are meant not just to save water, but to demonstrate our local commitment to doing so in part to attract favorable attention to funding for major projects associated with Reuse, Recharge, Conservation and Augmentation. Cochise County is a member of the Upper San Pedro Partnership (<http://www.usppartnership.com>) a collaborative organization made up of federal, state and local governments, government agencies, and private organizations. Codes and ordinances and other conservation programs are relatively new. Many pertain only to indoor water use. Measurement and enforcement are challenges we face. In cases where these challenges cannot be met we do not specifically claim a particular amount of savings.

Comox, BC – Does not apply "metered" rates to residential users (we do have meters on all ICI and multi-family). As a result, we cannot differentiate between the volumes used by one user and another. Water consumption in Comox is amongst the highest in Canada. The political will to ticket is not present, therefore only warnings are given. Without a financial penalty to control unreasonable use, no reliable (and politically acceptable) means of controlling water consumption exists. Meters cannot come quick enough.

Sechelt, BC – We are currently looking at changing our existing bylaw to reflect a lot of the issues you have touched on in this survey. We would be extremely interested in the results that surface from this study. Please pass them on to us if possible. Thanks! Implementing, administering and maintaining backflow prevention and cross-connection control programs to protect the public water system from hazards originating on the customers premises or from temporary connection. Some of the municipalities already have an active program and others will be developing a program.

Sacramento, CA – There is a state grant for irrigation improvements for properties 4 acres or more. Includes \$2500 for installation of water meter and improvements. \$2500 for meeting water budget after 1 year.

Oakland, CA – Have proposed new water regulations, but have not been passed yet. Offer plan reviews for customers who want to save water. Educational project underway to work with homeowners and developers in saving water. Serve 35 cities and unincorporated cities

Brooksville, FL – In reference to question 16 and 17, the District encourages people to conserve water through water conservation practices through educational brochures, videos, and PSAs, and the local utilities typically promote the individual programs. In order to address your survey, it's important to provide some context. The Southwest Florida Water Management District is one of 5 regional regulatory agencies in Florida directed by state law to preserve and protect water resources within its region. The District includes approximately 10,000 square miles in all or part of 16 counties in west central Florida. The District's duties involve water use and water quality regulation, long-range planning, land acquisition, aquatic weed control, flood control, water conservation, water resources education, water shortage planning, and restoration of certain lakes, rivers and bays. As a regulatory agency having the responsibility to ensure safe and adequate water supplies, we encourage and frequently support financially and technically, water conservation efforts within the District's boundaries. Our duties require us to coordinate efforts with more than a hundred government organizations, from the smallest municipalities to large state and federal agencies. The District has contributed funding toward many water conservation programs. All of the District's experience with these types of projects has been gained through partnerships with local utilities, both public and private, through the Cooperative Funding Program. Typically, utilities administer the program, and the District may reimburse them for up to 50% of the total eligible costs. Programs usually offer financial reimbursement in the form of a rebate, but other means such as bill credits have been used.

Incline Village, NV – Included article re Nevada incentive program.

Utah – Lawn ordinances get in the way. Cities need to examine their own ordinances and need to get rid of them because some are getting in the way. Central Utah has no program to promote landscape ordinances.

Las Cruces, NM – Most of these bylaws have just been adopted. This is the first phase, will focus on long-term goal of reducing peak demand.

Toronto, ON – In process of drafting water conservation bylaw but has not been passed yet.

Waterloo, ON – Program changes will be coming into effect in 2007.

Portland, OR – If there is a drought – power to administrator to create an ordinance/rules as they see necessary.

Everett, WA – Voluntary lawn watering calendar for all customers.

APPENDIX C

SURVEY QUESTIONNAIRE

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Thank you for assisting us in this project by completing this questionnaire as accurately and fully as you can. Please print your responses.

Please forward the completed survey by Friday September 1, 2006, to:

CRD Water Services
479 Island Highway
Victoria, BC
V9B 1H7

When answering this survey, please attach additional sheets of information if enough room has not been provided within the questionnaire

Should you have any questions about this survey, please contact Deborah Walker, Demand Management Coordinator, at CRD Water Services: Telephone 250-474-9697, Fax 205-474-4012 or e-mail dwalker@crd.bc.ca

Contact Information: - *For person completing the questionnaire*

Name: _____ Job Title: _____
Address: _____ City: _____ or
District: _____ or
County: _____
Province/State: _____ Postal/Zip Code: _____
Phone: _____ Fax: _____
E-mail: _____

The first series of questions relate to any outdoor water management ordinances/bylaws you may have.

