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**POTENTIAL WATER SAVINGS OF  
CONSERVATION TECHNIQUES**





***ST. JOHNS RIVER WATER  
MANAGEMENT DISTRICT***

***Potential Water Savings of  
Conservation Techniques***

November 8, 2004

**Burton & Associates**

*In Association with:*

***PBS&J***

***&***

***GIS Associates***



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CONSERVATION TECHNIQUES  
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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES SECTION I – INTRODUCTION

## I. INTRODUCTION

The St. Johns River Water Management District (SJRWMD) contracted with a team of professional consultants to evaluate the effectiveness of water conservation techniques implemented by utilities within SJRWMD. This report describes the analysis conducted during the Study and presents the results of the Study

### A. Objective

The objective of this Study was to determine the opportunity for savings in indoor and outdoor water use from the implementation of water conservation techniques by local utilities within SJRWMD.

This determination of savings as a result of the implementation of various water conservation techniques is intended to serve as a basis for use by SJRWMD to assess expected savings in overall water use for development of SJRWMD's 2005 Water Supply Plan.

### B. Scope

The scope of the Study included the following items:

1. Existing Literature Review and New Literature Search – Burton & Associates conducted a review of existing literature collected by SJRWMD on the effectiveness of conservation initiatives and conducted an additional literature search to identify water conservation techniques that have been implemented throughout the United States in order to determine the opportunity for water savings from implementation of each identified water conservation technique.
2. Survey of Utilities – PBS&J conducted a survey of selected utilities within SJRWMD to identify water conservation techniques that have been implemented by the utilities participating in the survey.

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3. *Evaluation of the Effectiveness of Water Conservation Techniques* – Burton & Associates and GIS Associates conducted an evaluation of billing data received from the utilities participating in the survey to determine the effectiveness of implemented water conservation techniques upon water use. This included the following activities:
  - a. *Analysis and Compilation of Billing Data* – Burton & Associates performed an analysis and compilation of billing history data by account received from five (5) participating utilities.
  - b. *Compilation of Parcel and Demographic Data by Account* – Upon receipt of the compiled billing history data from Burton & Associates, GIS Associates determined geo-code references for each account in the billing history of each utility at the subdivision and census tract level. This allowed compilation of a) parcel attribute data by subdivision for each utility from the applicable county property appraiser’s data base and b) demographic data by census tract for each utility from the Census Bureau data base. This parcel attribute data and census tract data was then associated with the billing history data of all accounts by subdivision and alternatively by census tract as observations for input to the econometric modeling described below.
  - c. *Econometric Modeling of Water Use* – Burton & Associates developed econometric models to determine the effect upon water usage of implemented water conservation techniques based upon billing history data from participating utilities summed at the subdivision level (with parcel attribute data as explanatory variables), and alternatively at the Census Tract level (with demographic data as explanatory variables). Econometric models were developed for each utility using account data compiled as observations at the subdivision level and econometric models were developed for the combined utilities using account data compiled

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as observations at the census tract level. Based upon the modeling results, Burton & Associates developed conclusions regarding the use of the results of this Study to estimate probable and possible water usage reductions by implementation of water conservation techniques at the utility level.

### **C. Methodology**

Tasks were assigned to each consulting firm involved in the Study as follows:

#### **Burton & Associates:**

1. Review of existing literature provided by SJRWMD and conduct of an additional literature search regarding the effectiveness of water conservation techniques in reducing water use.
2. Compilation of billing data from the participating utilities and development of an econometric model to evaluate the effectiveness of water conservation techniques in reducing water use in surveyed utilities within SJRWMD.
3. Preparation and coordination of this report to include the results of all consultants involved in the project.

#### **PBS&J:**

1. Preparation of an e-mail survey of utilities to determine a) those utilities interested in participating in the study, and b) what water conservation techniques have been implemented by each surveyed utility.
2. Conduct of the e-mail survey of the utilities described above and compilation of the results.

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### GIS Associates:

1. Geo-coding of billing addresses from billing records of participating utilities to append subdivision codes and census tract codes to account records and to match with a) subdivision codes on the property appraiser's data base to derive physical attributes of the properties that could be explanatory variables relative to water use, and b) census tract on the Census Bureau data base to derive socio-demographic attributes that could be explanatory variables relative to water use.

Weekly progress meetings were held via conference calls during the course of the study in order to ensure that the work of all consultants was coordinated on a regular basis. An interactive work session was conducted with District staff at the conclusion of the analysis to review the results of the econometric modeling of the effectiveness of water conservation techniques implemented by surveyed utilities in reducing water use. The modeling was finalized based on input from District staff and this report was prepared.

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## SECTION II – ANALYSIS

### II. ANALYSIS

#### A. Literature Search

SJRWMD provided Burton & Associates with the results of a previous literature search conducted for SJRWMD to serve as the basis for this task. Burton & Associates conducted a review of the provided literature to determine the applicability of the results of the studies included in the literature to the objectives of this Study. The results of the literature review indicated that, although the studies contained within the literature compilation varied in timeliness, methodology, scope, target result and findings, the results may be useful in drawing conclusions concerning expected ranges of water use reductions that might be expected from implementation of the water conservation techniques evaluated in the literature. The results of the review of the literature search provided by SJRWMD are discussed in Section III – Results, including a summary of the ranges of water savings by conservation technique, and are summarized by source in Appendix A.

It was determined that the data derived from the literature review, although useful as a general guide regarding ranges of water use reductions for conservation initiatives, was too non-specific and/or varied in the reported results to be useful in benchmarking of the econometric modeling conducted in this Study. Therefore, it was determined by SJRWMD and Burton & Associates that an additional, targeted literature search should be conducted to identify more relevant and current research or publications, that specifically deal with indoor and outdoor water use and changes in water use in response to specific water conservation practices to serve as benchmarks against which to evaluate the accuracy of the results of the econometric modeling conducted in this Study.

This literature search conducted by Burton & Associates identified several additional relevant papers, studies, articles and books. After review of this additional literature, it was determined that one publication provided the most meaningful, timely data for use in this Study. That publication was “Residential End Uses of Water”, which was published by the American Water Works Association (AWWA) in 1999. This reference is discussed in Section III – Results and is more fully described in Appendix A.

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## SECTION II – ANALYSIS

Because of the limited applicability of the references included in the original literature search provided by SJRWMD these references were not considered in the econometric modeling conducted in this Study. However, the AWWA reference cited above, identified in the additional literature search, was considered in the econometric modeling and served to establish benchmark parameters for expected indoor and outdoor water use with and without conservation. This information was very helpful in making assessments concerning validity of model results.

### ***B. Survey of Selected Utilities***

PBS&J developed a digital survey instrument that was distributed by e-mail to the twenty-five (25) largest utilities in SJRWMD and a few additional selected utilities in east central Florida that had indicated an interest in the Study. A total of thirty-eight (38) utilities were invited to participate and twenty-one (21) responded with completed surveys. A total of eight (8) of the respondents provided billing data, of which five (5) were useful for econometric modeling. The three (3) billing data sets that were not used were either not correctly compiled or substantial errors occurred when attempting to append additional data.

The survey was intended to invite participation in this Study and to solicit information from those utilities that chose to participate. PBS&J developed an initial survey form and distributed it to SJRWMD and other participating consultants for review and comment. The survey was finalized based upon input from that review and e-mailed to the utilities on the distribution list.

PBS&J conducted follow-up contacts with utilities that did not respond to the initial e-mailing, compiled information as it was received, and prepared the final compilation of the survey results (Appendix B).

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## SECTION II – ANALYSIS

### **C. Compilation of Billing Data**

During the course of the Study, as utilities committed to being a part of the Study, Burton & Associates contacted the billing representative of each participating utility with a request to obtain one year of monthly water billing history for each water account on their system. When billing data was received from the utilities, Burton & Associates reviewed the data, compiled it into a consistent format and e-mailed each utility billing data file to GIS Associates for geo-coding and compilation as described in the following section.

### **D. Appending of Property and Demographic Data by Account**

GIS Associates added subdivision and census tract codes to the utility billing data files received from Burton & Associates. This was done by using the service address in a GIS overlay of subdivisions and census tracts.

This process resulted in each account record being assigned a subdivision code and a census tract code. Physical attribute data was then appended to each account record from each county property appraiser's file based on its subdivision code and the billing records were then compiled at the subdivision level. Demographic data was then appended to each account record from the Census Bureau database based upon its census tract code and the billing records were then compiled at the census tract level. This resulted in one observation per subdivision in the subdivision analysis and alternatively one observation per census tract in the analysis at the census tract level.

### **E. Econometric Modeling of Water Use**

Burton & Associates began developing an econometric model for each billing data set to evaluate water use relative to a number of explanatory variables as geo-coded billing data was received from GIS Associates. The model was refined as additional geo-coded billing data was received from GIS associates.

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## ***SECTION II – ANALYSIS***

The model was constructed to accomplish a cross sectional analysis of water use 1) by individual utility and 2) across all utilities in the Study relative to the identified explanatory variables in order to evaluate the effects of each explanatory variable on water use. Detailed descriptions of the model and the modeling approach, including the explanatory variables identified, are included in Appendix B.

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## SECTION III – RESULTS

### III. RESULTS

Although the data available from the literature review and search was not specific enough to be used in the econometric modeling, it was definitive enough to identify ranges of expected water savings from the implementation of a number of water conservation techniques. These expected ranges of water savings are shown in Table 1.

The results of the econometric modeling process provided acceptable estimates of water use related to the explanatory variables included in the various models by utility and for all utilities combined. However, the survey and billing data provided by the participating utilities included specific data regarding only one conservation initiative (other than inclining block rates and reclaimed water) implemented by only one utility in a limited section of its service area. This limited the ability of the modeling process to evaluate the effectiveness of any other specific water conservation techniques.

Notwithstanding the limitation to evaluate specific water conservation techniques because of the lack of specific data about such techniques, the modeling provided valuable information and insights regarding indoor and outdoor water use in the participating utilities as well as the effect upon water use of:

- a. Price/cost,
- b. Reclaimed water,
- c. Property attributes (house size, lot size, yard area, age of structure, etc.),  
and
- d. Household attributes - persons per household.

The specific results of both the literature review/search and the econometric modeling are described in the following sub sections.

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### A. Literature Review/Search Results

The literature search consisted of two parts 1) review and evaluation of relevant studies, reports and analyses contained in a prior literature search provided to Burton & Associates by SJRWMD, and 2) a new literature search to identify additional current and relevant studies, reports and analyses related to the effects of water conservation practices upon water use.

#### 1. Review of Prior Literature Search

Review of the prior literature search provided by SJRWMD revealed a number of studies and analyses dealing with a broad array of water conservation techniques. The studies and analyses varied in terms of scope, isolation of the water conservation techniques from other explanatory variables that affect water use, and level of quantification of the expected water savings from implementation of the water conservation technique.

However, it may be useful to understand the ranges of expected savings for the water conservation techniques identified in the literature search, with the understanding that expected values within the ranges could be highly dependent upon factors affecting water use that were not specifically accounted for in the analyses.

For example, one study identified a range of water savings that was achieved as a result of a program to install flow reducing plumbing fixtures. However, the study noted that during the installation of the plumbing fixtures, a significant number of leaks were discovered and repaired prior to, or as a part of, the installation of the flow reducing fixtures. The study noted the contribution of the leak repairs to the reduction in water use, but did not attempt to assign a portion of the water savings to leak repairs versus flow reducing plumbing fixtures, nor did the study address the age of the dwellings involved.

Therefore, if the results of the literature review were to be used to predict water savings from the implementation of identified water conservation techniques within SJRWMD, it should be used cautiously. It is probably reasonable to assume that no

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greater water savings than represented by the lower quartile of the ranges of water savings identified herein for any water conservation technique will be realized.

Table 1 presents a summary of the results of the literature review/search of expected ranges of water savings. We encourage the reader to review the summaries (presented in Appendix A) which were the source for the ranges of water use reductions included in Table 1. Valuable insights can be gained from the individual summaries that can not be included in a table.

A legend for abbreviations used in Table 1 and Appendix A is as follows:

DU	=	dwelling Unit
gpd	=	gallons per day
gpcd	=	gallons per capita per day
gpad	=	gallons per average day
pr	=	pressure reduction
g/yr	=	gallons per year
fixture	=	plumbing fixture (eg, toilet, sink, etc.)
SF	=	single family
NR	=	non residential
ULFT	=	ultra low flow toilets
HWOD	=	hot water on demand
AF	=	acre feet

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***Table 1 – Estimated Ranges of Water Savings Potential per Literature Search***

Estimated Ranges of Water Savings Potential per Literature Search	
Conservation Initiative	Range Of Estimated Water Savings Potential
<b>INDOOR</b>	
Indoor use as a percentage of indoor and outdoor use	40% to 50% in Florida
Plumbing Retro Fit Kits	9.5 to 61.58 gpd per DU
Plumbing Retro Fit Kits - SF	12.49 to 14.13 gpd per DU
Plumbing Retro Fit Kits - MF	5.10% to 27% per DU
Plumbing Retro Fit Kits - City Wide Average (SF &Com.)	13.50% per account
Apartment Retrofits	15.6 gpd per DU
Jr. High School Retrofits	668 gpd per school
Hotel/Motel Retrofits	6 gpd per room
ULF Toilets - Single Family	5 to 47 gpcd per capita
ULF Toilets - Multi-Family	19.5 to 10.9 gpcd per capita
ULF Toilets - Combined	10.5 to 38 gpd per toilet
ULF Toilets - Com/Inst/Indus.	76.8 gpd/toilet per toilet
Toilet Retrofit/Water Displacement Devices	.65 gpcd per capita
Dual Flush Toilets	40% per toilet
1.0 GPF Urinals	10 gpd/fixture per fixture
Kitchen Faucet	13.10% per fixture
Water Efficient Clothes Washers	3 to 5.7 gpcd per capita
Water Efficient Clothes Washers - Multi-Housing Common Area	60% per washer
EcoSafe Washing Machines	40% per washer
Water Use Surveys:	
<i>Single Family</i>	14.70% per DU
<i>Multi-Family</i>	14.80% per DU
<i>Industrial</i>	5,250 gpad per account
<i>Educational Institution</i>	1720 gpad per account
<i>Hotel/Motel</i>	3,467 gpad per account
<i>Retail/Wholesale</i>	1,774 gpad per account
<i>Restaurants</i>	562 gpad per account
<i>Office Buildings</i>	2,790 gpad per account
<i>Nursing Facilities</i>	594 gpad per account
Low Flow Showerheads	5.05 to 7.8 gpcd per capita
Bath Faucets	27.90% per fixture
Faucet Aerators	1.2 gpd/fixture per fixture
Indoor Audit Survey Program	NA NA
Efficient Dishwashers	13.60% per washer
Plumbing Leak Repair Programs	20.9 to 73.97 gpd/home per DU
Toilet Leak Repair	50% of indoor use
Jr. High School Leak Repair	851 gpd per school
Pressure Reduction Pgrms -SF	1.9% w/17.6% pr per DU
Pressure Reduction Pgrms - MF	4.1% w/17.5% pr per DU
Graywater Systems	21.7% to 30% per DU
Sub-Metering Programs - Apts	18% to 39% per DU
Hot Water On Demand Systems	7.8 to 17.4 gpd per DU
<i>Shower</i>	1 to 3 g/shower per shower
<i>Bathroom Sink</i>	398 to 3,042 g/yr per sink
<i>Kitchen Sink</i>	2,045 g/yr per sink
<i>Household Points of Use (4)</i>	3,600 to 12,000 g/yr per DU
Public Education Programs	NA NA
Public Education Programs - MF	7.4 gpd per capita
Youth Education Programs	14.13 gpd/person per capita
Retro-Fit Homes Program	41% to 57% per DU
Average Water Savings Indoor/Retrofit	25% of indoor use

--- Continued ---

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## SECTION III – RESULTS

***Table 1 (Cont'd) – Estimated Ranges of Water Savings Potential per Literature Search***

Conservation Initiative	Range Of Estimated Water Savings Potential
<b>OUTDOOR</b>	
Outdoor use as a percentage of indoor and outdoor use	60% to 50% in Florida
Water Efficient Landscape & Irrigation System Rebates - Single Family	132 gpad per account
Water Efficient Landscape & Irrigation System Rebates - Multi-Family	324 gpad per account
Water Efficient Landscape & Irrigation System Rebates - Non-Residential	978 gpad per account
Large Landscape Water Use Surveys	428 gpad per account
Water Efficient Landscape - Xeriscape	16% to 75% of outdoor use
Water Efficient Irrigation	10% to 40% of outdoor use
Sensible Sprinkler Program	21% of outdoor use
Landscape Audits	10% of outdoor use
Irrigation Audits (SF)	50 gpd per account
Irrigation Audits (MF)	125 gpd per account
Irrigation Audits (Com.)	125 pgd per account
Water Audits (landscape)	42 to 55 gpd per account
Water Budgets:	
<i>Single Family</i>	78 to 156 gpad per account
<i>Multi-Family</i>	192 to 384 gpad per account
<i>Non-Residential</i>	578 to 1,156 gpad per account
Water Restrictions - Mandatory	10% to 55% per utility
Water Restrictions -	NA NA
Water Restrictions - Mandatory	20% to 57% per utility
Water Restrictions - Voluntary	-2% to 7% per utility
Rate Structures (Overall Avg.)	13.82% per utility
<i>Base Fac. Charge with Uniform Gallon Charge w/rate increase</i>	6.55% per utility
<i>Flat Rate To Base Fac. Chg with Uniform Gallonage Charge</i>	44.79% per utility
<i>Min. Usage to Base Fac. Chg with Uniform Gallonage Chg.</i>	9.70% per utility
<i>Inclining Block Rates (2 tier)</i>	10% per utility
Soil Moisture Sensors	10% to 24% per account
Soil Probes	14% to 69% per account
Rain Sensor Shut Off Devices	2,670 to 3,095 gpm per account
Rainwater Harvesting Rebates (SF)	21.6 gpd per account
Rainwater Harvesting Rebates (MF)	2057. gpd per account
Rainwater Harvesting Rebates (Com.)	205.7 gpd per account
Rain Barrels (SF)	2.3 gpd to 15 gpd per account
Graywater Systems	NA NA
Cisterns	41% per account
Public Education	10% per utility
Landscape Maint. Contracts	17% to 59% per account
Average Water Savings Outdoor	
<b>Total Indoor/Outdoor</b>	
Total indoor and outdoor savings from comprehensive programs	9% to 50% per utility

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### 2. New Literature Search

The literature search conducted by Burton & Associates focused on identification of studies, reports and analyses that addressed a quantitative evaluation of indoor water use relative to outdoor use to serve as benchmarks against which the results of the econometric modeling could be validated. As might be expected due to the narrow specificity of the search criteria, this literature search did not result in a large volume of references; however, one reference, “Residential End Uses of Water”, which was sponsored by the American Water Works Association (AWWA), was particularly helpful in providing benchmarks for expected outdoor and indoor water use, with and without conservation measures.

### ***B. Survey of Selected Utilities Results***

The largest twenty-five (25) utilities in SJRWMD plus an additional thirteen (13) utilities that expressed an interest in this Study were included in the survey. Responses were received from twenty-one (21) utilities. The e-mail survey form and complete compilation of the survey results are presented in a separate deliverable provided to SJRWMD by PBS&J.

Eight (8) of the utilities that responded to the survey provided billing history data. The data from five (5) of these utilities was complete enough to be used in the econometric modeling and provided sufficient observations for the development of meaningful models. The results of the modeling process provided acceptable estimates of water use related to the explanatory variables included in the various models by utility and for all utilities combined.

### ***C. Econometric Modeling of Water Use Results***

The compilation of billing data and parcel and demographic data by account described in Section II – Analysis, fed directly into the econometric modeling process. After all billing records received from participating utilities were compiled and geo-coded by subdivision and alternatively by census tract, the data was input into a series of

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econometric models developed by Burton & Associates to evaluate water use relative to a number of explanatory variables, including variables related to identified water conservation practices. Regression analysis was performed for each individual utility with billing account data compiled at the subdivision level and for all utilities combined with billing account data compiled at the census tract level. The basis for determining these modeling approaches and the results of each are described in the following sections.

### 1. Considerations of Econometric Modeling at the Subdivision Level versus the Census Tract Level

Each subdivision represented an observation in the econometric modeling performed based on account records compiled at the subdivision level. Subdivision was considered to be an appropriate level at which to compile billing records because 1) subdivision is the smallest level at which a geographical cross-reference could be made with the property address of each billing record, 2) property attributes could be compiled from county property appraisers' systems at the subdivision level, and 3) properties within a subdivision are likely to be more homogeneous in their attributes than properties across a larger geographic area.

Property attribute data is available on county property appraisers' systems at the subdivision level, but no demographic data is available at the subdivision level either on county systems or Census Bureau databases. However, property attribute data can provide explanatory variables relative to water use, so modeling at this level was determined to be beneficial.

Modeling performed with billing account records geo-coded and compiled at the census tract level also was considered. Each census tract represents an effective observation in this modeling approach. This approach provides the ability to include demographic data, such as persons per household, as explanatory variables, which is not possible in the subdivision modeling approach; however, there are considerably fewer observations at the census tract level than at the subdivision level.

Notwithstanding the more limited number of observations in the census tract level modeling, it was determined that there were sufficient observations for the modeling

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results to be reliable for all utilities on a combined basis. It was also determined that, when evaluated in conjunction with the modeling results at the subdivision level for individual utilities (which can provide insights into water use relative to property attributes), modeling at the census tract level for the combined utilities could provide beneficial insights into water use relative to demographic factors.

Therefore, it was determined that two modeling sets, one with billing account data compiled at the subdivision level for each individual utility and one at the census tract level for all utilities on a combined basis would be performed and the results of each would be considered in determining final conclusions regarding water use relative to conservation practices. A discussion of the results of each of these modeling approaches is presented in the following sections.

### 2. Results of the Econometric Modeling Process

The results of the econometric modeling process demonstrated that 1) the models can be used to accurately determine indoor and outdoor water use within a utility, thus identifying the potential for water savings in each area, and 2) the models can be used to accurately predict water savings from specific water conservation techniques, as long as the coefficients of the independent variables for each water saving technique can be identified. This was born out on the one conservation technique for which data was provided by one of the participating utilities.

Specifically, the econometric modeling results are summarized as follows:

- a. Indoor Water Use - Indoor water use estimated by the individual utility models ranged from 48 gallons per capita per day (gpcd) to 68 gpcd. Indoor use for the combined utility model ranged from 55 gpcd to 86 gpcd. These estimates are consistent with the results of a benchmark AWWA study that identified expected indoor use to be from 45 gpcd to 69 gpcd for conserving and non conserving households, respectively.

Potential water savings for indoor use could not be quantified in the econometric modeling process because of the very limited amount of available

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data. However, the econometric models developed could assess the effectiveness of indoor water conservation initiatives, 1) if such water conservation initiatives were implemented by utilities participating in the modeling effort, and 2) if data were provided indicating the accounts that were affected by the implemented water conservation initiatives.

- b. Outdoor Water Use – Outdoor water use ranged from 12 gallons per capita per day (gpcd) to 133 gpcd. This is a broad range and reflects the discretionary nature of outdoor water use. The most consistent correlations found between outdoor water use and the explanatory variables included in the econometric modeling were 1) cost of water and water use, 2) availability of reclaimed water and potable water use, and 3) other explanatory variables over which utilities have little or no control and water use. These relationships to water use are discussed below:

1) Cost of water:

- Utilities with a higher cost of water (including the cost of sewer service if included in the water bill) have lower water use than utilities with a lower cost of water. Among the five sample utilities, the relationships between average monthly water use and total water and sewer cost, measured by correlation coefficients, are .82 and .77 at 10,000 gallons per month and 20,000 gallons per month use respectively. This means that from utility to utility, there is a strong correlation between price and water use – as price increases, water use decreases. While this sample of utilities is relatively small, the values for average water use and price are composed from nearly 160,000 customers. Therefore, this observed relationship is not coincidental and would be expected to hold with a larger sample size. The table below demonstrates these relationships.

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Water and Sewer Charges	Average monthly Water Use (gal)	Total W&S Cost at 10,000 gal	Average Rate per 1,000 gal	Total W&S Cost at 20,000 gal	Average Rate per 1,000 gal
Utility A	5,969	\$ 62.25	\$ 6.23	\$ 91.05	\$ 4.55
Utility B	5,276	\$ 83.01	\$ 8.30	\$ 133.06	\$ 6.65
Utility C	15,760	\$ 43.65	\$ 4.37	\$ 65.85	\$ 3.29
Utility D	11,293	\$ 50.90	\$ 5.09	\$ 77.80	\$ 3.89
Utility E	6,559	\$ 57.76	\$ 5.78	\$ 87.86	\$ 4.39
Simple Correlation		-82%		-77%	

- The elasticity of demand, relative to this lower water use in response to a higher cost of water, falls consistently within a range of -0.20 to -0.40, which is consistent with the findings of much of the industry research on elasticity of demand of water use in response to the cost of water<sup>1</sup>.
- Water customers who are also sewer customers have lower water use than water only customers, and the difference is consistent with the elasticity response to the higher cost of water (including the cost of sewer service in the “cost of water”).
- The cost of water exhibits a strong correlation to water use. However, the modeling results could not conclude if, and how much, rate structure impacts water use.
  - Three (3) of the five (5) utilities included in the modeling process, had inclining block water rates and two (2) had uniform water rates. All but one of the rate programs with inclining block rates also capped sewer billings for residential customers in the range of 10,000 – 15,000 gallons per month. One of the uniform rates programs did not cap residential sewer billings, while the other

<sup>1</sup> For every 1% increase in the cost of water, water use decreases by from .20% to .40%.

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uniform rate program did cap residential sewer billings at 15,000 gallons per month<sup>2</sup>.

- The fact that the econometric modeling did not recognize rate structure as a significant variable relative to water use may be due to the fact that capping residential sewer billings in an inclining block rate structure effectively amounts to a declining block rate when total water and sewer cost is considered. Therefore, in the range of use where residential sewer billings are capped, a uniform rate without a residential sewer billing cap effectively elicits a similar water use response to that of an inclining block rate structure with a residential sewer billing cap.
- The modeling output included the total cost of water and sewer service at 10,000 gallons per month per household. It may be that further study of water use at higher levels could indicate a stronger response to rate structure. However, the model indicates that customer water use will respond to the total cost of water and sewer service rather than the isolated cost of water even at higher levels of use. Therefore, unless the inclining block rate structure includes rates at use levels above the residential sewer billing cap that are greater than the combined rate for water and sewer in a uniform rate without a residential sewer billing cap, the results will likely be similar to those observed in this Study.

### 2) Availability of reclaimed water:

- Increasing the percentage of customers using reclaimed water resulted in significant potable water use reductions for all utilities modeled for this Study.

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<sup>2</sup> These rate structures, and the associated policies regarding capping of residential sewer billings are consistent with the most commonly seen rate structures in Florida today.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## SECTION III – RESULTS

- Increasing the percentage of customers using reclaimed water to 100%, reduced potable water use per capita to a range that is consistent with the level of indoor water use determined in the benchmark AWWA study for all utilities modeled. Consistency of these results with the benchmark AWWA study for indoor water use gives confidence that the econometric models are providing a good estimation of water use reduction for reclaimed water; however, the presence of reclaimed water may or may not eliminate all outdoor use in all cases.

### 3) Other explanatory variables over which utilities have little or no control:

- The modeling results properly explained change in water use in response to changes in explanatory variables over which utilities have little or no control such as:
  - Yard size: reducing yard size to zero, effectively eliminated outdoor water use,
  - Presence of a pool: the presence of a pool indicated 10 to 15% greater water use than when no pool was present,
  - Persons per household: increasing persons per household increased water use consistent with the range of indoor use per capita determined from the benchmark AWWA study.
  - Average living area: a larger average living area indicated a higher water use (assumed to be in part, a reflection of household size in persons per household).
- The modeling results for each utility evaluated consistently predicted changes in water use relative to changes in explanatory variables over which utilities have little or no control. This is important because it

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## SECTION III – RESULTS

validates that the models are attributing reasonably accurate estimated changes in water use to the explanatory variables. Therefore, if conservation initiatives were implemented in the studied utilities and were included as explanatory variables in the set-up of the models, these results indicate that the models would predict the effect of those conservation initiatives upon water use and therefore the potential for water savings.

- c. Specific Water Conservation Initiative – The results of the econometric modeling process provided an estimate of the effectiveness of expected water savings for only one specific conservation initiative, other than price and reclaimed water, because of the limited amount of available data. The one conservation initiative for which data was available involved targeting customers to inform them about potential irrigation savings and proactively providing irrigation audits to high water use customers.

The expected water savings from the implementation of this conservation initiative were determined to be 0.2 mgd for the area in which the initiative was implemented (17% of the service area). Implementation throughout the entire service area would be estimated to result in 0.8 mgd in water use savings. This equates to 8 gcpd of water savings on an overall average basis.

It is important to note that the analysis of this one water conservation technique is based upon a limited application of the technique in only one utility. Therefore, until additional observations can be made of the effects of this technique in other utilities, general conclusions should not be made as to the expected water savings or the probability of such water savings being sustained over time.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES SECTION IV – CONCLUSIONS

## IV. CONCLUSIONS

The primary purpose of this Study was to determine the effectiveness of water conservation techniques on water use to assist SJRWMD in projection of potential water savings throughout SJRWMD if selected water conservation practices were implemented on a wide-spread basis. Conclusions can be drawn from this Study to support such projections; however, insufficient information regarding specific conservation practices was available to evaluate those practices through the econometric modeling conducted during this Study. Therefore, conclusions have been based on not only the econometric modeling, but also the results of the literature review conducted during the Study. There are three primary areas of conclusions that can be drawn from the results of this Study:

### **A. Conclusions Regarding Specific Water Conservation Techniques**

The literature review provided ranges of water savings from a number of conservation techniques that were implemented. These ranges can be used to estimate the expected water savings from the implementation of these conservation initiatives (see Table 1). However, if the data in Table 1 are to be used to predict water savings from the implementation of identified water conservation techniques within SJRWMD, it should be used cautiously. Because the studies from which the water savings in Table 1 were derived vary in terms of 1) consideration of other explanatory variables, 2) reliability of the data upon which the results were derived, 3) demographic profile of utility customers within the study areas and 4) geographic area and the influence of weather patterns, it is probably reasonable to conservatively assume that no greater water savings than represented by the lower quartile of the ranges of water savings identified herein for any water conservation technique will be achieved.

### **B. Conclusions Regarding Econometric Modeling**

There are three areas where specific conclusions can be drawn from the results of the econometric modeling conducted during this Study. These conclusions are presented as follows:

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## SECTION IV – CONCLUSIONS

1. Value of econometric models – The econometric models developed in this study have proven to provide 1) a good prediction of indoor versus outdoor water use for participating utilities, and 2) a good prediction of the reduction in water use relative to changes in explanatory variables. Therefore, it is concluded that these models could be used in a more comprehensive and/or extended study of the effectiveness of water conservation techniques in achieving water use reductions.
2. Specific Conservation Initiative – The results of the econometric modeling process indicated that implementation of a targeted initiative to inform customers regarding potential irrigation savings and proactively provide irrigation audits to high water use customers in order to reduce inefficient water use practices achieved water savings of 8 gcpd.
3. Price and Rate Structure – The cost of water exhibits a strong correlation to water use. However, the modeling results could not conclude if and how much the specific rate structure impacts water use. Therefore, when rate structure is considered in terms of its effectiveness relative to water conservation, it is concluded that rate structure should be evaluated for its effect upon water use relative to 1) the total resultant cost of water and sewer service in the ranges of use where water conservation is desired and 2) the desired reduction in water usage in those ranges of use.
4. Reclaimed Water – Availability of reclaimed water is a significant explanatory variable relative to potable water use and must be considered in any econometric modeling of water use. The modeling conducted in this Study found a direct relationship between the availability of reclaimed water and reduced potable water use.

However, reclaimed water 1) is initially a costly initiative, and 2) may present problems in terms of available supply relative to demands during extended dry seasons. Therefore, it is concluded that any consideration of reclaimed water should recognize these factors and it should be evaluated in the context of other, less costly and potentially less problematic conservation initiatives.

**POTENTIAL WATER SAVINGS OF  
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**C. General Conclusions**

*1) Water conservation data collection through CUP process* – This study revealed that most utilities either have not implemented significant water conservation initiatives, or do not capture data regarding the implementation of water conservation initiatives in a manner that is readily available. It is concluded that if SJRWMD desires to have this type of data available for future analyses of the effectiveness of water conservation techniques, availability of such data could be required as a condition of a utility’s Consumptive Use Permit (CUP) application. This would also provide the ability to better assess the utility’s water conservation efforts, and their effectiveness, in the evaluation of the CUP application.

*2) Water conservation data collection through SJRWMD sponsored study* – The required data could also be obtained as a part of a larger water conservation study sponsored by SJRWMD. Such a study could include 1) an initial study, 2) the commitment of participating utilities to implement certain water conservation techniques and to maintain certain data regarding those water conservation initiatives in their billing systems and 3) the provision for monitoring participants over time to study the effects of water conservation techniques as they are implemented.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## SECTION V – RECOMMENDATIONS

### V. RECOMMENDATIONS

The following recommendations were developed based upon the analysis conducted in this study and the conclusions presented in the prior section:

1. **Recommendation** - It is recommended that the results of this study be used cautiously as a predictor of water savings for specific water conservation techniques. If the results of Table 1 are used to predict water use reductions, it is conservatively reasonable to assume that no greater water savings than represented by the lower quartile of the ranges of water savings identified therein for any water conservation technique will be achieved.

**Explanation** - Essentially all of the data regarding expected water savings for specific water conservation techniques presented in Table 1 was based upon the review of the results of other studies throughout Florida and the country. Caution is recommended in the use of water savings data because the studies from which the water savings were derived vary in terms of 1) consideration of other explanatory variables, 2) reliability of the data upon which the results were derived, 3) demographic profile of utility customers within the study areas and 4) geographic area and the influence of weather patterns

2. **Recommendation** – It is recommended that a more extensive study be conducted to provide a more meaningful analysis of expected water savings from specific water conservation techniques. That study should build on the results of this study and use the modeling tools and techniques developed in this study to more fully evaluate the effects of water conservation techniques upon water use for utilities within SJRWMD. The study could include sampling and other data gathering and analysis techniques to perform the initial analysis. In addition, data capture, retrieval and compilation systems should be put in place at the utility level (see Recommendation 3) to provide empirical utility level data that can be used to update and calibrate the analysis periodically.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## SECTION V – RECOMMENDATIONS

**Explanation** – During this study an extensive literature review established a significant data base of the results of other studies relative to expected water savings of water conservation techniques. These results are informative, but are not necessarily reflective of expected water savings for utilities within SJRWMD for the reasons given in the explanation of Recommendation 1. In a more extensive study, the results of the literature review could provide benchmarks against which modeling results specific to utilities within SJRWMD could be compared for validation.

In the econometric modeling component of this study, very limited data was available regarding specific water conservation techniques from the participating utilities, making it impossible to predict water savings for specific water conservation techniques.

However, the models and modeling techniques used in this study proved to provide a good prediction of 1) indoor versus outdoor water use for participating utilities, and 2) change in water use in response to changes in virtually all explanatory variables modeled. Therefore, if more complete data were available in a more comprehensive study, the models developed in this study could be used to provide a good prediction of expected water savings for each water conservation technique evaluated.

- Recommendation** – It is recommended that consideration be given to requiring that certain data relative to implementation of conservation techniques be maintained and reported by utilities as a condition of the consumptive use permit (CUP) application.

**Explanation** – To provide a meaningful assessment of the effectiveness of water conservation techniques, it is essential that as much specific data as possible be maintained at the utility level regarding experience with implementation of those techniques. This will provide the ability to study the effects of water conservation techniques over time, based upon a reliable and regularly maintained base of data.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES *APPENDIX A – LITERATURE SEARCH*

## **APPENDIX A – LITERATURE SEARCH**

This Appendix presents the results of the review of the literature search provided by SJRWMD. The previous research compilation divided the literature into two categories: Indoor Water Conservation Studies and Accompanying Summaries and Outside Water Conservation Studies and Accompanying Summaries. These categories are discussed in the following sections.

### **A. CATEGORY 1 – INDOOR WATER CONSERVATION STUDY SUMMARIES WITH RESULTS IN TERMS OF WATER SAVINGS**

This category includes subcategories of selected studies on conservation initiatives such as 1) Comprehensive Programs or those programs that include multiple indoor water conservation initiatives; 2) Retrofit With Ultra Low Flow Toilet Programs; 3) Ultra Low Flow Toilets Programs; 4) Retrofit Kit Programs; 5) Efficient Clothes Washers Programs; 6) Indoor Audit Survey Programs; 7) Efficient Dishwashers Programs; 8) Plumbing Leak Repair Programs; 9) Pressure Reduction Programs; 10) Recycled Water for Plumbing Programs; 11) Sub-Metering Programs; 12) Hot Water On Demand Programs; and 13) Public Education Programs. These subcategories, and a synopsis of each study reviewed within the subcategory are discussed below.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX A – LITERATURE SEARCH

### 1. Subcategory 1. Comprehensive Programs

This subcategory included the results of ten separate studies. Each study was different in scope, objective and duration. Each comprehensive program embodied a different combination of conservation initiatives including efficient clothes washer programs, ultra low flow toilet (ULFT) programs, plumbing retrofit kit initiatives, water use surveys, classroom education programs, flapper rebate washer programs, graywater programs, compost toilets, water metering programs, etc. Each comprehensive program was implemented with varying degrees of success as a result of variables such as the overall aggressiveness of the implementation program, implementation program budget and staff, voluntary or mandatory status of the initiative, fixture installation support, marketing/information campaign prior to and during the program, etc. The number and classification of participants varied, as did the findings with regard to estimated water conserved per participant, total water conserved or overall reduction in water use experienced.

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*Ayers Associates, SWFWMD – Development of Water Conservation Options (2000)* – Following completion of the Regional Water Supply Plan, SWFWMD explored voluntary and mandatory non-agricultural water conservation measures to identify, evaluate and prioritize conservation measures for public and non-public sectors and the total amount of water that could be saved from these indoor and outdoor measures for 20 years. Specific conservation measures were selected for further analysis. The study findings in terms of water savings include the following:

Water Efficient Clothes Washers - 5.7 gpcd

Plumbing Retrofit Kits – 9 gpcd to 10.5 gpcd

Ultra Low Volume (ULV) Toilet Rebates – SF – 13.3 gpcd to 18.4 gpcd

Ultra Low Volume (ULV) Toilet Rebates – MF – 19.5 gpcd to 20.9 gpcd

Ultra Low Volume (ULV) Urinal Rebates – 59% gpcd

Water-Efficient Landscape and Irrigation System Rebates –SF – 132 gpcd

Water-Efficient Landscape and Irrigation System Rebates –MF – 324 gpcd

Water-Efficient Landscape and Irrigation System Rebates –NR – 978 gpcd

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## Industrial, Commercial, and Institutional Water Use Surveys:

*Industrial – 19% Potential Savings Realized or 5,250 gpad*

*Educational Inst. – 35% Potential Savings Realized or 1,720 gpad*

*Hotel/Motel – 67% Potential Savings Realized or 3,467 gpad*

*Retail/Wholesale – 61% Potential Savings Realized or 1,774 gpad*

*Restaurants – 29% Potential Savings Realized or 562 gpad*

*Office Buildings – 63% Potential Savings Realized or 2,790 gpad*

*Nursing Facilities – 15% Potential Savings Realized or 594 gpad*

## Large Landscape water Use Surveys – 428 gpad

Rain Sensor Shut-Off Devices – 3,095 gallons per device per month

Water Budgeting – SF – 78 to 156 gpad (50% to 100% compliance)

Water Budgeting – MF – 192 to 384 gpad (50% to 100% compliance)

Water Budgeting – NR – 578 to 1,156 gpad (50% to 100% compliance)

As stated in this study, the water savings estimated in a 1994 study (Bamezai et al., 1994) were broken out into pre-1980 construction and post-1980 construction categories due to the different plumbing codes after 1980. The following estimates present the average of those two categories:

Low Flow Showerhead Retrofits – 5.05 gpcd

Toilet Retrofit with Water Displacement Devices – 0.65 gpcd

Leak Repair – 0.5 gpcd

Landscape Audit – 10% of outdoor use.

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*GDS Associates – Texas Water Development Board Study (2002)* – This study was commissioned in 2001 to quantify the effectiveness of selected water conservation techniques within the region. The results were estimated as follows:

SF Toilet Retrofit – 10.5 gpd

SF Showerhead/Aerator – 6.8gpd

SF Clothes Washer – 5.6 gpd

SF Irrigation Audit – 50 gpd

SF Rainwater Harvest – 2.3 gpd

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MF Toilet Retrofit – 10.5 gpd  
MF Showerhead/Aerator – 5.5gpd  
MF Clothes Washer – 30 gpd  
MF Irrigation Audit – 125 gpd  
MF Rainwater Harvest – 205.7 gpd  
C Toilet Retrofit – 26 gpd  
C Clothes Washer – 24 gpd  
C Irrigation Audit – 125 gpd  
C Rainwater Harvest – 205.7 gpd

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*Contra Costa Water District – Contra Costa Conservation Report* – This report documents overall results from the program during the year 2002. In this District, the report states that 60% of water use is indoor and 40% is outdoor. Of the conservation initiatives implemented in the District, the ULFT replacement initiative provided the most water savings. The results of the program, in terms of water savings are stated below:

ULFT Replacement - SF – 32.2%  
ULFT Replacement – MF – 15.4%  
Water Conservation Survey – SF – 14.7%  
Water Conservation Survey – MF – 14.8%

Single-family surveys reduced consumption by an average of 42 gpd to 55 gpd.

During FY 02, over 1800 acre-feet of water, or 1% of demand was saved through the use of quantifiable conservation activities.

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*The City of Guelph – Water Conservation and Efficiency Implementation Study (2000)* – This program included a multi-residential toilet rebate program; multi-residential clothes washer rebate program; and public education and awareness program. The results in water savings were as follows:

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

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Toilet Rebate Program – 20-55 cubic meters/year per toilet

Washing Machine Replacement – 77-123 cubic meters per machine

Industrial/com./inst. buy back programs – 8,000 cubic meters per year

Public Awareness Program – 1.5% of household demand

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*Seattle Public Utilities (SPU) – Residential Efficiency: The Impact of Complete Indoor Retrofits (Amanda Boes)* - This study included 37 homes that had been retrofitted with water conserving fixtures. The results as stated by percent of water savings by category were as follows:

Bath faucets – 27.9% water savings post retrofit

Clothes Washer – 37.7% water savings post retrofit

Dishwasher – 13.6% water savings post retrofit

Faucet – 13.1% water savings post retrofit

Leak – 66% water savings post retrofit

Shower – 3.8% water savings post retrofit

Toilet – 58.1% water savings post retrofit

Total Indoor – 37.2% water savings post retrofit

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*Westminster, Colorado – Show Me the Savings! Do New Homes Use Less Water? (Amanda Boes)* – This study examined the water use in four groups of homes based upon when they were built (1977 to 1998). The water use was disaggregated into component end uses (toilets, faucets, etc.) and compared at the fixture level, on a daily per capita basis, in terms of annual demand. The following results in terms of water savings were demonstrated:

ULF Toilets - 5-9 gpcd

Horizontal axis clothes washers – 3-5 gpcd

On-Demand Hot Water Systems – Inconclusive

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*Lafayette & Wilsonville, Oregon – The Save Water and Energy Education Program: SWEEP Water and Energy Savings Evaluation* – This program included the installation and field evaluation of high-performance water- and energy-efficiency equipment including efficient clothes washers, dishwashers, toilets, low-flow showerheads, and faucet aerators. The results in terms of water savings were as follows:

Total Average Annual Per-Home Indoor Water Savings – 25%

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*Rocky Mountain Institute – Water Efficiency: The Next Generation (1998)* – In 1992 National Plumbing Standards passed by congress marked a turning point for US manufacturers of toilets, faucets and showerheads. However this study compiled results from other studies to promote water conservation education. Some of the compiled study results include the following:

Toilets – A new dual flush mechanism that discharges 1.6 gallons for a full flush and just 3 liters for a half flush (for liquids only), provides a 40% reduction in water used.

