

Water Conservation for Small Water Supply Systems

A MEETING OF THE RDN'S WATER PURVEYOR WORKING
GROUP



22 November 2012, Parksville BC



water conservation plan sections 1 and 2

INTRODUCTION AND WATER SYSTEM PROFILE



1. Introduction

Water and water conservation are important to our community because _____

The purpose of this plan is to develop and implement a long-term strategy addressing water quality and quantity issues to protect both public and environmental health.

It is important for our water supply system to conserve water because _____

The scope of this water conservation plan is _____

2. Water Supply System Profile

Our water supply comes from _____

Water is treated _____

Table 1. Water System Data

Total service population	20 people
Maximum built-out service population	28 people
Annual Water Supply Capacity	3700 m ³ per year
Maximum Daily Supply Capacity	10.5 m ³ on max day

Table 2. Service Connections Data

Service Connections	# of connections	# of connections metered	% of connections metered
Residential connections	14	1	7%
Public connections (e.g. hydrant, park, community centre)	1	0	0%
Other connections (e.g. commercial, industrial, institutional, agricultural)	0	0	--
Total service connections	15	1	7%

$= (1/14) \times 100$

$= (1/15) \times 100$

Table 3. Water Use Data



Type of Water Use	Maximum Day (m ³)	Annual (m ³)	Annual Per Capita (m ³)	Average Day (m ³)	Average Day Per Capita (litres)
Calculation			= [Annual] / [population]	= [Annual] / 365	= [Average day] x 1000 / [population]
Residential Connections	8.9	2336	117	6.4	320
Total System	9.7	2957	148	8.1	405



A comparison with other jurisdiction for average day per capita water use is shown in Figure 2.