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

SECTION A –OUTDOOR WATER MANAGEMENT ORDINANCES/BYLAWS

Question 1) Do you currently have any outdoor water management ordinances/bylaws? (Please tick response to question and move to question indicated beside answer.)

Yes (Continue to Q.2)

No (Skip to Q.13)

Question 2) How many do you have? _____ (Continue to Q. 3)

Question 3) Please tick all of the outdoor water management ordinances/bylaws you currently have. (Please record the name of the ordinance/bylaw when using the other category. Continue to Q. 4)

CURRENTLY HAVE

- Micro-drip irrigation only for any new landscape installations
- Turf grass soil depth requirements
- Require installation of an irrigation controller
- Rain sensors for in-ground sprinkler systems
- Prohibition of in-ground sprinklers in specific areas (e.g. medians)
- Limitation on the amount of lawn area per property
- Set percentage of plant material that must be native/drought species
- Landscape water budgets based on percentage of Evapotranspiration (ET)
- Watering bylaws/schedules
- Irrigation audits
- Landscaping audits
- Permits to put in an in-ground irrigation system
- Requirement for backflow prevention devices
- Separate meters for landscape
- Other (Please specify) _____
- Other (Please specify) _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 4) Which of the following customer groups were targeted by the ordinances/bylaws you indicated in the previous question? (Please tick all applicable groups. Please record the name when using either of the other categories. **Continue to Q. 5)**

Note: Industrial, Commercial, Institutional (ICI)

ORDINANCE/BYLAW	Single Family Residential	Multi- Family Residential	ICI	Other:
Micro-drip irrigation <u>only</u> for any new landscape installations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turf grass soil depth requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installation of an irrigation controller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rain sensors for in-ground sprinkler systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prohibition of in-ground sprinklers in specific areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Limitation on the amount of lawn/ grass areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set percentage of plant material that must be native species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landscape water budgets based on % of Evapotranspiration (ET)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Watering bylaws/schedules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation audits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landscaping audits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Permits to install an in-ground irrigation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Requirement for backflow prevention devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Separate meters for landscape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 5) What was the goal(s) of the ordinance(s)/bylaw(s)? *(For each ordinance/bylaw you have please record the name/goal where indicated. Continue to Q. 6a)*

Ordinance: _____

Goal: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 6a) How did you/do you measure the effectiveness of your ordinance(s)/bylaw(s)? E.g. what performance indicators did/do you use? *(For each ordinance/bylaw you have please record the name/measurement where indicated. Continue to Q. 6b)*

Ordinance: _____

Measure/Performance indicators: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 6b) How effective has this ordinance(s)/bylaw(s) been? *(For each ordinance/bylaw you have please record the name/effectiveness where indicated. Please be as specific as possible. E.g. if target set has it met its goal, this ordinance/bylaw has reduced water use by 5 %. Continue to Q. 7)*

Ordinance: _____

How effective: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 7) How long has this ordinance(s)/bylaw(s) been in place? *(Please record the name of the ordinance/bylaw when using the other category. Continue to Q. 8a)*

ORDINANCE/BYLAWS	Time in Effect
Micro-drip irrigation <u>only</u> for any new landscape installations	_____
Turf grass soil depth requirements	_____
Require installation of an irrigation controller	_____
Rain sensors for in-ground sprinkler systems	_____
Prohibition of in-ground sprinklers in specific areas (e.g. medians)	_____
Limitation on the amount of lawn area per property	_____
Set percentage of plant material that must be native/drought tolerant	_____
Landscape water budgets based on percentage of Evapotranspiration (ET)	_____
Watering bylaws/schedules	_____
Irrigation audits	_____
Landscaping audits	_____
Permits to put in an in-ground irrigation system	_____
Requirement for backflow prevention devices	_____
Separate meters for landscape	_____
Other (Please specify) _____	_____
Other (Please specify) _____	_____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 8a) What processes did you use for creating this ordinance(s)/bylaw(s)? *(For each ordinance/bylaw you have please record the name/process where indicated. Please be as specific as possible. E.g. who was involved in the planning process for the ordinance - for example was public consultation used? How long did it take from start to finish? Continue to Q. 8b)*

Ordinance: _____

Process: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 8b) Please indicate what costs you incurred and what these costs were for when creating the ordinance(s)/bylaw(s). *(For each ordinance/bylaw you have please record the name/cost/for where indicated. Continue to Q. 9)*