Showerheads – Use of throttling valves affords greater savings.

Faucets – Laminar-flow faucets produce a more efficient water stream and a foot-pedal control avoids waste.

Graywater – Other studies show that up to 50% reduction in home total water consumption can be achieved with a graywater system.

Composting toilets – Though only useful in certain applications, they eliminate the need for 28% of indoor water consumption.

Water Meters – In other countries, meters are located in visible spots for easy reading by users, and they measure hot and cold water separately.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX A – LITERATURE SEARCH

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*Rocky Mountain Institute – Water Efficiency for Your Home (1995)* – This booklet was designed to provide the average person with information on how to cut their water use. Statements in the booklet include the following:

U.S. indoor residential water use is estimated to average 80 gallons per person/day

ULFT may save you 15,000 gallons per year

Water efficient faucets reduce indoor use by 3-5%

Horizontal axis washing machines reduce water needed for washing 30-60%

Composting toilets reduce indoor water consumption by 30%

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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX A – LITERATURE SEARCH

## 2. Subcategory 2. Retrofit with ULF Toilet Program

This subcategory included the results of three separate retrofit studies that included ULF toilets. Subcategory 3, which follows, presents the results of studies that focused on ULF toilet programs specifically.

*United States General Accounting Office – Water Infrastructure: Water-efficient Plumbing Fixtures Reduce Water Consumption and Wastewater Flows (2000)* – This study examines the impact of national water efficiency standards on water consumption levels and wastewater flows. The results of the study, in terms of water savings, were documented as follows:

Low Flow Toilets – 40% water savings

Water-Efficient Clothes Washers – 37% to 61% water savings

Retro-Fit Homes – 41% to 57% water savings

Overall Impact of Implementation of National Standards – 3.3% to 9.1% water savings by 2020

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*East Bay Municipal Utility District – Residential Indoor Water Conservation Study (2003)* – This evaluation of high efficiency indoor plumbing fixture retrofits in single-family homes in the East Bay Municipal Utility District Service Area. The results in terms of water savings were stated as follows:

Toilet Leak Repair – 50% of total retrofit water savings

Total Retrofit – 35.5% water savings

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*Aquacraft and University of Colorado, Boulder – Conservation Retrofit Effectiveness: A Risk Based Model Using Precise End-Use Data (1996)* – The purpose of this project was to develop a simple model for assessing the effectiveness of a toilet and showerhead retrofit program in Boulder, Colorado. The model output for this study indicated the following in terms of water saving results:

Retrofit Project – 50% water savings (peak annual use)

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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX A – LITERATURE SEARCH

### 3. Subsection 3. Ultra Low Flow Toilets

This subcategory presented the results from seventeen (17) studies that included rebate, replacement, retrofit, direct install and testing programs for ULF toilets. These studies examined through various methods, the use of Ultra Low Flow Toilets in place of old-style toilets. Each of these studies varied in the length of time the program was in place, type or size of unit studied (residential, commercial, public) and the mandatory or voluntary status of the program. In some cases, these programs earmarked a policy change requiring ULFT installation for new development and re-development and are therefore on-going. Several important findings were highlighted in this subcategory including 1) for every 15 toilets replaced, a utility can add one new household without further impacting the water resource, 2) direct install for retrofit programs solve leak issues in addition to the savings achieved by the ULFT, 3) it is cost effective to target institutional buildings for ULFT retrofit, 4) and ULFTs stay installed and continue to save for many years. On average, the ULFT programs that were similar in scope were estimated to produce water savings per unit of 38 gallons per day. Presented below are summaries for each of the studies within this subcategory.

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***Volt VIEWtech for Hillsborough County Water Department – Ultra Low Flow Toilet Rebate Program (2001)*** – This voluntary program had a goal of 7,300 rebates with 100% on site inspections and customer surveys, as well as old toilet recycling. The results of the program in terms of water savings are as follows:

ULFT Rebate Program – Approximately 47 gpcd

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***St. Petersburg, Florida – Ultra Low Flow Toilet and Water Use Evaluation Rebate Project (P-784) (1999)*** – This program began in 1997. The results of this project in terms of water savings are as follows:

ULFT – 739 gpm for single-family homes

ULFT – 1,149 gpm for multi-family homes

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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES *APPENDIX A – LITERATURE SEARCH*

*City of Tampa Water Department – The Impact of Water Conserving Plumbing Fixtures on Institutional and Multi-Family Water Use (1993)* – This project was a case study that documented levels of water savings achieved by plumbing fixture replacements with low flow equivalents in an apartment complex and a junior high school. The results of this case study in terms of water savings were reported in this study as follows:

Apartment Retrofits – 15.6 gal/apt/day or 17.4%

Junior High School Retrofits (Leak Repair) – 851 gpd or 20% savings

Junior High School Retrofits – 668 gpd or 33% savings

Total JH School Retrofit + Leak Repair – 1,519 gpd or 53% savings

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*City of Tampa Water Department /SWFWMD – The Great Toilet Rebate Program (1997)* – During this rebate program, 4,824 rebates were processed, (1,952 single family, 2,857 multi-family, and 15 commercial). The results of this program in terms of water savings were reported in this study as follows:

Toilet Rebate – 38 gallons per day per household

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*Ayres & Associates/CH2MHill/City of Tampa – Water Savings and Participant Satisfaction Realized: City of Tampa Toilet Rebate Program Evaluation* - This evaluation was conducted on the rebate program that began in 1993 and ended in 1994. The purpose of the evaluation was to quantify water use reductions and customer satisfaction with this program. Approximately 530 households participated in the pilot program resulting in 700 toilets being replaced. After calculating average daily water use for the participants, the difference between participant households' average daily water use before and after the retrofit was compared to determine savings. The results of this evaluation in terms of water savings were reported as follows:

ULFT Retrofit – 38 gal/house/day or a 15% savings.

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## APPENDIX A – LITERATURE SEARCH

*AWWA – Sarasota County Environmental Services Utility – Case Study: Sarasota County Environmental Services Utility* – This case study provided a review of the Get Wet (Water Efficient Toilet) Toilet Rebate Program. The results of this case study were reported in terms of satisfaction rate with new toilets. Also, it was reported that “for every 15 toilets replaced, Utilities can add one new household without impacting the resource”.

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*John Olaf Nelson Water Resources Management, Petaluma, California – A High Participation CII ULFT Replacement Strategy (2000)* – This program was an aggressive direct-install program in an attempt to achieve a 19% replacement rate in the first program year. The retrofit program also included urinal valve kits, showerheads, aerators and indoor faucets. The results of this program in terms of water savings were reported in this study as follows

ULFT – 25.6 gpd savings

GPF Urinals – 10 gpd per fixture

Low Flow Shower Heads – 13.3 gpd per fixture

Faucet Aerators – 1.2 gpd per fixture

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*Austin, Texas – Environmental and Conservation Services Department – Free Toilet Program: Cheaper Than Rebates* – In 1994 the City of Austin began offering free ULF toilets to residential customers. The results in terms of waters savings are reported as follows:

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ULFT/Showerhead & Leak Repair – 38.7 gpd per household

*San Diego County Water Authority/Western Policy Research – Designing an Effective Public Institutions Plumbing Retrofit Program: A Multi-Agency Approach* – With a commitment to assist in the funding of ULFT retrofit program for commercial, industrial and institutional customer classes, the Authority has reported these findings in terms of water savings:

ULFT Retrofit Program – Average savings of 76.8 gpd per toilet

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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES *APPENDIX A – LITERATURE SEARCH*

*San Diego County Water Authority, California – A Comprehensive Approach to Toilet Retrofitting* – This program was an aggressive ULFT retrofit program. Over 200,000 ULFTs were installed by June 1995. No results in terms of water savings were documented in this report.

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*Regional Municipality of Waterloo, Canada – Water Conservation Program – A Case Study – 1994 Toilet Replacement Program* – This study is an overview of the Tri-City area 1994 Toilet Replacement Program. A pilot program produced 20% to 30% savings and inspired this program. The results of this program in terms of water savings were reported in this study as follows:

ULFT Replacement Program – 20% to 40% savings

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*EPA – High Efficiency Toilets* – This article presents documentation of various results from studies of the impact of the Energy Policy Act of 1992 that established a national manufacturing standard of 1.6 gpf for most toilets. Toilets are the greatest users of water in the average home. General statements of results in terms of water savings from EPA studies are documented below:

Residential 1.6 gpf toilets – General Average– 23-46% water savings

AWWA 1999 Study – ULFTs – 10.5 gpd water savings over traditional toilet

National Results – 7.6 billion gpd by 2020 or 20% of water supplied by public water systems in 1995.

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*Home Energy Magazine Online – The Big Flush Saving Water in the Big Apple (1994)* – This article online discussed the City of New York’s toilet rebate program that began in 1994. No results in terms of recorded water savings were reported in this article.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX A – LITERATURE SEARCH

*National Association of Home Builders Research Center for Seattle Public Utilities/East Bay Municipal Utility District – Water Closet Performance Testing* – This purpose of this performance test was to develop information on product performance, water savings reliability, and physical characteristics that will assist the consumer in evaluating products and making purchasing decisions. Also, to evaluate the NAHB Research Center’s flush performance test protocol. No results in terms of water savings were reported.

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*Kelly Faloon – Water Conservation: The Great Toilet Debate (2002)* –This article includes statistics on water savings from multiple sources to support the Energy Policy Act of 1992. Listed below are some of those statements of water savings made in the article:

1.6 gpf ULFT – 7,900 gallons to 21,700 gallons per year per toilet

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*Metropolitan Water District of Southern California – Verification by Inspection: What is the Truth* – This study assessed the practice of in-residence inspection programs for verification of installation of plumbing fixtures and devices. No results in terms of water savings were identified in this study.

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*Hillsborough County, Florida – Design and Implementation of ULFT Rebate Programs in the Southeast* – This article discussed four primary components of planning and implementing successful ULFT rebate programs in Florida and the Southeast. This article did not present results of documentation of water savings for ULFT Rebate Programs.

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## 4. Subcategory 4 – Retrofit Kits

This subcategory included ten studies of the results of providing (either for a fee or at no cost) plumbing retrofit kits to a varied group of participants. The kits varied in component makeup to include showerheads, shower timers, kitchen aerators, bathroom aerators, toilets, tank bags, toilet leak detection dye tablets, toilet tummies, toilet dams, etc. The degree of success of each program depended upon variables such as pre-installation education programs, whether delivery of each kit was made to the participant or pick up required, installation support availability and quality, and makeup of each kit provided. Given the many variables, the water savings fell within the range of 4.6% to 15.6%. The benefits of these programs included rapid recoup of program costs via deferred capital costs of new water supply programs. Presented below are summaries for each of the studies within this subcategory.

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*City of Winnipeg, Manitoba – Water and Waste Department – Evaluation of Nine Residential Retrofit Methods (Conserv 96)* – This pilot program was developed to test various methods of kit distribution for the 155,000 single-family homes in Winnipeg included in the residential retrofit program. The results of this evaluation did not include documentation of water savings.

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*City of Gulfport – Hallenco Services – Public Services Department Water Conservation Retrofit Program Analysis & Water Savings Evaluation (1997)* – This program included a public awareness program and a personalized approach to kit make-up and distribution. The program included the results of 147 participants, of which 94% installed the retrofit kit. The results of the program in terms of water savings are documented below:

Retrofit Kit Program (138 participating homes) – 56,000 gpd or a 4.6% savings

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*City of Plant City Utilities Department – Water Conservation Retrofit Program Analysis & Water-Savings Evaluation* – In 1993 the City implemented a comprehensive retrofit program. A personalized approach for pre-selection and installation process was designed for the plumbing retrofit program. Approximately 2,200 personalized kits were hand-delivered to each participating household. Water use analysis was made comparing data from actual monthly statements pre- and post retrofit. The results in terms of water savings are presented below.

Retrofit Program – 17% per person per year savings or 7,000 gallons per person per year

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*City of Dunedin – Water Saver Kit Retrofit Program (1995)* – The City implemented a plumbing retrofit program to interested residents using a “depot method”. An 18-month study included pre- and post retrofit water bill consumption information in four cycles. The results in terms of water savings are presented below.

Retrofit Program – 15.6% average single-family savings

Retrofit Program – 5.1% average multi-family savings

Retrofit Program – 13.5% average city-wide (residential and commercial) savings

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*Southwest Florida Water Management District –Regional Plumbing Retrofit Initiative Targeting West Central Florida Residents and Visitors* – The District developed a plumbing retrofit program that provided 200,000 homes with retrofit kits. The results in terms of water savings are presented below.

Retrofit Program – 9.5 gpd savings per household

Other results stated in the report were as follows:

Pinellas County Pilot Retrofit Project – Hotel/Motel – 6 gpd per occupancy

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## St. Petersburg Residential Retrofit Program – 1.36 mgd savings

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*Pinellas County Water Systems – Water Conservation Program (1993)* – This three phase program was developed to distribute 200,000 plumbing retrofit kits over 1 ½ years. Contact was made with 73.96% of the targeted households and 95.68% of those contacted installed the retrofit kit. No information on water savings was documented in this study.

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*City of Tampa Water Department – Conservation Phase IV Residential Retrofit Program Final Report (1994)* – The final report for this residential retrofit program reported that Phase IV included the distribution of 20,000 kits. Each contained a toilet tummy, a low flow showerhead, two faucet aerators, two leak detecting tablets, a window decal and instructions. This Phase resulted in a 65.59% contact rate with a 92.57% participation rate. The results of this report in terms of water savings are documented below.

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## Total Retrofit Program – 512,072 gpd savings

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*City of Tampa Water Department – Residential Retrofit Evaluation: Analysis of Pilot Program (1991)* – This program was established in 1989 with a goal to retrofit 10,000 pre-1984 homes with low-flow plumbing devices. Some or all of the devices were installed in approximately 93.8% of the targeted homes. The results of this report in terms of water savings are documented below.

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## Retrofit Program – 21.1 to 22.3 gpd per household savings

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*Pasco County, Florida – Retention Rate Survey and Water Savings Analysis (1996)* – Approximately 5,243 water conservation kits distributed to single family residents who were targeted as high water users were evaluated. Billing records were examined from the participants. The billing records of a control group who

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had not received the kits (251) were also examined. The results of this report in terms of water savings are documented below.

Retrofit Program – 4,558.85 gallons per household per year savings

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*Texas Water Development Board, Harris-Galveston Coastal Subsidence District – Effectiveness of Retrofit in Single Family Residences and Multifamily Projects* – This study was conducted from the Fall of 1991 to the Spring of 1992 to assess the cost-effectiveness of water and energy consumption and user satisfaction. Three devices were chosen for the study (kitchen aerator, bathroom aerator and low-flow showerhead). Billing records were analyzed of actual pre- and post retrofit water use to determine the water savings. The results of this report in terms of water savings are documented below.

Retrofit Program – SF – 14.13 gpp/day or 18% of avg. consumption

Retrofit Program – MF – 27%

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## 5. *Subcategory 5 - Efficient Clothes Washer Program*

This subcategory included the results of six studies that examined the effectiveness of using high-efficiency, horizontal-axis (h-axis) washing machines in terms of energy savings and water conservation. These Efficient Clothes Washer programs varied by user group, implementation program and method for data collection, however, the estimated water savings were found to be between 20% and 50%. Presented below are summaries for each of the studies within this subcategory.

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*Pacific Northwest National Laboratory – The Economics of Commercial-Grade Horizontal-Axis Clothes Washers: Detailed Metering and Real-World Savings (1999)* – This study was conducted to evaluate the energy and water efficiency of high-performance (horizontal-axis) clothes washers for barracks applications. A two-phased approach was used. Phase I included baseline metering of 3 barracks laundry rooms each containing six vertical-axis clothes washers. Phase II included the installation of 18 horizontal-axis clothes washers, six from each of the three different manufacturers, putting a clothes washer from one manufacturer in every barrack laundry room. The results of this report in terms of water savings are documented below.

*Efficient Clothes Washer Program (H-Axis) – 50% water savings over V-Axis*

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*United States Bureau of Reclamation – High-Efficiency Washing Machine Demonstration, Bern, Kansas (1999)* – The Department of Energy (DOE), the citizens of Bern, Maytag Corporation, the Bureau of Reclamation and the Kansas Rural Water Association cooperated to measure water and energy savings derived from h-axis washing machines in a demonstration project in Bern. Initially, 103 clothes washers were instrumented and analyzed for specific data. All of these washers were then replaced with h-axis washers and data was again collected. The results of this report in terms of water savings are documented below.

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Efficient Clothes Washer Program – H-Axis – 38% estimated overall savings  
or 15.7 gallons per load

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*Seattle Public Utilities, Resource Conservation – WashWise – Successful Market Transformation in Action (1999)* – This large market transformation program was developed to elevate public awareness in the regional market of efficient clothes washers. The program used cash incentives and marketing/promotional campaigns to promote distribution and use of these washers. The results of this report did not include water savings estimates, however, the report makes the following statement:

Efficient Clothes Washers are 50% more water and energy efficient.

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*Seattle Water and Seattle City Light - THELMA: Assessing the Market Transformation Potential for Efficient Clothes Washers in the Residential Sector (1992)* – THELMA (The High Efficiency Laundry Metering & Marketing Analysis) was created in 1992 during a collaborative effort by Seattle Water and Seattle City Light. This study cited that in 1992, clothes washers used 16,200 gallons of water annually. The results of this study indicated the following in terms of water savings:

Efficient Clothes Washer Program – H-Axis – 20% estimated overall savings

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*U.S. Water News Online – Builders and Developers Discover “New” Way to Conserve Water (1999)* – This article described the Multi-Housing Laundry Association’s (MLA) efforts to promote common-area laundry rooms as a way of conserving water and energy. According to the MLA, apartments with in-unit washers waste 8,500 gallons per year on laundry. The article further indicated the following in terms of water savings:

Common Area Laundry Rooms/ Multi-Housing – 60% estimated water savings

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*U. S. Water News Online – Washing Machine to Reduce Water Use, Eliminate Detergent (2001)* – This article depicts the benefits of new *washing machine technology* in terms of water savings, pollution control and energy savings. The new machines described in the article are designed to used less water, eliminate the need for detergent and cut washing time reducing the energy required for use. In terms of water savings, the article provides the following estimate:

EcoSafe Washing Machines – 40% water savings

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### 6. Subcategory 6 - Indoor Audit Surveys

This subcategory included the results from four studies that differed by survey methodology/technique, sample size, and survey content. These surveys included mail surveys, on-sight audits, water use monitoring network installations, and telephone interviews.

The first survey was a mail survey of 1,200 single family residences in order to determine the saturation of water efficient technologies and water-using behaviors. The results indicated a ranking of water use by type and volume, and percentages of conservation techniques that were utilized within each category of technique.

The second survey included a residential water audit program. As a result of this survey, the indoor water savings were estimated associated with the use of water efficient showerheads and toilet displacement bags. The audit program results determined that 39.5% of the showers in the audited homes were retrofitted with water-efficient showerheads resulting in each home experiencing an indoor water savings of 8.9 gallons per day.

In the third study, water use characteristics were evaluated using an extensive water use monitoring program to better determine the potential for water conservation by investigating actual fixture-specific water use characteristics. The findings of overall water conservation from this study were determined to be minimal and/or less than expected.

It was suggested by the authors of the study that the monitoring program that was installed influenced monitoring activities (the Hawthorn Effect) on the water using habits of the homeowner.

The objective of the final study in this subsection was to collect current data on water conservation attitudes and behavior, determine the types of saturation of water-conserving hardware, assess water conservation potential for identified market sectors and relate the study findings to those of previous studies. The results of this study

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estimated 13.17 million gallons per day of water conservation potential from the replacement of non-conserving toilets, showerheads and clothes washers, and from the installation of aerators on indoor faucets.

A breakdown of this estimated potential includes an estimated 4.64 mgd to be saved through toilet replacements, 3.60 mgd through the use of more efficient clothes washers, 3.49 mgd through showerhead replacement and 1.44 mgd through faucet aerators. An additional 1.18 mgd was saved through toilet retrofits.

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*Southern Illinois University at Carbondale – Existing Efficiencies in Residential Indoor Water Use (1999)*— A survey of 1,200 single-family residences in 12 North American cities was conducted to determine the level of saturation of water efficient technologies and water saving behaviors. The distribution of efficient uses was also examined in order to determine which socioeconomic and programmatic factors influence the degree of adoption of water conservation among the North American households. The results of this survey in terms of water savings are stated below by technology.

ULF Toilets – 1.53 gallons to 3.41 gallons water savings per flush

- Toilet flushing used 38 to 58.3 gallons per household per day
- 14% of toilets were ULF toilets

H-Axis Clothes Washers – no determination of water savings was stated

- Clothes washing used 39.2 gallons per household per day
- Only 2.2% of households surveyed had h-axis clothes washers

Low Flow Showers – the article stated “saturation of low-flow showers is relatively high”

- Showering used 30.8 gallons per household per day
- 75% of showering events had flow of 2.5 gpm

Low Flow Faucet – no determination regarding use of low-flow devices

- Household faucets used 27.4 gpd

Low Flow Dishwasher – no determination regarding use of low-flow appliance

- Dishwashing used 10.48 gpd per household

Indoor Water Leak Detection – 20.9 gpd per household potential water savings

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*Contra Costa Water District, California – Measuring the Water Reduction From Contra Costa Water District’s 1989 Residential Water Audit Program (1991)* – This water audit program began in 1988. A trained water auditor was sent to participants (free of charge) to advance water conservation efforts. An empirical evaluation of water reduction attributable to this program was conducted. Water savings were estimated in association with use of water efficient showerheads and toilet displacement bags. The actual amount of water used was determined by analyzing the billing records for the 672 households who participated. The results in terms of water savings are stated below:

Water Efficient Showerheads – 7.8 gpcd water savings

Toilet Bags – water savings could not be determined

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*Tampa, Florida – Residential Water Use Characteristics and the Potential for Conservation in Tampa, Florida (1991)* – The City of Tampa conducted a study of the City’s residential water use to better evaluate their potential for conservation. Detailed data was collected on 25 homes over a 30-day period. The results of the study in terms of water savings are stated below:

Shower Head Retrofit – 2.5 gpm

Water Closet Low Flow Retrofit – 6.08 gallons per day

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*East Bay Municipal Utility District – Water Conservation Market Penetration Study (2002)* – During this study, 388 single-family and 375-multi-family telephone interviews were conducted to assess customers’ behavior and attitudes regarding water conservation. Also, on-site inspection was made to assess fixtures, appliances and irrigation systems at 387 single-family and 360 multi-family residences as well as 56 non-residential properties. The findings in terms of water savings are stated below:

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Retrofit of ULF toilets, showerheads and clothes washers, and from installation of aerators on indoor faucets = 13.17 mgd water savings potential

Toilet Retrofit – 1.18 mgd

Toilet Replacement – 4.64 mgd

Efficient Clotheswasher – 3.60 mgd

Low Flow Showerhead – 3.49 mgd

Faucet Aerators – 1.44 mgd

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### 7. *Subsection 7 – Efficient Dishwasher Programs*

A study was conducted to determine how consumers wash dishes and how they use their dishwashers. This study relied upon the results of previous studies to determine that significant reductions in water use were the result of the development and installation of more efficient wash systems. This study concluded that the dishwashing habits of the individual (prewashing, using a pre-rinsing cycle, pre-rinsing in the sink, using the dishwasher when partially full, etc.) and the type of food led to challenges in understanding the actual water savings.

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*Virginia Polytechnic Institute and State University – Dishwashing and Water Conservation: An Opportunity for Environmental Education (2003)* – This study was conducted to assess how consumers wash dishes and how they use their dishwashers. The study stated that improvements in dishwasher design between the years of 1978 and 2000 reduced required water use from 11-15 gallons per cycle to 6-10 gallons per cycle. The study revealed that the true water savings potential for this activity lies in the individual’s water conservation education and awareness.

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**8. Subsection 8 - Plumbing Leak Repair Program**

This program was designed to assist low-income consumers with water leak problems that they could not afford to fix, that were also causing increased water bills they could not pay. This created an opportunity for water conservation. Preliminary estimates of water saved through leak repairs averages 27,000 gallons per household annually.

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*San Antonio, Texas – “Plumbers to People” (1994)* - This program was designed to address water conservation opportunities for a specific population in the San Antonio Water System (SAWS) use area. The SAWS Customer Service Department has been aware that many low-income consumers become caught in a circle of rising water bills that they cannot pay, due to domestic water leaks they cannot afford to repair. A *repair grant* program was implemented to assist qualifying households fix leak problems. The results of this program to date in terms of water savings is as follows:

Plumbing Leak Repair – 27,000 gallons/household/year

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## 9. Subsection 9 – Pressure Reduction Programs

Two pressure reduction programs were analyzed to determine the relationship between pressure and consumption and that relationship's effect upon water sales and/or water conservation. Findings from the study of these programs demonstrate that reducing system pressure can reduce residential water consumption, especially irrigation, without entailing any significant cost in terms of increased customer complaints. This reduction in water consumption is in proportion to how much the pressure is reduced. The more significant savings relate to outdoor water use savings.

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*San Antonio, Texas – Pressure Reduction: A Conservation Tool (1994)* – The San Antonio Water System (SAWS) increased water system pressure to sell more water in times before water conservation was an issue. No conclusions have been made regarding water conservation through reduced water pressure, however the SAWS is pursuing several studies to evaluate whether water consumption is related to delivery pressure.

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*Irvine Ranch District, California – Is System Pressure Reduction a Valuable Water Conservation Tool? Preliminary Evidence from the Irvine Ranch Water District (2003)* – Two selected test neighborhoods were analyzed to determine if water system pressure reductions resulted in reduced consumption. Findings of the study demonstrate that reducing system pressure can significantly reduce residential water consumption, especially irrigation, without entailing any significant costs in terms of increased customer complaints. Other findings in terms of water conservation stated in this study are as follows:

Reduced System Pressure –

17.6% reduction in pressure = 1.9% reduction in single family consumption with average landscape

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17.6% reduction in pressure = 4.1% reduction in single family  
consumption with greater than average landscape

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## ***10. Subsection 10 – Recycled Water for Plumbing***

The first program that was reviewed, analyzed the acceptance levels by the consumer of installing dual plumbing systems to supply recycled water to non-potable interior plumbing fixtures. The results of this study identified public agencies and private businesses as likely partners regarding this application. It also highlighted the need for planning increased public official involvement in the design of such systems and the need to understand each project independently.

The second analysis in this subsection was a study of graywater recycling in the home. This study examined three different designs of Supply Management Recycling (SMR) graywater units for residential use. Ten households were used in the study. Each household's newly installed SMR unit intercepted graywater from hand basins, baths and showers. This wastewater was then filtered to the outside storage unit. Graywater was then pumped back into a heater tank inside where it was disinfected before being gravity fed to the toilet cistern.

Water savings after 14 months revealed an average water savings of 21.7%; however, acceptance of this type of system by the households studied was only 20%. Complaints of disinfectant odors and problems with the SMR units in general reduced customer acceptability.

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***Monterey Regional Water Pollution Control Agency, California – Public Approval of Interior Plumbing Systems Using Recycled Water (1997)*** – The Monterey Regional Water Pollution Control Agency moved into a new building constructed with a dual plumbing system to supply recycled water to non-potable interior plumbing fixtures. The building was the first of its kind and provided a “test” for the efforts to advance public acceptance of RW use as an environmentally sound, economical solution to water shortage problems. No conclusions were made regarding the success of the RW system nor have actual water savings been reported to date.

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*National Water Demand Management Centre, England – Practical Aspects of Household Graywater Recycling (1999)* – This study examined three “off the shelf” Supply Management Recycling (SMR) graywater units to determine their effectiveness in terms of water consumption savings and associated cost savings from reduced water bills, water quality of gray water and the acceptability to the user of having a graywater recycling system in their home. All SMR units studied allow the recycling of graywater to flush the toilet, and some units having the option of drawing graywater off for garden watering. The conclusions made in terms of water savings are listed below:

Graywater System – 21.7% average water savings

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## ***11. Subsection 11 – Sub-Metering Programs***

The first study in this subsection assessed properties in Florida, Texas and California, in order to better understand how billing methods affect water consumption prices. The findings of this study indicated that consumers who pay directly for their water, use less water. Sub-metered apartments use between 18-39% less than properties where the units were not sub-metered.

The second study in this subsection involved installing sub-meters in a nine-unit apartment building. Tenants began receiving and paying individual water bills based upon actual consumption. Once these tenants began receiving individual bills that indicated actual use, water use dropped dramatically for an average savings of 27%. It was determined that even with these savings, retrofitting of sub-meters in existing structures is cost prohibitive; however, adding sub-meters in new construction provided substantial conservation potential.

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***National Apartment Association – Submetering, Rents, and Water Conservation (1999)*** – The water metering of 32 properties in Florida, Texas and California was assessed to better understand how billing methods affect water consumption prices. The findings indicated that tenants who pay for their water use less. The conclusions from this study in terms of water savings include:  
Sub-Metered Apartments – 18-39% water savings over apartments that include water service in rent

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***Seattle Public Utilities – Sub-Metering: The Next Big Conservation Frontier? (1998)*** – Approximately 35.8% of people are renters. A demonstration project in Seattle in 1995 determined that the potential for water conservation within this customer category is substantial. The results of this project in terms of water savings are stated below:  
Sub-Metered Apartment – 27% water savings

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## 12. Subsection 12 – Hot Water on Demand

This subsection included two studies that assessed the potential for water savings associated with water presently lost down the drain while occupants wait for the faucet water to reach the desired warm/hot temperature. Hot water re-circulation systems were studied in single-family homes which resulted in water savings of 7.8 gpd to 32 gpd, depending upon the distance from the point of use and the hot water heater, water heater temperature settings, pipe insulation and other factors.

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*Oak Ridge National Laboratory and City of Palo Alto Public Utility Commission – Water and Energy Savings Using Demand Hot Water Recirculating Systems in Residential Homes: A Case Study of Five Homes in Palo Alto, California (2002)* – This study assessed the potential for water savings with installation of hot water recirculation systems. The results of the study in terms of water savings are stated below:

Shower – 1-3 gallons/shower savings

Bathroom Sink – 893 to 3,042 gallons/year

Kitchen Sink – 2,047 gallons/year

Household Points of Use (4) – 3,600 to 12,000 gallons/year

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*Southwest Florida Water Management District and American Water Works Association – Investigation of Hot Water on Demand (HWOD) Devices for the Southwest Florida Water Management District and American Water Works Association Technical & Educational Council (2001)* – This study assessed the existing HWOD devices on the market and developed recommendations for their use. The types of installations were identified and statements were made regarding water savings include the following:

HWOD Devices for Residential Use – 7.8 gpd to 17.4 gpd per household water savings

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## 13. Subsection 13 – Public Education Program

Three programs were studied in this subsection. The first program included the development of an interactive indoor water conservation module presented on CD-ROM software with results of a feasibility analysis identifying measures to make the White House a model environmental residence and office building. The initiatives included installation of water efficient fixtures and devices, sub-meters and recirculating chillers.

The second program included the implementation of a training program for local multi-family professionals within a selected city, providing them with the knowledge and tools to establish their own water management plans. This program has helped to reduce the disparity between single-family sector water use and multi-family sector water use. Over a four-year period (1994-1998) a 7.4% drop in water used by apartment residents was experienced. The overall reduction equates to a citywide savings of over 450,000 gallons of water per day.

The third program in this subsection is a demonstration/display on multiple mediums of a “water conservation home” The home is a 3-bedroom, 2-bath house that has low-flow water devices in bathroom and kitchen and stores rainwater from the roof. This water conservation home display is available on CD-ROM and is instructive to adult groups and school groups and is open to the public.

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*Amy Vickers, Amy Vickers & Associates, Inc. – The Greening of the White House CD-ROM: Water Interactive Exercise (1994)* – This CD-ROM software was developed as an interactive indoor water conservation module. The project was initiated on Earth Day for the White House. No results were documented in terms of water savings resulting from the project.

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*Virginia Beach Public Utilities – Virginia Beach Multi-Family Conservation Program Shows 90% Implementation Rate (1998)* – In 1994 the City of Virginia Beach implemented a training program for local multi-family professionals

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providing them with the knowledge and tools to establish their own water management plans. The City has 40,000 apartment units accounting for 20% of total annual water consumption. There was a large disparity between single-family residential water use and multi-family use (53 gpd per person vs. 67 gpd per person). The results of the program in terms of water savings is stated below:

Multi-Family Professional Training Program – 7.4% gpd water savings

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*University of Arizona – “Casa Del Aqua” (1998)* – The University of Arizona and the City of Tucson created this demonstration house for home water conservation. The 3-bedroom, 2-bath house has low-flow water devices in the bathroom and kitchen and stores rainwater from the roof. It is landscaped to conserve water as well. No documented results in terms of actual water savings were stated in this report.

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## 14. Subsection 14 – Youth Education Programs

These programs include educational outreach programs that introduce students to regulatory procedures and conservation issues and programs.

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*AWWA – Portland, CT – Innovative Conservation Education: The Delicate Balance in Water Supply Decisions (1996)* – In 1996, the Connecticut Section Conservation Committee of the AWWA developed an educational plan for an outreach project. This outreach program introduces high school students to regulatory procedures, develops a relationship between regulatory agencies, environmental groups, local governments, water utilities and consumer groups. The program facilitates interagency cooperation and uses long distance network technology to involve other schools, and it exposes students to career opportunities in the industry and in government.

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*Harris-Galveston Coastal Subsidence District – Partnership in Conservation Education: Bringing the Message Home (2000)* – The “Learning to be Water Wise and Energy Efficient” Youth Education Program is coordinated by the Harris-Galveston Coastal Subsidence District through public and private partnerships. The curriculum teaches how to consume less water and energy. The program has been offered to over 55,000 fifth graders in the Texas upper Gulf Coast areas. The project boasts significant influence in water use behavior, in terms of water savings, as stated below:

Youth Education Program – 14.13 gpd per person

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*Tampa Water Department – Water Ambassador Program: In School Education to Sustain Community Water Conservation* – This in-school education program targets kindergarten through fifth grade students. The program is designed to

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inspire action. Students receive a “save-it” kit and conservation devices and materials. No findings or measurements of water savings as a result of this program have been documented.

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## B. CATEGORY II – OUTDOOR WATER CONSERVATION STUDY SUMMARIES WITH RESULTS IN TERMS OF WATER SAVINGS

This category included subcategories of selected studies on 1) Comprehensive Programs which were those programs that included multiple outdoor water conservation initiatives; 2) Water Efficient Landscape and Irrigation; 3) Water Audits; 4) Water Budget Programs; 5) Water Restriction Programs; 6) Rate Structure Measures, Costs & Benefits; 7) Rain and Soil Moisture Sensor Measures, Costs and Benefits; 8) Gray Water and Cisterns; 9) Education Programs.

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### 1. Subsection 1 – Comprehensive Programs

*EPA, 2002 – Cases in Water Conservation* - This first study in this subsection is an EPA publication that documents water-efficiency programs through 17 case studies of water systems in the U.S. Nine of the communities studied, focused on outdoor use. The results of these studies provided the following information:

*Cary, North Carolina* – The Cary Town Council adopted a water conservation program in 1996. The program consisted of eight elements: public education; landscape and irrigation codes; toilet flapper rebates; residential audits; conservation rate structures; new homes points programs; landscape water budget; and a water reclamation facility. The results for this program have been estimated to be a 16% reduction in retail water production by the end of 2026. The savings to date have reduced operating costs and have allowed Cary to delay two water plant expansions.

*Goleta, California* – In the mid 1970s, the City of Goleta established a water efficiency program. The program emphasized plumbing retrofits, including the installation of high-efficiency toilets and showerheads. The program also included free onsite water surveys, public education and changes in metering and rates structures. By 1989, a mandatory rationing plan was imposed to reduce use by 15%. By 1991, a 50% reduction in

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per-capital residential water use was achieved as a result of this comprehensive program. The program also achieved a 40% reduction in wastewater flows.

***Irvine Ranch Water District (TRWD), California*** – IRWD provides water services, sewage collection and water reclamation for the City of Irvine as well as portions of surrounding communities. In 1991, a five tier water rate structure was adopted which rewarded water conservation. The new rate structure was well received by the public and produced a 19% reduction in total water use over the next 12 months. Due to the success of the rate structure changes, the District initiated other conservation initiatives such as irrigation workshops, water audits and fixture rebates. The results of the combined initiatives have produced, on average, a 9% per household reduction in water use.

***Massachusetts Water Resources Authority (MWRA)*** - MWRA is a wholesale water provider to over 2 million people in 46 cities towns and municipal water districts in Massachusetts. In an initial response to the press on the Authority's water supply, a water conservation plan was adopted. The plan included the following: leak repair and detection; low-flow plumbing retrofit program; commercial water management planning assistance; public and school education programs; an actual change in state plumbing codes to require ULFTs, upgrades to meters and tracking software; and rate structure changes to encourage conservation. The results of the comprehensive program have primarily been measured in savings achieved from deferring supply expansion projects. Total demand reduction between 1987 and 1997 was 80 mgd. The capacity reduction of the planned treatment facility was 95 mgd with a capital savings of \$360 million or in present value terms, \$75 to \$117 million. Average daily demand was reduced from 346 mgd in 1987 to 256 mgd in 1997. Combined, the capital savings of deferring supply expansion and reducing the water treatment plant capacity is \$1.39 million per mgd to \$1.91 million per mgd.

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***Metropolitan Water District (MWD) of Southern California*** - The MWD is a wholesale supplier of water for Southern California. MWD provides financial support for conservation programs. One of the largest initiatives has been the toilet retrofit rebate program. Other efforts in this comprehensive effort have included water-efficiency site surveys, irrigation equipment improvements, distributions of new high-efficiency showerheads, rebates for high-efficiency washing machines and research into toilet performance and leakage rates. This comprehensive program has produced total water savings of approximately 59.1 mgd per year.

***Phoenix, Arizona*** – In 1986 the City approved a comprehensive water conservation program including: water pricing reform; indoor residential water conservation; industrial and commercial water conservation; plant and turf irrigation efficiency; and water-efficient landscaping. Changes in the City’s program over the years have concentrated less on retrofit plumbing programs and more on public education programs and rate structure alternatives to encourage behavioral changes in future water users. To date the savings continue to improve to an average annual water savings of 40 mgd per year.

***Santa Monica, California*** – In 1992, the City initiated a “Sustainable City Program”. As part of this program, the City has instituted a multifaceted approach to water conservation including numerous policies and programs such as: a new water waste ordinance; plumbing code regulations; water-conserving landscape regulations, water demand mitigation fees, wastewater mitigation for large development programs, retrofit-upon-sale ordinance, and water and wastewater rate structures that encourage conservation. Of the outdoor water programs available, the City offered demonstration sustainable gardens, sustainable landscape workshops and garden tours, sustainable landscape guidelines, and the California irrigation management information system. By 1995, the total water savings from all initiatives were identified as 14%. Wastewater flow was reduced 21% during the same timeframe.

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*Tampa, Florida* – In 1989, the Tampa Water Department implemented several measures to reduce water use. These measures included inclining block rate structures, water conserving codes, public education programs, water use restrictions, plumbing and landscaping codes. Outdoor irrigation was limited to one day per week and prohibited between 8 a.m. and 5 p.m. and all new irrigation systems were required to have rain sensors. The City provided homeowners with free Sensible Sprinkling irrigation evaluations and distributed free rain sensors. The landscape code limits the amount of irrigated turf grass to 50% in new developments and encourages the use of Florida-friendly plants and low volume irrigation methods. The Sensible Sprinkling irrigation evaluation resulted in a 25% drop in water use. Overall, the city experienced a 26% savings in per capita water use over the period from 1989 to 2001.

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*Tampa Water Department, 1995 – 1999 – Tampa Water Conservation Program* – The City of Tampa began its water conservation program in the 1980s. The initiatives have included a two-tier rate structure, irrigation codes, landscape codes, rain sensors and plumbing codes. A Sensible Sprinkling Program with irrigation evaluations, landscape evaluations, rain sensors, landscape/irrigation workshops and water-wise landscape demonstration sites are all components of the City’s overall program. Public awareness programs and in-school education programs also play a part. The implementation of conservation rates has resulted in reduced water use, as have the changes in the City’s code. The only documented water savings is stated below:

Sensible Sprinkling Program – 21% reduction in total water use by participants

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*Ayres Associates – SWFWMD – Development of Water Conservation Options (August 2000)* – This study was commissioned to identify, evaluate and prioritize conservation measures for public and non-public sectors and the total amount of

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water that could be saved from these indoor and outdoor measures for 20 years. Documented results of the study in terms of water savings include:

Comprehensive Program for Single Family – 132 gpad estimated total savings

Comprehensive Program for Multi - Family – 324 gpad estimated total savings

Other Studies Results:

Austin, TX, 1994 Xeriscape vs Traditional Landscape – 31% water savings

Nelson, 1994; Sokulsky et al 1993; Testa & Newton, 1993; Bennet, 1993

Xeriscape vs Traditional Landscape – 25 – 33% water savings

Novato, California (Nelson, 1992) Efficient Irrigation – 25 gpad

San Diego, CA (Bamezai et al, 1994) Efficient Irrigation – 10% water savings

Tampa FL (Ayers Associates, 1996) Efficient Irrigation – 32% water savings

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***SWFWMD, 2002 – Retrofit Programs, Reuse Projects, and Outdoor Water Conservation Efforts*** – This is a periodic report on the accomplishments and status of SWFWMD programs. This summary is limited to outdoor water conservation initiatives. The results in terms of water conservation are as follows:

Comprehensive Outdoor Retrofit Program within Water Use Caution Areas – 597,880 gpd water savings

Comprehensive Outdoor Retrofit Program within Basin Board Areas – 9,715,099 gpd water savings

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***GDS Associates, 2002 – Texas Water Development Board Study*** – This study was directed to provide the 16 water-planning regions within Texas comprehensive water conservation planning alternatives. This study quantifies

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the effectiveness of various water conservation techniques. The results of the study in terms of water savings are as follows:

SF Irrigation Audits – 50 gpd

SF Rainwater Harvesting Rebate – 21.6 gpd

SF Rain Barrels – 2.3 gpd

MF Irrigation Audit – 125 gpd

MF Rainwater Harvesting – 205.7 gpd

Commercial Irrigation Audit – 125 gpd

Commercial General Rebate Program – 3% of use

Commercial Rain Harvesting – 205.7 gpd

Regulations – not stated

Water Rates – 1% increase = 0.19% savings

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## 2. Subsection 2 – Water Efficiency Landscape & Irrigation

Many communities have implemented programs that include water efficient landscape and irrigation measures. This subsection includes the results from several such programs.

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*East Bay Municipal Utility District, Oakland, California – Landscape Comparison Survey* - This study compared the amount of water used by water conserving versus traditional landscapes during the period of June – August of 1992. Water conserving landscapes were considered those landscapes that only used turf grasses on less than 15% of the total yard, were well-maintained and with a lot size that was regular and measurable (square or rectangular). Traditional landscapes were those where greater than 70% of the total yard was turf grass, were well maintained and with lot sizes regular and measurable (square or rectangular). Basically, the results indicated that a 42% reduction in water use was experienced by the water conserving landscapes. It was discovered that in-ground irrigation used 36% more water.

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*City of Fargo, North Dakota – National Xeriscape Demonstration Program* – This is a program that studied two groups: Xeriscape Retrofit and Xeriscape New Start groups. Approximately 120 households participated in the study, however, the results are still being studied and as of the date of this Interim Report findings were inconclusive or incomplete.

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*Austin, Texas – Xeriscaping: Sowing the Seeds for Reducing Water Consumption (combined studies from 1984 to 1999)* - In 1983/1984, when the City of Austin initiated its Water Conservation Program, including xeriscape as the major outdoor program, water savings of 43% were experienced by the small sample utilized for the study. In Phase II of that same study, however, a larger sample size was analyzed and this Phase produced a more accurate estimate of

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water savings of 20%. An even larger study was conducted in 1996 that indicated that the range of water savings associated with utilizing Xeriscaping techniques range from 16% to 42%. This report was for the United States Bureau of Reclamation, conducted in May of 1999. The purpose of the latest study, a component of the larger, earlier 1996 study, was to examine a wider range of factors and to provide better estimates of costs and projected water savings related to Xeriscape promotion. This more recent study produced estimates of water savings due to utilization of Xeriscape techniques as 31%. Of note, the 1996 study identified factors which resulted in higher water consumption such as an increase in time spent on landscaping, increased money spent on landscaping, increased house value, pools, underground irrigation systems, and St. Augustine grass landscapes.