$= 2336 / 20$

$= 2336 / 365$

$= 6.4 \times 1000 / 20$

Average Day Per Capita Water Use

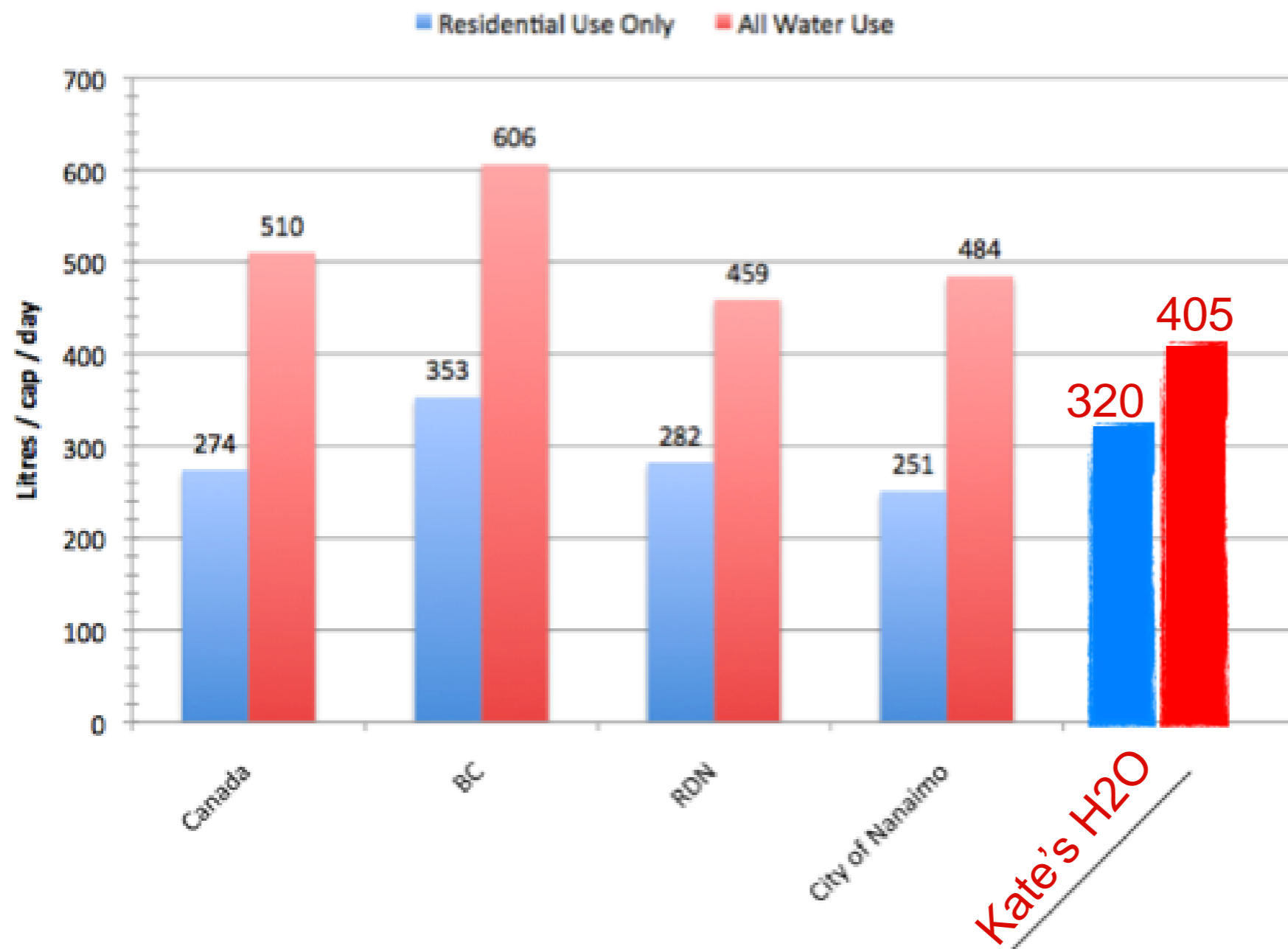


Figure 2: Average Day Water Use Comparison

Sources: [Canada and BC - 2011 Municipal Water Use Report](#) (Environment Canada)

water conservation plan sections 3 and 4

FORECASTING DEMAND AND GOALS & TARGETS



3. Forecasting Demand

The amount of water that will be used by our system in the future depends on our population growth and our reductions in per capita water use.

Figures 2 and 3 show possible water use futures for our system. The possible futures shown are:

- No Reductions – we continue to use the current amount of water per capita
- 0.5% Annual Reduction – every year we reduce our water use per capita by 0.5% from the previous year
- 2% Annual Reduction – every year we reduce our water use per capita by 2% from the previous year

The calculations for these forecasts are shown in Tables 4 and 5.

Table 4. Annual Water Use Forecasts

		2012	2022 (10 years)	2032 (20 years)
Service Population		20	24	28
Total System Annual Water Use (m³)	No Reductions	= Current Total System Water Use	= [Total System Annual Per Capita (Table 3)] x [2022 pop]	= [Total System Annual Per Capita (Table 3)] x [2032 pop]
		2957	3552	4144
	0.5% Annual Reduction	= Current Total System Water Use	= [2022 no reductions water use] x 0.951	= [2032 no reductions water use] x 0.905
		2957		
2% Annual Reduction	= Current Total System Water Use	= [2022 no reductions water use] x 0.817	= [2032 no reductions water use] x 0.668	
	2957			