Ordinance: _____

Cost: _____

For: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 9) Do you/did you promote these ordinance(s)/bylaw(s)? (Please tick response and continue to question indicated beside answer)

Yes (*Continue to Q. 10*)

No (*Skip to Q. 11*)

Question 10) Please tick all of the promotional methods you use/used to promote your ordinance(s)/bylaw(s). (Please record the name of the promotional method when using the other category. *Continue to Q. 11*)

- Brochure/flyer/pamphlets
- Public Service announcements
- Commercials on radio
- Commercials on TV
- Newspaper advertisements/magazines/newsletters
- On your Website
- Public open houses, town hall meetings
- Television or radio talk shows
- Displays in malls, schools, etc.
- Presentations to associations, service clubs, etc.
- Press releases
- Other (Please specify) _____
- Other (Please specify) _____

Question 11) What are your enforcement policies on this ordinance(s)/bylaw(s)? How are these policies enforced? E.g. bylaw officer patrols on a daily basis. (For each ordinance/bylaw you have please record the name/enforcement policy where indicated. *Continue to Q. 12*)

Ordinance: _____

Enforcement policy: _____

Ordinance: _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Enforcement policy: _____

Ordinance: _____

Enforcement policy: _____

Ordinance: _____

Enforcement policy: _____

Question 12) How may we obtain a copy of your ordinance(s)/ bylaw(s)? (*Continue to Q.13*)

- On-line (Please fill in your web address) _____
- By Fax
- By Mail
- By e-mail

There are only a few more questions. Thank you for your patience. This last series of questions relate to other non-ordinance programs you may have that encourage outdoor water conservation

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

SECTION B –NON-ORDINANCE PROGRAMS TO ENCOURAGE OUTDOOR WATER CONSERVATION

Question 13) Do you currently have any programs besides ordinances/bylaws that promote outdoor water conservation? *(Please tick response and continue to question indicated beside answer)*

Yes *(Continue to Q. 14)*

No *(Thank you for your time and cooperation. If you have additional comments please see the area at the end of the survey.)*

Question 14) Would you please tell me which of the following non-ordinance/bylaw programs you currently have? *(Please tick all applicable categories you have. Please record the name of program when using the other category. Continue to Q. 15)*

CURRENTLY HAVE

- Education campaign
- Rebates for Irrigation Evapotranspiration (ET) Controller
- Rebates for rain sensors
- Rebates for soil moisture sensors
- Rebates for converting in-ground systems to micro/drip
- Rebates for specific irrigation nozzles and heads with check valves
- Rebate for irrigation controller
- Rebate/incentive for cisterns & pump systems
- Rebates/incentives for harvesting rain water
- Financial incentives for irrigation audits
- Financial incentives for landscape audits
- Other (Please specify) _____
- Other (Please specify) _____

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 15) Which of the following customer groups would be eligible for the programs you indicated in the previous question? *(Please tick all eligible customer groups. Please record the name when using either of the other categories. Continue to Q. 16)*

Note: Industrial Commercial Institutional (ICI)

PROGRAM	Single Family Residential	Multi- Family Residential	ICI	Other:
Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates for Irrigation Evapotranspiration (ET) Controller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates for rain sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates for soil moisture sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates for converting in-ground systems to micro/drip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates for specific irrigation nozzles / heads with check valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebate for irrigation controller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebate/incentive for cisterns & pump systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebates/incentives for harvesting rain water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial incentives for irrigation audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial incentives for landscape audits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

Question 16) Do you promote these programs? *(Please tick response and continue to question indicated beside answer)*

Yes *(Continue to Q. 17)*

No *(Thank you for time and cooperation.
If you have additional comments please
see the area at the end of the survey)*

Question 17) Please tick all of the promotional methods you use to promote your non -ordinance program(s). *(Please record the name of the promotional method when using the other category.)*

- Brochure/flyer/pamphlets
- Public Service announcements
- Commercials on radio
- Commercials on TV
- Newspaper, magazine, newsletter advertisements
- On your Web site
- Community meetings and presentations
- Television or radio talk shows
- Displays in malls, schools, etc.
- Presentations to associations, service clubs, etc.
- Press releases

Other (Please specify) _____

Other (Please specify) _____

Thank you for your time and co- operation. Please record any additional comments below. Please return the completed survey by Friday September 1, 2006.

LANDSCAPE ORDINANCES SURVEY QUESTIONNAIRE

ADDITIONAL COMMENTS