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***Mesa, Arizona –An Evaluation of a Landscape Rebate Program*** – In 1984, The City of Mesa initiated a Water Development Fee Rebate Program. This program provided an economic incentive to homeowners and developers to install a water efficient landscape. The results of this study indicated that the program did encourage the installation of low water use landscape, however, actual water savings resulting from this initiative had not been determined.

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***Las Vegas, Nevada – A Five Year Investigation into the Potential Water and Monetary Savings of Residential Xeriscape in the Mojave Desert*** – This study was conducted by the Southern Nevada Water Authority (SNWA) in cooperation with the US Bureau of Reclamation, in an effort to quantify water and economic savings associated with converting traditional turf grass lawns into xeriscape landscapes. The post-conversion water savings documented by this study approximated 33%.

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***San Diego County Water Authority – CALFED 2003 Prop 13 Grant – Commercial Landscape Incentive Program*** – This program targeted large commercial properties and common areas of multi-family sites and provided

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financial incentives to owners to upgrade irrigation systems to enable the sites to become more water efficient. The results of this study projected that retrofit and schedule improvements could save a typical commercial site 3.52 AF/acre/year or 26 gallons per square foot.

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***Los Altos, California – CALFED 2003 Prop 13 Grant – ET Controller Installation in Six City Parks*** – In 2003 the City installed evapotranspiration (ET) based landscape irrigation controllers in the six largest public parks in Los Altos. These parks made up 21 acres, 13 of which were in turf. This study was based upon previous 15 years of studies that concluded that ET-based irrigation efficiency equates to 30-40% reductions in water use while still maintaining quality landscapes. The results from this Los Altos grant program have not been reported to date.

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***EPA – Water Efficient Landscaping*** – In 2002, the EPA produced a water-wise landscaping brochure for the public which highlighted results from water-efficient landscaping projects (many in Florida). The brochure highlighted the following:

- √ 30% of U.S. water use is devoted to outdoor use, mostly landscaping
- √ The typical suburban yard consumes 10,000 gallons of water above and beyond rainwater each year
- √ Households that water with a hose use 33% less water outdoors than household average; households with in-ground sprinklers use 35% more water; those with automatic timers use 47% more; those with drip systems use 15% more water than those without systems.
- √ Those homes with access to alternative sources of irrigation (gray water, reclaimed water, and collected rainwater) reduce water bills by as much as 25%.

The results stated in this brochure included:

- √ A selected applicant showcased in an Agency video for retrofitting a typical yard to Xeriscape cut outdoor water use by 75%.

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***Metropolitan Water District of Southern California – CALFED 2003 Prop 13 Grant*** – In 2003, the Metropolitan Water District of Southern California received a grant to install “Smart” ET based landscape irrigation controllers in residential and small commercial landscapes throughout the service territory with a final assessment report to address issues of new controllers. The estimated water savings over the ten year life of an ET device such as the ones supplied for this project is estimated at 38,616 acre-feet or \$19,377,439 in avoided regional cost. However, the study findings provide that water savings from ET controllers installed at 40 homes were equivalent to 18% of outdoor water use saving 57 gallons per day on 2,000 sq. ft. lot sizes. Other studies indicated weather-adjusted water savings of 21.47% average over historical five-year use determined for a first year post retrofit study of 37 homes with a control group of 800, and initial data for pilot ET controller study shows a 28% and 23% reduction compared to historic use. Therefore, the range of water savings over multiple studies is 18% to 28%.

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***North Marin Water District and East Bay Municipal Utility District, California – Xeriscape: Winning the Turf War Over Water*** – The Sunbelt States in the west and southwest United States have determined that approximate 40% of annual residential water demand is for turf irrigation. In a 1992 study, the East Bay Municipal Utility District in northern California compared daily water consumption of a group of single-family detached homes with “water conserving” landscapes to consumption by homes that had “traditional” turf-oriented landscapes. The water conserving landscapes saved an average of 42%, or 209 gallons per day over comparable traditional landscapes. Similar studies conducted in Austin, Texas and by the North Marin water District in California found a 43% savings. In another study the North Marin Water District looked at seven developments consisting of 548 dwelling units with mature landscapes. When converted to water-conserving landscapes the water savings were 54% compared to the traditional yards

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*North Marin Water District, California - Water Saved by Single Family Xeriscapes* – In the summer of 1993, the District studied 250 single family homes identified as having front yard xeriscapes. For each xeriscape yard found, a nearby matching traditionally landscaped site was identified. The participants were surveyed and key finding of water savings was that the xeriscape yards used 17% less water than the traditionally landscaped yards.

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### 3. *Subsection 3 – Water Audit Measures*

Eight studies were identified which addressed the results of water audits, irrigation audits and water use surveys. These studies were conducted between 1991 and 2000, included multiple participants in different areas of the Country, and provided different results with regard to water savings.

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*Contra Costa Water District (CCWD) – Residential Water Survey Evaluation (associated with outdoor irrigation)* – In 2000, CCWD implemented a 1998 residential landscape survey program focused on improving landscape irrigation efficiency. The program provided 233 homes with residential water conservation surveys in the summary of 1998. A trained auditor went to homes and recommended ways to reduce water consumption focused on outdoor use. The survey results of the 233 homes suggested water savings of 42 to 55 gpd. Approximately 60 to 70% of water use was associated with irrigation use. CCWD has implemented 2,216 water use surveys between 1990-1993 with an average of 16% water savings.

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*City of Tampa Landscape Water Audit* – The City of Tampa and SWFWMD entered a cooperative funding agreement to provide landscape water audits for 25 participating properties, primarily commercial/multi-family units. The results showed that water use reductions of 28% were achieved based solely on irrigation schedule/duration changes.

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*City of Tampa, Florida – An Evaluation of Sunset Park Landscape Irrigation /System Conservation Program* – In 1995, the City of Tampa began a Sensible Sprinkling Program designed to educate homeowners and improve outdoor water use efficiency. The goal of the program was to reduce residential water use by 25%. Irrigation system evaluations were conducted for the participants and

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recommendations were made regarding conservation landscaping changes that could be made to the existing landscape. Based on water use data for the 208 participants, water savings of 21% was reported 12 months after receipt of the evaluation reports.

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***Marin Municipal Water District, Corte Madera, California – Demand Elasticity During Drought (1999)*** – The District responded to a drought with numerous emergency measures including conservation kits (indoor) and denying landscape irrigation. Customers reduced consumption by 57%. The drought was followed by a wet period and pre-drought consumption resumed. Water audits during a non-drought period saved 9%.

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***United Water Resources, Harrington Park, New Jersey – Implementing a Lawn Watering Audit with Real Time Demand Monitoring (1999)*** – The affluent community of Franklin Lakes, 25 miles west of New York City, began experiencing peak water demands in the early morning due to automatic sprinkler use. A mail-out survey was sent to residential customers to gain information about lawn watering habits. Based on results of the survey, conservation suggestions were offered. An undetermined level of water savings was experienced by those residential customers who chose to comply with suggestions.

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#### 4. Subsection 4 - Water Budget Measures

October 1997 through October 1999, a three year pilot project was developed by the Green Industry Advisory Committee of the Southwest Florida Water Management District to test the hypothesis that “increased water savings will be achieved by allowing irrigation operators to manage their own systems using water budget or allocation strategies as compared to mandatory water restriction schedules”.

This study included 35 participating project sites, including single and multi-family residences, schools and educational centers, parks/botanical gardens, medical centers/cemeteries, and commercial/institutional properties. Irrigation and landscape audits were performed at each site that resulted in annual water budget-based annual allotments equal to 46 irrigations per year.

Irrigation and landscape audits were performed at each site that resulted in annual water budgets based on annual allotments equal to 46 irrigations per year. Every site received a weather station consisting of a hi/lo thermometer, rain gauge, installed rain shut-off device, scheduling magnet/sticker, a participation placard, and a variance from the mandatory water restriction schedules. Completed data sheets, which included water meter readings, day/duration of irrigation, rainfall, and weekly hi/lo temperature readings, were submitted to the project manager at the end of each month. An active landscape maintenance professional from each region monitored sites on a quarterly basis. Annually, each site was reviewed, photographed, and if significant landscape or irrigation alterations occurred, a new budget was derived for the following year.

Nineteen of the original 35 sites continued participation through the end of the third (final) year. The overall 1997-98 base budget averages 38% of the base historical use. The 1997-98 water use averaged 36% of historical use while 1998-99 water use averaged 52% of historical water use. In 1997-98, water use was 20% below budget while in 1998-99 water use was 37% over budget. This 57% increase in water use over budget from Year 2 to Year 3 was correlated to significantly lower rainfall in 1998-99.

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Seventeen sites saved a total of 14,565,404 gallons of water over the three-year period as compared to historical water use. Additionally, the two largest sites saved 26 million gallons of water. The 19 participating sites completed the project saving over 40 million gallons of water over the three years as compared to their historical water use. Based on the Hillsborough County 15,001 to 30,000-gallon water rate of \$3.65 per 1,000 gallons of water, this would equate to a savings of \$142,000. This savings more than covers the cost of the pilot project (\$118,084). Approximately \$1.20 was saved for every one-dollar spent.

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### 5. *Subsection 5 – Water Restriction Measures*

The studies that were reviewed for this subsection concluded that mandatory restrictions were more successful than voluntary restrictions; regulation enforcement was important to overall water savings levels; and more severe limitations on outdoor watering generally saw greater reductions in use.

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***University of Colorado – 2002 Municipal Response to Drought in the Colorado Front Range*** – As part of its ongoing effort to analyze the vulnerability of water resources in Colorado’s South Platte River Basin to the impacts of climate variability and regional growth, the Western Water Assessment examined drought response of nine cities along the Front Range during the summer of 2002. Response to restrictions ranged from 2% increase in per capita use to a 7% decrease when restrictions were voluntary to a range of 10% to 55% decrease in per capita use when restrictions were mandatory. Additionally, when water use was severely restricted (one day per week), greater reductions in per capita use were experienced.

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***Southwest Florida Water Management District – Water Restriction Notes – Lois Sorensen (July 30, 2003)*** - From 1992 to 2000, the effectiveness of lawn watering restrictions was assessed and notes for the SWFWMD Demand Management Coordinator, Lois Sorensen, sited results from programs implemented by three Florida Water Management Districts and select cities in Colorado. The results demonstrated between a 20-57% reduction in potable water use for local governments analyzed within the SWFWMD. The results from Ms. Sorensen’s notes indicate that in this District, more severe restrictions (1- day/week vs. 2-day/week) produced greater savings. Aggressive enforcement of code violations and penalties were also key to reducing use. In other Districts in Florida, 2-day restrictions during a drought produced potable use savings of between 11-28%. The results of studies of several cities in Colorado, as described in a more recent report by the University of Colorado’s Natural Resources Law

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Center, indicated that 1-day/week restrictions reduced potable demand by 56% while 2-day/week restrictions reduced demand by 30%. Fewer restrictions that allowed watering 3 days a week produced a lower reduction in potable water use of only 14%. Voluntary programs in this report produced even lower reductions of between 2% to 7%.

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### 6. Subsection 6 – Rate Structure Measures

The studies in this subsection attempt to provide an understanding of the interactive relationship between customer demand, rate design and pricing policies. An examination and quantification of the impact of price on water demand and price elasticity for various classes of customers was analyzed. Where does a price signal become effective?

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***Florida Public Service Commission – Conservation-Oriented Rate Structures for Water Utilities (1997)*** – This was a five year study by the FPSC to analyze the relationship between customer demand and rate design for utilities. During the course of this study, 80 utilities were granted rate changes. Different rate structure changes occurred which produced a variety of water use changes. For example: for utilities that had a base facility charge with uniform gallon charge:

A total of 69 rate cases involving 59 utilities were actually analyzed. In 72% of cases where rate increases were implemented, a decrease in water use of 13.82% was experienced. In the remaining 28% of cases, water use increased. A variety of rate structure changes were analyzed and the results in water savings ranged between 6.55% to 44.79%.

The 46 utilities that filed rate cases requesting a rate increase of an average of 29.66%, but who did not change their rate structure (base facility charge with uniform gallon charge) experienced an average decrease in use of 6.55%. For the 4 utilities that filed to change rate structure from a flat rate to a base facility charge with uniform gallonage charge experienced an average use decrease of 44.79%. For the 12 utilities who filed to change rate structure from a minimum use to base facility charge with a uniform gallonage charge, the average decrease in use was 9.70%. Two utilities changed their rate structure to an inclining-block rate structure with two tiers and experienced an average of 10% reduction in water use.

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*Brown & Caldwell/Southwest Florida Water Management District – Water Price Elasticity Study (1999)* – This study was conducted to determine the price elasticity of water demand for various customer classes. This study defined price elasticity as a measurement of percentage change in demand resulting from a 1% change in price, all other factors held constant. Ten utilities were selected to participate in the study with a focus on single-family customers. The results of this study revealed that single-family home customers are only modestly price sensitive to water prices below \$1.50 per thousand gallons. Discretionary use is affected when the price per thousand gallons exceeds \$1.50. The results of this study also indicated that price elasticity did not change significantly with property value. The use patterns of commercial users stays relatively constant and therefore price changes have little to no effect on commercial use.

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*Stratus Consulting Inc. for Texas Water Development Board – Water Price Elasticities for Single-Family Homes in Texas (1999)* – This study examines and quantifies the functional relationship between water consumption and water price for single family residential customers in Texas. The study sought to identify the overall price signal perceived by customers for the multiple prices associated with block rates. After identifying 3,276 customers with similar use patterns, data was collected and analyzed and the following results were presented in an executive summary of the study: 1) Customers concerned with water bill focus on the total water amount; 2) price sensitivity was greatest with outdoor irrigation; 3) only 24% of customers were aware of water prices; 4) demand did decrease with increased prices; and 4) although the City of Austin changed their rate structure to an inclining block rate, the new rate structure did not lower water consumption (average water prices adjusted for inflation dropped).

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### 7. *Rain and Soil Moisture Sensor Measures*

The studies researched for this subsection were to determine the effectiveness in terms of water use reduction of using rain and soil moisture sensors for outdoor irrigation and the effectiveness of the sensors and probes design. These studies were conducted over several years and varied by utility location and study focus.

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***Hillsborough County, Florida – Maximizing the Installation of Automatic Rain Shut-Off Devices (1995)*** – The Florida State Statutes require rain sensor devices on new automatic lawn sprinkler systems installed after May 1, 1991. In 1994, Hillsborough County passed an ordinance requiring rain switches on all irrigation systems by October 1, 1996. To implement this ordinance, the County developed an attractive rebate program. To justify the program, estimates on water savings were made for the estimated participating population of 1,600 sites. The savings were estimated to be 51,850,000 gallons per year and 259,200,000 gallons over the life expectancy of the device of five years. When compared to the estimated \$2.40 to \$3.60 cost per thousand gallons of developing additional water supplies, the cost of the rain sensor rebate program was estimated to cost \$0.31 per thousand gallons.

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***Hernando County Utilities Department – Rain Sensor Research Project (1998)*** – The objective of this project was to reduce potable water used by residential sprinkler systems by providing a voluntary installation program of rain sensor shut-off devices. Irrigation contractors were asked to participate as the distributors and installers of these devices. Customers were given a water bill credit of up to \$30.00 for voluntary installation. Approximately 216 devices were installed and 169 of the 216 were analyzed. The results of the analysis indicated that the monthly water savings per device were 3,095 gallons. It was determined that if the savings stayed constant for a 12 month period, the annual water savings would be approximately 6,276,000 gallons for the 169 devices.

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*Utah State University – Demonstration of Potential for Residential Water Savings Using a Soil Moisture Controlled Irrigation Monitor (1997)* – This was a one-year conservation project that reviewed the effectiveness of new technology for conserving irrigation water by residential users. Basically the soil moisture monitor prevented irrigation when it determined the lawn was wet and irrigation was not needed. Of the total 37 installations used for the study, 27 provided use data of sufficient quality and completeness to allow comparison with water use from prior years. On average, these 27 participants used 10% less water during the 1996 demonstration season.

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*CTSI Conservation Service Company – Tools That Do the Job for You and the Customer: A Low Tech and High Tech Tool* – Tom Ash, a horticulturist for CTSI completed an analysis of the effectiveness, in terms of water conservation, of using a low tech tool – the soil probe, and a high tech tool – an automatic ET paging irrigation controller. The analysis focused on results from conservation programs developed by the Irvine Ranch Water District in 1991. The District had provided incentive water rates and water bills to motivate irrigation contractors to use water efficiently. Soil probes were provided to the contractors for free. The use of these probes by commercial landscape contractors produced a steep reduction of average water use per acre. Also, a 14% to 69% reduction in total home water use was experienced by homeowners when a soil probe was used before turning on sprinklers. The results of the ET Paging Controller water conservation analysis were not available at the time of this report.

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*Boulder, Colorado – Hard Data on Soil Moisture Sensor Performance: Summary of Soil Moisture Sensor Operations* – This study was conducted to determine the level of cost and effort required to operate a system of sensors, the long term reliability of the systems, and the need to have a simple way to track the performance of irrigation systems to determine if the proper amount of water is being applied. The results of the study were encouraging: the time and cost for

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maintaining and operating the systems was nominal, the Watermark systems were found to be reliable after several years in the ground and with minor exceptions, a sensor controlled sprinkler system matched irrigation requirements very closely. Water savings experienced were stated in terms of irrigation water requirements decrease. The total seasonal theoretical irrigation water requirement was 28 inches for April through September. The sensors allowed for only 21 inches with no negative effects to the quality landscape. Therefore a 24% reduction in irrigation water was experienced using the sensors.

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## 8. Subsection 8 – Gray Water and Cistern Measures

Graywater is water that is collected on site from the bathtub/shower, bathroom sink and clothes washer. The graywater system is a typically a gravity feed system requiring no filtering and no tank. Cisterns are containers used to collect and store water such as rainwater, or graywater generated by a residence. They may be used for potable or non-potable purposes.

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*City of Santa Barbara and East Bay Municipal Utility District – Monitoring Graywater Use: Three Case Studies in California* – This study (1996 – 1998) was conducted to determine the practicality of installing graywater systems, their costs, customer acceptance, permitting issues and affect upon soils and landscape quality. A total of four residential properties were analyzed. One property experienced water savings of approximately 190,470 gallons over the study period and the other participants experienced water savings of approximately 446,200 gallons over the study period.

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*Southwest Florida Water Management District – Cisterns in The State of Florida (1997)* – This document is a reference for cisterns in Florida and includes information regarding the background, construction considerations, maintenance and promotion of cisterns and other issues. The document portends that if 5% of coastal community households with the SWFWMD utilized 2,000 gallon potable cisterns, approximately 11,101,238 gpd could be saved. It is the conclusion of the author that cisterns can provide water savings, especially for non-potable irrigation. The document states that if a household used a 4,000 gallon non-potable cistern, 41% of the outdoor irrigation demand could be met. However, the cistern contribution would be small during periods of little rainfall. The cost to the homeowner of cisterns is somewhat restrictive when compared to the cost of shallow wells and reclaimed water.

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*City of Vancouver – City Makes Rain Barrels Available to Save Water* – This program provides subsidized rain barrels for up to 1,000 residents under a pilot program to conserve water in the City. The City estimates that each barrel will save 1,300 gallons of water during the peak summer months when demand for water is high and precipitation is low.

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### 9. Subsection 9 – Education Program Measures

For this subsection, seventeen studies were reviewed to determine the effectiveness of such programs. These programs included education programs for water conservation for the general public, schools, park managers, commercial customers, and landscape professionals.

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*AWWA - Town of Cary, North Carolina – Department of Public Works & Utilities – Water Conservation Programs* – This program focuses on reducing per capita water consumption by 20% by the year 2020. The program includes voluntary, incentive, and regulatory mechanisms to address both supply-side and demand-side conservation. This program targets residential and commercial customers. The “Beat the Peak” outdoor water use conservation program, attempts to decrease peak water demand by shifting peak use times to early morning and reducing overall water consumption. The “Block Leader Program” is a grass roots outreach program, and the “Tuna Can Plan” helps to demonstrate the concept of efficient irrigation. Despite the town’s annual growth rate of 5%, the volume of water sold has remained the same, and the City’s conservation efforts have reduced operating costs and are expected to defer considerable capital expenditures.

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*AWWA - City of Durham Environmental Resources Department, North Carolina – Water Conservation Program Parade Unit Sponsorship* - The City’s water conservation program began in 1993. In 1999, the City started the parade unit sponsorship element of their conservation program. This element includes the sponsorship of a walking unit in Durham’s annual Holiday Parade. The City works with local schools to create costumes and signs that focus on water conservation. There has been an increase in school participation from year to year as more schools hear about the program.

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*AWWA-Santa Barbara County Water Agency, California – Santa Barbara County Regional Water Efficiency Program* – This program, which began in 1990, is continuing. It provides coordination for cooperative efforts among purveyors, acts as a clearing house for information on water efficiency technology and monitors legislation concerning efficient water use. The program components include in-school education resources and programs, public information programs and materials, landscape water efficiency education and materials, agricultural water efficiency, industrial, commercial and industrial efficiency programs and materials. The evaluation of effectiveness of the program is based upon a survey completed by local water purveyors and the general public. To date the program’s effectiveness “satisfaction” rating has been 4.5 with 5.0 as the highest rating.

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*AWWA – Sarasota County, Florida – A Motorized Water Conservation Message (1998)* – The Sarasota County Environmental Services Utilities managed this program. The program consisted of a transit bus, covered in vinyl depicting a water conserving landscape. The bus’s route is designed for maximum exposure to the County’s 300,000 residents. This program report states that “the average residential water use in Florida is between 100 to 150 gallons per person per day”. Outdoor water use generally accounts for 50% or more of the total. The bus design is meant to make residents aware of the costs and benefits of water-efficient landscaping.

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*Seattle Public Utilities, Seattle, Washington – The Natural Lawn Program: A New Approach to Outdoor Water Conservation* – This multi-agency, comprehensive program was designed to focus on lawns and lawn care behaviors/ethics rather than merely water and watering behaviors. In this utility service area, water use increases 25% to 50% during the summer months. Since the program began, water use has consistently remained at about 10% below average especially during the summary months.

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*AWWA – Harris-Galveston Coastal Subsidence District, Texas – Learning to be Waterwise* – This program began in 1994 and continues today. It targets fifth-grade students and their parents by combining classroom education activities and hands on home projects that include the installation of water efficiency technologies and student conducted in-home surveys of water use patterns. No actual data of water savings was documented.

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*AWWA – Southwest Florida Water Management District and City of Tampa, Florida – Water Conservation Education Arts Program* – This water conservation theater presentation and workbooks program targeted 65,000 Hillsborough County students and 2,000 teachers. During the summer of 2000, based on the information from teacher evaluations an attempt was made to tie to this program to a decrease in water use in the homes of students exposed to the program. However, this attempt was unsuccessful due to extreme drought conditions during that same timetable.

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*AWWA – East Bay Municipal Utility District, Oakland, California – Project Water (Water Awareness through Education and Research (2000))* – These classroom materials and teachers’ guides provide water conservation education to a target audience of approximately 90,000 children each year. The effectiveness of the program is determined in focus groups conducted every few years where teachers conveyed that the materials are educationally sound, fun for students and convenient to use.

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*AWWA – East Bay Municipal Utility District, Oakland California – School Gardens* – This program is an interagency approach to educating teachers, students and the community about the role that water plays in the garden. The program includes sponsorship of education workshops for teachers covering garden topics, garden and water-specific activities and resource materials, and small grants for water-wise school garden projects. This program has not

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

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included a component for the measurement of the effectiveness of the program in terms of water savings.

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*AWWA – Georgia Water Wise Council – Water Sourcebook Series* – This series of books provides teachers with hands-on activities using water as the theme to supplement and enhance existing curricula. Students in grades K-12 benefit from these sourcebooks. Formal program evaluation on use of materials has not been implemented due to costs.

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*AWWA – City of Albuquerque – Water Education Program* – This program is an ongoing component of the City of Albuquerque’s Water Resources/Water Conservation Program. This education program includes presentations on Albuquerque’s water cycle, conservation, groundwater protection, and Albuquerque’s long-range water strategy. Every teacher is asked to complete an evaluation developed by the City. However, no conclusions regarding water savings attributable to the program have been published.

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*AWWA – Southwest Florida Water Management District In-School Education Program* - This In-School Education Program began in 1991 and consists of hands-on classroom projects. The target audience includes K-12 students and teachers through the District’s 16 counties. The program includes teacher evaluations and pre- and post tests. However, no conclusions regarding water savings attributable to the program have been published.

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*Denver Water, Denver, Colorado – The Blue Stamp Incentive Program: An Intra-Governmental Agreement for Water Conservation* – This program was designed as an incentive to Denver Parks Department for conserving water. It was designed around the idea of paying Denver Parks Department to use water efficiently. For every 1,000 gallons of water saved from a five-year historical average, Denver Water would credit the Denver Parks \$1.00 or one blue stamp.

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No information regarding results of this incentive program was available in the research.

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***AWWA – Southwest Florida Water Management District*** – In 2001 the SWFWMD began a “Water Matters” restaurant campaign to provide such things as table tents, coasters, children’s activity sheets, stickers, bookmarks, mirror stickers and pins for restaurants. These materials are meant to educate Florida residents and visitors about Florida’s water resources. No evaluations were presented in the case study; however, an evaluation was completed at the end of the program’s first year. The results of this evaluation were not available in the literature reviewed

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***Marin Municipal Water District (MMWD), Corte Madera, California – Water Management in the Landscape Maintenance Contract*** – The MMWD emphasizes water management as a means to successfully meet landscape conservation goals. This includes adding water management principles to landscape maintenance contracts. Several conclusions from the study of this program are: 1) offering financial incentives for upgrading irrigation systems components may not result in water savings unless an effective water management program is also instituted; and 2) to be effective, water management may need to be included in the landscape maintenance contract. Three MMWD sites adopted the principles of water management and have reduced their water use significantly from their base water use. In the first year of the program (1997) the percent reduction drop in water use ranged from 17% to 35% and in 1998 the percent reduction drop ranged from 40% to 59%.

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***Metropolitan Water District of Southern California – Protector Del Agua: Bilingual Landscape Education Program*** – This program, developed by California Polytechnic State University, San Luis Obispo, California, began in 1994 and consists of six courses that target landscape maintenance technicians

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES *APPENDIX A – LITERATURE SEARCH*

and operators of small landscape businesses. The response to the program has resulted in the inclusion of additional courses.

*United States Bureau of Reclamation, Sacramento, California – Landscape Water Budgets: New Business Opportunities for the Landscape Industry* – A best management practice identified by the California Urban Water Management Council was titled “Large Landscape Conservation Programs and Incentives”. This would require districts to identify accounts with dedicated irrigation meters and to assign an ETO-based water use budget. Water budgets are usually developed in terms of units of water applied per acre of irrigated landscape, in relation to the area’s evapotranspiration rate. Once landscapes are measured and water budgets are developed for customers, districts will be able to more easily monitor water use and target assistance programs to customers exceeding their water budget.

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St. Johns River  
Water Management District  
Conservation Survey Results  
August 2004

Prepared By:  
**PBS&J**

St. Johns River Water Management District (District) engaged the services of PBS&J to assist with various components of their demand reduction study and water conservation plan. To accomplish the objective to develop an "inventory" of current and potential practices and potential funding sources for implementing conservation practices that will be included in the District's 20-year water conservation plan, a questionnaire was developed and survey conducted.

This document, which has been bookmarked, is a compilation and summary of the results of the survey.

Jo Ann Jackson, PBS&J, Orlando, FL  
Chrisell Jones, PBS&J, Las Vegas, NV

August 10, 2004



**St. Johns River Water Management District  
Demand Reduction Survey Results**

**1-Contacts & General Info**

				#SF Residential Water Customers	# Multi-Family Residential Water Customers	# Reuse Residential Customers	# Service Areas	% of Homes Built Prior to 1995	(Actual or Estimate)	Extensive System Upgrade / Maintenance Over Past 2-5 Years	Conservation Targeted to Older Homes
<b>City of Altamonte Springs</b>				N/A	N/A	6,100	1	90%	Estimate	Yes	Yes
<b>Name:</b>	Kristen Rombeck	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Compliance/CIP Coordinator	<b>GIS Contact Name:</b>	None Given								
<b>Department:</b>	Public Works & Utilities	<b>Email:</b>	None Given								
<b>Phone:</b>	407-571-8331	<b>Phone:</b>	None Given								
<b>Fax:</b>	407-571-8350										
<b>Email:</b>	kristenr@altamonte.org	<b>Reuse Program:</b>	Yes								
		<b>Reuse Contact Name:</b>	Kristen Rombeck								
		<b>Email:</b>	kristenr@altamonte.org								
		<b>Phone:</b>	407-571-8331								
				<b>Target Areas:</b> During past years the City provided water saving fixture incentives. The City has also adopted the state building code which requires the installation of low flow fixtures.							
				<b>Upgrades/Maint:</b> Applied for permit to allow storage of reclaimed water in a 40 acre surface water body known as Cranes Roost which was formerly a FDOT borrow pit. Once the permit was received, 2 discharge points were constructed. Various surface water reclaimed augmentation sources have been identified. Design, permitting, and construction of the surface water augmentation features are currently underway. Reclaimed assets are continually being dedicated to the City by developments as required by Code.							
<b>City of Apopka</b>				13,834	N/A	2,200	1	50%	Estimate	Yes	No
<b>Name:</b>	John Jreij	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Assistant Public Services Director	<b>GIS Contact Name:</b>	None Given								
<b>Department:</b>	Public Services	<b>Email:</b>	None Given								
<b>Phone:</b>	407-703-1731	<b>Phone:</b>	None Given								
<b>Fax:</b>	407-703-1748										
<b>Email:</b>	jjreij@apopka.net	<b>Reuse Program:</b>	Yes								
		<b>Reuse Contact Name:</b>	Chuck McCrary								
		<b>Email:</b>	N/A								
		<b>Phone:</b>	407-703-1731								
				<b>Upgrades/Maint:</b> Replaced existing water lines and extending new lines for through-out the City for new developments.							
<b>City of Casselberry</b>				14,500 +/-	5,250 +/-	1,500	3	90%	Estimate	No	Yes
<b>Name:</b>	Gerald Chancellor, P.E.	<b>GIS Depiction Available:</b>	Yes								
<b>Title:</b>	Water Resources Operations Director	<b>GIS Contact Name:</b>	Ann Hooper								
<b>Department:</b>	Public Works	<b>Email:</b>	ahooper@casselberry.org								
<b>Phone:</b>	(407) 262-7725 ext.1236	<b>Phone:</b>	(407) 262-7725 ext.1229								
<b>Fax:</b>	(407) 262-7767										
<b>Email:</b>	gchancellor@casselberry.org	<b>Reuse Program:</b>	Yes								
		<b>Reuse Contact Name:</b>	Respondent as listed above.								
		<b>Email:</b>	None Given								
		<b>Phone:</b>	None Given								
				<b>Service Areas:</b> Unincorporated Seminole County, City of Maitland, & City of Casselberry							
				<b>Target Areas:</b> All areas being served.							
<b>City of Clermont</b>				10,070	59	2,000	2	50%	Estimate	Yes	Yes
<b>Name:</b>	Tamara Richardson	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Director of Engineering and Utilities	<b>GIS Contact Name:</b>	None Given								
<b>Department:</b>	Engineering	<b>Email:</b>	None Given								
<b>Phone:</b>	(352) 241- 7335	<b>Phone:</b>	None Given								
<b>Fax:</b>	(352) 394 - 2379										
<b>Email:</b>	trichardson@clermontfl.org	<b>Reuse Program:</b>	Yes								
		<b>Reuse Contact Name:</b>	Rebecca Vanderbeck								
		<b>Email:</b>	rvanderbeck@clermontfl.org								
		<b>Phone:</b>	352-241-7335								
				<b>Service Areas:</b> City of Clermont East Side Water System; City of Clermont West Side Water System							
				<b>Target Areas:</b> The City has budgeted projects for the next fiscal year, beginning October 2004, for plumbing fixture retrofit and rain sensor retrofit for the older sections of the City.							
				<b>Upgrades/Maint:</b> The City of Clermont is in a phase of rapid growth. Both water systems have been expanded to serve larger areas. New wells have been added and are planned for both service areas to improve water quality and increase capacity.							
<b>City of Cocoa</b>				N/A	N/A	N/A	10	N/A	Other	Yes	No
<b>Name:</b>	Nanette D. Hurst	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Water Conservation/Public Relations	<b>GIS Contact Name:</b>	Nanette Hurst								
<b>Department:</b>	Utilities	<b>Email:</b>	nhurst@cocoaf.org								
<b>Phone:</b>	(321) 639-7602	<b>Phone:</b>	(321) 639-7602								
<b>Fax:</b>	(321) 639-7663										
<b>Email:</b>	nhurst@cocoaf.org	<b>Reuse Program:</b>	Yes								
		<b>Reuse Contact Name:</b>	Nanette D. Hurst								
		<b>Email:</b>	nhurst@cocoaf.org								
		<b>Phone:</b>	(321) 639-7602								
				<b>Service Areas:</b> Cape Canaveral, Cocoa, Cocoa Beach, Kennedy Space Center, Merritt Island, Patrick Air Force Base, Rockledge, Sharpes, Suntree, Viera							
				<b>Upgrades/Maint:</b> Installed 36" water line in 2003 (22,820 LF plus 1,270 ft. sub-aqueous & 220 ft. bridge piping). Also, 7-miles of 54" water line in 2004.							

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**1-Contacts & General Info**

				#SF Residential Water Customers	# Multi-Family Residential Water Customers	# Reuse Residential Customers	# Service Areas	% of Homes Built Prior to 1995	(Actual or Estimate)	Extensive System Upgrade / Maintenance Over Past 2-5 Years	Conservation Targeted to Older Homes
<b>City of Eustis</b>				8559 total	N/A	N/A	3	80%	Estimate	Yes	No
<b>Name:</b>	Erwin Gajentan	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Director of Water	<b>GIS Contact Name:</b>	Chin Khor								
<b>Department:</b>	Water Department	<b>Email:</b>	khorc@ci.eustis.fl.us	<b>Service Areas:</b> City of Eustis, Sorrento Springs, Hethrow Country Estates							
<b>Phone:</b>	352-357-5618	<b>Phone:</b>	352-357-5480								
<b>Fax:</b>	352-357-9420	<b>Reuse Program:</b>	No								
<b>Email:</b>	gajentane@ci.eustis.fl.us	<b>Reuse Contact Name:</b>	None Given								
		<b>Email:</b>	None Given								
		<b>Phone:</b>	None Given	<b>Upgrades/Maint:</b> Water main replacment, meter replacement, fire hydrant replacement, Water main expansion, security up grades, and Reclaimed water system expansion.							
<b>Gainesville Regional Utilities</b>				N/A	N/A	N/A	1	80%	Estimate	Yes	No
<b>Name:</b>	Rick Hutton	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Sr. Water/Wastewater Engineer	<b>GIS Contact Name:</b>	None Given								
<b>Department:</b>	Strategic Planning	<b>Email:</b>	None Given								
<b>Phone:</b>	(352) 393-1218	<b>Phone:</b>	None Given								
<b>Fax:</b>	(352) 334-3151	<b>Reuse Program:</b>	Yes								
<b>Email:</b>	huttonrh@gru.com	<b>Reuse Contact Name:</b>	Rick Hutton								
		<b>Email:</b>	Huttonrh@gru.com								
		<b>Phone:</b>	(352) 393-1218	<b>Upgrades/Maint:</b> We upgrade and maintain our system on a continuous basis. Upgrades completed in the last 5 years include addition of 4 new production wells, filter system upgrades to include peak flow capacity and extension of a new 36 inch water main.							
<b>Indian River County Utilities</b>				N/A	N/A	N/A	1	70%	Estimate	Yes	No
<b>Name:</b>	Michael Hotchkiss	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Capital Projects Manager	<b>GIS Contact Name:</b>	Kevin Osthus								
<b>Department:</b>	Engineering	<b>Email:</b>	kosthus@ircgov.com								
<b>Phone:</b>	77-567-8000, ext. 1821	<b>Phone:</b>	772-567-8000, ext. 1824								
<b>Fax:</b>	772-770-5143	<b>Reuse Program:</b>	No								
<b>Email:</b>	mhotchkiss@ircgov.com	<b>Reuse Contact Name:</b>	None Given								
		<b>Email:</b>	None Given								
		<b>Phone:</b>	None Given	<b>Upgrades/Maint:</b> Replaced polybutylene services, A/C pipe, decommissioned packaged plants, regionalized service system.							
<b>Intercoastal Utilities, Inc.</b>				N/A	N/A	N/A	1	56%	Estimate	Yes	No
<b>Name:</b>	M.L. Forrester	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	V.P. Jax Utilities Management	<b>GIS Contact Name:</b>	M.L. Forrester								
<b>Department:</b>	Administration	<b>Email:</b>	MLF@jaxum.com								
<b>Phone:</b>	(904) 779-5353 or (904) 779-9797	<b>Phone:</b>	(904) 779-5353								
<b>Fax:</b>	(904) 779-5733	<b>Reuse Program:</b>	No								
<b>Email:</b>	MLF@jaxum.com	<b>Reuse Contact Name:</b>	(Serve Golf Course only)								
		<b>Email:</b>	None Given								
		<b>Phone:</b>	None Given	<b>Upgrades/Maint:</b> Yr 2000 - Upgrade and expansion of all water resource, storage, pumping, chlorination, and emergency power generation facilities.							
<b>JEA</b>				N/A	N/A	200	1	70%	Estimate	Yes	No
<b>Name:</b>	Tim Perkins	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Manager, Water/Sewer System	<b>GIS Contact Name:</b>	None Given								
<b>Department:</b>	Market Strategy	<b>Email:</b>	None Given								
<b>Phone:</b>	904-665-4520	<b>Phone:</b>	None Given								
<b>Fax:</b>	904-665-7369	<b>Reuse Program:</b>	Yes								
<b>Email:</b>	perkte@jea.com	<b>Reuse Contact Name:</b>	Jay Yarnell								
		<b>Email:</b>	yarnjj@jea.com								
		<b>Phone:</b>	904-665-6570	<b>Upgrades/Maint:</b> Expanded well and storage capacity at several WTP. Significantly expanded water distribution system R&R program.							

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**1-Contacts & General Info**

				#SF Residential Water Customers	#Multi-Family Residential Water Customers	# Reuse Residential Customers	# Service Areas	% of Homes Built Prior to 1995	(Actual or Estimate)	Extensive System Upgrade / Maintenance Over Past 2-5 Years	Conservation Targeted to Older Homes
<b>Town of Lady Lake</b>											
Name:	Bill Vance	GIS Depiction Available:	No	N/A	N/A	N/A	0	95%	Estimate	Yes	No
Title:	Town Manager	GIS Contact Name:	None Given	<b>Service Areas:</b> Town of Lady Lake, The Villages, Water Oak, the Recreation Plantation RV Resort							
Department:	Administration	Email:	None Given								
Phone:	352-751-1545	Phone:	None Given								
Fax:	352-751-1549										
Email:	bvance@ladylake.org	Reuse Program:	No	<b>Upgrades/Maint:</b> No additional information was provided on the original survey.							
		Reuse Contact Name:	None Given								
		Email:	None Given								
		Phone:	None Given								
<b>Marion County Utilities</b>				20,360	1,240	N/A	28	55%	Estimate	Yes	No
Name:	Charles Howard	GIS Depiction Available:	No	<b>Service Areas:</b> Citrus Park - Deer Path - Dunnellon Airport - Golden Ocala - Marion Oaks - Oak Trace - Palm Cay - Peppertree - Pine Run - Raven Hill - S. Ocala Industrial Park - South Lake Weir - Salt Springs - Samira Villas - Silver Springs Shores - South Forty - South Oak - Spruce Creek Golf & Country Club - Spruce Creek Preserves - Spruce Creek South - Silver Springs Woods - Stone Crest - Summer Glen - Summerglen - The Fountains - Timber Ridge - Williams Travel Center - Don Garlits							
Title:	Operations Superintendent	GIS Contact Name:	None Given								
Department:	Operations	Email:	None Given								
Phone:	352-687-1856	Phone:	None Given								
Fax:	352-687-8900										
Email:	charles.howard@marioncounty	Reuse Program:	No	<b>Upgrades/Maint:</b> Consolidation into subregional treatment facilities, extension of water and sewer services, and improvement of infrastructure.							
		Reuse Contact Name:	None Given								
		Email:	None Given								
		Phone:	None Given								
<b>City of Melbourne</b>				N/A	N/A	2,000	9	60%	0	Yes	Yes
Name:	Jennifer Wilster	GIS Depiction Available:	No	<b>Service Areas:</b> Melbourne, Melbourne Village, Palm Shores, Satellite Beach, Indian Harbour Beach, Indialantic, Melbourne Beach, unincorporated Brevard County areas, wholesale water provided to West Melbourne							
Title:	Environmental Community Out	GIS Contact Name:	None Given								
Department:	Public Works & Utilities	Email:	None Given								
Phone:	(321) 674-5761	Phone:	None Given	<b>Target Areas:</b> older toilets and older shower heads and various conservation devices							
Fax:	(321) 674-5765										
Email:	Jwilster@melbourneflorida.org	Reuse Program:	Yes	<b>Upgrades/Maint:</b> Went online with new \$23 million surface water treatment plant in 2002. Over \$1 million a year in waterline replacement projects and upgrades							
		Reuse Contact Name:	robert klaproth								
		Email:	rklaproth@melbourneflorida.org								
		Phone:	321-674-5761								
<b>Orange County Utilities Water Division</b>				570 connections	55 connections	700 connections	5	60%	Actual	Yes	Yes
Name:	Jacqueline W. Torbert	GIS Depiction Available:	No	<b>Service Areas:</b> North Service Area, South Service Area, East Service Area, West Service Area and Southwest Service Area							
Title:	Manager, Orange County Utiliti	GIS Contact Name:	None Given								
Department:	Utilities	Email:	None Given								
Phone:	407-836-6891	Phone:	None Given								
Fax:	407-836-6838										
Email:	Jacqueline.Torbert@ocfl.net	Reuse Program:	Yes	<b>Target Areas:</b> In 2003/4 conducted a pilot toilet replacement program to document the amount of water saved by retrofitting with low-flow toilets. Study is still ongoing.							
		Reuse Contact Name:	Al Castro	<b>Upgrades/ Maint:</b> 0							
		Email:	None Given								
		Phone:									

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**1-Contacts & General Info**

				#SF Residential Water Customers	#Multi-Family Residential Water Customers	# Reuse Residential Customers	# Service Areas	% of Homes Built Prior to 1995	(Actual or Estimate)	Extensive System Upgrade / Maintenance Over Past 2-5 Years	Conservation Targeted to Older Homes
<b>Orlando Utilities Commission</b> Name: Michael K Malone      GIS Depiction Available: No Title: Water Conservation Coordinator      GIS Contact Name: Michael K Malone Department: Water Business Unit      Email: mmalone@ouc.com  Phone: 1.407.709.6691      Phone: 407.709.6691 Fax: 1.407.236.9625 Email: mmalone@ouc.com      Reuse Program: Yes Reuse Contact Name: Michael K Malone Email: mmalone@ouc.com Phone: 407.709.6691				N/A	N/A	N/A	1	N/A	0	Yes	No
				Upgrades/Maint: We have upgraded all 8 of our water plants to utilize ozonation for water treatment.							
<b>City of Ormond Beach</b> Name: Tim Sheahan      GIS Depiction Available: No Title: Utilities Manager      GIS Contact Name: None Given Department: Public Works      Email: None Given Phone: 386-676-3583      Phone: None Given Fax: 386-676-3294 Email: sheahan@ormondbeach.org      Reuse Program: Yes Reuse Contact Name: Tim Sheahan Email: sheahan@ormondbeach.org Phone: 386-676-3583				N/A	N/A	1,000	1	N/A	0	Yes	No
				Upgrades/Maint: Replacement of 2" galvanized iron pipe water mains with new 8" PVC water mains. Meter replacement program to replace all meters more than 10 years old. Looping of dead end mains.							
<b>Palm Bay Utilities</b> Name: Rick Nipper      GIS Depiction Available: No Title: Operations Division Manager      GIS Contact Name: Rick Nipper Department: Utilities      Email: nipper@palmbayflorida.org Phone: 321-952-3471      Phone: 321-952-3471 Fax: 321-768-7795 Email: nipper@palmbayflorida.org      Reuse Program: Yes Reuse Contact Name: Matt Prendergast Email: premdm@palmbayflorida.org Phone: 321-952-3468				19,000	4,500	400	1	25%	Estimate	Yes	Yes
				Target Areas: Provide low flow showerheads for customers							
				Upgrades/Maint: Refurbishment of 2 Water Treatment Units. Addition of 1.5 MGD Reverse Osmosis Plant. Water and Sewer infrastructure improvements.							
<b>City of Palm Coast</b> Name: Brian Matthews      GIS Depiction Available: No Title: Environmental Specialist      GIS Contact Name: Brian Matthews Department: Name: Utility Department      Email: BMATTHEWS@ci.palm-coast.fl.us Phone: 386-986-2353      Phone: 386-986-2353 Fax: 386-986-2393 Email: BMATTHEWS@ci.palm-coast.org      Reuse Program: Yes Reuse Contact Name: Brian Matthews Email: BMATTHEWS@ci.palm-coast.fl.us Phone: 386-986-2353				24,210	435	750	3	41%	Estimate	Yes	No
				Service Areas: Ocean City, Grand Haven, Hammock Dunes							
				Upgrades/Maint: Double our treatment capacity at our membrane softening plant, installed two recirculation lines at ends of system to return flow to system and reduce water quality flushing							
<b>St. Johns County Utility Department</b> Name: Frank Kenton      GIS Depiction Available: No Title: Administrative Manager      GIS Contact Name: None Given Department: Utility Dept.      Email: None Given Phone: (904) 471-2161x17      Phone: None Given Fax: (904) 461-7619 Email: fkenton@co.st-johns.fl.us      Reuse Program: No Reuse Contact Name: None Given Email: None Given Phone: None Given				16,824	154	N/A	1	70%	Estimate	Yes	No
				Upgrades/Maint: We have replaced 2" galvanized lines with pvc lines. We have replaced all gas chlorine feed systems with liquid chlorine feed systems. SCADA upgrades on all booster stations. Installed magnetic flow meters at water plants. Added Floridan Wells at MWS and NW water plants.							