from Table 3

=148x24

=148x28

Table 4. Annual Water Use Forecasts

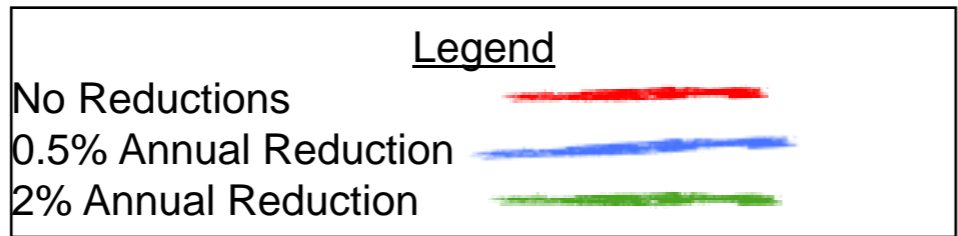
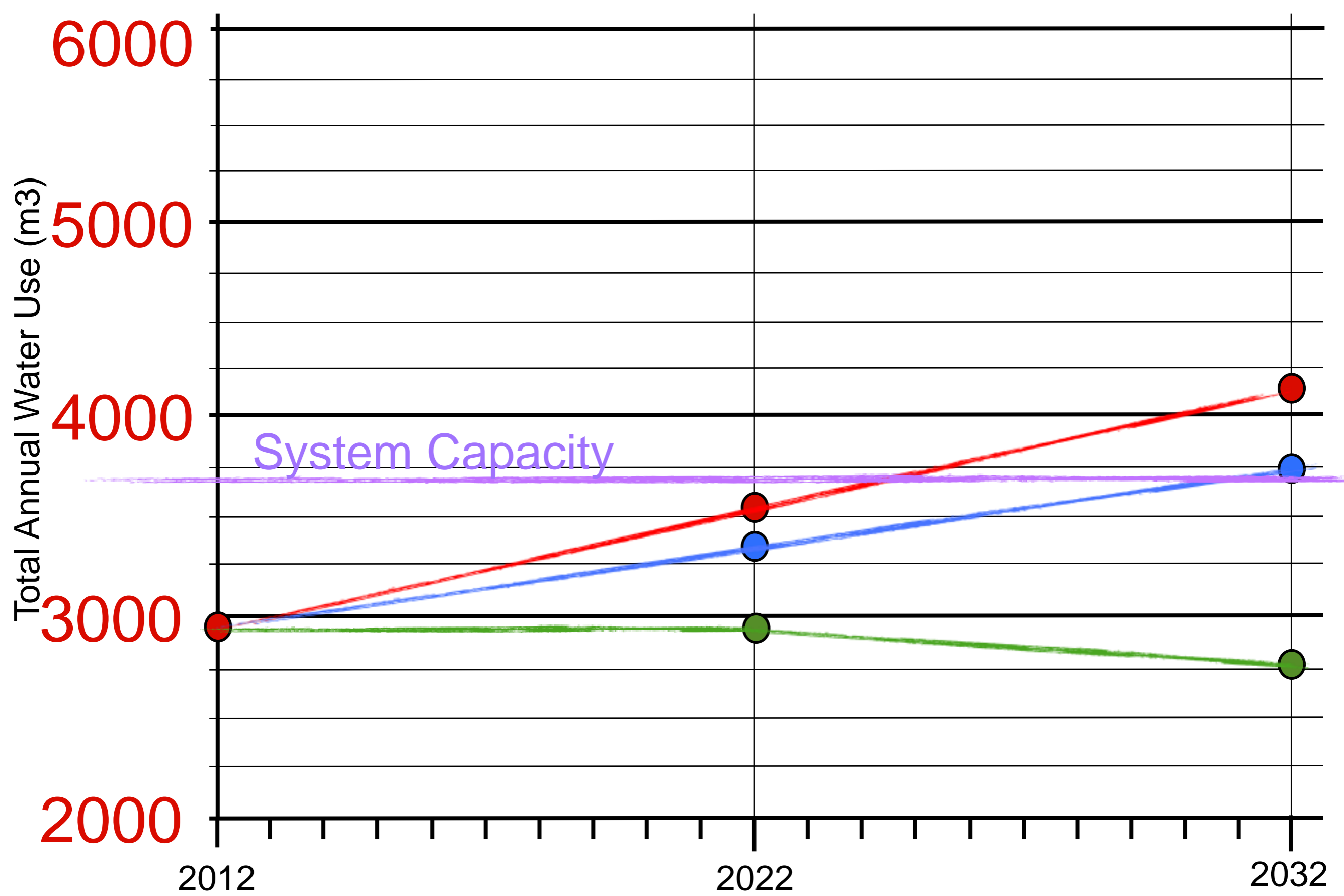
		2012	2022 (10 years)	2032 (20 years)
Service Population		20	24	28
Total System Annual Water Use (m³)	No Reductions	= Current Total System Water Use	= [Total System Annual Per Capita (Table 3)] x [2022 pop]	= [Total System Annual Per Capita (Table 3)] x [2032 pop]
		2957	3552	4144
	0.5% Annual Reduction	= Current Total System Water Use	= [2022 no reductions water use] x 0.951	= [2032 no reductions water use] x 0.905
		2957	3378	3750
	2% Annual Reduction	= Current Total System Water Use	= [2022 no reductions water use] x 0.817	= [2032 no reductions water use] x 0.668
		2957	2902	2768