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**1-Contacts & General Info**

				#SF Residential Water Customers	# Multi-Family Residential Water Customers	# Reuse Residential Customers	# Service Areas	% of Homes Built Prior to 1995	(Actual or Estimate)	Extensive System Upgrade / Maintenance Over Past 2-5 Years	Conservation Targeted to Older Homes
<b>Seminole County Environmental Services Department</b>				N/A	N/A	N/A	11	71%	Actual	Yes	No
<b>Name:</b>	Liz Block	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Water Conservation Coordinator	<b>GIS Contact Name:</b>	None Given	<b>Service Areas:</b> Northeast, Northwest, Southeast, Southwest, Apple Valley, Dol Ray Manor, Druid Hills/Bretton Woods, Lake Brantley, Lake Harriet, Meredith Manor, Fern Park							
<b>Department:</b>	Seminole County Environment	<b>Email:</b>	None Given								
<b>Phone:</b>	407-665-2121	<b>Phone:</b>	None Given								
<b>Fax:</b>	407-665-2019	<b>Reuse Program:</b>	Yes								
<b>Email:</b>	lblock@seminolecountyfl.gov	<b>Reuse Contact Name:</b>	Liz Block	<b>Upgrades/ Maint:</b> Chemical system improvements at three WTPs; installed security systems at all plants; replaced flow meters at wells and effluent at all plants; installed major water and reclaimed mains and improved system loops; inventoried, maintained, and accurately located all hydrants; wrote wellfield operation plans; improved lost water programs and procedures to prepare for water audits.							
		<b>Email:</b>	lblock@seminolecountyfl.gov								
		<b>Phone:</b>	407-665-2121								
<b>Volusia County Water Resources and Utilities</b>				N/A	N/A	577	8	N/A	0	Yes	Yes
<b>Name:</b>	Rebecca Adkins	<b>GIS Depiction Available:</b>	No								
<b>Title:</b>	Administrative Coordinator	<b>GIS Contact Name:</b>	None Given	<b>Service Areas:</b> Southeast, Deltona North, Northeast, Southwest, Spruce Creek, Pine Island, Stone Island, New Hope villas							
<b>Department:</b>	Public Works	<b>Email:</b>	None Given								
<b>Phone:</b>	386-943-7027	<b>Phone:</b>	None Given	<b>Target Areas:</b> Low flow toilets							
<b>Fax:</b>	386-740-5162	<b>Reuse Program:</b>	Yes								
<b>Email:</b>	badkins@co.volusia.fl.us	<b>Reuse Contact Name:</b>	Scott Mays	<b>Upgrades/ Maint:</b> 0							
		<b>Email:</b>	smays@co.volusia.fl.us								
		<b>Phone:</b>	386-943-2076								



**St. Johns River Water Management District  
Demand Reduction Survey Results**

**2-Public Awareness Program**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Sevinole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>ON-GOING PUBLIC AWARENESS PROGR</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Brochures</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Implemented or Plan to Implement:	1980	1988	1999	2003	1991	2000	~1980s	N/A	2000	1997	N/A	1994	1981	1995	1982 approximately	1998	2003	1982	N/A	2001	N/A
Topic: Indoors	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Outdoors	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area: Entire Service Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Specific Neighborhoods										Yes				Yes							
Zip Code																					
Older Homes														Yes							
Newer Homes		Yes												Yes							
Other																		Yes	Yes		
Distribution: Speaking Events	Yes	Yes	Yes	Yes	Yes					Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	
Special Mailings	Yes	Yes		Yes	Yes					Yes		Yes	Yes	Yes	Yes		Yes	Yes			
Other	Yes	Yes	Yes		Yes		Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
<b>Bill Inserts</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Year Implemented or Plan to Implement:	1980	1988	2000	2001	2004	2000	1980s	N/A	2000	1997	1993	N/A	2003	2001	1982 approximately	N/A	N/A	N/A	N/A	2001	N/A
Topic: Indoors	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes			Yes	Yes	Yes	Yes
Outdoors	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes			Yes	Yes	Yes	Yes
Area: Entire Service Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes			Yes		Yes	Yes
Specific Neighborhoods																					
Zip Code																					
Older Homes					Yes																
Newer Homes		Yes		Yes																	
Other																		Yes			
Frequency: Every Cycle															Yes						
Quarterly				Yes	Yes	Yes			Yes					Yes	Yes						
Other	Yes	Yes			Yes	Yes	Yes		Yes	Yes		Yes					Yes	Yes	Yes	Yes	Yes
<b>Special Mailings</b>	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Year Implemented or Plan to Implement:	1995	N/A	2000	N/A	N/A	1997	N/A	N/A	2000	1997	N/A	N/A	1997	1998	1999	N/A	N/A	not sure	undecided	2002	N/A
Topic: Drought Alerts				Yes		Yes												Yes			
Restrictions				Yes		Yes				Yes			Yes	Yes				Yes			
Other Conservation Topics						Yes				Yes			Yes	Yes	Yes					Yes	
All of the Above			Yes															Yes			
Frequency: Every Cycle						Yes							Yes								
Quarterly			Yes										Yes					Yes			
Other				Yes	Yes				Yes				Yes	Yes	Yes					Yes	
<b>News Releases</b>	No	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No
Year Implemented or Plan to Implement:	N/A	N/A	N/A	2002	N/A	N/A	1996	N/A	2000	1997	N/A	N/A	1981	2001	1999 approximately	1998	N/A	not sure	2003	N/A	N/A
Topic: Indoors							Yes			Yes			Yes		Yes	Yes			Yes		
Outdoors				Yes			Yes			Yes			Yes	Yes	Yes	Yes			Yes		
Area: Entire Service Area				Yes			Yes			Yes			Yes	Yes					Yes		
Zip Code																					
Other												Yes			Yes	Yes					
All of the Above																					

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**2-Public Awareness Program**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>Videos</b>	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	N/A	
Year Implemented or Plan to Implement:	N/A	N/A	2001	2003	1991	N/A	1980	N/A	2005	2000	N/A	1998	1981	1995	2000	1998	2003	2005	undecided	2002	N/A
Total Annual Viewing Audience:	400	N/A	2-3,000	250	200	100	200-300	N/A	N/A	N/A	N/A	25	400	10,000+	Over 2,266 customers	?	N/A	N/A	N/A	N/A	N/A
Topic: Indoors	Yes		Yes		Yes		Yes		Yes		Yes	Yes	Yes	Yes		Yes			Yes		
Topic: Outdoors	Yes		Yes	Yes	Yes		Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes			Yes		
Where: Schools	Yes		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes					
Where: Professional Groups	Yes				Yes		Yes					Yes	Yes	Yes	Yes						
Where: Speaking Engagements	Yes		Yes		Yes		Yes		Yes		Yes	Yes	Yes	Yes	Yes						
Where: Seminars/Workshops	Yes		Yes	Yes	Yes				Yes		Yes	Yes	Yes	Yes	Yes						
Who: Youth	Yes		Yes	Yes	Yes	Yes	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Who: Adult	Yes		Yes	Yes	Yes		Yes		Yes		Yes	Yes	Yes	Yes	Yes						
Who: Professional Groups	Yes										Yes			Yes						Yes	
Who: Other																					
<b>Sponsored Public Media Messages</b>	No	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Year Implemented or Plan to Implement:	N/A	N/A	2000	N/A	N/A	2002	Lare 70's	N/A	2002	1997	N/A	N/A	1997	2001	1999 approximately	1998	N/A	2004	2002	N/A	N/A
Budget for Next Fiscal Year:	N/A	N/A	\$ 15,000	N/A	Sporadically	N/A	\$ 50,000	N/A	\$ 4,500	N/A	N/A	N/A	\$ 75,000	\$ 200,000	\$ 4,900	N/A	N/A	N/A	N/A	N/A	
Sponsorship Level: With the District			Yes			Yes			Yes	Yes			Yes	Yes	Yes	Yes			Yes		
Sponsorship Level: Independently							Yes		Yes	Yes			Yes	Yes	Yes		Yes				
Topics: Drought Related							Yes							Yes							
Topics: Restrictions			Yes				Yes		Yes	Yes			Yes	Yes	Yes	Yes		Yes	Yes		
Topics: Conservation							Yes						Yes	Yes	Yes						
Topics: Other													Yes								
Media: Radio			Yes				Yes		Yes	Yes			Yes	Yes	Yes	Yes		Yes	Yes		
Media: Television			Yes				Yes		Yes	Yes			Yes	Yes	Yes	Yes		Yes	Yes		
Media: Cable TV									Yes				Yes				Yes				
Media: Billboards																Yes					
<b>Promotes Water Conservation Contests</b>	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No
Year Implemented or Plan to Implement:	N/A	N/A	2001	2004	N/A	N/A	N/A	N/A	2005	N/A	N/A	N/A	N/A	1998	N/A	1998	N/A	Not sure	2005	2004	N/A
Measures Effectiveness:	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Topic: Indoors			Yes	Yes										Yes		Yes					
Topic: Outdoors			Yes	Yes											Yes	Yes					

N/A = Not applicable; answer not required.

Blank = No answer provided.

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**3-Indoor Incentive Programs**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Manatee County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>IMPLEMENTED INDOOR INCENTIVE PGMS</b>	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
<b>Replacement, Rebate, Incentive, Retrofit</b>	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Year Implemented:	1980s	N/A	2001	N/A	2001	N/A	1980s	N/A	N/A	N/A	N/A	N/A	1997	2003	N/A	1996	2002	1992	N/A	2002	2002
Written Policies and Procedures Available:	No	N/A	No	N/A	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	Yes	Yes	N/A	No	No	No	N/A	No	Yes
Customer Follow-up After Installation:	No	N/A	No	N/A	Yes	N/A	No	N/A	N/A	N/A	N/A	N/A	Yes	Yes	N/A	Yes	No	No	N/A	Yes	Yes
Plan to Implement:	N/A	No	N/A	Yes	N/A	No	N/A	No	No	N/A	Yes	No	N/A	Yes	Yes	N/A	N/A	N/A	No	N/A	N/A
Year Plan to Implement:	N/A	N/A	N/A	2004	N/A	N/A	N/A	N/A	N/A	N/A	2007	N/A	N/A	2003	2006	N/A	N/A	N/A	N/A	N/A	N/A
<b>Residential Consultations Provided (Indoor)</b>	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No
Year Implemented or Plan to Implement:	N/A	1990	2001	N/A	N/A	1997	Late 70's	N/A	2003	1998	N/A	1998	1981	2001	2002	N/A	2006	Not sure	undecided	2001	N/A
Measures Effectiveness:	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Track Actual Water Use Changes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
<b>Low-flush Toilet Replacement/Rebates</b>	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	Yes
Year Implemented or Plan to Implement:	N/A	N/A	N/A	2004	FY2005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1997	2003	N/A	N/A	N/A	Not sure	undecided	2005	N/A
Annual # of Toilet Replacements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,007	N/A	N/A	N/A	200	500	N/A	N/A	N/A	N/A	N/A	N/A	100
Measures Effectiveness:	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Track Actual Water Use Changes	N/A	N/A	No	N/A	N/A	No	N/A	N/A	No	N/A	N/A	No	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area													Yes								Yes
Specific Neighborhoods														Yes							
Zip Code																					
Older Homes																					
<b>Other Plumbing Replacement/Rebate Pgms</b>	No	No	Yes	No	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes	No
Year Implemented or Plan to Implement:	N/A	N/A	2001	2004	1991	N/A	1980's	N/A	N/A	N/A	N/A	N/A	1981	2003	N/A	N/A	2002	not sure	undecided	2002	N/A
Annual # of Toilet Replacements	N/A	N/A	250	N/A	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	700	N/A	N/A	1,000	N/A	N/A	200	N/A
Measures Effectiveness:	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Track Actual Water Use Changes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area			Yes		Yes								Yes	Yes			Yes			Yes	
Specific Neighborhoods																					
Zip Code																					
Older Homes																					
<b>Residential Leak Detection Program</b>	No	Yes	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No
Year Implemented or Plan to Implement:	N/A	1992	2001	N/A	N/A	N/A	N/A	N/A	N/A	1997	N/A	1998	N/A	N/A	2003	N/A	N/A	N/A	N/A	1990	N/A
Written Policies and Procedures Available:	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	Yes	N/A	N/A	Yes	N/A	N/A	N/A	N/A	No	N/A
Established Schedule	N/A	No	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	No	N/A	N/A	Yes	N/A	N/A	N/A	N/A	Yes	N/A
Utilize Performance Contracts	N/A	No	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	No	N/A	N/A	Yes	N/A	N/A	N/A	N/A	No	N/A
Perform Irrigation Audits	Yes	No	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	Yes	N/A	N/A	Yes	N/A	N/A	N/A	N/A	Yes	N/A
# Customers Benefitting Annually	N/A	N/A	Unknown	N/A	N/A	N/A	N/A	N/A	N/A	750	N/A	200	N/A	N/A	169	N/A	N/A	N/A	N/A	don't know	N/A
Measures Effectiveness:	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Track Actual Water Use Changes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area	Yes	Yes	Yes							Yes		Yes		Yes	Yes					Yes	
Specific Neighborhoods												Yes									
Zip Code																					
Older Homes																					
Plan to Implement:	No	N/A	N/A	Yes	No	Yes	N/A	N/A	No	N/A	N/A	N/A	N/A	Yes	N/A	N/A	No	No	No	N/A	No
Year Plan to Implement:	N/A	N/A	N/A	2004	N/A	2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A = Not applicable; answer not required.

Blank = No answer provided.

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**4-Outdoor Incentive Programs**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>IMPLEMENTED INDOOR INCENTIVE PGMS</b>	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
<b>Sponsor Landscape Workshops/Seminars</b>	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No
Year Implemented:	2001	1990	2001	2002	2001	N/A	2000	N/A	2005	N/A	2007	N/A	2001	2001	2005	1998	2001	Not Sure	undecided	2001	N/A
Measures Effectiveness:	Yes	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Track Actual Water Use Changes	N/A	Yes	Yes	No	N/A	N/A	No	N/A	N/A	N/A	No	N/A	No	No	No	No	No	No	N/A	Yes	N/A
Workshops By: Staff		Yes											Yes	Yes						Yes	
Outside Professionals	Yes		Yes	Yes			Yes						Yes	Yes		Yes	Yes			Yes	
<b>Outdoor Rebate, Replacement, Incentives</b>	Yes	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	Yes
Year Implemented:	1985	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2001	N/A	N/A	1998	N/A	N/A	N/A	N/A	2002
Written Policies and Procedures Available:	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
Customer Follow-up After Installation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A
Mobile Irrigation Lab Program	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
Plan to Implement:	N/A	No	Yes	No	No	No	No	N/A	No	No	N/A	No	N/A	No	Yes	N/A	No	Yes	No	Yes	N/A
Year Plan to Implement:	N/A	N/A	2005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2006	N/A	N/A	N/A	N/A	2004	N/A
<b>Rain Sensor Program</b>	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No	N/A
Year Implemented:	N/A	1992	2000	1991	N/A	2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	N/A	1998	N/A	N/A	N/A	N/A	N/A
Measures Effectiveness:	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
# Customers Benefitting Annually	N/A	N/A	Unknown	1,000	N/A	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25	N/A	?	N/A	N/A	N/A	N/A	N/A
Track Actual Water Use Changes	N/A	Yes	N/A	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area	Yes	Yes	Yes	Yes									Yes		Yes						
Specific Neighborhoods						Yes							Yes								
Zip Code																					
Older Homes																					
Plan to Implement:	N/A	N/A	N/A	Yes	No	N/A	No	N/A	No	No	N/A	N/A	No	N/A	N/A	N/A	No	No	No	Yes	N/A
Year Plan to Implement:	N/A	N/A	N/A	2005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	N/A
<b>Residential Consultations Provided (Outdoor)</b>	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No
Year Implemented:	N/A	1992	1999	2002	N/A	N/A	Late 70's	N/A	2003	2003	N/A	1998	1981	2001	N/A	N/A	N/A	N/A	N/A	2002	N/A
Measures Effectiveness:	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
# Customers Benefitting Annually	N/A	N/A	Unknown	90	N/A	N/A	>2000	N/A	50	80	N/A	1,000	52	500	N/A	N/A	N/A	N/A	N/A	300	N/A
Track Actual Water Use Changes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area		Yes	Yes	Yes			Yes		Yes	Yes		Yes	Yes	Yes	Yes						
Specific Neighborhoods																Yes				Yes	
Zip Code																					
Older Homes																					
Plan to Implement:	N/A	No	No	Yes	No	No	No	N/A	No	No	N/A	N/A	No	Yes	Yes	N/A	No	No	No	No	N/A
Year Plan to Implement:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2005	N/A	N/A	N/A	N/A	N/A
<b>Irrigation System Improvement Incentives</b>	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes
Year Implemented:	1985	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	N/A	N/A	N/A	N/A	N/A
Measures Effectiveness:	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Annual Recorded Improvements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	N/A	N/A	N/A	N/A	N/A
Track Actual Water Use Changes	N/A	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	Yes	N/A	N/A	N/A	Yes	N/A
Area: Entire Service Area	Yes															Yes					Yes
Specific Neighborhoods																					
Zip Code																					
Older Homes																					
Plan to Implement:	N/A	No	No	Yes	No	No	No	N/A	No	No	N/A	N/A	No	Yes	Yes	N/A	No	No	No	No	N/A
Year Plan to Implement:	N/A	N/A	N/A	2004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	2006	N/A	N/A	N/A	N/A	N/A	N/A

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**4-Outdoor Incentive Programs**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>Florida-friendly Landscaping Incentives</b>	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No
Year Implemented:	N/A	N/A	N/A	2004	N/A	N/A	N/A	2001	N/A	N/A	N/A	N/A	N/A	N/A	2002	pre 1995	N/A	N/A	N/A	N/A	N/A
Measures Effectiveness:	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Annual Recorded Improvements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	N/A	N/A	N/A	N/A	N/A
Track Actual Water Use Changes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Area: Entire Service Area				Yes				Yes							Yes	Yes					
Specific Neighborhoods																					
Zip Code																					
Older Homes																					
Plan to Implement:	No	No	No	No	No	N/A	No	Yes	No	No	N/A	N/A	No	Yes	N/A	N/A	No	No	No	No	N/A
Year Plan to Implement:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2004	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A = Not applicable; answer not required.

Blank = No answer provided.

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**5-Local Ord-Res-Codes**

	City of Altamonte Springs	City of Apopka	City of Casselberry	City of Clermont	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>Water Use Restrictions</b>	Yes	Yes	Yes	Yes		Yes						Yes	Yes		Yes		Yes		Yes	Yes	
Year Implemented:	1999	2000	2000	1999	N/A	2001	N/A	N/A	N/A	N/A	N/A	N/A	1980	1993	N/A	2001	N/A	2001	N/A	1981	N/A
Enforcement Practiced:	Yes	Yes	Yes	Yes		Yes			N/A			Yes	Yes		Yes		Yes		Yes		
Water Savings Analyzed:	Yes	No	No			N/A						No	Yes		No		No		Yes		
<b>Native Plant Use</b>		Yes	Yes	Yes		Yes						Yes			Yes				Yes		
Year Implemented:	N/A	1992	1993	2004	N/A	Pending	N/A	N/A	N/A	N/A	N/A	N/A	2003	N/A	N/A	2004 pending	N/A	N/A	N/A	1994	N/A
Enforcement Practiced:		Yes	Yes	Yes					N/A			Yes			No				No		
Water Savings Analyzed:		No	No									No			No				N/A		
<b>Drought Tolerant Plant Use</b>				Yes		Yes						Yes			Yes				Yes		
Year Implemented:	N/A	N/A	N/A	2004	N/A	Pending	N/A	N/A	N/A	N/A	N/A	N/A	2003	N/A	N/A	2004 pending	N/A	N/A	N/A	1994	N/A
Enforcement Practiced:				Yes					N/A			Yes			No				Yes		
Water Savings Analyzed:												No			No				N/A		
<b>Rain Sensors</b>	Yes	Yes	Yes	Yes		Yes						Yes			Yes				Yes		
Year Implemented:	See the answer to 24	1992	1990	1991	N/A	Pending	N/A	N/A	N/A	N/A	N/A	N/A	2001	N/A	N/A	2001	N/A	N/A	N/A	N/A	N/A
Enforcement Practiced:		Yes	Yes	Yes					N/A			Yes			Yes				Yes		
Water Savings Analyzed:		No	No									No			No				N/A		
<b>Site Design Review</b>	Yes	Yes		Yes		Yes						Yes			Yes				Yes		
Year Implemented:	Mid to late 70's at a	1992	N/A	2004	N/A	1990	N/A	N/A	N/A	N/A	N/A	N/A	1980	N/A	N/A	2003 amended	N/A	N/A	N/A	1994	N/A
Enforcement Practiced:	Yes	Yes		Yes		Yes			N/A			Yes			Yes				Yes		
Water Savings Analyzed:	N/A	No		No								No			No				N/A		
<b>Efficient Irrigation</b>		Yes		Yes		Yes															Yes
Year Implemented:	N/A	1992	N/A	2004	N/A	Pending	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1994	N/A
Enforcement Practiced:		Yes		Yes					N/A										Yes		
Water Savings Analyzed:		No		No											N/A				N/A		
<b>Turf Use Restrictions</b>				Yes		Yes									Yes				Yes		
Year Implemented:	N/A	N/A	N/A	2004	N/A	Pending	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2003 amended	N/A	N/A	N/A	1994	N/A
Enforcement Practiced:				Yes					N/A						Yes				Yes		
Water Savings Analyzed:				No											No				N/A		
<b>Specific Permitting Action Requirements</b>	No	No	Yes	Yes		No	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No

N/A = "Not Applicable" selected by respondent  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**6-Water Sewer Rate Structures**

	City of Altamonte Springs	City of Apopka	City Of Casselberry	City of Clermont	City of Cocoa	City of Eustis						
<b>WATER RATE STRUCTURE</b>												
<b>Rates Structured to Promote Conservation</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>		<b>Yes</b>						
Year Implemented:	Late 80's	2000	2000	2001	N/A	2002						
Year Plan to Implement:	N/A	N/A	N/A	N/A	N/A	N/A						
# Tiers in Current Rate Structure	5	4	5	5	N/A	4						
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Tier 1	Facility Charge - Flat Rate	\$2.79	Min charge	\$5.15	0-3,999	\$0.99	Base Charge	\$5.48	N/A	N/A	0-8,000	\$1.53
Tier 2	0-3000 gallons	\$0.98	1000-6000	\$0.95	4,000-9,999	\$1.38	1,000 - 10,000	\$1.10	N/A	N/A	8,001-20,000	\$1.91
Tier 3	Next 4000 gallons	\$1.92	7000-15000	\$1.17	10,000-19,999	\$2.32	11,000 - 20,000	\$1.43	N/A	N/A	20,001 to 50,000	\$2.68
Tier 4	Next 23000	\$2.41	over 15000	\$1.75	20,000-29,999	\$2.78	21,000 - 30,000	\$2.20	N/A	N/A	Over 50,000	\$3.04
Tier 5	Over 30000	\$3.01	Rate based per	N/A	30,000 & Up	\$3.47	over 30,000	\$3.00	N/A	N/A	N/A	N/A
Tier 6	Outside City rates are more	N/A	thousand gallons	N/A	Outside City Limits	25%Higher	N/A	N/A	N/A	N/A	N/A	N/A
<b>Surcharge for Excessive Use</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Surcharge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Monthly SF Service Charge</b>	\$20.64		N/A		\$14.50		\$44.00		N/A		N/A	
<b>Residential Billing Cycle</b>	Monthly		Monthly		Monthly		monthly		N/A		Monthly	
<b>Drought Rate</b>	<b>No</b>		<b>No</b>		<b>No</b>		<b>No</b>				<b>Yes</b>	
<b>All Government/Exempt Users Metered</b>	<b>No</b>		<b>Yes</b>		<b>Yes</b>		<b>Yes</b>				<b>Yes</b>	
Year Implemented:	N/A		0		0		at least 1991		N/A		1999	
Year Plan to Implement:	0		N/A		N/A		N/A		N/A		N/A	
	Note: There are no exempt users											
<b>WASTEWATER RATE STRUCTURE</b>												
<b>Monthly SF Service Charge per EDU</b>	\$37.12		N/A		\$25.00		\$38.00		N/A		\$1.34	
Residential Rate Structure Description	Tiered rate structure also. Facility Charge = 5.55, 0-3000 gallons potable water 1.81 per thousand gallons, Next 4000 gallons = 3.67, Next 4000 gallons 3.82, Over 11000 gallons flat rate of 35.39		Wastewater charges are based on water usage. Min charge is \$11.57. 1000 to 12000 = \$1.92 per thousand gallons water used. Caps off at \$34.61.		\$7.90 base charge, \$3.117 for 0-6,999, \$3.7441>7,000 25% Higher outside City Limits, No cap on gallonage,ie, all water passing thru the meter is billed as sewer usage.		Base Charge = \$12.13; Variable Charge (per 1,000 gal) = \$1.59; Maximum gallons subject to Variable Charge = 16,000		Not provided		Not provided	

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**6-Water Sewer Rate Structures**

	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities						
<b>WATER RATE STRUCTURE</b>												
<b>Rates Structured to Promote Conservation</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>						
Year Implemented:	N/A	1989	N/A	1997	N/A	1993						
Year Plan to Implement:	N/A	N/A	2006	N/A	2007?	N/A						
# Tiers in Current Rate Structure	3	4	N/A	3	N/A	2						
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>		
Tier 1	0-9	\$1.01	0-3000	\$2.20	All Use	0.72/M	1-11,000	.78/Kgal	N/A	N/A	6,000 / per 1,000 gls	\$1.14
Tier 2	10-24	\$1.33	3001-7000	\$2.42	N/A	N/A	12,000-22,000	.97/Kgal	N/A	N/A	above / per 1,000 gls	\$1.72
Tier 3	25+	\$2.29	7001-13000	\$3.85	N/A	N/A	>22,000	4.00/Kgal	N/A	N/A	N/A	N/A
Tier 4	N/A	N/A	13001-99999	\$7.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Surcharge for Excessive Use</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>		
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Surcharge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Monthly SF Service Charge</b>	\$11.00		\$9.05		\$12.21		\$15.69		\$12.00		\$25.00	
<b>Residential Billing Cycle</b>	monthly		monthly		Quarterly		monthly		monthly		Monthly	
<b>Drought Rate</b>	<b>No</b>		<b>No</b>		<b>No</b>		<b>No</b>		<b>No</b>		<b>No</b>	
<b>All Government/Exempt Users Metered</b>	<b>Yes</b>		<b>Yes</b>		<b>Yes</b>		<b>Yes</b>		<b>Yes</b>		<b>Yes</b>	
Year Implemented:	0		1989		1983		0		0		1993	
Year Plan to Implement:	N/A		N/A		N/A		N/A		N/A		N/A	
	All users except hydrants have always been metered											
<b>WASTEWATER RATE STRUCTURE</b>												
<b>Monthly SF Service Charge per EDU</b>	\$17.00		\$15.87		\$34.21		\$28.35		\$16.00		\$35.00	
Residential Rate Structure Description	\$2.27/month base customer charge + \$2.61/Kgal. Wastewater flow calculated as the minimum of the customer's winter maximum water usage or the current month water usage		2.86 per thousand gallons residential caps at 12k		Base Facility Charge: \$49.53 PER QUARTER; Gallonage Charge: \$4.14/Mgals. (Residential Swr Gallonage Chg Capped at 30,000 gals. Per quarter)		Charges are based on the metered potable water flow. We charge \$3.88/Kgal up to 22 Kgal. Sewer charges are capped at 22Kgal.		High flat rate then based upon water consumption.		The rate is \$3.25 per 1,000 capped at 8,000	

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**6-Water Sewer Rate Structures**

	City of Melbourne	Orange County Utilities Water Division	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast						
<b>WATER RATE STRUCTURE</b>												
<b>Rates Structured to Promote Conservation</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>		<b>No</b>						
Year Implemented:	N/A	1997	2001	pre 1996	N/A	N/A						
Year Plan to Implement:	N/A	N/A	N/A	N/A	N/A	2005						
# Tiers in Current Rate Structure	N/A	4	4	N/A	N/A	N/A						
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>						
Tier 1	N/A	N/A	0-3000	\$0.89	First 3,000 Gallons In City / Outside City Limits 0.801/0.945	\$8.26+\$2.08 per1000	N/A	0-10,000	\$2.90	N/A	N/A	
Tier 2	N/A	N/A	4000-15000	\$1.19	Next 12,000 Gallons In City / Outside City Limits	1.071/1.263	N/A	N/A	10,000-20,000	\$3.76	N/A	N/A
Tier 3	N/A	N/A	16000-30000	\$2.09	Next 15,000 Gallons In City / Outside City Limits	1.880/2.219	N/A	N/A	20,000 plus	\$4.63	N/A	N/A
Tier 4	N/A	N/A	31000+	\$2.61	Next 30,000 Gallons In City / Outside City Limits	2.348/2.771	N/A	N/A	N/A	N/A	N/A	N/A
Tier 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Surcharge for Excessive Use</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Surcharge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Monthly SF Service Charge</b>	\$4.40	\$5.47	4.55 for inside and \$5.35 for outside	18.66 for 5000gal	?	\$28.65						
<b>Residential Billing Cycle</b>	monthly	Monthly	monthly	monthly	monthly	monthly						
<b>Drought Rate</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>						
<b>All Government/Exempt Users Metered</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>						
Year Implemented:	0	1980	1923	pre 1996	0	1970						
Year Plan to Implement:	N/A	N/A	N/A	N/A	N/A	N/A						
<b>WASTEWATER RATE STRUCTURE</b>												
<b>Monthly SF Service Charge per EDU</b>	\$7.76	\$13.96	Not Applicable	\$25.33	?	\$24.02						
Residential Rate Structure Description	based on amount of water used	Uniform Rate of \$3.17 per 1,000 gallons with a cap at 14,000 gallons	Not Applicable We do not manage wastewater.	\$10.78 base rate (includes first 2,000 gal.) = \$2.91 per 1000 gal. over 2,000 gal.	Residential customer are only charged for a maximum of 10,000 gallons per month plus monthly base facility charge of \$ 12.82	Base rate = 10.07 with 0 gals used, then 2.79 / 1000 gals of water used upto 8000 gals., no additional charge after that.						

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**6-Water Sewer Rate Structures**

	St. Johns County Utility Department	Sevier County Environmental Services Department	Volusia County Water Resources and Utilities			
<b>WATER RATE STRUCTURE</b>						
<b>Rates Structured to Promote Conservation</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>			
Year Implemented:	2001	2003	2002			
Year Plan to Implement:	N/A	N/A	N/A			
# Tiers in Current Rate Structure	4	5	4			
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Tier 1	0-4,000	\$3.05	0-10000	\$0.65	0-7	1.54/2.91
Tier 2	4,001-8,000	\$4.21	10001-20000	\$1.00	7-14	1.76/3.14
Tier 3	8,001-15,000	\$5.67	20001-30000	\$2.50	14-21	2023/3.61
Tier 4	> 15,000	\$7.65	30001-50000	\$3.50	over 21	4.62/6.01
Tier 5	N/A	N/A	50001 and over	\$4.75	N/A	N/A
Tier 6	N/A	N/A	N/A	N/A	N/A	N/A
<b>Surcharge for Excessive Use</b>	<b>No</b>	<b>No</b>	<b>No</b>			
	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>	<b>Gallons</b>	<b>Rate</b>
Surcharge	N/A	N/A	N/A	N/A	N/A	N/A
<b>Monthly SF Service Charge</b>	\$9.52	\$6.60	N/A			
<b>Residential Billing Cycle</b>	monthly	monthly	monthly			
<b>Drought Rate</b>	<b>No</b>	<b>No</b>	<b>No</b>			
<b>All Government/Exempt Users Metered</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>			
Year Implemented:	approx. 1995	don't know	0			
Year Plan to Implement:	N/A	N/A	N/A			
<b>WASTEWATER RATE STRUCTURE</b>						
<b>Monthly SF Service Charge per EDU</b>	\$9.13	\$11.50	N/A			
Residential Rate Structure Description	We charge for each 1,000 gallons used. There is a 10,000 gallon cap on sewer charges for single family and an 8,000 gallon cap for multi-family.	\$2.63 per 1000 gal up to 15000	Base rate & gallons up to 14,000			

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**7-Reuse Program**

	City of Altamonte Springs	City of Apopka	City Of Casselberry	City of Clermont	City of Cocoa	City of Eustis
<b>Reuse/Reclaim Program in Effect:</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>
<b>Year Reuse/Reclaimed Program Began</b>	<b>1992</b>	<b>1988</b>	<b>1988</b>	<b>2003</b>	<b>N/A</b>	<b>N/A</b>
<b>Efforts described as:</b>						
Aggressive	Yes	Yes	Yes	Yes		
Mildly Aggressive						
Passive						
<b>% of Service Area with Access to Reuse Water</b>	<b>90+%</b>	<b>20%</b>	<b>30%</b>	<b>30%</b>	<b>N/A</b>	<b>N/A</b>
<b>Plan to Expand Service Area</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>		
Year Expansion Planned:	Ongoing	2004	0	2005	0	0
<b>% Reuse Customers Metered:</b>	<b>Approx 15%</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b># Residential Reuse/Reclaim Customers:</b>	<b>6,100</b>	<b>2,200</b>	<b>1,500</b>	<b>2,000</b>	<b>N/A</b>	<b>N/A</b>
<b>Rate Structure:</b>						
Flat Rate + 1,000 gal. rate	Yes		Yes		Yes	
Per 1,000 gal.	Yes	Yes	Yes	Yes	Yes	
Flat Rate	Yes		Yes		Yes	
Description of Rate Structure, other than as shown above:	Flat rate for residential. For customers in neighborhoods that have reclaimed avail but aren't connected, they still have to pay a flat availability charge. Commercial is billed based on a tiered consumption. See faxed rate sheet.	No information provided.	\$1.50 Base Charge \$.8312 for 0-12,999 \$1.7257 for all usage > 13,000	Sold in bulk to development	No information provided.	No information provided.
<b>Description of methods employed to conserve reuse/reclaimed water:</b>	The City serves low-cost reclaimed water to over 90% of its inside City customers and is working to expand its outside city commercial services. Thanks to the dual piping system the pressures in the reclaimed system can be dropped in the system to a point which won't allow the activation of an irrigation system during restriction hours. We also have Water restriction patrols during times of severe drought and restriction enforcement. During these times all city employees (garbage truck drivers, meter readers, distribution system employees, construction personnel) call in to designated reps to report water restriction violations. The reps deliver notices, speak one on one with the violator and in some cases lock off the violators reclaimed system until a fine is paid (this only happens when there has been multiple violations of restrictions).	Violations issued for non-compliance.	Rate is almost double for all gallonage consumed over 13,000 gallons/month. Same watering restrictions as are imposed for potable water irrigation are applicable to reclaimed water usage.	Development owns and operates large scale irrigation system. Control of individual zones is based on actual rainfall and calculated need based on recent rainfall and other weather conditions.	No information provided.	No information provided.

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**7-Reuse Program**

	Gainessville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division
<b>Reuse/Reclaim Program in Effect:</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>
<b>Year Reuse/Reclaimed Program Began</b>	<b>1993</b>	<b>N/A</b>	<b>N/A</b>	<b>Oct-04</b>	<b>N/A</b>	<b>N/A</b>	<b>1988</b>	<b>31747</b>
<b>Efforts described as:</b>								
Aggressive	Yes							Yes
Mildly Aggressive		Yes	Yes				Yes	
Passive				Yes		Yes		
<b>% of Service Area with Access to Reuse Water</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>&lt;1%</b>	<b>N/A</b>	<b>N/A</b>	<b>10%</b>	<b>20%</b>
<b>Plan to Expand Service Area</b>	<b>Yes</b>	<b>Yes</b>		<b>Yes</b>			<b>Yes</b>	<b>No</b>
Year Expansion Planned:	On-going as new developments come in	0	0	2007+	0	0	soon	0
<b>% Reuse Customers Metered:</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>100%</b>	<b>99%</b>
<b># Residential Reuse/Reclaim Customers:</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>200</b>	<b>N/A</b>	<b>N/A</b>	<b>2,000</b>	<b>1700 connections</b>
<b>Rate Structure:</b>								
Flat Rate + 1,000 gal. rate								
Per 1,000 gal.						Yes		
Flat Rate	Yes						Yes	
Description of Rate Structure, other than as shown above:	\$10/ month flat rate	No information provided.	(Do not have authorized charge/rate for reuse water provided to Golf Course)	1-15Kgal .97/Kgal, 16-30Kgal 1.56Kgal, >30Kgal 4.00/Kgal	No information provided.	.05 cents per 1,000 gls	No information provided.	Fixed Monthly Charge by meter size with an allowance built in. Usage in excess of the allowance is subject to the volume charge. Retail volume charge is \$0.84 per 1,000 gallons. Wholesale rates are \$0.70, \$0.42, or \$0.28 depending on the demand placed on the system.
Description of methods employed to conserve reuse/reclaimed water:	No information provided.	No information provided.	No information provided.	Conservation rate structure.	No information provided.	No information provided.	make it available every other day to keep from running out and still meeting demand	No information provided.

N/A = Answer not applicable  
Blank = No answer was provided by respondent

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**7-Reuse Program**

	<i>Orlando Utilities Commission</i>	<i>City of Ormond Beach</i>	<i>Palm Bay Utilities</i>	<i>City of Palm Coast</i>	<i>St. Johns County Utility Department</i>	<i>Seminole County Environmental Services Department</i>	<i>Volusia County Water Resources and Utilities</i>
<b>Reuse/Reclaim Program in Effect:</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>
<b>Year Reuse/Reclaimed Program Began</b>	<b>1989</b>	<b>pre 1996</b>	<b>2000</b>	<b>1990</b>	<b>N/A</b>	<b>2004</b>	<b>1986</b>
<b>Efforts described as:</b>							
Aggressive						Yes	
Mildly Aggressive	Yes	Yes					
Passive			Yes	Yes			Yes
<b>% of Service Area with Access to Reuse Water</b>	N/A	5%	100%	3%	N/A	N/A	5%
<b>Plan to Expand Service Area</b>		<b>Yes</b>	<b>Yes</b>	<b>Yes</b>		<b>Yes</b>	<b>Yes</b>
Year Expansion Planned:	0	2004	?	2005	0	2004	0
<b>% Reuse Customers Metered:</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>	<b>100%</b>
<b># Residential Reuse/Reclaim Customers:</b>	<b>N/A</b>	<b>1,000</b>	<b>400</b>	<b>750</b>	<b>N/A</b>	<b>N/A</b>	<b>577</b>
<b>Rate Structure:</b>							
Flat Rate + 1,000 gal. rate			Yes				
Per 1,000 gal.			Yes	Yes			
Flat Rate		Yes	Yes				
Description of Rate Structure, other than as shown above:	No information provided.	No information provided.	NO CHARGE	No information provided.	No information provided.	Currently flat, but in the middle of a rate study to determine tiered structure	No information provided.
<b>Description of methods employed to conserve reuse/reclaimed water:</b>	No information provided.	Notice on web site.	NONE	No information provided.	No information provided.	No information provided.	No information provided.

N/A = Answer not applicable  
Blank = No answer was provided by respondent

	City of Altamonte Springs	City of Apopka	City Of Casselberry	City of Clermont
<b>SECTION 1 - GENERAL INFORMATION</b>				
1. Names of Utility's service areas, if there is more than one service area:	No comments provided.	No comments provided.	Unincorporated Seminole County, City of Maitland, & City of Casselberry	City of Clermont East Side Water System; City of Clermont West Side Water System
2. Description of upgrades and/or maintenance provided to the system:	Applied for permit to allow storage of reclaimed water in a 40 acre surface water body known as Cranes Roost which was formerly a FDOT borrow pit. Once the permit was received, 2 discharge points were constructed. Various surface water reclaimed augmentation sources have been identified. Design, permitting, and construction of the surface water augmentation features are currently underway. Reclaimed assets are continually being dedicated to the City by developments as required by Code.	Replaced existing water lines and extending new lines for through-out the City for new developments.	No comments provided.	The City of Clermont is in a phase of rapid growth. Both water systems have been expanded to serve larger areas. New wells have been added and are planned for both service areas to improve water quality and increase capacity.
3. Specific services areas with older homes targeted to implement water conservation practices:	During past years the City provided water saving fixture incentives. The City has also adopted the state building code which requires the installation of low flow fixtures.	No comments provided.	All areas being served.	The City has budgeted projects for the next fiscal year, beginning October 2004, for plumbing fixture retrofit and rain sensor retrofit for the older sections of the City.
<b>SECTION 2 - PUBLIC AWARENESS ACTIVITIES</b>				
8. Distribution of brochures and/or pamphlets other than through speaking engagements or special mailings:	Cost-shared with SJRWMD a year or so ago in a Water Conservation Media Campaign which included TV and Radio ads. The City has also published articles in 2 City sponsored which are mailed out quarterly and are a type of newsletter mail-out. The quarterly mail-outs go to all inside City residents.	New residents moving into City.	Mailouts/Bill stuffers	No comments provided.
9. Frequency of distribution of water bill inserts if other than with every billing cycle or on a quarterly basis:	Varies depending on water consumption and water restriction implementation. The City utilizes type on the water bill more than letter inserts.	At least once a year.	No comments provided.	No comments provided.
10. Subject matter of special mailings other than drought alerts or watering restrictions:	The City typically utilizes the one line of text available on monthly utility bills for messages about water restrictions, conservation activities, community activities, congrats and more. The City also utilizes 2 quarterly City-sponsored newsletters as an avenue of public education. Articles are included in the newsletter pursuant to current community activities. The City also utilizes it's website for education.	No comments provided.	Landscaping/Xeriscape , Leak Detection& Prevention, Irrigation Practices	No comments provided.
10. Frequency of special mailings if other than with every billing cycle or	No comments provided.	No comments provided.	No comments provided.	The City sends information as needed as conditions change.
13. Titles of the conversation videos used:	The City usually relies upon videos published by the AWWA, Cooperative Extension Offices, and SJRWMD to guarantee consistency of info released.	No comments provided.	Water Conservation Videos from AWWA, Water Reuse(Every Drop Counts...Use It Again Florida), Water Pollution(SJRWMD)	Water Pollution -- The Dirty Details (SJRWMD); Water Conservation for the Home (SJRWMD)
13. Targeted video audiences if other than youth, adult, or professional groups:	No comments provided.	No comments provided.	No comments provided.	No comments provided.
14. Targeted contest audiences:	No comments provided.	No comments provided.	Elementary & Middle Schools thru AWWA Dropsavers Poster Contest	youth
<b>SECTION 3 - INDOOR CONVERSATION INCENTIVE PROGRAMS</b>				
17. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their indoor water use is being tracked:	We have implemented a complimentary irrigation audit program for the top 100 users however the enforcement of water restrictions happens this program due to the fact that irrigation systems are not allowed to be run during daytime hours 10am to 4pm which normally corresponds with typical working hours of City employees, commercial business management personnel, schools, multi-family dev. management staff and etc... The City also sends welcome letters to new customers and offers a cross connection inspection of indoor and outdoor systems, during this inspection staff members usually get a chance to do some one on one education about conservation, system maintenance, and more.	No comments provided.	No comments provided.	No comments provided.
18. Description of how behavior effectiveness resulting from low-flush toilet replacement or rebates is being tracked:	The City did this years ago but have found that due to the building code changes suppliers now carry low flow only toilets thus no need to continue program. Also the program wasn't widely used by the residents in the past but with the boom of Home Depot and Lowes (Home Improvement stores) a lot of remodeling is occurring and it is occurring under the new building codes. See answer to 16 for more details.	No comments provided.	No comments provided.	No comments provided.
19. Description of how behavior effectiveness resulting from indoor plumbing retrofit or exchanges (other than low-flush toilets) is being tracked:	The City did this years ago but have found that due to the changes in the building code, suppliers now carry low flow only fixtures. Further due to the large turn over in homes lately many people are remodeling thus the fixture are being changed out without incentive. The City discontinued the program due to lack of interest from the customers. See answer to 16 for more details.	No comments provided.	Showerhead Exchange Program	No comments provided.

	City of Altamonte Springs	City of Apopka	City Of Casselberry	City of Clermont
20. Description of how behavior effectiveness resulting from implementation of a leak detection program specific to residential customers is being tracked:	Irrigation audits are provided by the City to the top 100 commercial users. All public works employees are asked to report broken irrigation heads, unexplained flowing water and etc when observed during their normal daily activities regardless if the employee works in the water dept or not. This is beneficial given that public works utilizes City employees for trash collection, meter reading, potable and reclaimed water distribution maintenance, gravity and pumped sewage collection and treatment, potable water supply, police and more.  The City does offer courtesy inspections for unusually high consumption for all customer classes (residential, commercial, multifamily) and on both water systems (reclaimed and potable).	Through the water bills	No comments provided.	No comments provided.
<b>SECTION 4 - OUTDOOR CONVERSATION INCENTIVE PROGRAMS</b>				
15. Description of how behavior effectiveness resulting from conducting landscape workshops and/or seminars is being tracked:	No comments provided.	Based on water bills.	No comments provided.	No comments provided.
22. Description of how behavior effectiveness resulting from a rain sensor program is being tracked:	Building code, Florida Statutes require the installation of a rain sensor with every automated irrigation system.	Through the water bills.	All new irrigation systems are required to install same.	The City has required rain sensors on new homes since 1991. This is included in the final inspection of each home. The retrofit program for older homes will begin in the fall of this year.
23. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their outdoor water use is being tracked:	Irrigation audits are provided by the City to the top 100 commercial users. All public works employees are asked to report broken irrigation heads, unexplained flowing water and etc when observed during their normal daily activities regardless if the employee works in the water dept or not. This is beneficial given that public works utilizes City employees for trash collection, meter reading, potable and reclaimed water distribution maintenance, gravity and pumped sewage collection and treatment, potable water supply, police and more. Keep in mind the complimentary irrigation audit program for the top 100 users is hampered due to the enforcement of water restrictions due to the fact that irrigation systems are not allowed to be run during daytime hours 10am to 4pm which normally corresponds with typical working hours of City employees, commercial business management personnel, schools, multi-family dev. management staff and etc... The City also sends welcome letters to new customers and offers a cross connection inspection of indoor and outdoor systems, during this inspection staff members usually get a chance to do some one on one education about conservation, system maintenance, and more.	Through water bills.	No comments provided.	check consumption of homes that were evaluated
24. Description of how behavior effectiveness resulting from implementation of an irrigation system improvement program is being tracked:	The City offers a low-cost reclaimed water system for irrigation use. The system currently serves all commercial and 90% of the City's residents. The system is known as Project APRICOT.	No comments provided.	No comments provided.	No comments provided.
25. Description of how behavior effectiveness resulting from implementation of an incentive program promoting use of drought-tolerant or xeriscape/Florida-friendly landscaping is being tracked:	There is no need for a rain sensor program, State laws already require the installation of rain sensors. Also, the City's has adopted the states building code by reference.	No comments provided.	No comments provided.	This year, the City passed a Water Efficient and Landscape Ordinance. This encourages new or modified landscapes to incorporate drought-tolerant landscaping. Since it is a new ordinance, the effectiveness has not yet been measured.
<b>SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES</b>				
27. Description of permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use other than those covered by Code:	Recall that the state building code requires the installation/use of low flow fixtures, toilets and rain sensors...there is no need for the City to do anything other than adopt and enforce (via building permit inspections) the state's building code.	No comments provided.	Plumbing Code Requirements for all new construction and renovations. Review and approval of plans and specifications prior to building permit issuance.	The City of Clermont uses the Lake County Building Department for inspection of new and renovated structures. The Building Code includes requirements for low flow toilets and shower heads. These items are required in new construction.
<b>SECTION 9 - COMMENTS</b>				
Additional general comments provided:	Different and various conservation practices have been implemented City-wide. Retrofit Program--We don't currently have a program. We did this in the past, however. There is no need for it now as the State Building Code doesn't allow anything other than low flow thus supply warehouses usually don't stock anything except low flow. Due to the fact that the City has a number of outside City customers, the City prefers to rely on the SJRWMD Media campaign in order to guarantee that consistent information is released. Water restriction hours adopted by the City are based upon SJRWMD water restrictions in order to eliminate confusion to outside City customers. We have done this a couple of years but don't every single year. The installation of rain sensors is required by state law. The City's inspectors do inspect each irrigation system via the building permit process. Residential reclaimed customers are not metered. All potable connections are metered. All commercial reclaimed customers are metered.	No comments provided.	A separate rate structure than listed above, is applicable to residences which have irrigation meters and irrigate with potable water. Such customers are charged a base rate of \$4.77/month, \$1.87 for 0-12,999 gallons and \$2.45 for all gallonage >13,000 per month. Again, these rates are increased by 25% for like customers outside of the City limits.	No comments provided.

N/A = Answer not applicable  
Blank = No answer was provided by respondent

	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.
<b>SECTION 1 - GENERAL</b>					
1. Names of Utility's service areas, if there is more than one service area:	Cape Canaveral, Cocoa, Cocoa Beach, Kennedy Space Center, Merritt Island, Patrick Air Force Base, Rockledge, Sharpes, Suntree, Viera	City of Eustis, Sorrento Springs, Hethrow Country Estates	No comments provided.	No comments provided.	Serve multiple customer types using two (2) water water production facilities, but through interconnected trans/dist grid system.
2. Description of upgrades and/or maintenance provided to the system:	Installed 36" water line in 2003 (22,820 LF plus 1,270 ft. sub-aqueous & 220 ft. bridge piping). Also, 7-miles of 54" water line in 2004.	Water main replacment, meter replacement, fire hydrant replacement, Water main expansion, security up grades, and Reclaimed water system expansion.	We upgrade and maintain our system on a continuous basis. Upgrades completed in the last 5 years include addition of 4 new production wells, filter system upgrades to include peak flow capacity and extension of a new 36 inch water main.	Replaced polybutylene services, A/C pipe, decommissioned packaged plants, regionalized service system.	Yr 2000 - Upgrade and expansion of all water resource, storage, pumping, chlorination, and emergency power generation facilities.
3. Specific services areas with older homes targeted to implement water conservation practices:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 2 - PUBLIC AWARENESS</b>					
8. Distribution of brochures and/or pamphlets other than through speaking engagements or special mailings:	Water Bill inserts; Newsletters, Local Newspaper	Included with water bills (Selection buttons are not working)	Bill stuffers, handouts at various events, and handouts to customers in conjunction with home energy/water conservation audits.	No comments provided.	Delivery to area libraries, institutions
9. Frequency of distribution of water bill inserts if other than with every billing cycle or on a quarterly basis:	No comments provided.	Bi-annual	Seasonally, Water conservation notices distributed during high demand periods	No comments provided.	No comments provided.
10. Subject matter of special mailings other than drought alerts or watering restrictions:	No comments provided.	Water quality reports, City wide annual reports.	No comments provided.	No comments provided.	No comments provided.
10. Frequency of special mailings if other than with every billing cycle or on a quarterly basis:	Won't due to the water bill inserts	No comments provided.	No comments provided.	No comments provided.	No comments provided.
13. Titles of the conversation videos used:	A Consumer's Guide to WC; Down the Drain; Florida's Aquifers: The Treasure Below; My Florida Yard 2004; The Hydrolic Cycle; Water: Gift of Life; WC at Home; WC at Work; WC PSA's; Water Follies; Waterhog Haven; Waterwise Landscape Irrigation; What Do You Know About H2O; What Is Xeriscape?; Xeriscape Irrigation (Principles); Xeriscape Maintenance	AWWA Waterhog Haven, AWWA The Basics of Water Quality We Treat Water Right, AWWA Always Pure Never Runs Dry, SJRWMD Water Conservation for the Home.	The Water Cycle, Home Energy Survey, GRU Academy	No comments provided.	No comments provided.
13. Targeted video audiences if other than youth, adult, or professional groups:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
14. Targeted contest audiences:	Won't w/o additional personnel.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 3 - INDOOR CONSERVATION</b>					
17. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their indoor water use is being tracked:	Not for private residential customers w/o additional personnel.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
18. Description of how behavior effectiveness resulting from low-flush toilet replacement or rebates is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No current plans to implement
19. Description of how behavior effectiveness resulting from indoor plumbing retrofit or exchanges (other than low-flush toilets) is being tracked:	No comments provided.	No comments provided.	Low flow shower head and faucet aerator giveaways	No comments provided.	No plans to implement - Largest Wtr Conservation need is in irrigation

	City of Cocoa	City of Eustis	Gainesville Regional Utilities	Indian River County Utilities	Intercoastal Utilities, Inc.
20. Description of how behavior effectiveness resulting from implementation of a leak detection program specific to residential customers is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 4 - OUTDOOR</b>					
15. Description of how behavior effectiveness resulting from conducting landscape workshops and/or seminars is being tracked:	No comments provided.	No comments provided.	System Demand Reductions	No comments provided.	No comments provided.
22. Description of how behavior effectiveness resulting from a rain sensor program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
23. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their outdoor water use is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
24. Description of how behavior effectiveness resulting from implementation of an irrigation system improvement program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
25. Description of how behavior effectiveness resulting from implementation of an incentive program promoting use of drought-tolerant or xeriscape/Florida-friendly landscaping is being tracked:	No comments provided.	No comments provided.	No comments provided.	Our incentive program consists of not providing irrigation water.	No comments provided.
<b>SECTION 5 - LOCAL OR</b>					
27. Description of permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use other than those covered by Code:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 9 - COMMENTS</b>					
Additional general comments provided:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	Intercoastal Utilities is an investor-owned and contract-operated utility. Its rates and service tariffs are controlled by a County-appointed regulatory Authority. That Authority has not addressed implementation of water conservation rules, practices or rates. The SJRWMD, through its CUP issued to the utility, has required Intercoastal to (a) aggressively promote water conservation through the media and personal customer contacts, and (b) propose and pursue both water-conserving rates AND monthly billing of water services.

N/A = Answer not applicable  
Blank = No answer was provided by r

**St. Johns River Water Management District  
Demand Reduction Survey Results**

**8-Utility Comments**

	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division
<b>SECTION 1 - GENERAL INFORMATION</b>					
1. Names of Utility's service areas, if there is more than one service area:	No comments provided.	Town of Lady Lake, The Villages, Water Oak, the Recreation Plantation RV Resort	Citrus Park - Deer Path - Dunnellon Airport - Golden Ocala - Marion Oaks - Oak Trace - Palm Cay - Peppertree - Pine Run - Raven Hill - S. Ocala Industrial Park - South Lake Weir - Salt Springs - Samira Villas - Silver Springs Shores - South Forty - South Oak - Spruce Creek Golf & Country Club - Spruce Creek Preserves - Spruce Creek South - Silver Springs Woods - Stone Crest - Summer Glen - Summerglen - The Fountains - Timber Ridge - Williams Travel Center - Don Garlits	Melbourne, Melbourne Village, Palm Shores, Satellite Beach, Indian Harbour Beach, Indialantic, Melbourne Beach, unincorporated Brevard County areas, wholesale water provided to West Melbourne	North Service Area, South Service Area, East Service Area, West Service Area and Southwest Service Area
2. Description of upgrades and/or maintenance provided to the system:	Expanded well and storage capacity at several WTP. Significantly expanded water distribution system R&R program.	No additional information was provided on the original survey.	Consolidation into subregional treatment facilities, extension of water and sewer services, and improvement of infrastructure.	Went online with new \$23 million surface water treatment plant in 2002. Over \$1 million a year in waterline replacement projects and upgrades	No comments provided.
3. Specific services areas with older homes targeted to implement water conservation practices:	No comments provided.	No comments provided.	No comments provided.	older toilets and older shower heads and various conservation devices	In 2003/4 conducted a pilot toilet replacement program to document the amount of water saved by retrofitting with low-flow toilets. Study is still ongoing.
<b>SECTION 2 - PUBLIC AWARENESS</b>					
8. Distribution of brochures and/or pamphlets other than through speaking engagements or special mailings:	Bill inserts, public schools	No comments provided.	Pamphlet Rack in office. Utilities conservation information passed out to schools, and at a booth once a month at the mall.	Also, at special events.	Public meetings & events; HOA meetings; and at other requested events throughout the county.
9. Frequency of distribution of water bill inserts if other than with every billing cycle or on a quarterly basis:	2 or three inserts a year	Occasionally	No comments provided.	occasionally to promote special water conservation events or other timely information	No comments provided.
10. Subject matter of special mailings other than drought alerts or watering restrictions:	Primarily on irrigation and waterwise landscaping	No comments provided.	No comments provided.	General indoor and outdoor water conservation information. (PW&Utilities Connection is monthly, Conservation News is quarterly)	Water Restriction notices to new customers; Consumer Confidence Report to all customers with conservation information in the report.
10. Frequency of special mailings if other than with every billing cycle or on a quarterly basis:	As necessary or appropriate.	No comments provided.	No comments provided.	No comments provided.	Weekly mail outs for new customers on restrictions; annually on CCR.
13. Titles of the conversation videos used:	Energy and Water Conservation Audit	No comments provided.	No comments provided.	Conserving Water on the Space Coast, Down the Drain, Water Hog Haven., My Florida Yard: 2004 Florida Friendly Landscape Seminar, Water for Life, Water Follies, Professor Water: Fantastic Facts about H2O, What Do You Know About H2O	Videos produced by AWWA.
13. Targeted video audiences if other than youth, adult, or professional groups:	Don't know because the majority of the videos are distributed to individuals.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
14. Targeted contest audiences:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	Youth
<b>SECTION 3 - INDOOR CONSERVATION</b>					
17. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their indoor water use is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	At workshops and presentations we discuss water conservation with individuals and often receive calls for to answer more detailed questions and send materials to them.
18. Description of how behavior effectiveness resulting from low-flush toilet replacement or rebates is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
19. Description of how behavior effectiveness resulting from indoor plumbing retrofit or exchanges (other than low-flush toilets) is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	A showerhead exchange program is done once a year, old showerheads are exchanged for new ones - guarantees the installation of the new showerheads

	JEA	Town of Lady Lake	Marion County Utilities	City of Melbourne	Orange County Utilities Water Division
20. Description of how behavior effectiveness resulting from implementation of a leak detection program specific to residential customers is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	In 2004 a pilot program for rain sensor give-aways & installation was initiated. Customer must attend a landscape & irrigation workshop. Also their irrigation system must be on potable water to qualify.
<b>SECTION 4 - OUTDOOR</b>					
15. Description of how behavior effectiveness resulting from conducting landscape workshops and/or seminars is being tracked:	No comments provided.	No comments provided.	No comments provided.	By the survey questions participants are required to complete and turn in at the end of the seminar to get a goodie bag (in 2004 had 600 attendees)	Tracking water consumption will be implemented in late 2004. Water consumption for previous 13 billing cycles will be recorded, water consumption will be tracked starting 30 days after attending workshop for 13 billing cycles.
22. Description of how behavior effectiveness resulting from a rain sensor program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	In 2004 a pilot program for rain sensor give-aways & installation was initiated. Customer must attend a landscape & irrigation workshop. Also their irrigation system must be on potable water to qualify.
23. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their outdoor water use is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	Landscape consultant who conducts workshops will do private consultations upon request of water customer.
24. Description of how behavior effectiveness resulting from implementation of an irrigation system improvement program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
25. Description of how behavior effectiveness resulting from implementation of an incentive program promoting use of drought-tolerant or xeriscape/Florida-friendly landscaping is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 5 - LOCAL ORDINANCES</b>					
27. Description of permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use other than those covered by Code:	No comments provided.	No comments provided.	Marion County Land Development Codes	No comments provided.	No comments provided.
<b>SECTION 9 - COMMENTS</b>					
Additional general comments provided:	No comments provided.	The Town of Lady Lake is in the process of purchasing a wastewater treatment facility and has plans to incorporate its expansion (500,000 gpd) and creation of reuse capabilities in the next 3-4 years. We will be pursuing our next CUP in 2007 and will be considering how best to accommodate many of the water conservation items identified within this survey. To date we have been less than pro-active in this regard and we realize that in the future we must get better due to the importance of water as a natural resource here in Florida. Thanks for the opportunity to share these thoughts with you.	No comments provided.	some of your questions are too vague	No comments provided.

N/A = Answer not applicable  
Blank = No answer was provided by r

	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department
<b>SECTION 1 - GENERAL</b>					
1. Names of Utility's service areas, if there is more than one service area:	No comments provided.	No comments provided.	No comments provided.	Ocean City, Grand Haven, Hammock Dunes	No comments provided.
2. Description of upgrades and/or maintenance provided to the system:	We have upgraded all 8 of our water plants to utilize ozonation for water treatment.	Replacement of 2" galvanized iron pipe water mains with new 8" PVC water mains. Meter replacement program to replace all meters more than 10 years old. Looping of dead end mains.	Refurbishment of 2 Water Treatment Units. Addition of 1.5 MGD Reverse Osmosis Plant. Water and Sewer infrastructure improvements.	Double our treatment capacity at our membrane softening plant, installed two recirculation lines at ends of system to return flow to system and reduce water quality flushing	We have replaced 2" galvanized lines with pvc lines. We have replaced all gas chlorine feed systems with liquid chlorine feed systems. SCADA upgrades on all booster stations. Installed magnetic flow meters at water plants. Added Floridan Wells at MWS and NW water plants.
3. Specific services areas with older homes targeted to implement water conservation practices:	Our conservation efforts target our whole service area.	No comments provided.	Provide low flow showerheads for customers	No comments provided.	No comments provided.
<b>SECTION 2 - PUBLIC AWARENESS</b>					
8. Distribution of brochures and/or pamphlets other than through speaking engagements or special mailings:	Through the use of bill inserts, OUC provides conservation facts and tips directly to its customers. Bill inserts include the Connections newsletter (news and information from OUC) and monthly inserts featuring more specific issues related to conservation.	Special Events, Earth Day	No comments provided.	No comments provided.	walk-ins, seminars, etc.
9. Frequency of distribution of water bill inserts if other than with every billing cycle or on a quarterly basis:	Conservation messages are provided annually but the frequency increases as a result of warmer temperatures during spring and summer months.	No comments provided.	No comments provided.	periodically, without specific frequency	We place a brief conservation message in the bill 4-6 times a year.
10. Subject matter of special mailings other than drought alerts or watering restrictions:	The annual OUC Water Quality Report is provided via direct mail to customers. This report provides in depth information regarding money-saving and convenient ways customers can conserve water resources.	No comments provided.	No comments provided.	conservation issues in / out, plant tours, water saving device give aways etc.	No comments provided.
10. Frequency of special mailings if other than with every billing cycle or annually:	The OUC Water Quality Report is distributed to all customers annually.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
13. Titles of the conversation videos used:	The OUC Home Energy Survey is provided to customers in Spanish and English on VHS video, interactive CD-ROM and can be accessed online at www.ouc.com. Annually over 2,266 customers learn to conserve water resources through these efforts.	Water-wise Landscaping	Conserving Water on the Space Coast	No comments provided.	No comments provided.
13. Targeted video audiences if other than youth, adult, or professional groups:	We target our entire customer base of 190,000.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
14. Targeted contest audiences:	No comments provided.	Schools, Builders, Irrigation contractors, homeowners	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 3 - INDOOR CONSERVATION</b>					
17. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their indoor water use is being tracked:	Each month we calculate the overall consumption of our customers and compare it to the previous months and years.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
18. Description of how behavior effectiveness resulting from low-flush toilet replacement or rebates is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
19. Description of how behavior effectiveness resulting from indoor plumbing retrofit or exchanges (other than low-flush toilets) is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.

	Orlando Utilities Commission	City of Ormond Beach	Palm Bay Utilities	City of Palm Coast	St. Johns County Utility Department
20. Description of how behavior effectiveness resulting from implementation of a leak detection program specific to residential customers is being tracked:	We track each irrigation audit in our computer system as WAUD or Water Audits. This allows us to provide a monthly count of the audits performed. We, also use the SJRWMD's Mobile Irrigation Laboratory for Commercial High End Irrigation users. We utilize these methods at a minimum of 4 weeks a year and often 8 weeks or more.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 4 - OUTDOOR</b>					
15. Description of how behavior effectiveness resulting from conducting landscape workshops and/or seminars is being tracked:	Through the implementation of the OUCanopy Tree Planting Program, customers will gain important tree planting and landscaping tips and information regarding xeriscaping, efficient irrigation techniques and selecting drought resistant plants and trees.	we're not	Surveys	No comments provided.	No comments provided.
22. Description of how behavior effectiveness resulting from a rain sensor program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
23. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their outdoor water use is being tracked:	The majority of requests for water audits are from customers with spikes in consumption for one or more months. They are anxious to learn why their water consumption has increased. This results in a perfect time for conservation education. Therefore consumption is the perfect tracking method of effectiveness.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
24. Description of how behavior effectiveness resulting from implementation of an irrigation system improvement program is being tracked:	No comments provided.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
25. Description of how behavior effectiveness resulting from implementation of an incentive program promoting use of drought-tolerant or xeriscape/Florida-friendly landscaping is being tracked:	Our tiered residential and irrigation rates provide an incentive for customers using Florida Friendly landscape items.	No comments provided.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 5 - LOCAL OR</b>					
27. Description of permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use other than those covered by Code:	We do not make manage water consumption. This lies in the realm of the City of Orlando and Orange County Florida.	indoor use of low flow fixtures and toilets, outside rain sensors required on all homes, a minimum of 50% of the landscaped area must beof xeric plantings.	No comments provided.	No comments provided.	No comments provided.
<b>SECTION 9 - COMMENTS</b>					
Additional general comments provided:	No comments provided.	The City of Ormond Beach is a member of the Water Authority of Volusia (WAV). This organization employs a full time conservation coordinator that acts on behalf of member governments. Many of the responses in this survey reflect the conservation efforts of the organization.	No comments provided.	No comments provided.	Section 4 asks the same question over and over as the "a" part of questions 22-25.

N/A = Answer not applicable  
Blank = No answer was provided by r

	Seminole County Environmental Services Department	Volusia County Water Resources and Utilities
<b>SECTION 1 - GENERAL</b>		
1. Names of Utility's service areas, if there is more than one service area:	Northeast, Northwest, Southeast, Southwest, Apple Valley, Dol Ray Manor, Druid Hills/Bretton Woods, Lake Brantley, Lake Harriet, Meredith Manor, Fern Park	Southeast, Deltona North, Northeast, Southwest, Spruce Creek, Pine Island, Stone Island, New Hope villas
2. Description of upgrades and/or maintenance provided to the system:	Chemical system improvements at three WTPs; installed security systems at all plants; replaced flow meters at wells and effluent at all plants; installed major water and reclaimed mains and improved system loops; inventoried, maintained, and accurately located all hydrants; wrote wellfield operation plans; improved lost water programs and procedures to prepare for water audits.	No comments provided.
3. Specific services areas with older homes targeted to implement water conservation practices:	No comments provided.	Low flow toilets
<b>SECTION 2 - PUBLIC AWARENESS</b>		
8. Distribution of brochures and/or pamphlets other than through speaking engagements or special mailings:	Billing Office	with utility bills bi monthly
9. Frequency of distribution of water bill inserts if other than with every billing cycle or on a quarterly basis:	No set schedule, but 4-6 times a year	see previous response
10. Subject matter of special mailings other than drought alerts or watering restrictions:	Offer of free irrigation evaluations to high water users, Alert that rain sensor is not working	No comments provided.
10. Frequency of special mailings if other than with every billing cycle or on a quarterly basis:	Periodically	No comments provided.
13. Titles of the conversation videos used:	Conservation easements, Florida's Aquifers the Treasure Below, Spring Waters Run Deep, This Old Pond, Water Pollution the Dirty Details, Watersheds Wetlands and Wildlife, Waterwise Landscape Irrigation, Water Saving Tips	No comments provided.
13. Targeted video audiences if other than youth, adult, or professional groups:	Videos are played on SGTV on a rotating basis, there is no designated target audience	No comments provided.
14. Targeted contest audiences:	No comments provided.	No comments provided.
<b>SECTION 3 - INDOOR CONSERVATION</b>		
17. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their indoor water use is being tracked:	No comments provided.	No comments provided.
18. Description of how behavior effectiveness resulting from low-flush toilet replacement or rebates is being tracked:	No comments provided.	No comments provided.
19. Description of how behavior effectiveness resulting from indoor plumbing retrofit or exchanges (other than low-flush toilets) is being tracked:	No comments provided.	No comments provided.

	Seminole County Environmental Services Department	Volusia County Water Resources and Utilites
20. Description of how behavior effectiveness resulting from implementation of a leak detection program specific to residential customers is being tracked:	No comments provided.	held workshops, gave away rain snors
<b>SECTION 4 - OUTDOOR</b>		
15. Description of how behavior effectiveness resulting from conducting landscape workshops and/or seminars is being tracked:	By tracking water use changes	No comments provided.
22. Description of how behavior effectiveness resulting from a rain sensor program is being tracked:	No comments provided.	see previous answers
23. Description of how behavior effectiveness resulting from individual residential consultations or evaluations concerning their outdoor water use is being tracked:	By water use changes	No comments provided.
24. Description of how behavior effectiveness resulting from implementation of an irrigation system improvement program is being tracked:	No comments provided.	inconjuction with WAV and the District
25. Description of how behavior effectiveness resulting from implementation of an incentive program promoting use of drought-tolerant or xeriscape/Florida-friendly landscaping is being tracked:	No comments provided.	No comments provided.
<b>SECTION 5 - LOCAL ORI</b>		
27. Description of permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use other than those covered by Code:	Adopted Florida Building Code which requires low flow toilets, showerheads, etc. Inspections required as part of building permit to receive CO	No comments provided.
<b>SECTION 9 - COMMENTS</b>		
Additional general comments provided:	No comments provided.	No comments provided.

N/A = Answer not applicable  
Blank = No answer was provided by r



# Survey Appendix

<b>Utility Name:</b> City of Altamonte Springs	<b>Date Survey Completed:</b> 10-Jun-04
<b>Respondent's Name:</b> Kristen Rombeck	<b>Area Code and Phone Number:</b> 407-571-8331
<b>Position/Title:</b> Compliance/CIP Coordinator	<b>Email:</b> <a href="mailto:kristenr@altamonte.org">kristenr@altamonte.org</a>
<b>Department:</b> Public Works & Utilities	<b>Fax:</b> 407-571-8350
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Applied for permit to allow storage of reclaimed water in a 40 acre surface water body known as Cranes Roost which was formerly a FDOT borrow pit. Once the permit was received, 2 discharge points were constructed. Various surface water reclaimed augmentation sources have been identified. Design, permitting, and construction of the surface water

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? Yes  No

a. Please list the specific areas targeted below.

During past years the City provided water saving fixture incentives. The City has also adopted the state building code which requires the installation of low flow fixtures.

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name:   
 Email:   
 Phone:

Please provide contact information.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

Name:   
 Email:   
 Phone:

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?

- Speaking Events  Special Mailings  Other

If other, how do you distribute your brochures and/or pamphlets?

which included TV and Radio ads. The City has also published articles in 2 City

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise,

when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle
- Quarterly
- Other

If other, how often do you insert conservation information in water bills?

Varies depending on water consumption and water restriction implementation. The

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

No

- Drought Alerts
- Other
- Watering Restrictions
- All of These

The City typically utilizes the one line of text available on monthly utility bills for messages about water restrictions, conservation activities, community activities,

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1995

- Monthly
- Quarterly
- Other

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

No

Please also answer question 11c.

- Indoor
- Outdoor
- Entire Service Area
- Other
- Zip Code
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

No

Please also answer question 12c.

- With the District
- Independently
- Drought Alerts
- Conservation Tips
- Watering Restrictions
- Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

- Radio
- Broadcast TV
- Cable
- Billboards

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Under what circumstances are videos utilized?

- Schools
- Professional Groups
- Speaking Engagements
- Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

d. Please list the titles of the videos below:

The City usually relies upon videos published by the AWWA, Cooperative Extension Offices, and SJRWMD to guarantee consistency of info released.

e. What are your target audiences?

- Youth
- Adult
- Professional
- Other

f. What does your annual viewing audience total?

400

14. Do you promote water conservation contests on an on-going basis?

No

- Indoor
- Outdoor
- Awareness
- Knowledge
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

N/A

[Yellow box]

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes [dropdown arrow]

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

[dropdown arrow]

[Yellow box]

Please continue to SECTION 3.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown arrow]

[dropdown arrow]

[Yellow box]

a. What year did you begin implementing these programs?

1980s

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No [dropdown arrow]

c. Do you follow-up with the customer in any manner after installation?

No [dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown arrow]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

We have implemented a complimentary irrigation audit program for the top 100 users however the enforcement of water restrictions happens this program due to the fact that irrigation systems are not allowed to be run during daytime hours 10am to 4pm which

[dropdown arrow]

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

The City did this years ago but have found that due to the building code changes suppliers now carry low flow only toilets thus no need to continue program. Also the

[dropdown arrow]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

Please also answer question 19c.

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

The City did this years ago but have found that due to the changes in the building code, suppliers now carry low flow only fixtures. Further due to the large turn over in homes



20. Do you have a leak detection program specific to residential customers?

No

a. Are you considering implementing any rain sensor programs in the future?

No

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

- 
- 
- 
- 
- Yes

Irrigation audits are provided by the City to the top 100 commercial users. All public works employees are asked to report broken irrigation heads, unexplained flowing



Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

a. What year did you begin implementing these programs?

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes

c. Do you follow-up with the customer in any manner after installation?

No

d. Do you have a mobile irrigation lab program?

No

Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Behavior
- We do not measure
- Knowledge
- All of These

c. What year did you begin this program?

Please enter the year.

d. Approximately how many residences benefit annually?

Please enter #.

Building code, Florida Statutes require the installation of a rain sensor with every automated irrigation system.



23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes ▼

[ ]

a. Service areas targeted include:  
 Entire Service Area     Zip Code  
 Specific Neighborhoods     Older Homes

*Please select all that apply above.*

b. How have you measured effectiveness?  
 Awareness     Behavior     We do not measure  
 Knowledge     All of These

*Please select all that apply above.*

c. What year did you begin these services? [ ] *Please enter the year.*

d. Approximately how many residences benefit annually? [ ] *Please enter #.*

[ ] *Please make your selection.*

Irrigation audits are provided by the City to the top 100 commercial users. All public works employees are asked to report broken irrigation heads, unexplained flowing

24. Do you have an incentive program for irrigation system improvements? Yes ▼

[ ]

a. Service areas targeted include:  
 Entire Service Area     Zip Code  
 Specific Neighborhoods     Older Homes

b. How have you measured effectiveness?  
 Awareness     Behavior     We do not measure  
 Knowledge     All of These

c. What year did you begin this program? [ 1985 ]

d. Approximately how many improvements are recorded annually? [ ] *Please complete shaded area.*

[ ] *Please make your selection.*

The City offers a low-cost reclaimed water system for irrigation use. The system currently serves all commercial and 90% of the City's residents. The system is known

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No ▼

[ ]

a. Are you considering implementing any rain sensor programs in the future? No ▼

[ ]

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

[ ]

[ ]

There is no need for a rain sensor program, State laws already require the installation of rain sensors. Also, the City's has adopted the states building code by reference.

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: [ 1999 ]	Please indicate if you enforce the corresponding ordinance/code: Enforcement practiced ▼	Please indicate if you have analyzed water savings: Water savings analyzed ▼
<input type="checkbox"/> Native Plant Use	Adoption Year: [ ]	_____ ▼	_____ ▼
<input type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: [ ]	_____ ▼	_____ ▼
<input checked="" type="checkbox"/> Rain Sensors	Adoption Year: [ See the answer to 24 ]	_____ ▼	_____ ▼
<input checked="" type="checkbox"/> Site Design Review		<i>Make selection above.</i>	<i>Make selection above.</i>

Site Design Review

Efficient Irrigation

Turf Use Restrictions

Adoption Year:

Enforcement practiced

Not Applicable

Adoption Year:

Adoption Year:

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes?

No

Recall that the state building code requires the installation/use of low flow fixtures, toilets and rain sensors...there is no need for the City to do anything other than adopt and enforce (via building permit inspections) the state's building code.

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

No

Please also answer question 28a.

a. When do you plan on metering all users?

Please enter the year.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

Yes

a. What year did you implement conservation-based rates?

c. How many tiers are structured in your residential rates?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	Facility Charge - Flat Rate	\$ 2.79
Tier 2	0-3000 gallons	\$ 0.98
Tier 2	Next 4000 gallons	\$ 1.92
Tier 4	Next 23000	\$ 2.41
Tier 5	Over 30000	\$ 3.01
Tier 6	Outside City rates are more	

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer?

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

No

Please continue to the next question.

33. Do you have a drought rate?

No

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Tiered rate structure also. Facility Charge = 5.55, 0-3000 gallons potable water 1.81 per thousand gallons, Next 4000 gallons = 3.67, Next 4000 gallons 3.82, Over 11000 gallons flat rate of 35.39

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?

Aggressive

Mildly Aggressive

Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

39. Do you have plans to expand your service area? Yes  When?

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?

41. Approximately how many residential customers do you provide with reclaimed water service?

42. How are your rates structured?  Flat Rate + per 1,000 gal. rate  Flat Rate  Per 1,000 gal.  Other  
If other, please describe your rate structure below.

a. Do you have plans to implement a volumetric rate in the future?

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

[Please continue to SECTION 9.](#)

### SECTION 9 - COMMENTS

*The following section is provided if you have any comments or additional information you would like to share at this time.*

Different and various conseration practices have been implemented City-wide.  
Retrofit Program--We don't currently have a program. We did this in the past, however. There is no need for it now as the State Building Code doesn't allow anything other than low flow thus supply warehouses usually don't stock anything except low flow.  
Due to the fact that the City has a number of outside City customers, the City prefers to rely on the SJRWMD Media campaign in order to guarantee that consistent information is released. Water restriction hours adopted by the City are based upon SJRWMD water restrictions in order to eliminate confusion to outside City customers. We have done this a couple of years but don't every single year.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address: JAPeters@altamonte.org Title: Director of Public Works & Utilities  
Recipient 2 Email Address: KMRombeck@altamonte.org Title: Compliance/CIP Coordinator  
Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_  
Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

<b>Utility Name:</b> City of Apopka	<b>Date Survey Completed:</b> 24-May-04
<b>Respondent's Name:</b> John Jreij	<b>Area Code and Phone Number:</b> 407-703-1731
<b>Position/Title:</b> Assistant Public Services Director	<b>Email:</b> <a href="mailto:jreij@apopka.net">jreij@apopka.net</a>
<b>Department:</b> Public Services	<b>Fax:</b> 407-703-1748
<b>Total Number of Single Family Water Customers:</b> 13,834	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Replaced existing water lines and extending new lines for through-out the City for new developments.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name:

Email:

Phone:

Please provide contact information.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

Name:

Email:

Phone:

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?

- Speaking Events  Special Mailings  Other

If other, how do you distribute your brochures and/or pamphlets?

New residents moving into City.

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?  
 Every Billing Cycle     Quarterly     Other

If other, how often do you insert conservation information in water bills?  
At least once a year.

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

No ▼

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

[Yellow box for answer]

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

Monthly     Quarterly     Other

[Yellow box for answer]

11. Do you issue news releases on an on-going basis?

No ▼

Please also answer question 11c.

Indoor     Outdoor     Entire Service Area     Other     Zip Code     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

12. Do you sponsor public conservation media messages on an on-going basis?

No ▼

Please also answer question 12c.

With the District     Independently     Drought Alerts     Conservation Tips     Watering Restrictions     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

[Yellow box for answer]

Radio     Broadcast TV     Cable     Billboards

13. Do you utilize videos of any kind on an on-going basis?

No ▼

Please also answer question 13c.

Indoor Topics     Outdoor Topics     Schools     Professional Groups     Speaking Engagements     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

[Yellow box for answer]

Youth     Adult     Professional     Other

[Yellow box for answer]

[Yellow box for answer]

14. Do you promote water conservation contests on an on-going basis?

No ▼

Please also answer question 14c.

Indoor     Outdoor     Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes [dropdown]

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1990

d. Do you track actual water use changes?

Yes [dropdown]

e. How are you tracking behavior effectiveness?

Based on water bills.

Please continue to SECTION 3.

SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown]

[Yellow box]

[Yellow box]

[dropdown]

[dropdown]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1990

c. How are you tracking behavior effectiveness?

[Yellow box]

d. Do you track actual water use changes?

Yes [dropdown]

Please describe behavior tracking above.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown]

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[Yellow box]

[dropdown]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown]

Please also answer question 19c.

- Entire Service Area
  - Specific Neighborhoods
  - Zip Code
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

*Please enter the year.*

|

20. Do you have a leak detection program specific to residential customers?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many customers benefit annually?

*Please enter #.*

e. Do you have written policies or procedures for the program?

Yes

f. Have you established a schedule for the program?

No

g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

No

h. Do you perform irrigation audits?

No

i. How are you tracking behavior effectiveness?

j. Do you track actual water use changes?

Yes

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

[Please continue to the next question.](#)

22. Have you implemented a rain sensor program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many residences benefit annually?

*Please enter #.*

e. How are you tracking behavior effectiveness?

f. Do you track actual water use changes?

Yes

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes ▼

[ ]

**a. Service areas targeted include:**  
 Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

*Please select all that apply above.*

**b. How have you measured effectiveness?**  
 Awareness  Behavior  We do not measure  
 Knowledge  All of These

**c. What year did you begin these services?** 1992

**d. Approximately how many residences benefit annually?** [ ] *Please enter #.*

**e. How are you tracking behavior effectiveness?**  
Through water bills.

**f. Do you track actual water use changes?** Yes ▼

24. Do you have an incentive program for irrigation system improvements? No ▼

[ ]

**a. Are you considering implementing any rain sensor programs in the future?** No ▼

[ ]

Entire Service Area  Zip Code  Awareness  Behavior  We do not measure  
 Specific Neighborhoods  Older Homes  Knowledge  All of These

[ ]  
[ ]  
[ ]

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No ▼

[ ]

**a. Are you considering implementing any rain sensor programs in the future?** No ▼

[ ]

Entire Service Area  Zip Code  Awareness  Behavior  We do not measure  
 Specific Neighborhoods  Older Homes  Knowledge  All of These

[ ]  
[ ]  
[ ]

Please continue to the next question.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

		Please indicate if you enforce the corresponding ordinance/code:	Please indicate if you have analyzed water savings:
<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: <span style="float: right;">2000</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Native Plant Use	Adoption Year: <span style="float: right;">1992</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: [ ]	[ ] ▼	[ ] ▼
<input checked="" type="checkbox"/> Rain Sensors	Adoption Year: <span style="float: right;">1992</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Site Design Review	Adoption Year: <span style="float: right;">1992</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Efficient Irrigation			

Efficient Irrigation

Adoption Year:

Enforcement practiced

Savings not analyzed

Turf Use Restrictions

Adoption Year:

Please continue to the next question.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes?

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

a. Since what year have all users been metered?

Please enter the year.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

a. What year did you implement conservation-based rates?   
c. How many tiers are structured in your residential rates?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	Min charge	\$ 5.15
Tier 2	1000-6000	\$ 0.95
Tier 2	7000-15000	\$ 1.17
Tier 4	over 15000	\$ 1.75
Tier 5	Rate based per	
Tier 6	thousand gallons	

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer?

Please enter service charge for one EDU.

31. Do you bill monthly or bi-monthly?

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

Please continue to the next question.

33. Do you have a drought rate?

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

Please enter service charge for one EDU.

35. Please describe your wastewater residential rate structure.

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

39. Do you have plans to expand your service area? Yes  When? 2004
40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand? 100%
41. Approximately how many residential customers do you provide with reclaimed water service? 2,200
42. How are your rates structured?
- Flat Rate + per 1,000 gal. rate     Flat Rate
- Per 1,000 gal.                                     Other

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

Violations issued for non-compliance.

Please continue to SECTION 9.

**SECTION 9 - COMMENTS**

The following section is provided if you have any comments or additional information you would like to share at this time.

[Empty comment box]

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address:	<u>jirej@apopka.net</u>	Title:	<u>Assistant Public Services Director</u>
Recipient 2 Email Address:	_____	Title:	_____
Recipient 3 Email Address:	_____	Title:	_____
Recipient 4 Email Address:	_____	Title:	_____

Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004

<b>Utility Name:</b> City Of Casselberry	<b>Date Survey Completed:</b> 11-May-04
<b>Respondent's Name:</b> Gerald Chancellor, P.E.	<b>Area Code and Phone Number:</b> (407) 262-7725 ext.1236
<b>Position/Title:</b> Water Resources Operations Manager	<b>Email:</b> <a href="mailto:gchancellor@casselberry.org">gchancellor@casselberry.org</a>
<b>Department:</b> Public Works	<b>Fax:</b> (407) 262-7767
<b>Total Number of Single Family Water Customers:</b> 14,500 +/-	<b>Total Number of Multi Family Water Customers:</b> 5,250 +/-

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? No  Yes

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

*Please continue to the next question.*

4. Have you implemented any conservation practices that target areas with older homes? Yes  No

a. Please list the specific areas targeted below.

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? Yes  No

a. Who should we contact for additional information?

**Name:**   
**Email:**   
**Phone:**

*Please continue to the next question.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

**Name:**   
**Email:**   
**Phone:**

*Please provide contact information.*

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

**If other, how do you distribute your brochures and/or pamphlets?**

*Please continue to the next question.*

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle   
 Quarterly   
 Other

Please select all that apply above.