$= 3552 \times .951$

$= 3552 \times .817$

$= 4144 \times .905$

$= 4144 \times .668$

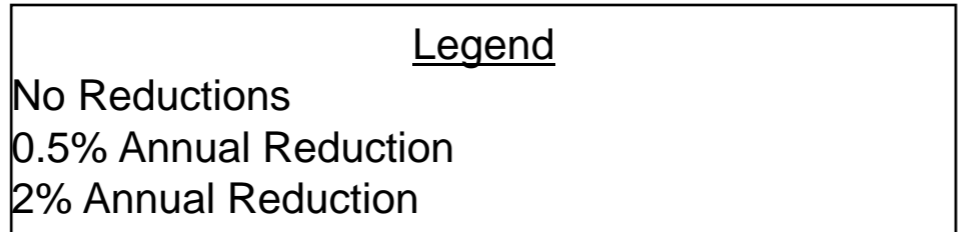


Maximum Day Water Use (m3)

2012

2022

2032



4. Conservation Goals and Targets

Benefits we would like to achieve through water conservation are listed as our water conservation goals in Table 6.

Table 6. Water Conservation Goals

1.
2.
3.
4.
5.

Reduce operating costs

Postpone installing a new well

Avoid need for new treatment plant

Protect our local water resources

Our targets for water conservation are listed in Table 7.

Table 7. Water Conservation Targets

1.
2.

Keep our system max day below 10m³

Reduce our average residential use by 15% by 2020

water conservation plan sections 5 and 6

CURRENT MEASURES AND MEASURES TO IMPLEMENT



5. Current Water Conservation Measures

Table 8 lists the water conservation measures we already have in place in our water system.

Table 8. Current Water Conservation Measures

Description of Conservation Measure	Year Implemented

The most effective water conservation measure has been _____

6. Conservation Measures to Implement

To help select conservation measures for our system, we have rated a number of potential measures according to the selection criteria shown in Table 9.

Table 9. Selection Criteria

1.	affordable for system
2.	reduces max summer use
3.	easy to implement
4.	affordable for water users

Each measure was given a score out of 5 for each selection criterion (5 is the best, 0 is the worst). The scores were added up to give a total score. Table 10 shows the results of the rating.

We plan to implement _____

Table 10. Conservation Measures Rating 1 (worst) to 5 (best)

Conservation Measures	Selection Criteria				Total Score
	1. system affordable	2. reduces summer use	3. easy	4. users affordable	
1. meter water source	4	1	3	4	12
2. meter water users	2	5	2	2	11
3. repair known leaks					
4. indoor water use brochures					
5. shared rainwater tank					
6.					
7.					

Table 10. Conservation Measures Rating 1 (worst) to 5 (best)

Conservation Measures	Selection Criteria				Total Score
	1. system affordable	2. reduces summer use	3. easy	4. users affordable	
1. meter water source	4	1	3	4	12
2. meter water users	2	5	2	2	11
3. repair known leaks	3	5	2	2	12
4. indoor water use brochures	5	2	4	5	16
5. shared rainwater tank	3	4	3	3	13
6.					
7.					

water conservation plan section 7

IMPLEMENTATION PLAN



7. Implementation Strategy

The next steps to implement this water conservation plan are:

1.

This will be performed by: _____

This will be completed by the following date: _____

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