[Yellow box]

10. Do you send out special mailings on an on-going basis?

Yes ▼

a. Typical subject matter includes:

- Drought Alerts   
 Other   
 Watering Restrictions   
 All of These

a1. What other subject matter is covered in your special mailings?

Landscaping/Xeriscape , Leak Detection& Prevention, Irrigation Practices

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

c. At what frequency are special mailings sent out?

- Monthly   
 Quarterly   
 Other

If other, how often do you send special mailings?

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

No ▼

Please also answer question 11c.

- Indoor  
 Outdoor

- Entire Service Area  
 Other

- Zip Code  
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box] Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

Yes ▼

a. Sponsorship level includes:

- With the District  
 Independently

b. Typical subject matter includes:

- Drought Alerts   
 Watering Restrictions  
 Conservation Tips   
 Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

d. What media do you utilize in your program?

- Radio   
 Broadcast TV   
 Cable   
 Billboards

e. How much is budgeted for next FY? \$15,000

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

- Schools   
 Speaking Engagements  
 Professional Groups   
 Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Please list the titles of the videos below:

Water Conservation Videos from AWWA, Water Reuse(Every Drop Counts...Use It Again Florida), Water Pollution(SJRWMD)

e. What are your target audiences?

- Youth   
 Adult   
 Professional   
 Other

[Yellow box]

f. What does your annual viewing audience total?

2-3,000

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

Yes ▼

a. Contest themes include:

- Indoor   
 Outdoor

b. How have you measured effectiveness?

- Awareness   
 Knowledge   
 We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. What groups do you typically target?

Elementary & Middle Schools thru AWWA Dropsavers Poster Contest

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Behavior
- We do not measure
- Knowledge
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Do you track actual water use changes?

Yes

e. How are you tracking behavior effectiveness?

[Redacted]

Please describe behavior tracking above.

SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

[Redacted]

[Redacted]

a. What year did you begin implementing these programs?

2001

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No

c. Do you follow-up with the customer in any manner after installation?

No

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

[Redacted]

[Redacted]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Redacted]

Please fill in the year.

[Redacted]

[Redacted]

No

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes

a. Service areas targeted include:

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. Approximately how many fixtures are replaced annually?

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. What year did you begin this program?

d. Approximately how many customers benefit annually?

e. Do you have written policies or procedures for the program?

Yes

No

f. Have you established a schedule for the program?

No

g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

Yes

h. Do you perform irrigation audits?

Please continue to SECTION 4.

### SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes

When?

Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. What year did you begin this program?

d. Approximately how many residences benefit annually?

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

Please select all that apply above.

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin these services?

1999

d. Approximately how many residences benefit annually?

Unknown

Please make your selection.

Please describe tracking above.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

Water Use Restrictions

Adoption Year: 2000

Please indicate if you enforce the corresponding ordinance/code:

Enforcement practiced

Please indicate if you have analyzed water savings:

Savings not analyzed

Native Plant Use

Adoption Year: 1993

Enforcement practiced

Savings not analyzed

Drought Tolerant Plant Use

Adoption Year:

Rain Sensors

Adoption Year: 1990

Enforcement practiced

Savings not analyzed

Site Design Review

Adoption Year:

Efficient Irrigation

Enter adoption year above.

Make selection above.

Make selection above.

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? Yes

a. Please explain below what permitting actions specifically relate to water conservation.

Plumbing Code Requirements for all new construction and renovations. Review and approval of plans and specifications prior to building permit issuance.

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

Please enter the year.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates?

c. How many tiers are structured in your residential rates?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-3,999	\$0.99
Tier 2	4,000-9,999	\$1.38
Tier 2	10,000-19,999	\$2.32
Tier 4	20,000-29,999	\$2.78
Tier 5	30,000 & Up	\$3.47
Tier 6	Outside City Limits	25% Higher

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$14.50

Please continue to the next question.

31. Do you bill monthly or bi-monthly? Monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$25.00

Please continue to the next question.

35. Please describe your wastewater residential rate structure. \$7.90 base charge, \$3.117 for 0-6,999, \$3.7441>7,000 25% Higher outside City Limits, No cap on gallonage, ie. all water passing thru the meter is billed as sewer usage.

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? 1988

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes? within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? 30%



<b>Utility Name:</b> City of Clermont	<b>Date Survey Completed:</b> 17-May-04
<b>Respondent's Name:</b> Tamara Richardson	<b>Area Code and Phone Number:</b> (352) 241- 7335
<b>Position/Title:</b> Director of Engineering and Utilities	<b>Email:</b> <a href="mailto:trichardson@clermontfl.org">trichardson@clermontfl.org</a>
<b>Department:</b> Engineering	<b>Fax:</b> (352) 394 - 2379
<b>Total Number of Single Family Water Customers:</b> 10,070	<b>Total Number of Multi Family Water Customers:</b> 59

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

*Please continue to the next question.*

4. Have you implemented any conservation practices that target areas with older homes? Yes  No

a. Please list the specific areas targeted below.

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
Name:   
Email:   
Phone:

*Please provide contact information.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes

a. Who should we contact for additional information?  
Name:   
Email:   
Phone:

**Please continue to SECTION 2.**

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

*Please continue to the next question.*

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle   
 Quarterly   
 Other

[Yellow box]

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes ▼

a. Typical subject matter includes:

- Drought Alerts   
 Other   
 Watering Restrictions   
 All of These

[Yellow box]

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

N/A

c. At what frequency are special mailings sent out?

- Monthly   
 Quarterly   
 Other

If other, how often do you send special mailings?  
The City sends information as needed as conditions change.

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes ▼

a. Conservation Topics Include:

- Indoor  
 Outdoor

b. Targeted Areas Include:

- Entire Service Area   
 Zip Code  
 Other   
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

No ▼

- With the District  
 Independently

- Drought Alerts   
 Watering Restrictions  
 Conservation Tips   
 Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

N/A

- Radio   
 Broadcast TV   
 Cable   
 Billboards

[Yellow box]

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

- Schools   
 Speaking Engagements  
 Professional Groups   
 Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2003

d. Please list the titles of the videos below:

Water Pollution -- The Dirty Details (SJRWMD); Water Conservation for the Home (SJRWMD)

e. What are your target audiences?

- Youth   
 Adult   
 Professional   
 Other

[Yellow box]

f. What does your annual viewing audience total?

250

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

Yes ▼

a. Contest themes include:

- Indoor   
 Outdoor

b. How have you measured effectiveness?

- Awareness   
 Knowledge   
 We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2004

d. What groups do you typically target?

youth

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

d. Do you track actual water use changes?

No

e. How are you tracking behavior effectiveness?

Please describe behavior tracking above.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes

When?

2004

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

N/A

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2004

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No

- Entire Service Area
- Awareness
- Behavior
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2004



Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

No

a. Are you considering implementing any rain sensor programs in the future?

Yes

When?

2004

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure



Please continue to SECTION 4.

### SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

N/A



Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes

Yes

2005

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These

We do not measure

c. What year did you begin this program?

1991

d. Approximately how many residences benefit annually?

1000

The City has required rain sensors on new homes since 1991. This is included in the final inspection of each home. The retrofit program for older homes will begin in the



Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

Please select all that apply above.

c. What year did you begin these services?

2002

d. Approximately how many residences benefit annually?

90

e. How are you tracking behavior effectiveness?

check consumption of homes that were evaluated

f. Do you track actual water use changes?

Yes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future?

Yes

When?

2004

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

c. What year did you begin this program?

2004

d. Approximately how many improvements are recorded annually?

Please enter #.

This year, the City passed a Water Efficient and Landscape Ordinance. This encourages new or modified landscapes to incorporate drought-tolerant landscaping. Since it is a new ordinance, the effectiveness has not yet been measured.

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year: 1999
- Native Plant Use Adoption Year: 2004
- Drought Tolerant Plant Use Adoption Year: 2004
- Rain Sensors Adoption Year: 1991
- Site Design Review Adoption Year: 2004

Please indicate if you enforce the corresponding ordinance/code:

- Enforcement practiced

Please indicate if you have analyzed water savings:

- Make selection above.
- Make selection above.
- Make selection above.
- Make selection above.
- Savings not analyzed

Efficient Irrigation

Adoption Year: 2004

Enforcement practiced

Savings not analyzed

Turf Use Restrictions

Adoption Year: 2004

Enforcement practiced

Savings not analyzed

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? Yes

a. Please explain below what permitting actions specifically relate to water conservation.

The City of Clermont uses the Lake County Building Department for inspection of new and renovated structures. The Building Code includes requirements for low flow toilets and shower heads. These items are required in new construction.

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? at least 1991

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates? 2001
c. How many tiers are structured in your residential rates? 5

b. Please provide your commodity rate structure below.

Table with 3 columns: Tier, Gallon Range, \$ Rate. Rows include Tier 1 (Base Charge \$5.48), Tier 2 (1,000-10,000 \$1.10, 11,000-20,000 \$1.43), Tier 4 (21,000-30,000 \$2.20), Tier 5 (over 30,000 \$3.00), and Tier 6.

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$ 44.00

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 38.00

Please continue to the next question.

35. Please describe your wastewater residential rate structure. Base Charge = \$12.13; Variable Charge (per 1,000 gal) = \$1.59; Maximum gallons subject to Variable Charge = 16,000

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? 2003

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers? Aggressive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? 30%



<b>Utility Name:</b> City of Cocoa	<b>Date Survey Completed:</b> 9-Jun-04
<b>Respondent's Name:</b> Nanette D. Hurst	<b>Area Code and Phone Number:</b> (321) 639-7602
<b>Position/Title:</b> Water Conservation/Public Relations Officer	<b>Email:</b> <a href="mailto:nhurst@cocoaf1.org">nhurst@cocoaf1.org</a>
<b>Department:</b> Utilities	<b>Fax:</b> (321) 639-7663
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Other

Please enter percentage and make a selection above.

4. Have you implemented any conservation practices that target areas with older homes? No

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
**Name:**   
**Email:**   
**Phone:**

Please continue to the next question.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes

a. Who should we contact for additional information?  
**Name:**   
**Email:**   
**Phone:**

**Please continue to SECTION 2.**

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No   
Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

If other, how do you distribute your brochures and/or pamphlets?

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle  Quarterly  Other

[Yellow box]

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

No

Please also answer question 10b.

- Drought Alerts  Other  Watering Restrictions  All of These

[Yellow box]

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

- Monthly  Quarterly  Other

Won't due to the water bill inserts

11. Do you issue news releases on an on-going basis?

No

Please also answer question 11c.

- Indoor  Outdoor  Entire Service Area  Other  Zip Code  All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

No

Please also answer question 12c.

- With the District  Independently  Drought Alerts  Conservation Tips  Watering Restrictions  Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

- Radio  Broadcast TV  Cable  Billboards

Sporadically

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

- Indoor Topics  Outdoor Topics

b. Under what circumstances are videos utilized?

- Schools  Professional Groups  Speaking Engagements  Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1991

d. Please list the titles of the videos below:

A Consumer's Guide to WC; Down the Drain; Florida's Aquifers: The Treasure Below; My Florida Yard 2004; The Hydrolic Cycle; Water: Gift of Life; WC at Home; WC at Work; WC PSA's; Water Follies; Waterhog Haven; Waterwise Landscape Irrigation; What Do You Know About H2O; What Is Xeriscape?; Xeriscape Irrigation (Principles); Xeriscape

e. What are your target audiences?

- Youth  Adult  Professional  Other

[Yellow box]

f. What does your annual viewing audience total?

200

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

- Indoor  Outdoor  Awareness  Knowledge  We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

Won't w/o additional personnel.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

Please select all that apply above.

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

Dropdown arrow

Empty text box

SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

Dropdown arrow

Empty text box

a. What year did you begin implementing these programs?

2001

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes

c. Do you follow-up with the customer in any manner after installation?

Yes

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No

Please also answer question 15c.

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Empty text box

Please enter the year.

Not for private residential customers w/o additional personnel.

Dropdown arrow

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

FY2005

Empty text box

Empty text box

Dropdown arrow

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes

a. Service areas targeted include:

- Entire Service Area
  - Zip Code
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1991

d. Approximately how many fixtures are replaced annually?

500

[Empty text box]

[Dropdown arrow]

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

No [Dropdown arrow]

a. Are you considering implementing any rain sensor programs in the future?

No [Dropdown arrow]

[Empty text box]

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

[Empty text box]

[Empty text box]

[Dropdown arrows]

[Empty text box]

[Dropdown arrow]

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [Dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [Dropdown arrow]

[Empty text box]

[Empty text box]

[Dropdown arrows]

Please continue to the next question.

22. Have you implemented a rain sensor program?

No [Dropdown arrow]

a. Are you considering implementing any rain sensor programs in the future?

No [Dropdown arrow]

[Empty text box]

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

[Empty text box]

[Empty text box]

[Empty text box]

[Dropdown arrow]

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Efficient Irrigation

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

*Please select all that apply above.*

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes?

*Please make your selection.*

28. Are all governmental entities and exempt users metered?

*Please make your selection.*

### SECTION 6 - WATER RATE STRUCTURE

*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

29. Are your water rates structured to promote water conservation?

*Please make your selection.*

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 4	<input type="text"/>	<input type="text"/>
Tier 5	<input type="text"/>	<input type="text"/>
Tier 6	<input type="text"/>	<input type="text"/>

*Please complete rates above.*

30. How much is your monthly water service charge for a typical SF customer?

*Please enter service charge for one EDU.*

31. Do you bill monthly or bi-monthly?

*Please enter residential billing cycle.*

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

*Please make your selection.*

33. Do you have a drought rate?

*Please make your selection.*

### SECTION 7 - WASTEWATER RATE STRUCTURE

*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

34. How much is your monthly wastewater service charge for a typical SF customer?

*Please enter service charge for one EDU.*

35. Please describe your wastewater residential rate structure.

*Please describe wastewater rate structure above.*

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

*Please enter the year.*

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?

Aggressive  Mildly Aggressive  Passive

*Please make your selection.*

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

*Please enter percentage.*

39. Do you have plans to expand your service area?

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?  Please enter percentage.

41. Approximately how many residential customers do you provide with reclaimed water service?  Please enter the number of customers.

42. How are your rates structured?  Flat Rate + per 1,000 gal. rate  Flat Rate  Per 1,000 gal.  Other  
If other, please describe your rate structure below.  
  
Please describe your rate structure above.

a. Do you have plans to implement a volumetric rate in the future?

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

Please provide description of reuse conversation methods above.

**SECTION 9 - COMMENTS**

The following section is provided if you have any comments or additional information you would like to share at this time.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.



Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004

<b>Utility Name:</b> City of Eustis	<b>Date Survey Completed:</b> 6/16 04
<b>Respondent's Name:</b> Erwin Gajentan	<b>Area Code and Phone Number:</b> 352-357-5618
<b>Position/Title:</b> Director of Water	<b>Email:</b> <a href="mailto:gajentane@ci.eustis.fl.us">gajentane@ci.eustis.fl.us</a>
<b>Department:</b> Water Department	<b>Fax:</b> 352-357-9420
<b>Total Number of Single Family Water Customers:</b> 8559 total	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
**Name:**   
**Email:**   
**Phone:**

Please continue to the next question.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? No  Yes

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Zip Code  
 Other Specific Area  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

Please select all that apply above.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Zip Code  
 Other Specific Area  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?  
 Every Billing Cycle  Quarterly  Other

If other, how often do you insert conservation information in water bills?  
Bi-annual

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes

a. Typical subject matter includes:

Drought Alerts  Other  Watering Restrictions  All of These

a1. What other subject matter is covered in your special mailings?

Water quality reports, City wide annual reports.

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

c. At what frequency are special mailings sent out?

Monthly  Quarterly  Other

Please enter other information.

11. Do you issue news releases on an on-going basis?

No

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

Yes

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts  Watering Restrictions  
 Conservation Tips  Other

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

d. What media do you utilize in your program?

Radio  Broadcast TV  Cable  Billboards

Please select all that apply above.

e. How much is budgeted for next FY?

Please enter \$ above.

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

Please select all that apply above.

b. Under what circumstances are videos utilized?

Schools  Speaking Engagements  
 Professional Groups  Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

d. Please list the titles of the videos below:

AWWA Waterhog Haven, AWWA The Basics of Water Quality We Treat Water Right, AWWA Always Pure Never Runs Dry, SJRWMD Water Conservation for the Home.

e. What are your target audiences?

Youth  Adult  Professional  Other

f. What does your annual viewing audience total?

100

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

Indoor  Outdoor

Awareness

Knowledge

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

Please also answer question 15c.

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

[dropdown arrow]

[Yellow box]

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown arrow]

[Yellow box]

[Yellow box]

[dropdown arrow]

[dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown arrow]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

[Yellow box]

[dropdown arrow]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[Yellow box]

No [dropdown arrow]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

Please also answer question 19c.

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

- Awareness

- Behavior

We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

*Please enter the year.*

|

20. Do you have a leak detection program specific to residential customers?

No

a. Are you considering implementing any rain sensor programs in the future?

Yes  When?

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

*Please describe tracking above.*

*Please make your selection.*

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

[Please continue to the next question.](#)

22. Have you implemented a rain sensor program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many residences benefit annually?

e. How are you tracking behavior effectiveness?

f. Do you track actual water use changes?

No

*Please describe tracking above.*

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

Please also answer question 25a.

a. Are you considering implementing any rain sensor programs in the future? N/A

Please make your selection.

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have perf

- Water Use Restrictions Adoption Year: 2001
- Native Plant Use Adoption Year: Pending
- Drought Tolerant Plant Use Adoption Year: Pending
- Rain Sensors Adoption Year: Pending
- Site Design Review Adoption Year: 1990
- Efficient Irrigation

Please indicate if you enforce the corresponding ordinance/code:

- Enforcement practiced
- Make selection above.
- Make selection above.
- Make selection above.
- Enforcement practiced

Please indicate if you have analyzed water savings:

- Not Applicable
- Make selection above.
- Make selection above.
- Make selection above.
- Make selection above.

Efficient Irrigation

Adoption Year: Pending

Make selection above.

Make selection above.

Turf Use Restrictions

Adoption Year: Pending

Make selection above.

Make selection above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

[Empty text box]

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? 1999

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates? 2002
c. How many tiers are structured in your residential rates? 4

b. Please provide your commodity rate structure below.

Table with 3 columns: Tier, Gallon Range, \$ Rate. Rows include Tier 1 (0-8,000, \$ 1.53), Tier 2 (8,001-20,000, \$ 1.91), Tier 2 (20,001 to 50,000, \$ 2.68), Tier 4 (Over 50,000, \$ 3.04), Tier 5, Tier 6.

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? Please enter service charge for one EDU.

31. Do you bill monthly or bi-monthly? Monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? Yes

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 1.34

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Please describe wastewater rate structure above.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

[Empty text box] Aggressive Mildly Aggressive Passive



<b>Utility Name:</b> Gainesville Regional Utilities	<b>Date Survey Completed:</b> 11-Jun-04
<b>Respondent's Name:</b> Rick Hutton	<b>Area Code and Phone Number:</b> (352) 393-1218
<b>Position/Title:</b> Sr. Water/Wastewater Engineer	<b>Email:</b> huttonrh@gru.com
<b>Department:</b> Strategic Planning	<b>Fax:</b> (352) 334-3151
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

We upgrade and maintain our system on a continuous basis. Upgrades completed in the last 5 years include addition of 4 new production wells, filter system upgrades to include peak flow capacity and extension of a new 36 inch water main.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995? 80% Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name:   
 Email:   
 Phone:

Please provide contact information.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

Name: Rick Hutton  
 Email: Huttonrh@gru.com  
 Phone: (352) 393-1218

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? ~1980s

d. How are these distributed?

- Speaking Events  Special Mailings  Other

If other, how do you distribute your brochures and/or pamphlets?

home energy/water conservation audits.

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? 1980s

d. At what frequency are inserts utilized?  
 Every Billing Cycle     Quarterly     Other

If other, how often do you insert conservation information in water bills?  
Seasonally, Water conservation notices distributed during high demand periods

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

No

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Monthly     Quarterly     Other

11. Do you issue news releases on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor  
 Outdoor

b. Targeted Areas Include:

Entire Service Area     Zip Code  
 Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1996

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts     Watering Restrictions  
 Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Late 70's

d. What media do you utilize in your program?

Radio     Broadcast TV     Cable     Billboards

e. How much is budgeted for next FY?

\$ 50,000.00

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1980

d. Please list the titles of the videos below:

The Water Cycle, Home Energy Survey, GRU Academy

e. What are your target audiences?

Youth     Adult     Professional     Other

f. What does your annual viewing audience total?

200-300

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

Indoor     Outdoor

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes [dropdown]

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

d. Do you track actual water use changes?

No [dropdown]

e. How are you tracking behavior effectiveness?

System Demand Reductions [Yellow box]

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown]

[dropdown]

[Yellow box]

a. What year did you begin implementing these programs?

1980s

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes [dropdown]

c. Do you follow-up with the customer in any manner after installation?

No [dropdown]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Late 70's

[Yellow box]

[dropdown]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown]

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[Yellow box]

[dropdown]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes [dropdown]

a. Service areas targeted include:

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- We do not measure

Entire Service Area  
 Specific Neighborhoods

Zip Code  
 Older Homes

Awareness  
 Knowledge

Behavior  
 All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1980's

d. Approximately how many fixtures are replaced annually?

Please enter #.

Low flow shower head and faucet aerator giveaways

▼

20. Do you have a leak detection program specific to residential customers?

No

Please also answer question 20a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

Entire Service Area  
 Specific Neighborhoods

Zip Code  
 Older Homes

Awareness  
 Knowledge

Behavior  
 All of These

We do not measure

▼  
▼  
▼  
▼

▼

### SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

▼

▼

▼

Please continue to the next question.

22. Have you implemented a rain sensor program?

No

a. Are you considering implementing any rain sensor programs in the future?

No

Entire Service Area  
 Specific Neighborhoods

Zip Code  
 Older Homes

Awareness  
 Knowledge

Behavior  
 All of These

We do not measure

▼

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

Please select all that apply above.

c. What year did you begin these services?

Late 70's

d. Approximately how many residences benefit annually?

>2000

Please describe tracking above.

Please make your selection.

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year: [ ]
- Native Plant Use Adoption Year: [ ]
- Drought Tolerant Plant Use Adoption Year: [ ]
- Rain Sensors Adoption Year: [ ]
- Site Design Review Adoption Year: [ ]

Please indicate if you enforce the corresponding ordinance/code:

- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Please indicate if you have analyzed water savings:

- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

Please enter the year.

All users except hydrants have alw

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates?

Please enter the year.

c. How many tiers are structured in your residential rates?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-9	\$ 1.01
Tier 2	10-24	\$ 1.33
Tier 2	25+	\$ 2.29
Tier 4		
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$ 11.00

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 17.00

Please continue to the next question.

35. Please describe your wastewater residential rate structure. \$2.27/month base customer charge + \$2.61/Kgal. Wastewater flow calculated as the minimum of the customer's winter maximum water usage or the current month water usage

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? 1993

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? Please enter percentage.



<b>Utility Name:</b> Indian River County Utilities	<b>Date Survey Completed:</b> 6-May-04
<b>Respondent's Name:</b> Michael Hotchkiss	<b>Area Code and Phone Number:</b> 77-567-8000, ext. 1821
<b>Position/Title:</b> Capital Projects Manager	<b>Email:</b> <a href="mailto:mhotchkiss@ircgov.com">mhotchkiss@ircgov.com</a>
<b>Department:</b> Engineering	<b>Fax:</b> 772-770-5143
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes

a. Please provide a brief description of the upgrades/maintenance performed below:

Replaced polybutylene services, A/C pipe, decommissioned packaged plants, regionalized service system.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

<b>Name:</b>	Kevin Osthus
<b>Email:</b>	<a href="mailto:kosthus@ircgov.com">kosthus@ircgov.com</a>
<b>Phone:</b>	772-567-8000, ext. 1824

Please continue to the next question.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? No


Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? No

Please continue to SECTION 3.

8. Does your program include on-going distribution of brochures and/or pamphlets? No

Please also answer question 8c.

- |   |   |  |                                      |
|---|---|--|--------------------------------------|
| <input type="checkbox"/> Indoor Topics  | <input type="checkbox"/> Entire Service Area    | <input type="checkbox"/> Older Homes         | <input type="checkbox"/> Zip Code    |
| <input type="checkbox"/> Outdoor Topics | <input type="checkbox"/> Specific Neighborhoods | <input type="checkbox"/> Other Specific Area | <input type="checkbox"/> Newer Homes |

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?  Please enter the year.

- Speaking Events     Special Mailings     Other
- 

9. Do you insert water conservation information in water bills on an on-going basis? No

Please also answer question 9c.

- |   |   |  |                                      |
|---|---|--|--------------------------------------|
| <input type="checkbox"/> Indoor Topics  | <input type="checkbox"/> Entire Service Area    | <input type="checkbox"/> Older Homes         | <input type="checkbox"/> Zip Code    |
| <input type="checkbox"/> Outdoor Topics | <input type="checkbox"/> Specific Neighborhoods | <input type="checkbox"/> Other Specific Area | <input type="checkbox"/> Newer Homes |

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?  Please enter the year.

Every Billing Cycle     Quarterly     Other

**10. Do you send out special mailings on an on-going basis?**

No ▼

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

**b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

Monthly     Quarterly     Other

**11. Do you issue news releases on an on-going basis?**

No ▼

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

**12.**

**Do you sponsor public conservation media messages on an on-going basis?**

No ▼

Please also answer question 12c.

With the District  
 Independently

Drought Alerts  
 Conservation Tips

Watering Restrictions  
 Other

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

**13. Do you utilize videos of any kind on an on-going basis?**

No ▼

Please also answer question 13c.

Indoor Topics  
 Outdoor Topics

Schools  
 Professional Groups

Speaking Engagements  
 Seminars/Workshops

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

Youth     Adult     Professional     Other

**14. Do you promote water conservation contests on an on-going basis?**

No ▼

Please also answer question 14c.

Indoor     Outdoor

Awareness

Knowledge

We do not measure

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

Please also answer question 15c.

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

[dropdown arrow]

[Yellow box]

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown arrow]

[Yellow box]

[Yellow box]

[dropdown arrow]

[dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown arrow]

a. How have you measured effectiveness?

Awareness

Knowledge

Behavior

All of These

We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

[dropdown arrow]

[Yellow box]

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[dropdown arrow]

[Yellow box]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

Please also answer question 19c.

Entire Service Area

Zip Code

Awareness

Behavior

We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

▼

20. Do you have a leak detection program specific to residential customers?

No ▼

Please also answer question 20a.

a. Are you considering implementing any rain sensor programs in the future?

▼

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼  
▼  
▼  
▼

▼

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No ▼

Please also answer question 21a.

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

▼

Please make your selection.

▼  
▼  
▼

22. Have you implemented a rain sensor program?

No ▼

Please also answer question 22a.

a. Are you considering implementing any rain sensor programs in the future?

▼

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No  Please also answer question 23a.

a. Are you considering implementing any rain sensor programs in the future?

*Please make your selection.*

Entire Service Area       Zip Code       Awareness       Behavior       We do not measure  
 Specific Neighborhoods       Older Homes       Knowledge       All of These

24. Do you have an incentive program for irrigation system improvements? No  Please also answer question 24a.

a. Are you considering implementing any rain sensor programs in the future?

*Please make your selection.*

Entire Service Area       Zip Code       Awareness       Behavior       We do not measure  
 Specific Neighborhoods       Older Homes       Knowledge       All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? Yes  When?

*Please enter the year.*

Entire Service Area       Zip Code       Awareness       Behavior       We do not measure  
 Specific Neighborhoods       Older Homes       Knowledge       All of These

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

	Adoption Year:	Please indicate if you enforce the corresponding ordinance/code:	Please indicate if you have analyzed water savings:
<input type="checkbox"/> Water Use Restrictions	<input type="text" value=""/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Native Plant Use	<input type="text" value=""/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Drought Tolerant Plant Use	<input type="text" value=""/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Rain Sensors	<input type="text" value=""/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Site Design Review	<input type="text" value=""/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Efficient Irrigation			

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? 1989

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates? 1989  
c. How many tiers are structured in your residential rates? 4

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-3000	\$ 2.20
Tier 2	3001-7000	\$ 2.42
Tier 2	7001-13000	\$ 3.85
Tier 4	13001-99999	\$ 7.70
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$ 9.05

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 15.87

Please continue to the next question.

35. Please describe your wastewater residential rate structure. 2.86 per thousand gallons residential caps at 12k

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

Aggressive  Mildly Aggressive  Passive

Yes

Yes ▼

Flat Rate + per 1,000 gal. rate

Flat Rate

Per 1,000 gal.

Other

▼

Please continue to SECTION 9.

### SECTION 9 - COMMENTS

The following section is provided if you have any comments or additional information you would like to share at this time.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address: areisfeld@ircgov.com Title: customer/billing services supervisor

Recipient 2 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004

<b>Utility Name:</b> Intercoastal Utilities, Inc.	<b>Date Survey Completed:</b>
<b>Respondent's Name:</b> M.L. Forrester	<b>Area Code and Phone Number:</b> (904) 779-5353 or (904) 779-9292
<b>Position/Title:</b> V.P. Jax Utilities Management, Inc. (Contract Operator)	<b>Email:</b> <a href="mailto:MLF@jaxum.com">MLF@jaxum.com</a>
<b>Department:</b> Administration	<b>Fax:</b> (904) 779-5733
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Serve multiple customer types using two (2) water water production facilities, but through interconnected trans/dist grid system.

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Yr 2000 - Upgrade and expansion of all water resource, storage, pumping, chlorination, and emergency power generation facilities.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995? 56% Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

<b>Name:</b>	M.L. Forrester
<b>Email:</b>	<a href="mailto:MLF@jaxum.com">MLF@jaxum.com</a>
<b>Phone:</b>	(904) 779-5353

Please continue to the next question.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? No  Yes

(Serve Golf Course only)

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area
- Specific Neighborhoods
- Older Homes
- Other Specific Area
- Zip Code
- Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? 2000

d. How are these distributed?

- Speaking Events
- Special Mailings
- Other

If other, how do you distribute your brochures and/or pamphlets?

Delivery to area libraries, institutions

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area
- Specific Neighborhoods
- Older Homes
- Other Specific Area
- Zip Code
- Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? 2000

d. At what frequency are inserts utilized?

- Every Billing Cycle
- Quarterly
- Other

[Redacted]

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

No

- Drought Alerts
- Other
- Watering Restrictions
- All of These

[Redacted]

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

- Monthly
- Quarterly
- Other

[Redacted]

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

No

- Indoor
- Outdoor
- Entire Service Area
- Other
- Zip Code
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes

a. Sponsorship level includes:

- With the District
- Independently

b. Typical subject matter includes:

- Drought Alerts
- Conservation Tips
- Watering Restrictions
- Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

d. What media do you utilize in your program?

- Radio
- Broadcast TV
- Cable
- Billboards

e. How much is budgeted for next FY?

\$ 4,500.00

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

No

- Indoor Topics
- Outdoor Topics
- Schools
- Professional Groups
- Speaking Engagements
- Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

[Redacted]

- Youth
- Adult
- Professional
- Other

[Redacted]

[Redacted]

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No

- Indoor
- Outdoor
- Awareness
- Knowledge
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

[Redacted]

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

[dropdown arrow]

[Redacted]

Please continue to SECTION 3.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown arrow]

[Redacted]

[Redacted]

[dropdown arrow]

[dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown arrow]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2003

[dropdown arrow]

[Redacted]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Redacted]

Please fill in the year.

2007

No current plans to implement

No [dropdown arrow]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

Please also answer question 19c.

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

- Awareness

- Behavior

We do not measure  
Intercoastal  
May 5, 2004

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

No plans to implement - Largest Wtr Conservation need is in irrigation

|

20. Do you have a leak detection program specific to residential customers?

No

a. Are you considering implementing any rain sensor programs in the future?

No

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

|

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

Please continue to the next question.

22. Have you implemented a rain sensor program?

No

a. Are you considering implementing any rain sensor programs in the future?

No

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

|

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes  No

a. Service areas targeted include:

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

Please select all that apply above.

b. How have you measured effectiveness?

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

c. What year did you begin these services? 2003

d. Approximately how many residences benefit annually? 50

Please make your selection.

Please describe tracking above.

24. Do you have an incentive program for irrigation system improvements? No  Yes

a. Are you considering implementing any rain sensor programs in the future? No  Yes

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No  Yes

a. Are you considering implementing any rain sensor programs in the future? No  Yes

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

- 

Please indicate if you have analyzed water savings:

-

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? 1983

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? No

a. When do you plan to restructure rates for conservation? 2006

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	All Use	0.72/M
Tier 2		
Tier 2		
Tier 4		
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$ 12.21

Please continue to the next question.

31. Do you bill monthly or bi-monthly? Quarterly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 34.21

Please continue to the next question.

35. Please describe your wastewater residential rate structure. Base Facility Charge: \$49.53 PER QUARTER; Gallonage Charge: \$4.14/Mgals. (Residential Swr Gallonage Chg Capped at 30,000 gals. Per quarter)

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

Aggressive  Mildly Aggressive  Passive

▼

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- Flat Rate + per 1,000 gal. rate       Flat Rate
- Per 1,000 gal.                               Other

(Do not have authorized charge/rate for reuse water provided to Golf Course)

▼

\_\_\_\_\_

\_\_\_\_\_

Please continue to SECTION 9.

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

Intercoastal Utilities is an investor-owned and contract-operated utility. Its rates and service tariffs are controlled by a County-appointed regulatory Authority. That Authority has not addressed implementation of water conservation rules, practices or rates. The SJRWMD, through its CUP issued to the utility, has required Intercoastal to (a) aggressively promote water conservation through the media and personal customer contacts, and (b) propose and pursue both water-conserving rates AND monthly billing of water services.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

**Please provide the email addresses of those in your organization who should receive a copy of the results.**



Recipient 1 Email Address: <u>MLF@jaxum.com</u>	Title: <u>V.P.; Jax Util. Mgmt., Inc.</u>
Recipient 2 Email Address: <u>H_Vjames@att.net</u>	Title: <u>Operations Manager</u>
Recipient 3 Email Address: _____	Title: _____
Recipient 4 Email Address: _____	Title: _____

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

Utility Name: JEA	Date Survey Completed: 24-May-04
Respondent's Name: Tim Perkins	Area Code and Phone Number: 904-665-4520
Position/Title: Manager, Water/Sewer System Planning	Email: <a href="mailto:perkte@jea.com">perkte@jea.com</a>
Department: Market Strategy	Fax: 904-665-7369
Total Number of Single Family Water Customers:	Total Number of Multi Family Water Customers:

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Expanded well and storage capacity at several WTP. Significantly expanded water distribution system R&R program.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name:

Email:

Phone:

Please provide contact information.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

Name:

Email:

Phone:

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?

- Speaking Events  Special Mailings  Other

If other, how do you distribute your brochures and/or pamphlets?

Bill inserts, public schools

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?  
 Every Billing Cycle     Quarterly     Other

If other, how often do you insert conservation information in water bills?  
2 or three inserts a year

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes ▼

a. Typical subject matter includes:  
 Drought Alerts     Other     Watering Restrictions     All of These

a1. What other subject matter is covered in your special mailings?

Primarily on irrigation and waterwise landscaping

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

c. At what frequency are special mailings sent out?  
 Monthly     Quarterly     Other

If other, how often do you send special mailings?

As necessary or appropriate.

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor  
 Outdoor

b. Targeted Areas Include:

Entire Service Area     Zip Code  
 Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes ▼

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts     Watering Restrictions  
 Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

d. What media do you utilize in your program?

Radio     Broadcast TV     Cable     Billboards

e. How much is budgeted for next FY?

Please enter \$ above.

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

d. Please list the titles of the videos below:

Energy and Water Conservation Audit

e. What are your target audiences?

Youth     Adult     Professional     Other

Don't know because the majority of the videos are distributed to individuals.

f. What does your annual viewing audience total?

Please enter #.

14. Do you promote water conservation contests on an on-going basis?

No ▼

Please also answer question 14c.

Indoor     Outdoor

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

Please also answer question 15c.

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please enter the year.

[dropdown arrow]

[Yellow box]

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

Please also answer question 16a.

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

[dropdown arrow]

[Yellow box]

Please make your selection.

[Yellow box]

[dropdown arrow]

[dropdown arrow]

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown arrow]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998 [Yellow box]

[Yellow box]

[dropdown arrow]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[Yellow box]

[dropdown arrow]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

Please also answer question 19c.

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

- Awareness

- Behavior

We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

*Please enter the year.*

|

20. Do you have a leak detection program specific to residential customers?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many customers benefit annually?

e. Do you have written policies or procedures for the program?

No

f. Have you established a schedule for the program?

No

g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

No

h. Do you perform irrigation audits?

Yes

|

**Please continue to SECTION 4.**

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

**Please continue to the next question.**

22. Have you implemented a rain sensor program?

No

a. Are you considering implementing any rain sensor programs in the future?

No

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

|

**Please continue to the next question.**

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes  No

a. Service areas targeted include:

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

Please select all that apply above.

b. How have you measured effectiveness?

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

c. What year did you begin these services? 2003

d. Approximately how many residences benefit annually? 80

Please make your selection.

Please describe tracking above.

24. Do you have an incentive program for irrigation system improvements? No  Yes

a. Are you considering implementing any rain sensor programs in the future? No  Yes

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No  Yes

a. Are you considering implementing any rain sensor programs in the future? No  Yes

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

- Not Applicable

Please indicate if you have analyzed water savings:

- 
- 
- 
- 
-

Efficient Irrigation

Adoption Year:

Not Applicable

Turf Use Restrictions

Adoption Year:

Not Applicable

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

Please enter the year.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates?

1997

c. How many tiers are structured in your residential rates?

3

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	1-11,000	.78/Kgal
Tier 2	12,000-22,000	.97/Kgal
Tier 2	>22,000	4.00/Kgal
Tier 4		
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$15.69

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$28.35

Please continue to the next question.

35. Please describe your wastewater residential rate structure. Charges are based on the metered potable water flow. We charge \$3.88/Kgal up to 22 Kgal. Sewer charges are capped at 22Kgal.

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? Oct-04

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? <1%

Yes

39. Do you have plans to expand your service area? Yes  When? 2007+
40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand? 100%
41. Approximately how many residential customers do you provide with reclaimed water service? 200
42. How are your rates structured?  Flat Rate + per 1,000 gal. rate  Flat Rate  Other  
 If other, please describe your rate structure below.  
 1-15Kgal .97/Kgal, 16-30Kgal 1.56Kgal, >30Kgal 4.00/Kgal

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

Conservation rate structure.

Please continue to SECTION 9.

**SECTION 9 - COMMENTS**

The following section is provided if you have any comments or additional information you would like to share at this time.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address: <u>yarnjj@jea.com</u>	Title: <u>Director, Rates &amp; Market Development</u>
Recipient 2 Email Address: <u>uptojm@jea.com</u>	Title: <u>Director, Brand Management</u>
Recipient 3 Email Address: <u>perkete@jea.com</u>	Title: <u>Manager, W/S Sys Plan</u>
Recipient 4 Email Address: _____	Title: _____

Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004

<b>Utility Name:</b> Town of Lady Lake	<b>Date Survey Completed:</b> 13-May-04
<b>Respondent's Name:</b> Bill Vance	<b>Area Code and Phone Number:</b> 352-751-1545
<b>Position/Title:</b> Town Manager	<b>Email:</b> <a href="mailto:bvance@ladylake.org">bvance@ladylake.org</a>
<b>Department:</b> Administration	<b>Fax:</b> 352-751-1549
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

**Please complete all information above.**  
**SECTION 1 - GENERAL INFORMATION**

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?  **Please enter number.**

b. Please provide the names of your service areas below:  
  
**Please continue to the next question.**

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:  
  
**Please continue to the next question.**

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

**Please continue to the next question.**

4. Have you implemented any conservation practices that target areas with older homes? No  Yes

**Please continue to the next question.**

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
Name:   
Email:   
Phone:   
**Please provide contact information.**

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? No  Yes

**Please continue to SECTION 2.**

**SECTION 2 - PUBLIC AWARENESS ACTIVITIES**

7. Do you have an on-going public awareness / education program? No  Yes

**Please continue to SECTION 3.**

8. Does your program include on-going distribution of brochures and/or pamphlets? No  Yes

**Please also answer question 8c.**

Indoor Topics       Entire Service Area       Older Homes       Zip Code  
 Outdoor Topics       Specific Neighborhoods       Other Specific Area       Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?  **Please enter the year.**

Speaking Events       Special Mailings       Other

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics       Outdoor Topics  
**Please select all that apply above.**

b. Targeted Areas Include:  
 Entire Service Area       Older Homes       Zip Code  
 Specific Neighborhoods       Other Specific Area       Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?  Every Billing Cycle       Quarterly       Other  
If other, how often do you insert conservation information in water bills?

Every Billing Cycle     Quarterly     Other

Occasionally

10. Do you send out special mailings on an on-going basis?

No

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Monthly     Quarterly     Other

11. Do you issue news releases on an on-going basis?

No

Please also answer question 11c.

Indoor     Entire Service Area     Zip Code  
 Outdoor     Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12. Do you sponsor public conservation media messages on an on-going basis?

No

Please also answer question 12c.

With the District     Drought Alerts     Watering Restrictions  
 Independently     Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

13. Do you utilize videos of any kind on an on-going basis?

No

Please also answer question 13c.

Indoor Topics     Schools     Speaking Engagements  
 Outdoor Topics     Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Youth     Adult     Professional     Other

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

Indoor     Outdoor     Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No ▼

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2007

No ▼

[Empty text box]

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No ▼

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes ▼

When?

2007

[Empty text box]

[Empty dropdown menu]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No ▼

Please also answer question 15c.

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Empty text box]

Please enter the year.

[Empty text box]

[Empty dropdown menu]

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No ▼

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Empty text box]

Please fill in the year.

[Empty text box]

[Empty text box]

[Empty dropdown menu]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No ▼

Please also answer question 19c.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Empty text box]

Please enter the year.

when might you implement this practice?

[Yellow input box]

20. Do you have a leak detection program specific to residential customers?

No

Please also answer question 20a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

[Yellow input boxes and dropdown menus]

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**  
*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

Please also answer question 21a.

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Please make your selection.

[Yellow input box and dropdown menus]

22. Have you implemented a rain sensor program?

No

Please also answer question 22a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

[Yellow input boxes and dropdown menus]

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption?

No

Please also answer question 23a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

24. Do you have an incentive program for irrigation system improvements?

No

Please also answer question 24a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property?

No

Please also answer question 25a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

Water Use Restrictions

Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Native Plant Use

Adoption Year:

Drought Tolerant Plant Use

Adoption Year:

Rain Sensors

Adoption Year:

Site Design Review

Adoption Year:

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing

No

that promotes efficient water use changes?

No

[Empty yellow box]

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

Yes

a. Since what year have all users been metered?

[Empty yellow box]

Please enter the year.

[Empty yellow box]

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

No

a. When do you plan to restructure rates for conservation?

2007?

[Empty yellow box]

[Empty yellow box]

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1		
Tier 2		
Tier 2		
Tier 4		
Tier 5		
Tier 6		

Please complete rates above.

30. How much is your monthly water service charge for a typical SF customer?

\$12

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

No

[Empty yellow box]

[Empty yellow box]

Please continue to the next question.

33. Do you have a drought rate?

No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

\$16

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

High flat rate then based upon water consumption.

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

[Empty yellow box]

Aggressive

Mildly Aggressive

Passive

[Empty yellow box]

[Empty yellow box]

[Empty yellow box]

[Empty yellow box]

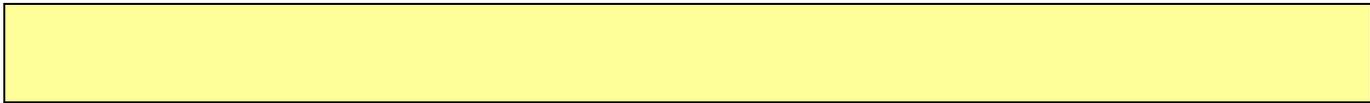
Flat Rate + per 1,000 gal. rate

Flat Rate

Per 1,000 gal.

Other

[Empty yellow box]



Please continue to SECTION 9.

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

The Town of Lady Lake is in the process of purchasing a wastewater treatment facility and has plans to incorporate its expansion (500,000 gpd) and creation of reuse capabilities in the next 3-4 years. We will be pursuing our next CUP in 2007 and will be considering how best to accommodate many of the water conservation items identified within this survey. To date we have been less than pro-active in this regard and we realize that in the future we must get better due to the importance of water as a natural resource here in Florida. Thanks for the opportunity to share these thoughts with you.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Every Billing Cycle     Quarterly     Other

10. Do you send out special mailings on an on-going basis?

No ▼

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Monthly     Quarterly     Other

11. Do you issue news releases on an on-going basis?

No ▼

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

No ▼

Please also answer question 12c.

With the District  
 Independently

Drought Alerts  
 Conservation Tips

Watering Restrictions  
 Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. Please list the titles of the videos below:

Please provide video titles above.

e. What are your target audiences?

Youth     Adult     Professional     Other

f. What does your annual viewing audience total?

14. Do you promote water conservation contests on an on-going basis?

No ▼

Please also answer question 14c.

Indoor     Outdoor

Awareness

Knowledge

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Redacted]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown]

Please also answer question 15c.

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Redacted]

Please enter the year.

[dropdown]

[Redacted]

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown]

[Redacted]

[Redacted]

[dropdown]

[dropdown]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown]

a. How have you measured effectiveness?

Awareness

Knowledge

Behavior

All of These

We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998

[Redacted]

[dropdown]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown]

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Redacted]

Please fill in the year.

[Redacted]

[Redacted]

No [dropdown]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown]

Please also answer question 19c.

Entire Service Area

Zip Code

Awareness

Behavior

We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

*Please enter the year.*

|

20. Do you have a leak detection program specific to residential customers?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many customers benefit annually?

e. Do you have written policies or procedures for the program?

Yes

f. Have you established a schedule for the program?

No

g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

No

h. Do you perform irrigation audits?

Yes

|

**Please continue to SECTION 4.**

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

*The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.*

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No

**Please continue to the next question.**

22. Have you implemented a rain sensor program?

No

**Please also answer question 22a.**

a. Are you considering implementing any rain sensor programs in the future?

**Please make your selection.**

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

|

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes  No

**a. Service areas targeted include:**

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

*Please select all that apply above.*

c. What year did you begin these services?

d. Approximately how many residences benefit annually?

No

**b. How have you measured effectiveness?**

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

*Please describe tracking above.*

24. Do you have an incentive program for irrigation system improvements? No

No

**Please also answer question 24a.**

a. Are you considering implementing any rain sensor programs in the future?

*Please make your selection.*

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

No

**Please also answer question 25a.**

a. Are you considering implementing any rain sensor programs in the future?

*Please make your selection.*

- Entire Service Area  Zip Code  
 Specific Neighborhoods  Older Homes

- Awareness  Behavior  We do not measure  
 Knowledge  All of These

**Please continue to SECTION 5.**

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? Yes

a. Please explain below what permitting actions specifically relate to water conservation.

Marion County Land Development Codes

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? 1993

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates? 1993
c. How many tiers are structured in your residential rates? 2

b. Please provide your commodity rate structure below.

Table with 3 columns: Tier, Gallon Range, \$ Rate. Rows include Tier 1 (6,000 / per 1,000 gls, \$ 1.14), Tier 2 (above / per 1,000 gls, \$ 1.72), and empty rows for Tier 2, Tier 4, Tier 5, and Tier 6.

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$25.00

Please continue to the next question.

31. Do you bill monthly or bi-monthly? Monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$35.00

Please continue to the next question.

35. Please describe your wastewater residential rate structure. The rate is \$3.25 per 1,000 capped at 8,000

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

Aggressive Mildly Aggressive [checked] Passive

▼ [ ]  
[ ]  
[ ]

- Flat Rate + per 1,000 gal. rate     Flat Rate  
 Per 1,000 gal.                       Other

.05 cents per 1,000 gls

▼ [ ]

[ ]

Please continue to SECTION 9.

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

[ ]

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

- YES, I would like a copy of the survey results.



**Please provide the email addresses of those in your organization who should receive a copy of the results.**

Recipient 1 Email Address: marsha.senger@marioncountyfl.org Title: \_\_\_\_\_  
Recipient 2 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_  
Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_  
Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*



when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle
- Quarterly
- Other

If other, how often do you insert conservation information in water bills?  
 occasionally to promote special water conservation events or other timely information

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes

a. Typical subject matter includes:

- Drought Alerts
- Other
- Watering Restrictions
- All of These

a1. What other subject matter is covered in your special mailings?

General indoor and outdoor water conservation information. (PW&Utilities Connection is monthly, Conservation News is quarterly)

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

c. At what frequency are special mailings sent out?

- Monthly
- Quarterly
- Other

If other, how often do you send special mailings?

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes

a. Conservation Topics Include:

- Indoor
- Outdoor

b. Targeted Areas Include:

- Entire Service Area
- Other
- Zip Code
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1981

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes

a. Sponsorship level includes:

- With the District
- Independently

b. Typical subject matter includes:

- Drought Alerts
- Conservation Tips
- Watering Restrictions
- Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

d. What media do you utilize in your program?

- Radio
- Broadcast TV
- Cable
- Billboards

e. How much is budgeted for next FY?

Please enter \$ above.

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Under what circumstances are videos utilized?

- Schools
- Professional Groups
- Speaking Engagements
- Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1981

d. Please list the titles of the videos below:

Conserving Water on the Space Coast, Down the Drain, Water Hog Haven., My Florida Yard: 2004 Florida Friendly Landscape Seminar, Water for Life, Water Follies, Professor Water: Fantastic Facts about H2O, What Do You Know About H2O

e. What are your target audiences?

- Youth
- Adult
- Professional
- Other

f. What does your annual viewing audience total?

400

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

- Indoor
- Outdoor
- Awareness
- Knowledge
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Redacted]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes [dropdown]

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Do you track actual water use changes?

No [dropdown]

e. How are you tracking behavior effectiveness?

By the survey questions participants are required to complete and turn in at the end of the semiar to get a goodie bag (in 2004 had 600 attendees)

Please continue to SECTION 3.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown]

[dropdown]

[Redacted]

a. What year did you begin implementing these programs?

1997

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes [dropdown]

c. Do you follow-up with the customer in any manner after installation?

Yes [dropdown]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes [dropdown]

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1981

[Redacted]

[dropdown]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

Yes [dropdown]

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1997

d. Approximately how many toilets are replaced annually?

200

[Redacted]

[dropdown]

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes [dropdown]

**a. Service areas targeted include:**

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

**b. How have you measured effectiveness?**

- Awareness
- Behavior
- Knowledge
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1981

d. Approximately how many fixtures are replaced annually?

1000

[Empty text box]

[Dropdown arrow]

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

No

Please also answer question 20a.

a. Are you considering implementing any rain sensor programs in the future?

[Dropdown arrow]

[Empty text box]

Please make your selection.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Behavior
- Knowledge
- All of These
- We do not measure

[Empty text box]

[Empty text box]

[Dropdown menu with arrows]

[Empty text box]

[Dropdown arrow]

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

[Dropdown arrow]

[Empty text box]

a. What year did you begin implementing these programs?

2001

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No

No

c. Do you follow-up with the customer in any manner after installation?

No

d. Do you have a mobile irrigation lab program?

Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes

No

[Empty text box]

**a. Service areas targeted include:**

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

**b. How have you measured effectiveness?**

- Awareness
- Behavior
- Knowledge
- All of These
- We do not measure

Please select all that apply above.

c. What year did you begin this program?

[Empty text box]

Please enter the year.

d. Approximately how many residences benefit annually?

[Empty text box]

Please enter #.

[Empty text box]

[Dropdown arrow]

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? Yes

a. Service areas targeted include:  
 Entire Service Area     Zip Code  
 Specific Neighborhoods     Older Homes

b. How have you measured effectiveness?  
 Awareness     Behavior     We do not measure  
 Knowledge     All of These

c. What year did you begin these services? 1981

d. Approximately how many residences benefit annually? 52

Please select all that apply above.

Please describe tracking above.

Please make your selection.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

Please continue to the next question.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

		Please indicate if you enforce the corresponding ordinance/code:	Please indicate if you have analyzed water savings:
<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: 1980	Enforcement practiced	Savings not analyzed
<input checked="" type="checkbox"/> Native Plant Use	Adoption Year: 2003	Enforcement practiced	Savings not analyzed
<input checked="" type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: 2003	Enforcement practiced	Savings not analyzed
<input checked="" type="checkbox"/> Rain Sensors	Adoption Year: 2001	Enforcement practiced	Savings not analyzed
<input checked="" type="checkbox"/> Site Design Review			

Site Design Review

Adoption Year:

Enforcement practiced

Savings not analyzed

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please continue to the next question.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes?

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

a. Since what year have all users been metered?  Please enter the year.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

a. What year did you implement conservation-based rates?

Please enter the year.

c. How many tiers are structured in your residential rates?

Please enter the # above.

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 4	<input type="text"/>	<input type="text"/>
Tier 5	<input type="text"/>	<input type="text"/>
Tier 6	<input type="text"/>	<input type="text"/>

Please complete rates above.

30. How much is your monthly water service charge for a typical SF customer? \$

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

Please continue to the next question.

33. Do you have a drought rate?

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?  Aggressive  Mildly Aggressive  Passive



<b>Utility Name:</b> Orange County Utilities Water Division	<b>Date Survey Completed:</b> 30-Jun-04
<b>Respondent's Name:</b> Jacqueline W. Torbert	<b>Area Code and Phone Number:</b> 407-836-6891
<b>Position/Title:</b> Manager, Orange County Utilities Water Division	<b>Email:</b> <a href="mailto:Jacqueline.Torbert@ocfl.net">Jacqueline.Torbert@ocfl.net</a>
<b>Department:</b> Utilities	<b>Fax:</b> 407-836-6838
<b>Total Number of Single Family Water Customers:</b> 93,570 connections	<b>Total Number of Multi Family Water Customers:</b> 355 connections

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes   
a. How many service areas do you have?   
b. Please provide the names of your service areas below:  
  
*Please continue to the next question.*
- 
2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes   
a. Please provide a brief description of the upgrades/maintenance performed below:  
  
*Please provide description above.*
- 
3. What percentage of your service area is comprised of homes built prior to 1995?  Actual   
*Please continue to the next question.*
- 
4. Have you implemented any conservation practices that target areas with older homes? Yes   
a. Please list the specific areas targeted below.  
  
*Please continue to the next question.*
- 
5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No   
b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
Name:   
Email:   
Phone:   
*Please provide contact information.*
- 
6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes   
a. Who should we contact for additional information?  
Name:   
Email:   
Phone:   
*Please provide contact information.*

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes   
*Please continue to the next question.*
- 
8. Does your program include on-going distribution of brochures and/or pamphlets? Yes   
a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics  
b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Zip Code  
 Other Specific Area  
 Newer Homes  
c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?   
d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other  
If other, how do you distribute your brochures and/or pamphlets?  
  
*Please continue to the next question.*
- 
9. Do you insert water conservation information in water bills on an on-going basis? Yes   
a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics  
b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Zip Code  
 Other Specific Area  
 Newer Homes  
c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?   
d. At what frequency are inserts utilized?  
 Every Billing Cycle  
 Quarterly  
 Other

Every Billing Cycle  Quarterly  Other

[Yellow box]

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes [dropdown arrow]

a. Typical subject matter includes:

Drought Alerts  Other  Watering Restrictions  All of These

a1. What other subject matter is covered in your special mailings?

Water Restriction notices to new customers; Consumer Confidence Report to all customers with conservation information in the report.

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998

c. At what frequency are special mailings sent out?

Monthly  Quarterly  Other

If other, how often do you send special mailings?

Weekly mail outs for new customers on restrictions; annually on CCR.

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes [dropdown arrow]

a. Conservation Topics Include:

Indoor  Outdoor

b. Targeted Areas Include:

Entire Service Area  Zip Code  Other  All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes [dropdown arrow]

a. Sponsorship level includes:

With the District  Independently

b. Typical subject matter includes:

Drought Alerts  Conservation Tips  Watering Restrictions  Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. What media do you utilize in your program?

Radio  Broadcast TV  Cable  Billboards

e. How much is budgeted for next FY?

\$75,000

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes [dropdown arrow]

a. Conservation Topics Include:

Indoor Topics  Outdoor Topics

b. Under what circumstances are videos utilized?

Schools  Professional Groups  Speaking Engagements  Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1995

d. Please list the titles of the videos below:

Videos produced by AWWA.

e. What are your target audiences?

Youth  Adult  Professional  Other

[Yellow box]

f. What does your annual viewing audience total?

10,000+

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

Yes [dropdown arrow]

a. Contest themes include:

Indoor  Outdoor

b. How have you measured effectiveness?

Awareness  Knowledge  We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998

d. What groups do you typically target?

Youth

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Do you track actual water use changes?

No

e. How are you tracking behavior effectiveness?

Tracking water consumption will be implemented in late 2004. Water consumption for previous 13 billing cycles will be recorded, water consumption will be tracked starting 20 days after attending workshop for 13 billing cycles.

Please continue to SECTION 3.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

Yes

2003

a. What year did you begin implementing these programs?

2003

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes

c. Do you follow-up with the customer in any manner after installation?

Yes

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

At workshops and presentations we discuss water conservation with individuals and often receive calls for to answer more detailed questions and send materials to them.

Yes

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2003

d. Approximately how many toilets are replaced annually?

500

e. How are you tracking behavior effectiveness?

Please describe tracking above.

f. Do you track actual water use changes?

Yes

19.

Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise,

2003

when might you implement this practice?

d. Approximately how many fixtures are replaced annually?

700

A showerhead exchange program is done once a year, old showerheads are exchanged for new ones - guarantees the installation of the new showerheads

Yes [dropdown arrow]

20. Do you have a leak detection program specific to residential customers?

No [dropdown arrow]

a. Are you considering implementing any rain sensor programs in the future?

Yes [dropdown arrow]

When? 2004

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These
- We do not measure

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

In 2004 a pilot program for rain sensor give-aways & installation was initiated. Customer must attend a landscape & irrigation workshop. Also their irrigation system

[dropdown arrow]

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown arrow]

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

[dropdown arrow]

Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes [dropdown arrow]

[dropdown arrow]

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. What year did you begin this program?

2004

d. Approximately how many residences benefit annually?

25

In 2004 a pilot program for rain sensor give-aways & installation was initiated. Customer must attend a landscape & irrigation workshop. Also their irrigation system

[dropdown arrow]

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption?

Yes [dropdown arrow]

[dropdown arrow]

a. Service areas targeted include:

- Entire Service Area
- Zip Code

b. How have you measured effectiveness?

- Awareness
- Behavior
- We do not measure

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

**Please select all that apply above.**

**c. What year did you begin these services?**

2001

**d. Approximately how many residences benefit annually?**

500

Landscape consultant who conducts workshops will do private consultations upon request of water customer.

**Please make your selection.**

**24. Do you have an incentive program for irrigation system improvements?**

No

**a. Are you considering implementing any rain sensor programs in the future?**

Yes

**When?** 2004

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

[Empty text boxes for additional information]

**25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property?**

No

**a. Are you considering implementing any rain sensor programs in the future?**

Yes

**When?** 2004

- Entire Service Area
- Zip Code
- Awareness
- Behavior
- We do not measure
- Specific Neighborhoods
- Older Homes
- Knowledge
- All of These

[Empty text boxes for additional information]

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

**26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.**

- Water Use Restrictions      **Adoption Year:** 1993
- Native Plant Use              **Adoption Year:** [ ]
- Drought Tolerant Plant Use      **Adoption Year:** [ ]
- Rain Sensors                      **Adoption Year:** [ ]
- Site Design Review              **Adoption Year:** [ ]
- Efficient Irrigation              **Adoption Year:** [ ]
- Turf Use Restrictions              **Adoption Year:** [ ]

*Enter adoption year above.*

**Please indicate if you enforce the corresponding ordinance/code:**

- Enforcement practiced
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

*Make selection above.*

**Please indicate if you have analyzed water savings:**

- Water savings analyzed
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

*Make selection above.*

**27. Do you require any permitting actions specifically related to indoor and outdoor plumbing**

No

that promotes efficient water use changes?

No

[Empty yellow box]

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

Yes

a. Since what year have all users been metered?

1980

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

Yes

a. What year did you implement conservation-based rates?

1997

c. How many tiers are structured in your residential rates?

4

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-3000	\$ 0.89
Tier 2	4000-15000	\$ 1.19
Tier 2	16000-30000	\$ 2.09
Tier 4	31000+	\$ 2.61
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer?

\$5.47

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

Monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

No

Please continue to the next question.

33. Do you have a drought rate?

No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

\$13.96

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Uniform Rate of \$3.17 per 1,000 gallons with a cap at 14,000 gallons

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

Dec-86

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?

Aggressive

Mildly Aggressive

Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

20%

39. Do you have plans to expand your service area?

No

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?

99%

41. Approximately how many residential customers do you provide with reclaimed water service?

1700 connection

42. How are your rates structured?

Flat Rate + per 1,000 gal. rate

Flat Rate

Per 1,000 gal.

Other

If other, please describe your rate structure below.

Fixed Monthly Charge by meter size with an allowance built in. Usage in excess of the allowance is subject to the volume charge. Retail volume charge is \$0.84 per 1,000 gallons. Wholesale rates are \$0.70, \$0.42, or

1,000 gal.

Other



43. Please describe any methods you employ to conserve reclaimed/reuse water below.

*Please provide description of reuse conversation methods above.*

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address:	<u>Jacqueline.Torbert@ocfl.net</u>	Title:	<u>Manager, Utilities Water</u>
Recipient 2 Email Address:	_____	Title:	_____
Recipient 3 Email Address:	_____	Title:	_____
Recipient 4 Email Address:	_____	Title:	_____

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> Orlando Utilities Commission	<b>Date Survey Completed:</b> 3-Jun-04
<b>Respondent's Name:</b> Michael K Malone	<b>Area Code and Phone Number:</b> 1.407.709.6691
<b>Position/Title:</b> Water Conservation Coordinator	<b>Email:</b> mmalone@ouc.com
<b>Department:</b> Water Business Unit	<b>Fax:</b> 1.407.236.9625
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

**Please complete all information above.**  
**SECTION 1 - GENERAL INFORMATION**

1. Do you have multiple service areas within your service boundaries? No

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes

a. Please provide a brief description of the upgrades/maintenance performed below:

We have upgraded all 8 of our water plants to utilize ozonation for water treatment.

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995?

*Please enter percentage and make a selection above.*

4. Have you implemented any conservation practices that target areas with older homes? No

Our conservation efforts target our whole service area.

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name: Michael K Malone  
Email: mmalone@ouc.com  
Phone: 407.709.6691

*Please continue to the next question.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes

a. Who should we contact for additional information?

Name: Michael K Malone  
Email: mmalone@ouc.com  
Phone: 407.709.6691

**Please continue to SECTION 2.**

**SECTION 2 - PUBLIC AWARENESS ACTIVITIES**

7. Do you have an on-going public awareness / education program? Yes

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? 982 approximate

d. How are these distributed?

- Speaking Events  Special Mailings  Other

If other, how do you distribute your brochures and/or pamphlets?

customers. Bill inserts include the Connections newsletter (news and information from

*Please continue to the next question.*

9. Do you insert water conservation information in water bills on an on-going basis? Yes

a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area  Older Homes  Zip Code  
 Specific Neighborhoods  Other Specific Area  Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice? 982 approximate

d. At what frequency are inserts utilized?

- Every Billing Cycle  Quarterly  Other

Every Billing Cycle     Quarterly     Other

Conservation messages are provided annually but the frequency increases as a result of

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes

a. Typical subject matter includes:

Drought Alerts     Other     Watering Restrictions     All of These

a1. What other subject matter is covered in your special mailings?

The annual OUC Water Quality Report is provided via direct mail to customers. This report provides in depth information regarding money-saving and convenient ways

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1999

c. At what frequency are special mailings sent out?

Monthly     Quarterly     Other

If other, how often do you send special mailings?

The OUC Water Quality Report is distributed to all customers annually.

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor  
 Outdoor

b. Targeted Areas Include:

Entire Service Area     Zip Code  
 Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

999 approximate

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts     Watering Restrictions  
 Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

999 approximate

d. What media do you utilize in your program?

Radio     Broadcast TV     Cable     Billboards

e. How much is budgeted for next FY?

\$200,000

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2000

d. Please list the titles of the videos below:

The OUC Home Energy Survey is provided to customers in Spanish and English on VHS video, interactive CD-ROM and can be accessed online at www.ouc.com. Annually over 2,266 customers learn to conserve water resources through these efforts.

e. What are your target audiences?

Youth     Adult     Professional     Other

We target our entire customer base of 190,000.

f. What does your annual viewing audience total?

Over 2,266 customers

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No

Please also answer question 14c.

Indoor     Outdoor

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

No

Through the implementation of the OUCanopy Tree Planting Program, customers will gain important tree planting and landscaping tips and information regarding

Please continue to SECTION 3.

SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes

When?

2006

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes

a. How have you measured effectiveness?

Awareness

Knowledge

Behavior

All of These

We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

c. How are you tracking behavior effectiveness?

Each month we calculate the overall consumption of our customers and compare it to the previous months and years.

d. Do you track actual water use changes?

Yes

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No

Please also answer question 18c.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please fill in the year.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No

Please also answer question 19c.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

20. Do you have a leak detection program specific to residential customers?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

d. Approximately how many customers benefit annually?

e. Do you have written policies or procedures for the program?

Yes

f. Have you established a schedule for the program?

Yes

g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

Yes

h. Do you perform irrigation audits?

Yes

i. How are you tracking behavior effectiveness?

We track each irrigation audit in our computer system as WAUD or Water Audits. This allows us to provide a monthly count of the audits performed. We, also use the

j. Do you track actual water use changes?

No

Please continue to SECTION 4.

### SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes

When?

Please continue to the next question.

22. Have you implemented a rain sensor program?

No

Please also answer question 22a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption?

Yes

**a. Service areas targeted include:**

- Entire Service Area       Zip Code  
 Specific Neighborhoods       Older Homes

*Please select all that apply above.*

**c. What year did you begin these services?**

*Please enter the year.*

**d. Approximately how many residences benefit annually?**

*Please enter #.*

**e. How are you tracking behavior effectiveness?**

**f. Do you track actual water use changes?**

Yes  No

The majority of requests for water audits are from customers with spikes in consumption for one or more months. They are anxious to learn why their water

- b. How have you measured effectiveness?**  
 Awareness       Behavior       We do not measure  
 Knowledge       All of These

**24. Do you have an incentive program for irrigation system improvements?**

No  Yes

**a. Are you considering implementing any rain sensor programs in the future?**

Yes  No

**When?**  2006

- Entire Service Area       Zip Code  
 Specific Neighborhoods       Older Homes

- Awareness       Behavior       We do not measure  
 Knowledge       All of These

**25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property?**

Yes  No

**a. Service areas targeted include:**

- Entire Service Area       Zip Code  
 Specific Neighborhoods       Older Homes

**c. What year did you begin this program?**

2002

**d. Approximately how many improvements are recorded annually?**

*Please enter #.*

**e. How are you tracking behavior effectiveness?**

**f. Do you track actual water use changes?**

Yes  No

Our tiered residential and irrigation rates provide an incentive for customers using Florida Friendly landscape items.

- b. How have you measured effectiveness?**  
 Awareness       Behavior       We do not measure  
 Knowledge       All of These

**Please continue to SECTION 5.**

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

**26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.**

Water Use Restrictions

**Adoption Year:**

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Native Plant Use

**Adoption Year:**

Drought Tolerant Plant Use

**Adoption Year:**

Rain Sensors

**Adoption Year:**

Site Design Review

**Adoption Year:**

Efficient Irrigation

**Adoption Year:**

Turf Use Restrictions

**Adoption Year:**

*Please select all that apply above.*

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No ▼

We do not make manage water consumption. This lies in the realm of the City of Orlando and Orange County Florida.

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes ▼

a. Since what year have all users been metered? 1923

Please continue to SECTION 6.

**SECTION 6 - WATER RATE STRUCTURE**  
*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

29. Are your water rates structured to promote water conservation? Yes ▼

a. What year did you implement conservation-based rates? 2001

c. How many tiers are structured in your residential rates? 4

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	First 3,000 Gallons In City / Outside City Limits	0.801/0.945
Tier 2	Next 12,000 Gallons In City / Outside City Limits	1.071/1.263
Tier 2	Next 15,000 Gallons In City / Outside City Limits	1.880/2.219
Tier 4	Next 30,000 Gallons In City / Outside City Limits	2.348/2.771
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? 4.55 for

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No ▼

Please continue to the next question.

33. Do you have a drought rate? No ▼

Please continue to SECTION 7.

**SECTION 7 - WASTEWATER RATE STRUCTURE**  
*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

34. How much is your monthly wastewater service charge for a typical SF customer? Not Applicable

Please continue to the next question.

35. Please describe your wastewater residential rate structure. Not Applicable We do not manage wastewater.

Please continue to SECTION 8.

**SECTION 8 - REUSE / RECLAIMED WATER PROGRAM**  
 Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? 1989

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers? 
 Aggressive     Mildly Aggressive     Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? Please enter percentage.

39. Do you have plans to expand your service area? Please enter percentage.

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand? Please enter the number of customers.

41. Approximately how many residential customers do you provide with reclaimed water service? Please enter the number of customers.

42. How are your rates structured?  
 Flat Rate + per 1,000 gal. rate     Flat Rate  
 Per 1,000 gal.     Other

Per 1,000 gal.

Other

\_\_\_\_\_

▼

\_\_\_\_\_

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

\_\_\_\_\_

*Please provide description of reuse conversation methods above.*

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

\_\_\_\_\_

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

**Please provide the email addresses of those in your organization who should receive a copy of the results.**



Recipient 1 Email Address:	<a href="mailto:mmalone@ouc.com">mmalone@ouc.com</a>	Title:	<u>Water Conservation</u>
Recipient 2 Email Address:	<a href="mailto:dbradshaw@ouc.com">dbradshaw@ouc.com</a>	Title:	<u>Water Engineering</u>
Recipient 3 Email Address:	_____	Title:	_____
Recipient 4 Email Address:	_____	Title:	_____

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> City of Ormond Beach	<b>Date Survey Completed:</b> 8-Jun-04
<b>Respondent's Name:</b> Tim Sheahan	<b>Area Code and Phone Number:</b> 386-676-3583
<b>Position/Title:</b> Utilities Manager	<b>Email:</b> <a href="mailto:sheahan@ormondbeach.org">sheahan@ormondbeach.org</a>
<b>Department:</b> Public Works	<b>Fax:</b> 386-676-3294
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries?

No




Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years?

Yes



a. Please provide a brief description of the upgrades/maintenance performed below:

Replacement of 2" galvanized iron pipe water mains with new 8" PVC water mains. Meter replacement program to replace all meters more than 10 years old. Looping of dead end mains.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?

Please enter percentage and make a selection above.



4. Have you implemented any conservation practices that target areas with older homes?

No



Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented?

No



b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name:

Email:

Phone:


Please provide contact information.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation?

Yes



a. Who should we contact for additional information?

Name:

Email:

Phone:


Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program?

Yes



Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets?

Yes



a. Conservation Topics Include:

- Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area       Older Homes       Zip Code  
 Specific Neighborhoods       Other Specific Area       Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998

d. How are these distributed?

- Speaking Events       Special Mailings       Other

If other, how do you distribute your brochures and/or pamphlets?

Special Events, Earth Day

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis?

No



Please also answer question 9c.

- Indoor Topics  
 Outdoor Topics

- Entire Service Area  
 Specific Neighborhoods

- Older Homes       Zip Code  
 Other Specific Area       Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Every Billing Cycle     Quarterly     Other

10. Do you send out special mailings on an on-going basis?

No ▼

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Monthly     Quarterly     Other

11. Do you issue news releases on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor  
 Outdoor

b. Targeted Areas Include:

Entire Service Area     Zip Code  
 Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please continue to the next question.

12.

Do you sponsor public conservation media messages on an on-going basis?

Yes ▼

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts     Watering Restrictions  
 Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. What media do you utilize in your program?

Radio     Broadcast TV     Cable     Billboards

e. How much is budgeted for next FY?

Please continue to the next question.

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. Please list the titles of the videos below:

e. What are your target audiences?

Youth     Adult     Professional     Other

f. What does your annual viewing audience total?

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

Yes ▼

a. Contest themes include:

Indoor     Outdoor

b. How have you measured effectiveness?

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. What groups do you typically target?

Schools, Builders, Irrigation contactors, homeowners

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

1998

d. Do you track actual water use changes?

No

e. How are you tracking behavior effectiveness?

we're not

Please continue to SECTION 3.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

a. What year did you begin implementing these programs?

1996

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No

c. Do you follow-up with the customer in any manner after installation?

Yes

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No

Please also answer question 15c.

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please fill in the year.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No

Please also answer question 19c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

|

20. Do you have a leak detection program specific to residential customers?

No

Please also answer question 20a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

|

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

a. What year did you begin implementing these programs?

1998

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes

No

c. Do you follow-up with the customer in any manner after installation?

Yes

d. Do you have a mobile irrigation lab program?

Please continue to the next question.

22. Have you implemented a rain sensor program?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. What year did you begin this program?

1998

d. Approximately how many residences benefit annually?

?

|

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No ▼

a. Are you considering implementing any rain sensor programs in the future? Yes ▼ When? 2005

Entire Service Area       Zip Code       Awareness       Behavior       We do not measure  
 Specific Neighborhoods       Older Homes       Knowledge       All of These

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? Yes ▼

a. Service areas targeted include:  
 Entire Service Area       Zip Code  
 Specific Neighborhoods       Older Homes

b. How have you measured effectiveness?  
 Awareness       Behavior       We do not measure  
 Knowledge       All of These

c. What year did you begin this program? 2004

d. Approximately how many improvements are recorded annually? ?

Please describe tracking above.

Please make your selection.

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? Yes ▼

a. Service areas targeted include:  
 Entire Service Area       Zip Code  
 Specific Neighborhoods       Older Homes

b. How have you measured effectiveness?  
 Awareness       Behavior       We do not measure  
 Knowledge       All of These

c. What year did you begin this program? pre 1995

d. Approximately how many improvements are recorded annually? ?

Please continue to the next question.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

		Please indicate if you enforce the corresponding ordinance/code:	Please indicate if you have analyzed water savings:
<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: <span style="border: 1px solid black; padding: 2px;">2001</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Native Plant Use	Adoption Year: <span style="border: 1px solid black; padding: 2px;">2004 pending</span>	Enforcement not practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: <span style="border: 1px solid black; padding: 2px;">2004 pending</span>	Enforcement not practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Rain Sensors	Adoption Year: <span style="border: 1px solid black; padding: 2px;">2001</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input checked="" type="checkbox"/> Site Design Review	Adoption Year: <span style="border: 1px solid black; padding: 2px;">2003 amended</span>	Enforcement practiced ▼	Savings not analyzed ▼
<input type="checkbox"/> Efficient Irrigation			

Efficient Irrigation

Adoption Year:

Not Applicable

Turf Use Restrictions

Adoption Year:

Enforcement practiced

Savings not analyzed

Please continue to the next question.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? Yes

a. Please explain below what permitting actions specifically relate to water conservation.

indoor use of low flow fixtures and toilets, outside rain sensors required on all homes, a minimum of 50% of the landscaped area must beof xeric plantings.

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

Please continue to SECTION 6.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates?

c. How many tiers are structured in your residential rates?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	\$8.26+\$2.08 per1000	
Tier 2		
Tier 2		
Tier 4		
Tier 5		
Tier 6		

Please complete rates above.

30. How much is your monthly water service charge for a typical SF customer?

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

Yes

39. Do you have plans to expand your service area? Yes  When?
40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?  *Please enter percentage.*
41. Approximately how many residential customers do you provide with reclaimed water service?
42. How are your rates structured?
- Flat Rate + per 1,000 gal. rate     Flat Rate
- Per 1,000 gal.     Other

a. Do you have plans to implement a volumetric rate in the future?

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

Notice on web site.

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

The City of Ormond Beach is a member of the Water Authority of Volusia (WAV). This organization employs a full time conservation coordinator that acts on behalf of member governments. Many of the responses in this survey reflect the conservation efforts of the organization.

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

**Please provide the email addresses of those in your organization who should receive a copy of the results.**



Recipient 1 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 2 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> Palm Bay Utilities	<b>Date Survey Completed:</b>
<b>Respondent's Name:</b> Rick Nipper	<b>Area Code and Phone Number:</b> 321-952-3471
<b>Position/Title:</b> Operations Division Manager	<b>Email:</b> <a href="mailto:nipper@palmbayflorida.org">nipper@palmbayflorida.org</a>
<b>Department:</b> Utilities	<b>Fax:</b> 321-768-7795
<b>Total Number of Single Family Water Customers:</b> 19,000	<b>Total Number of Multi Family Water Customers:</b> 4,500

Please complete all information above.

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No  Yes

Please continue to the next question.

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

Refurbishment of 2 Water Treatment Units. Addition of 1.5 MGD Reverse Osmosis Plant. Water and Sewer infrastructure improvements.

Please continue to the next question.

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

Please continue to the next question.

4. Have you implemented any conservation practices that target areas with older homes? Yes  No

a. Please list the specific areas targeted below.

Provide low flow showerheads for customers

Please continue to the next question.

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

<b>Name:</b>	Rick Nipper
<b>Email:</b>	<a href="mailto:nipper@palmbayflorida.org">nipper@palmbayflorida.org</a>
<b>Phone:</b>	321-952-3471

Please continue to the next question.

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?

<b>Name:</b>	Matt Prendergast
<b>Email:</b>	<a href="mailto:prendm@palmbayflorida.org">prendm@palmbayflorida.org</a>
<b>Phone:</b>	321-952-3468

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes  No

Please continue to the next question.

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:

Entire Service Area     Older Homes     Zip Code  
 Specific Neighborhoods     Other Specific Area     Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?

Speaking Events     Special Mailings     Other

Please continue to the next question.

9. Do you insert water conservation information in water bills on an on-going basis? No  Yes

Please also answer question 9c.

Indoor Topics  
 Outdoor Topics

Entire Service Area  
 Specific Neighborhoods

Older Homes     Zip Code  
 Other Specific Area     Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Every Billing Cycle     Quarterly     Other

10. Do you send out special mailings on an on-going basis?

No ▼

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Monthly     Quarterly     Other

11. Do you issue news releases on an on-going basis?

No ▼

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12.

Do you sponsor public conservation media messages on an on-going basis?

No ▼

Please also answer question 12c.

With the District  
 Independently

Drought Alerts  
 Conservation Tips

Watering Restrictions  
 Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

13. Do you utilize videos of any kind on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools  
 Professional Groups

Speaking Engagements  
 Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. Please list the titles of the videos below:

e. What are your target audiences?

Youth     Adult     Professional     Other

f. What does your annual viewing audience total?

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No ▼

Please also answer question 14c.

Indoor     Outdoor

Awareness

Knowledge

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

[Yellow box]

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes [dropdown]

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Do you track actual water use changes?

No [dropdown]

e. How are you tracking behavior effectiveness?

Surveys [Yellow box]

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown]

[dropdown]

[Yellow box]

a. What year did you begin implementing these programs?

2002

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No [dropdown]

c. Do you follow-up with the customer in any manner after installation?

No [dropdown]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No [dropdown]

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2006

[Yellow box]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown]

Please also answer question 18c.

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

[Yellow box]

Please fill in the year.

[Yellow box]

[Yellow box]

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes [dropdown]

a. Service areas targeted include:

- Entire Service Area
  - Zip Code
  - Specific Neighborhoods
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#\Database.xls  
Prepared by: Chrisell Jones, PBS

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. Approximately how many fixtures are replaced annually?



Please continue to the next question.

20. Do you have a leak detection program specific to residential customers? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure






Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs? No

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future? No



Please continue to the next question.

22. Have you implemented a rain sensor program? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure





Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Efficient Irrigation

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

*Please select all that apply above.*

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

*Please continue to the next question.*

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

*Please enter the year.*

### SECTION 6 - WATER RATE STRUCTURE

*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

29. Are your water rates structured to promote water conservation? *Please make your selection.*

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-10,000	\$ 2.90
Tier 2	10,000-20,000	\$ 3.76
Tier 2	20,000 plus	\$ 4.63
Tier 4		
Tier 5		
Tier 6		

*Please continue to the next question.*

30. How much is your monthly water service charge for a typical SF customer?

*Please continue to the next question.*

31. Do you bill monthly or bi-monthly?

*Please continue to the next question.*

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

*Please continue to the next question.*

33. Do you have a drought rate? No

**Please continue to SECTION 7.**

### SECTION 7 - WASTEWATER RATE STRUCTURE

*The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.*

34. How much is your monthly wastewater service charge for a typical SF customer?

*Please continue to the next question.*

35. Please describe your wastewater residential rate structure. Residential customer are only charged for a maximum of 10,000 gallons per month plus monthly base facility charge of \$ 12.82

**Please continue to SECTION 8.**

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

Yes

39. Do you have plans to expand your service area? Yes  When?
40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?  *Please enter percentage.*
41. Approximately how many residential customers do you provide with reclaimed water service?

42. How are your rates structured?  Flat Rate + per 1,000 gal. rate  Flat Rate  Per 1,000 gal.  Other
- If other, please describe your rate structure below.

a. Do you have plans to implement a volumetric rate in the future?

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.

Please provide the email addresses of those in your organization who should receive a copy of the results.



Recipient 1 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_  
 Recipient 2 Email Address: garrig@palmbayflorida.org Title: \_\_\_\_\_  
 Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_  
 Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> City of Palm Coast	<b>Date Survey Completed:</b> 9-Jun-04
<b>Respondent's Name:</b> Brian Matthews	<b>Area Code and Phone Number:</b> 386-986-2353
<b>Position/Title:</b> Environmental Specialist	<b>Email:</b> <a href="mailto:BMATTHEWS@ci.palm-coast.fl.us">BMATTHEWS@ci.palm-coast.fl.us</a>
<b>Department:</b> Name: Utility Department	<b>Fax:</b> 386-986-2393
<b>Total Number of Single Family Water Customers:</b> 24,210	<b>Total Number of Multi Family Water Customers:</b> 435

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? Yes

a. How many service areas do you have?

b. Please provide the names of your service areas below:

Ocean City, Grand Haven, Hammock Dunes

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes

a. Please provide a brief description of the upgrades/maintenance performed below:

Double our treatment capacity at our membrane softening plant, installed two recirculation lines at ends of system to return flow to system and reduce water quality flushing

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995?  Estimate

*Please continue to the next question.*

4. Have you implemented any conservation practices that target areas with older homes? No

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?

Name: Brian Matthews  
Email: [BMATTHEWS@ci.palm-coast.fl.us](mailto:BMATTHEWS@ci.palm-coast.fl.us)  
Phone: 386-986-2353

*Please continue to the next question.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes

a. Who should we contact for additional information?

Name: Brian Matthews  
Email: [BMATTHEWS@ci.palm-coast.fl.us](mailto:BMATTHEWS@ci.palm-coast.fl.us)  
Phone: 386-986-2353

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area
- Specific Neighborhoods
- Older Homes
- Other Specific Area
- Zip Code
- Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?

- Speaking Events
- Special Mailings
- Other

*Please continue to the next question.*

9. Do you insert water conservation information in water bills on an on-going basis? Yes

a. Conservation Topics Include:

- Indoor Topics
- Outdoor Topics

b. Targeted Areas Include:

- Entire Service Area
- Specific Neighborhoods
- Older Homes
- Other Specific Area
- Zip Code
- Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise,  *Please enter the year.*

when might you implement this practice?

d. At what frequency are inserts utilized?

- Every Billing Cycle
- Quarterly
- Other

If other, how often do you insert conservation information in water bills?  
 periodically, without specific frequency

10. Do you send out special mailings on an on-going basis?

Yes ▼

a. Typical subject matter includes:

- Drought Alerts
- Other
- Watering Restrictions
- All of These

a1. What other subject matter is covered in your special mailings?

conservation issues in / out, plant tours, water saving device give aways etc.

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

not sure

c. At what frequency are special mailings sent out?

- Monthly
- Quarterly
- Other

If other, how often do you send special mailings?

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

No ▼

- Indoor
- Outdoor

- Entire Service Area
- Other

- Zip Code
- All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

not sure

Please continue to the next question.

12.

Do you sponsor public conservation media messages on an on-going basis?

Yes ▼

a. Sponsorship level includes:

- With the District
- Independently

b. Typical subject matter includes:

- Drought Alerts
- Conservation Tips
- Watering Restrictions
- Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2004

d. What media do you utilize in your program?

- Radio
- Broadcast TV
- Cable
- Billboards

e. How much is budgeted for next FY?

\$ -

Please enter \$ above.

13. Do you utilize videos of any kind on an on-going basis?

No ▼

- Indoor Topics
- Outdoor Topics

- Schools
- Professional Groups

- Speaking Engagements
- Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

- Youth
- Adult
- Professional
- Other

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No ▼

- Indoor
- Outdoor

- Awareness

- Knowledge

- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Not sure

[Yellow box]

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Not Sure

No [dropdown arrow]

[Yellow box]

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown arrow]

[dropdown arrow]

[Yellow box]

a. What year did you begin implementing these programs?

1992

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No [dropdown arrow]

c. Do you follow-up with the customer in any manner after installation?

No [dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No [dropdown arrow]

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Not sure

[dropdown arrow]

[Yellow box]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

- Entire Service Area
- Zip Code
- Specific Neighborhoods
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Not sure

[Yellow box]

[Yellow box]

[dropdown arrow]

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

not sure

▼

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

No ▼

a. Are you considering implementing any rain sensor programs in the future?

No ▼

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼  
▼  
▼  
▼

▼

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No ▼

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes ▼

When?

▼

▼

▼

Please continue to the next question.

22. Have you implemented a rain sensor program?

No ▼

a. Are you considering implementing any rain sensor programs in the future?

No ▼

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No

a. Are you considering implementing any rain sensor programs in the future? No

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

Entire Service Area     Zip Code     Awareness     Behavior     We do not measure  
 Specific Neighborhoods     Older Homes     Knowledge     All of These

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: <input type="text" value="2001"/>	Please indicate if you enforce the corresponding ordinance/code: Enforcement practiced <input type="text"/>	Please indicate if you have analyzed water savings: Savings not analyzed <input type="text"/>
<input type="checkbox"/> Native Plant Use	Adoption Year: <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Rain Sensors	Adoption Year: <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Site Design Review			

Site Design Review

Adoption Year:



Efficient Irrigation

Adoption Year:



Turf Use Restrictions

Adoption Year:



Please continue to the next question.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No ▼

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes ▼

a. Since what year have all users been metered?

Please continue to SECTION 6.

### SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? No ▼

a. When do you plan to restructure rates for conservation?

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 2	<input type="text"/>	<input type="text"/>
Tier 4	<input type="text"/>	<input type="text"/>
Tier 5	<input type="text"/>	<input type="text"/>
Tier 6	<input type="text"/>	<input type="text"/>

Please complete rates above.

30. How much is your monthly water service charge for a typical SF customer? \$

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No ▼

Please continue to the next question.

33. Do you have a drought rate? No ▼

Please continue to SECTION 7.

### SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

Please continue to SECTION 8.

### SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?  Aggressive  Mildly Aggressive  Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?
39. Do you have plans to expand your service area? Yes  When?
40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?
41. Approximately how many residential customers do you provide with reclaimed water service?

42. How are your rates structured?

Flat Rate + per 1,000 gal. rate     Flat Rate

Per 1,000 gal.                       Other

43. Please describe any methods you employ to conserve reclaimed/reuse water below.

*Please provide description of reuse conversation methods above.*

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.



**Please provide the email addresses of those in your organization who should receive a copy of the results.**

Recipient 1 Email Address: [BMATTHEWS@ci.palm-coast.fl.us](mailto:BMATTHEWS@ci.palm-coast.fl.us) Title: Environmental Specialist

Recipient 2 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 3 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

Recipient 4 Email Address: \_\_\_\_\_ Title: \_\_\_\_\_

<b>Utility Name:</b> St. Johns County Utility Department	<b>Date Survey Completed:</b> 10-May-04
<b>Respondent's Name:</b> Frank Kenton	<b>Area Code and Phone Number:</b> (904) 471-2161x17
<b>Position/Title:</b> Administrative Manager	<b>Email:</b> fkenton@co.st-johns.fl.us
<b>Department:</b> Utility Dept.	<b>Fax:</b> (904) 461-7619
<b>Total Number of Single Family Water Customers:</b> 16,824	<b>Total Number of Multi Family Water Customers:</b> 154

### SECTION 1 - GENERAL INFORMATION

1. Do you have multiple service areas within your service boundaries? No

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes

**a. Please provide a brief description of the upgrades/maintenance performed below:**

We have replaced 2" galvanized lines with pvc lines. We have replaced all gas chlorine feed systems with liquid chlorine feed systems. SCADA upgrades on all booster stations. Installed magnetic flow meters at water plants. Added Floridan Wells at MWS and NW water plants.

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995? 70% Estimate

*Please continue to the next question.*

4. Have you implemented any conservation practices that target areas with older homes? No

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

**b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?**

**Name:**

**Email:**

**Phone:**

*Please provide contact information.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? No

Please continue to SECTION 2.

### SECTION 2 - PUBLIC AWARENESS ACTIVITIES

7. Do you have an on-going public awareness / education program? Yes

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes

**a. Conservation Topics Include:**

- Indoor Topics  
 Outdoor Topics

**b. Targeted Areas Include:**

- Entire Service Area       Older Homes       Zip Code  
 Specific Neighborhoods       Other Specific Area       Newer Homes

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**  *Please enter the year.*

**d. How are these distributed?**

- Speaking Events       Special Mailings       Other

**If other, how do you distribute your brochures and/or pamphlets?**

walk-ins, seminars, etc.

9. Do you insert water conservation information in water bills on an on-going basis? Yes

**a. Conservation Topics Include:**

- Indoor Topics  
 Outdoor Topics

**b. Targeted Areas Include:**

- Entire Service Area       Older Homes       Zip Code  
 Specific Neighborhoods       Other Specific Area       Newer Homes

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**  *Please enter the year.*

d. At what frequency are inserts utilized?  
 Every Billing Cycle     Quarterly     Other

If other, how often do you insert conservation information in water bills?  
We place a brief conservation message in the bill 4-6 times a year.

10. Do you send out special mailings on an on-going basis?

No ▼

Drought Alerts     Other     Watering Restrictions     All of These

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

Monthly     Quarterly     Other

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

Yes ▼

a. Conservation Topics Include:

Indoor  
 Outdoor

b. Targeted Areas Include:

Entire Service Area     Zip Code  
 Other     All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2003

Please continue to the next question.

12. Do you sponsor public conservation media messages on an on-going basis?

Yes ▼

a. Sponsorship level includes:

With the District  
 Independently

b. Typical subject matter includes:

Drought Alerts     Watering Restrictions  
 Conservation Tips     Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

d. What media do you utilize in your program?

Radio     Broadcast TV     Cable     Billboards

e. How much is budgeted for next FY?

\$ -

Please enter \$ above.

13. Do you utilize videos of any kind on an on-going basis?

No ▼

Indoor Topics  
 Outdoor Topics

Schools  
 Professional Groups

Speaking Engagements  
 Seminars/Workshops

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

Youth     Adult     Professional     Other

Please continue to the next question.

14. Do you promote water conservation contests on an on-going basis?

No ▼

Indoor     Outdoor

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

[Yellow box]

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No [dropdown arrow]

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

[dropdown arrow]

[Yellow box]

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

No [dropdown arrow]

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No [dropdown arrow]

[Yellow box]

[Yellow box]

[dropdown arrow]

[dropdown arrow]

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No [dropdown arrow]

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

[dropdown arrow]

[Yellow box]

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No [dropdown arrow]

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

[Yellow box]

[Yellow box]

[dropdown arrow]

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No [dropdown arrow]

- Entire Service Area
  - Specific Neighborhoods
  - Zip Code
  - Older Homes
- D:\Clients Active\St Johns\Survey Results#Database.xls  
Prepared by: Chrisell Jones, PBS

- Awareness

- Behavior

We do not measure  
St Johns Co  
May 5, 2004

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

undecided

▼

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

No ▼

a. Are you considering implementing any rain sensor programs in the future?

No ▼

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼

▼

▼

▼

▼

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No ▼

a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

No ▼

▼

▼

▼

Please continue to the next question.

22. Have you implemented a rain sensor program?

No ▼

a. Are you considering implementing any rain sensor programs in the future?

No ▼

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

▼

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

24. Do you have an incentive program for irrigation system improvements? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No

a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please continue to the next question.

Please continue to SECTION 5.

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

- Water Use Restrictions Adoption Year:
- Native Plant Use Adoption Year:
- Drought Tolerant Plant Use Adoption Year:
- Rain Sensors Adoption Year:
- Site Design Review Adoption Year:

Please indicate if you enforce the corresponding ordinance/code:

Please indicate if you have analyzed water savings:

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

Please select all that apply above.

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing that promotes efficient water use changes? No

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered? approx. 1995

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates? 2001
c. How many tiers are structured in your residential rates? 4

b. Please provide your commodity rate structure below.

Table with 3 columns: Tier, Gallon Range, \$ Rate. Rows include Tier 1 (0-4,000, \$ 3.05), Tier 2 (4,001-8,000, \$ 4.21), Tier 2 (8,001-15,000, \$ 5.67), Tier 4 (> 15,000, \$ 7.65), Tier 5, and Tier 6.

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer? \$ 9.52

Please continue to the next question.

31. Do you bill monthly or bi-monthly? monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 9.13

Please continue to the next question.

35. Please describe your wastewater residential rate structure. We charge for each 1,000 gallons used. There is a 10,000 gallon cap on sewer charges for single family and an 8,000 gallon cap for multi-family.

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you did not indicate in the first section that your utility has a reuse/claimed program, please continue to SECTION 8.

Aggressive Mildly Aggressive Passive

▼ [ ]  
[ ]  
[ ]

- Flat Rate + per 1,000 gal. rate
- Flat Rate
- Per 1,000 gal.
- Other

[ ]

▼ [ ]

[ ]

**Please continue to SECTION 9.**

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

Section 4 asks the same question over and over as the "a" part of questions 22-25.

[ ]

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey. Once we have compiled all the results, it would be our pleasure to provide you with a copy.

- YES, I would like a copy of the survey results.

**Please provide the email addresses of those in your organization who should receive a copy of the results.**



Recipient 1 Email Address:	<u><a href="mailto:fkenton@co.st-johns.fl.us">fkenton@co.st-johns.fl.us</a></u>	Title:	<u>Administrative Manager</u>
Recipient 2 Email Address:	_____	Title:	_____
Recipient 3 Email Address:	_____	Title:	_____
Recipient 4 Email Address:	_____	Title:	_____

*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> Seminole County Environmental Services Department	<b>Date Survey Completed:</b>
<b>Respondent's Name:</b> Liz Block	<b>Area Code and Phone Number:</b> 407-665-2121
<b>Position/Title:</b> Water Conservation Coordinator	<b>Email:</b> <a href="mailto:lblock@seminolecountyfl.gov">lblock@seminolecountyfl.gov</a>
<b>Department:</b> Seminole County Environmental Services Department	<b>Fax:</b> 407-665-2019
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

**Please complete all information above.**  
**SECTION 1 - GENERAL INFORMATION**

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

*Please continue to the next question.*

3. What percentage of your service area is comprised of homes built prior to 1995?  Actual

*Please continue to the next question.*

4. Have you implemented any conservation practices that target areas with older homes? No

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
Name:   
Email:   
Phone:

*Please provide contact information.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes

a. Who should we contact for additional information?  
Name:   
Email:   
Phone:

**Please continue to SECTION 2.**

**SECTION 2 - PUBLIC AWARENESS ACTIVITIES**

7. Do you have an on-going public awareness / education program? Yes

*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

If other, how do you distribute your brochures and/or pamphlets?

*Please continue to the next question.*

9. Do you insert water conservation information in water bills on an on-going basis? Yes

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

d. At what frequency are inserts utilized?  
 Every Billing Cycle  
 Quarterly  
 Other

If other, how often do you insert conservation information in water bills?

Every Billing Cycle     Quarterly     Other

No set schedule, but 4-6 times a year

Please continue to the next question.

10. Do you send out special mailings on an on-going basis?

Yes

a. Typical subject matter includes:

Drought Alerts     Other     Watering Restrictions     All of These

a1. What other subject matter is covered in your special mailings?

Offer of free irrigation evaluations to high water users, Alert that rain sensor is not working

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

c. At what frequency are special mailings sent out?

Monthly     Quarterly     Other

If other, how often do you send special mailings?

Periodically

Please continue to the next question.

11. Do you issue news releases on an on-going basis?

No

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

12. Do you sponsor public conservation media messages on an on-going basis?

No

Please also answer question 12c.

With the District  
 Independently

Drought Alerts  
 Conservation Tips

Watering Restrictions  
 Other

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

13. Do you utilize videos of any kind on an on-going basis?

Yes

a. Conservation Topics Include:

Indoor Topics  
 Outdoor Topics

b. Under what circumstances are videos utilized?

Schools     Speaking Engagements  
 Professional Groups     Seminars/Workshops

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2002

d. Please list the titles of the videos below:

Conservation easements, Florida's Aquifers the Treasure Below, Spring Waters Run Deep, This Old Pond, Water Pollution the Dirty Details, Watersheds Wetlands and Wildlife, Waterwise Landscape Irrigation, Water Saving Tips

e. What are your target audiences?

Youth     Adult     Professional     Other

If other, what are your target audiences?

Videos are played on SGTv on a rotating basis, there is no designated target audience

f. What does your annual viewing audience total?

Please enter #.

14. Do you promote water conservation contests on an on-going basis?

No

Indoor     Outdoor

Awareness     Knowledge     We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2004

Please continue to the next question.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

Yes ▼

a. Workshops/seminars are given by:

- Staff
- Non-Staff Outside Professionals

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

d. Do you track actual water use changes?

Yes ▼

By tracking water use changes

e. How are you tracking behavior effectiveness?

Please continue to SECTION 3.

**SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS**  
*The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.*

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes ▼

▼

a. What year did you begin implementing these programs?

2002

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

No ▼

c. Do you follow-up with the customer in any manner after installation?

Yes ▼

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

Yes ▼

a. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2001

Please continue to the next question.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

No ▼

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

2005

Please continue to the next question.

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

Yes ▼

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise,

2002

when might you implement this practice?

d. Approximately how many fixtures are replaced annually?

200

[Empty text box]

Please continue to the next question.

20. Do you have a leak detection program specific to residential customers?

Yes



[Empty text box]

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

c. What year did you begin this program?

1990

d. Approximately how many customers benefit annually?

don't know

e. Do you have written policies or procedures for the program?

No



Yes



f. Have you established a schedule for the program?

No



g. Do you utilize performance contracts for leak detection and/or retrofit inspections?

Yes



h. Do you perform irrigation audits?

[Empty text box]

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

No



a. Are you considering implementing any replacement/rebate, incentive and/or retrofit indoor water conservation programs in the future?

Yes



When?

2004

[Empty text box]



Please continue to the next question.

22. Have you implemented a rain sensor program?

No



a. Are you considering implementing any rain sensor programs in the future?

Yes



When?

2004

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

[Empty text box]

[Empty text box]

[Empty text box]

Please continue to the next question.

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption?

Yes



[Empty text box]

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

**Please select all that apply above.**

- c. What year did you begin these services?
- d. Approximately how many residences benefit annually?
- e. How are you tracking behavior effectiveness?
- f. Do you track actual water use changes? Yes  No

**Please continue to the next question.**

- 24. Do you have an incentive program for irrigation system improvements? No
- a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure




- 25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property? No
- a. Are you considering implementing any rain sensor programs in the future? No

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes
- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure




**Please continue to the next question.**

**Please continue to SECTION 5.**

**SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES**

*Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.*

- 26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

		Please indicate if you enforce the corresponding ordinance/code:	Please indicate if you have analyzed water savings:
<input checked="" type="checkbox"/> Water Use Restrictions	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1981"/>	Enforcement practiced <input type="checkbox"/>	Water savings analyzed <input type="checkbox"/>
<input checked="" type="checkbox"/> Native Plant Use	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1994"/>	Enforcement not practiced <input checked="" type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Drought Tolerant Plant Use	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1994"/>	Enforcement practiced <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Rain Sensors	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="Enter adoption year above."/>	Enforcement practiced <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Site Design Review	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1994"/>	Enforcement practiced <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Efficient Irrigation	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1994"/>	Enforcement practiced <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Turf Use Restrictions	Adoption Year: <input style="width: 50px; border: 1px solid black;" type="text" value="1994"/>	Enforcement practiced <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

- 27. Do you require any permitting actions specifically related to indoor and outdoor plumbing? Yes

that promotes efficient water use changes? Yes

a. Please explain below what permitting actions specifically relate to water conservation.

Adopted Florida Building Code which requires low flow toilets, showerheads, etc. Inspections required as part of building permit to receive CO

Please continue to the next question.

28. Are all governmental entities and exempt users metered? Yes

a. Since what year have all users been metered?

don't know

Please continue to SECTION 6.

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation? Yes

a. What year did you implement conservation-based rates?

2003

c. How many tiers are structured in your residential rates?

5

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-10000	\$ 0.65
Tier 2	10001-20000	\$ 1.00
Tier 2	20001-30000	\$ 2.50
Tier 4	30001-50000	\$ 3.50
Tier 5	50001 and over	\$ 4.75
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer?

\$ 6.60

Please continue to the next question.

31. Do you bill monthly or bi-monthly?

monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure? No

Please continue to the next question.

33. Do you have a drought rate? No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer? \$ 11.50

Please continue to the next question.

35. Please describe your wastewater residential rate structure.

\$2.63 per 1000 gal up to 15000

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program? 2004

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?

Aggressive

Mildly Aggressive

Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water? 0%

Please enter percentage.

39. Do you have plans to expand your service area? Yes

When?

2004

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand? 100%

41. Approximately how many residential customers do you provide with reclaimed water service? 0

Please enter the number of customers.

42. How are your rates structured?

Flat Rate + per 1,000 gal. rate

Flat Rate

Per 1,000 gal.

Other

If other, please describe your rate structure below.

Currently flat, but in the middle of a rate study to determine tiered structure

100,000 gal.

Other



43. Please describe any methods you employ to conserve reclaimed/reuse water below.

*Please provide description of reuse conversation methods above.*

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.



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*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

<b>Utility Name:</b> Volusia County Water Resources and Utilities	<b>Date Survey Completed:</b> 28-Jun-04
<b>Respondent's Name:</b> Rebecca Adkins	<b>Area Code and Phone Number:</b> 386-943-7027
<b>Position/Title:</b> Administrative Coordinator	<b>Email:</b> <a href="mailto:badkins@co.volusia.fl.us">badkins@co.volusia.fl.us</a>
<b>Department:</b> Public Works	<b>Fax:</b> 386-740-5162
<b>Total Number of Single Family Water Customers:</b>	<b>Total Number of Multi Family Water Customers:</b>

**Please complete all information above.**  
**SECTION 1 - GENERAL INFORMATION**

1. Do you have multiple service areas within your service boundaries? Yes  No

a. How many service areas do you have?

b. Please provide the names of your service areas below:

*Please continue to the next question.*

2. Have you done extensive system upgrades and/or maintenance over the past 2-5 years? Yes  No

a. Please provide a brief description of the upgrades/maintenance performed below:

*Please provide description above.*

3. What percentage of your service area is comprised of homes built prior to 1995?  
*Please enter percentage and make a selection above.*

4. Have you implemented any conservation practices that target areas with older homes? Yes  No

a. Please list the specific areas targeted below.

*Please continue to the next question.*

5. Do you have a GIS layer showing graphical depiction of the areas where specific conservation practices have been implemented? No  Yes

b. Who can we contact to identify the geographic extent of the areas where specific conservation practices have been implemented?  
 Name:   
 Email:   
 Phone:

*Please provide contact information.*

6. Do you have a reuse/reclaimed water program to serve residential customers with reclaimed water for lawn irrigation? Yes  No

a. Who should we contact for additional information?  
 Name:   
 Email:   
 Phone:

**Please continue to SECTION 2.**

**SECTION 2 - PUBLIC AWARENESS ACTIVITIES**

7. Do you have an on-going public awareness / education program? Yes  No   
*Please continue to the next question.*

8. Does your program include on-going distribution of brochures and/or pamphlets? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?  *Please enter the year.*

d. How are these distributed?  
 Speaking Events  
 Special Mailings  
 Other

If other, how do you distribute your brochures and/or pamphlets?

9. Do you insert water conservation information in water bills on an on-going basis? Yes  No

a. Conservation Topics Include:  
 Indoor Topics  
 Outdoor Topics

b. Targeted Areas Include:  
 Entire Service Area  
 Specific Neighborhoods  
 Older Homes  
 Other Specific Area  
 Zip Code  
 Newer Homes

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?  *Please enter the year.*

d. At what frequency are inserts utilized?  
 Every Billing Cycle  
 Quarterly  
 Other

If other, how often do you insert conservation information in water bills?

Every Billing Cycle     Quarterly     Other

see previous response

**10. Do you send out special mailings on an on-going basis?**

No

Please also answer question 10b.

Drought Alerts     Other     Watering Restrictions     All of These

**b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

Monthly     Quarterly     Other

**11. Do you issue news releases on an on-going basis?**

No

Please also answer question 11c.

Indoor  
 Outdoor

Entire Service Area  
 Other

Zip Code  
 All of These

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

**12. Do you sponsor public conservation media messages on an on-going basis?**

No

Please also answer question 12c.

With the District  
 Independently

Drought Alerts  
 Conservation Tips

Watering Restrictions  
 Other

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

Radio     Broadcast TV     Cable     Billboards

**13. Do you utilize videos of any kind on an on-going basis?**

Please make your selection.

Indoor Topics  
 Outdoor Topics

Schools  
 Professional Groups

Speaking Engagements  
 Seminars/Workshops

Youth     Adult     Professional     Other

**14. Do you promote water conservation contests on an on-going basis?**

No

Please also answer question 14c.

Indoor     Outdoor

Awareness

Knowledge

We do not measure

**c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?**

Please enter the year.

15. Do you sponsor landscape workshops/seminars on an on-going basis?

No

Please also answer question 15c.

- Staff
- Non-Staff Outside Professionals

- Awareness
- Knowledge

- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

### SECTION 3 - INDOOR CONSERVATION INCENTIVE PROGRAMS

The following section concerns programs and/or incentives relative to your residential indoor water conservation efforts.

16. Have you implemented any indoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes

Yes

a. What year did you begin implementing these programs?

2002

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

Yes

c. Do you follow-up with the customer in any manner after installation?

Yes

Please continue to the next question.

17. Do you provide individual consultations or evaluations on an on-going basis for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their indoor water consumption?

No

Please also answer question 15c.

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

b. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please enter the year.

18. Do you have an on-going replacement/rebate program for low-flush toilets?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. If this is an on-going program, what year was it implemented? Otherwise, when might you implement this practice?

Please fill in the year.

d. Approximately how many toilets are replaced annually?

100

19. Other than toilets, do you have an on-going indoor plumbing retrofit or exchange program?

No

Please also answer question 19c.

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These
- We do not measure

c. If this is an on-going program, what year was it implemented? Otherwise,

Please enter the year.

when might you implement this practice?

[Yellow input box]

20. Do you have a leak detection program specific to residential customers?

No [dropdown arrow]

a. Are you considering implementing any rain sensor programs in the future?

No [dropdown arrow]

[Yellow input box]

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

[Yellow input box]

[Yellow input box]

[Dropdown menu with arrows]

held workshops, gave away rain snors

Please continue to SECTION 4.

**SECTION 4 - OUTDOOR CONSERVATION INCENTIVE PROGRAMS**

The following section concerns programs and/or incentives relative to your residential outdoor water conservation efforts.

21. Have you implemented any outdoor water conservation replacement/rebate, incentive and/or retrofit programs?

Yes [dropdown arrow]

[Dropdown arrow]

[Yellow input box]

a. What year did you begin implementing these programs?

2002

b. Do you have written policies/procedures concerning implementation and maintenance of the program(s)?

[Dropdown arrow]

Please make your selection.

c. Do you follow-up with the customer in any manner after installation?

[Dropdown arrow]

Please make your selection.

d. Do you have a mobile irrigation lab program?

[Dropdown arrow]

Please make your selection.

22. Have you implemented a rain sensor program?

[Dropdown arrow]

Please make your selection.

[Dropdown arrow]

[Yellow input box]

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

[Yellow input box]

[Yellow input box]

see previous answers

23. Do you provide individual consultations or evaluations for private residential customers who are interested in recommendations that will help them to conserve and/or reduce their outdoor water consumption?

No [dropdown arrow]

Please also answer question 23a.

a. Are you considering implementing any rain sensor programs in the future?

[Dropdown arrow]

Please make your selection.

[Yellow input box]

Entire Service Area

Zip Code

Awareness

Behavior

We do not measure

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

24. Do you have an incentive program for irrigation system improvements?

Yes

a. Service areas targeted include:

- Entire Service Area
- Specific Neighborhoods
- Zip Code
- Older Homes

b. How have you measured effectiveness?

- Awareness
- Knowledge
- Behavior
- All of These
- We do not measure

Please select all that apply above.

c. What year did you begin this program?

Please fill in the year.

d. Approximately how many improvements are recorded annually?

Please complete shaded area.

inconjuction with WAV and the District

Please make your selection.

25. Do you have an incentive program for residential customers to use drought-tolerant or xeriscape/Florida-friendly landscaping on their property?

No

Please also answer question 25a.

a. Are you considering implementing any rain sensor programs in the future?

Please make your selection.

- Entire Service Area
- Specific Neighborhoods

- Zip Code
- Older Homes

- Awareness
- Knowledge

- Behavior
- All of These

We do not measure

Please continue to SECTION 5.

### SECTION 5 - LOCAL ORDINANCES, RESOLUTIONS AND BUILDING CODES

Please do not consider any State or Water Management District policies, practices, or directives when making your selections below.

26. Specifically related to residential landscaping, please select which of the following components are contained in your adopted Ordinances, Resolutions, and/or Building Codes and the year adopted; or what year you plan adopt. Also indicate if you have performed an analysis to determine associated water savings.

Water Use Restrictions

Adoption Year:

Enter adoption year above.

Please indicate if you enforce the corresponding ordinance/code:

Make selection above.

Please indicate if you have analyzed water savings:

Make selection above.

Native Plant Use

Adoption Year:

Drought Tolerant Plant Use

Adoption Year:

Rain Sensors

Adoption Year:

Site Design Review

Adoption Year:

Efficient Irrigation

Adoption Year:

Turf Use Restrictions

Adoption Year:

27. Do you require any permitting actions specifically related to indoor and outdoor plumbing

No

that promotes efficient water use changes?

No

[Empty yellow input box]

Please continue to the next question.

28. Are all governmental entities and exempt users metered?

Yes

a. Since what year have all users been metered?

[Empty yellow input box]

Please enter the year.

[Empty yellow input box]

SECTION 6 - WATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

29. Are your water rates structured to promote water conservation?

Yes

a. What year did you implement conservation-based rates?

2002

c. How many tiers are structured in your residential rates?

4

b. Please provide your commodity rate structure below.

	Gallon Range	\$ Rate
Tier 1	0-7	1.54/2.91
Tier 2	7-14	1.76/3.14
Tier 2	14-21	2023/3.61
Tier 4	over 21	4.62/6.01
Tier 5		
Tier 6		

Please continue to the next question.

30. How much is your monthly water service charge for a typical SF customer?

[Empty yellow input box]

Please enter service charge for one EDU.

31. Do you bill monthly or bi-monthly?

monthly

Please continue to the next question.

32. Do you impose a surcharge for excessive residential water use that is not reflected in the inclined rate structure?

No

[Empty yellow input box]

[Empty yellow input box]

Please continue to the next question.

33. Do you have a drought rate?

No

Please continue to SECTION 7.

SECTION 7 - WASTEWATER RATE STRUCTURE

The following questions relate ONLY to single-family residential customers with a 5/8-inch or 3/4-inch water meter.

34. How much is your monthly wastewater service charge for a typical SF customer?

[Empty yellow input box]

Please enter service charge for one EDU.

35. Please describe your wastewater residential rate structure.

Base rate & gallons up to 14,000

Please continue to SECTION 8.

SECTION 8 - REUSE / RECLAIMED WATER PROGRAM

Since you indicated in the first section that your utility has a reuse/reclaimed program, please complete the following section.

36. When did you begin your reuse/reclaimed water program?

1986

37. How would you describe your recent efforts to promote reuse/reclaimed water use changes?within your service area to residential customers?

Aggressive

Mildly Aggressive

Passive

38. What approximate percentage of your entire residential service area currently has access to reclaimed water?

5%

39. Do you have plans to expand your service area?

Yes

When?

[Empty yellow input box]

Please enter the year.

40. What approximate percentage of your reclaimed residential customers have a metering device to measure demand?

100%

41. Approximately how many residential customers do you provide with reclaimed water service?

577

42. How are your rates structured?

Flat Rate + per 1,000 gal. rate

Flat Rate

Per 1,000 gal.

Other

[Empty yellow input box]

100,000 gal.

Other



43. Please describe any methods you employ to conserve reclaimed/reuse water below.

*Please provide description of reuse conversation methods above.*

**SECTION 9 - COMMENTS**

*The following section is provided if you have any comments or additional information you would like to share at this time.*

On behalf of the St. Johns River Water Management District, thank you for participating in this portion of our survey.  
Once we have compiled all the results, it would be our pleasure to provide you with a copy.

YES, I would like a copy of the survey results.



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*Prepared by PBS&J exclusively for the St. Johns River Water Management District, Department of Water Supply Management, May 2004*

**POTENTIAL WATER SAVINGS OF  
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APPENDIX C – ECONOMETRIC MODELING**

**APPENDIX C – ECONOMETRIC MODELING**

**A. Using Regression Models**

A common purpose or use for the estimation of regression models is for the development of inferences or estimates of changes in demand, or the dependent variable, from changes in explanatory or independent variables. This implies the presumption of ‘causality’ which regression does not prove or disprove; however, a model developed from accepted economic theory that meets the standards of hypothesis testing does indicate a likely change in demand from one or a number of explanatory variables. Thus, for this analysis, we developed a series of spreadsheet models using the results of each regression model to simulate the expected change in water use from a change in an explanatory variable. A sample of this model is illustrated in Table Appendix C-1 on the second following page.

There are four basic components of these models. First, the area indicated as Section A in Table 1 is simply the standard output of the statistical program used to estimate each regression model. Most importantly, this output provides the estimated coefficients for each independent or explanatory variable. In addition, the output includes several standard statistics of the model. Next, the area labeled Section B is a summary of *actual* average water use in gallons (also shown in logarithmic form) and *estimated* average water use using the model data in its proper form multiplied by the coefficients from Section A. This simply shows that the model is properly estimating water use using the resulting coefficients and the model data.

The next area, Section C, is a slight modification of the calculation of estimated water use. The box labeled “CURRENT” simply provides the average value of each explanatory variable from the model data used to estimate the regression model. Most importantly, the area labeled “NEW VALUE” is designed to allow the user to change the value of any one or more explanatory variables, thereby resulting in a different level of estimated water use. If no value is entered into the “NEW VALUE” box, the model uses the default value from the model data and will also calculate at the model estimate as shown in Section B. The change in water use is expressed as a new estimate of total

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average water use, the change in use from actual, and as a percentage of actual water use prior to the change.

Finally, Section D converts estimated water use into total annual demand using the total number of customers in the model data set. If a change is made to an explanatory variable, the change in average monthly demand is also converted to an annual basis as well as a change in terms of million gallons per day (mgd).

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE APPENDIX C-1. SAMPLE UTILITY MODEL**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.361	0.445	3.059	0.002
LOG(AC-(ADJ_SF/43660))	0.083	0.020	4.058	0.000
LOG(HTD_SF)	0.081	0.061	1.340	0.181
POOL_PCT	0.004	0.001	6.638	0.000
SWR_PCT	-0.003	0.000	-9.367	0.000
REUSE_PCT	-0.002	0.000	-4.129	0.000
R-squared	0.459	Mean dependent var		1.787
Adjusted R-squared	0.454	S.D. dependent var		0.336
S.E. of regression	0.248	Akaike info criterion		0.059
Sum squared resid	37.070	Schwarz criterion		0.102
Log likelihood	-11.833	F-statistic		102.128
Durbin-Watson stat	1.187	Prob(F-statistic)		0.000

Actual and Estimated Water Use	ACTUAL	MODEL EST	ADJ EST	VAR
Average monthly use (gal)	5,969	5,969	5,969	-
Dependent Variable: LOG(CONS_AVG)	1,787	1,787	1,787	0%

Regression Output	ANNUAL USE	Total Change in Water Use
	3,181 mgal	Customers mgal
		44,415
		0%

Estimate of Demand from Change in Explanatory Variable	NEW VALUE	CURRENT
	-1,616	0.20
	7,430	1,885
	32	32
	66	66
	6	6

Calculation of Total Use and Estimated Change in Total Use	Chg in per capita use
	0 gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

### ***B. Utility Data Sets***

Billing history from eight (8) different utilities was received as a result of the survey and subsequent data request. Only five (5) of these samples were usable for the econometric modeling process. Errors occurred during the data extraction process that required that three (3) of the billing history data sets be not used. The following table provides a summary of the included data sets;

Utility	Average Customers	Average Monthly Water Use (gal)	Subdivisions	Census Tracts
Utility A	44,415	5,969	993	41
Utility B	31,202	5,276	441	38
Utility C	35,767	15,760	91	38
Utility D	38,450	11,293	473	33
Utility E	7,826	6,559	144	15
Combined Utilities	157,660	9,381	2,142	165

These data sets were appended with property and census data based on subdivision and census tract identifiers linked with each individual property location. Additional information regarding targeted conservation programs was also to be appended to the data at the subdivision and census tract levels in order to estimate the impact of these programs. However, only one utility, Utility D, provided data regarding a targeted irrigation program that was used in model specification. As a result, the individual and combined utility models were predominately specified using price, demographic characteristics, property characteristic, and the availability of irrigation substitutes in order to explain water use.

Initially, an individual model for each utility based on subdivisions was specified and estimated before a combined utility model was developed based on census tracts. The results of the individual models are described in the following section.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

### C. Individual Utility Models

#### UTILITY A

The billing history provided by this utility covered roughly 44,000 residential customers from several municipal jurisdictions<sup>3</sup>. This utility was able to provide account data that included types of service by account (i.e. water, sewer, and reclaimed water), as well as identifiers for service areas or whether accounts are located within City limits, and the total water and sewer charge for each account bill. As a result, several variations of this data, including different municipal subsets, were specified and estimated.

The property data appended to this billing history included a good range of physical characteristics of properties by subdivision. This data included total lot size, land, building, and total property values, both total and heated square footage, and data regarding pools.

The following models were specified and estimated using this utility data set:

1. Model A.1 – this model included all jurisdictions and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of the rate of a combined water and sewer bill per 1,000 gallons of water use [LOG(TOT\_COST)], average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average heated square footage of the household [LOG(HTD\_SF)], and the percentage of homes with a pool [(POOL\_PCT)] and percentage of accounts using reclaimed water [(REUSE\_PCT)].
2. Model A.2 – this model included all jurisdictions and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average heated square footage of the household

---

<sup>3</sup> This utility provides water service and water billing services to several municipal jurisdictions in addition to serving and billing its own retail customers.

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[LOG(HTD\_SF)], and the percentage of homes with a pool [(POOL\_PCT)], percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].

3. Model A.3 – this model included a subset of the primary utility municipal customers and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average heated square footage of the household [LOG(HTD\_SF)], and the percentage of homes with a pool [(POOL\_PCT)], percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].
  
4. Model A.4 – this model included a subset of a secondary municipal jurisdiction and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average heated square footage of the household [LOG(HTD\_SF)], and the percentage of homes with a pool [(POOL\_PCT)], percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].

Overall, each model has an acceptable level of explanatory power and individual estimators have the correct sign and acceptable t-scores (see Regression Outputs). Table Appendix C-2 below provides a summary of the results of the models described above.

Table Appendix C-2 shows, for each model, the Adjusted R<sup>2</sup> value, the *F-statistic*, the number of observations for each model, and the coefficients for each independent variable.

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**Table Appendix C-2. Summary of Utility A Models**

MODEL	A.1	A.2	A.3	A.4
Adjusted R <sup>2</sup>	57%	45%	63%	71%
F-statistic	164.54	102.13	39.71	98.63
Observations (n=)	609	609	117	205
Independent variables:				
Constant	1.7728	1.3612	1.5590	-1.1010
Average cost (W&S) per 1,000 gallons of water use	-0.3913			
Yard area (acres), total lot size less developed area	0.0142	0.0828	0.0618	
Average living area (square feet)	0.0864	0.0812	0.0360	0.4663
Age of housing unit				-0.1275
Percent of homes with pool (%)	0.0038	0.0044	0.0066	0.0041
Percent of accounts with sewer (%)		-0.0026	-0.0008	-0.0021
Percent of accounts using reclaimed (%)	-0.0016	-0.0021	-0.0028	-0.0075

These models allow two distinct inferences to be made regarding average water use within this utility which are discussed below.

**Indoor versus Outdoor Water Use**

First, both the variables for the size of yard and the use of reclaimed water, an irrigation substitute, allow for the estimate of the proportion of indoor versus outdoor water use. Based on the modeling results, if the size of yard variable is taken to zero, thus eliminating demand for outdoor watering, the result is a reasonable estimate for indoor water use, holding all other variables constant. In addition, if the percentage of accounts using reclaimed water as a substitute for irrigation is increased to 100%, the result is also a reasonable estimate of indoor water use, holding all else constant. Table Appendix C-3 below provides a summary of the estimate between indoor and outdoor water use using this technique for each model for Utility A (see also Table A.1-A.9). This table shows that the estimate of indoor water use is consistent across the model runs and is also consistent with the results of the American Water Works Association (AWWA) publication “Residential End Uses of Water, 1999”, which determined that indoor water use ranged from **45** to **69** gallons per day for conserving and non conserving households respectively.

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**Table Appendix C-3. Summary of Indoor-Outdoor Estimated Water Use (gpcd)**

MODEL	A.1	A.2	A.3	A.4
Total per capita use (gal per day)	79	79	76	99
Indoor estimate:				
Elimination of yard area	67	51	54	
100% reclaimed water use	68	65	59	48
Average	68	58	57	48
Outdoor Estimate	12	21	20	51

Based on actual per capita water use, it is therefore reasonable to assume that the difference between total water use and these indoor estimates results in the outdoor portion of water use. The subset used in the model A.4 potentially has double the average outdoor water use compared with the subset from model A.3, and potentially more opportunity for conservation, holding all else constant.

**Price Elasticity**

The second inference we are able to draw involves the price elasticity of water. Since the variable for the average cost of the total bill per 1,000 gallons of water was significant and exhibited the correct response (as price goes up, demand declines) we are able to calculate the average price elasticity of demand using Model A.1. In addition, Model A.2 was specified with the share of combined water and sewer customers to substitute for the impact of price. This allows us to estimate a second price elasticity and test the validity of using the share of sewer customers in lieu of not having total charge data, which was the case for all other utilities<sup>4</sup>. Using Model A.1, the regression coefficient for average cost of water generates an average price elasticity of approximately -0.3. Similarly, using Model A.2, a shift in the share of accounts with sewer results in an implied price elasticity of between -0.2 and -0.3.

---

<sup>4</sup> Total monthly amount billed was requested from all utilities as a part of the billing data requested; however, only Utility A provided the monthly billed amount in the billing data received. Therefore, it was important to test the validity of using the presence of sewer service, which was provided by all utilities, in lieu of the total charge data prior to modeling the other utilities.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model Results

The modeling results for Utility A are presented on the following pages and are described below.

### Model A.1

A Model Summary for Model A.1, including the regression output, is presented on the second following page.

Several scenarios changing the value of an explanatory variable were developed using Model A.1, the results of which are presented in Tables A1 through A3 and are presented following the above referenced Model Summary and are described below.

#### Table A1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –

Table A1 presents the results of Model A.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 67 gallons per day. The conclusion drawn from this model is that 67 gallons per capita per day is indoor water use and 13 gallons per capita per day  $(79 - 67)$ <sup>5</sup> is attributed to outdoor water use.

#### Table A2 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use

Table A2 presents the results of Model A.1 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 68 gallons per day. The conclusion drawn from this model is that 68 gallons per capita per day is indoor water use and 11 gallons per capita per day  $(79 - 68)$  is attributed to outdoor water use<sup>6</sup>.

---

<sup>5</sup> The difference between 13 and  $(79-67)$  is attributable to rounding.

<sup>6</sup> It should be noted that if reclaimed water is available at a lower price than potable water (which is typically the case), outdoor reclaimed water use will likely be higher than the amount attributed to outdoor potable water use due to the effect of elasticity of demand upon reclaimed water use (lower price than

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*Table A3 – Price Elasticity Estimate from Change in Average Cost* – Table A3 presents the results of Model A.1 in which average cost of water and sewer service is increased by approximately 17%, thus causing a reduction in water use. The “New Value” box shows the combined average cost per 1,000 gallons of water and sewer service set at \$7.25, compared to the current cost of \$6.22 (a 17% increase) and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 75 gallons per day, or a 5% reduction. This represents an elasticity coefficient of -0.35<sup>7</sup>.

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potable water). This is applicable to all model analyses involving substitution of reclaimed water for potable water.

<sup>7</sup> An additional analysis of the estimate of elasticity is presented in Model A.2, Table A6, by increasing the percent of accounts with both water and sewer service (thus increasing the average cost), resulting in an elasticity coefficient of -0.20.

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*Utility Model A.1*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(TOT_COST) LOG(AC-(ADJ_SF/43560))
LOG(HTD_SF) POOL_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(TOT_COST) + C(3)*LOG(AC-
(ADJ_SF/43560)) + C(4)*LOG(HTD_SF) + C(5)*POOL_PCT +
C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 1.772773557 - 0.3913299175*LOG(TOT_COST) +
0.01422653547*LOG(AC-(ADJ_SF/43560)) +
0.08642773131*LOG(HTD_SF) + 0.003756533877*POOL_PCT -
0.001636193089*REUSE_PCT
```

**Regression Output**

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/24/04 Time: 17:00  
Sample(adjusted): 2 991 IF AVG\_LOC >19  
Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.772774	0.394583	4.492779	0.0000
LOG(TOT_COST)	-0.391330	0.023332	-16.77237	0.0000
LOG(AC-(ADJ_SF/43560))	0.014227	0.018363	0.774720	0.4388
LOG(HTD_SF)	0.086428	0.053489	1.615791	0.1067
POOL_PCT	0.003757	0.000587	6.403858	0.0000
REUSE_PCT	-0.001636	0.000440	-3.715466	0.0002
R-squared	0.577054	Mean dependent var		1.786573
Adjusted R-squared	0.573547	S.D. dependent var		0.335562
S.E. of regression	0.219133	Akaike info criterion		-0.188473
Sum squared resid	28.95562	Schwarz criterion		-0.145006
Log likelihood	63.38989	F-statistic		164.5430
Durbin-Watson stat	1.226625	Prob(F-statistic)		0.000000



# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A1. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**UTILITY MODEL A.1**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/24/04 Time: 17:00  
 Sample (adjusted): 2 991 IF AVG\_LOC >19  
 Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773	0.395	4.493	0.000
LOG(TOT_COST)	-0.391	0.023	-16.772	0.000
LOG(AC-(ADJ_SF/43560))	0.014	0.018	0.775	0.439
LOG(HTD_SF)	0.086	0.053	1.616	0.107
POOL_PCT	0.004	0.001	6.404	0.000
REUSE_PCT	-0.002	0.000	-3.715	0.000

R-squared 0.577 Mean dependent var 1.787  
 Adjusted R-squared 0.574 S.D. dependent var 0.336  
 S.E. of regression 0.219 Akaike info criterion -0.188  
 Sum squared resid 28.956 Schwarz criterion -0.145  
 Log likelihood 63.390 F-statistic 164.543  
 Durbin-Watson stat 1.227 Prob(F-statistic) 0.000

<b>ANNUAL USE</b>
3,181 mgal

<b>Total Conservation Opportunity</b>	<b>mgal</b>
Customers	44,415
	(507)
	-16%
	(1.4)

<b>ADJ EST</b>	<b>VAR</b>
5,018	(951)
1.613	-16%

<b>ACTUAL</b>	<b>MODEL EST</b>	<b>CURRENT</b>	<b>NEW VALUE</b>
5,969	5,969	1,773	
1,787	1,787	-0.715	
		\$ 6.22	
		-0.023	0.00
		0.642	
		0.120	
		-0.011	

Constant 1.773  
 Average cost (W&S) per 1,000 gallons of water use -0.715  
 Yard area (acres), total lot size less developed area -0.023  
 Average living area (square feet) 1,685  
 Percent of homes with pool (%) 32  
 Percent of accounts using reclaimed (%) 6

Average Household Size (US Census)	2.47	Chg in per capita use
Per Capita Use per Day	79	(13) gpd

% Chg in Price 0%  
 e = 0.00

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A2. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

**UTILITY MODEL A.1**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/24/04 Time: 17:00  
 Sample(adjusted): 2 991 IF AVG\_LOC >19  
 Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773	0.395	4.493	0.000
LOG(TOT_COST)	-0.391	0.023	-16.772	0.000
LOG(AC-(ADJ_SF/43560))	0.014	0.018	0.775	0.439
LOG(HTD_SF)	0.086	0.053	1.616	0.107
POOL_PCT	0.004	0.001	6.404	0.000
REUSE_PCT	-0.002	0.000	-3.715	0.000
R-squared	0.577	Mean dependent var		1.787
Adjusted R-squared	0.574	S.D. dependent var		0.336
S.E. of regression	0.219	Akaike info criterion		-0.188
Sum squared resid	28.956	Schwarz criterion		-0.145
Log likelihood	63.390	F-statistic		164.543
Durbin-Watson stat	1.227	Prob(F-statistic)		0.000

<b>ANNUAL USE</b>	3,181 mgal
-------------------	------------

<b>Total Conservation Opportunity</b>	mgal	
Customers	44,415	(451)
		-14%
		(1.2)

<b>ADJ EST</b>	<b>VAR</b>
5,122	(847)
1.634	-14%

<b>ACTUAL</b>	<b>MODEL EST</b>
5,969	5,969
1.787	1.787

	ADJ EST	VAR	NEW VALUE	% Chg in Price	e =
Constant	1.773			0%	0.00
Average cost (W&S) per 1,000 gallons of water use	1.827		6.22		
Yard area (acres), total lot size less developed area	-1.616		0.20		
Average living area (square feet)	7.430		1,685		
Percent of homes with pool (%)	32		32		
Percent of accounts using reclaimed (%)	6		6		

Average Household Size (US Census)	2.47	Chg in per capita use
Per Capita Use per Day	79	(1) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A3. PRICE ELASTICITY ESTIMATE FROM CHANGE IN AVERAGE COST**

<b>UTILITY MODEL A.1</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773	0.395	4.493	0.000
LOG(TOT_COST)	-0.391	0.023	-16.772	0.000
LOG(AC-(ADJ_SF/43560))	0.014	0.018	0.775	0.439
LOG(HTD_SF)	0.086	0.053	1.616	0.107
POOL_PCT	0.004	0.001	6.404	0.000
REUSE_PCT	-0.002	0.000	-3.715	0.000
R-squared	0.577	Mean dependent var	1.787	
Adjusted R-squared	0.574	S.D. dependent var	0.336	
S.E. of regression	0.219	Akaike info criterion	-0.188	
Sum squared resid	28.956	Schwarz criterion	-0.145	
Log likelihood	63.390	F-statistic	164.543	
Durbin-Watson stat	1.227	Prob(F-statistic)	0.000	

Average monthly use (gal)	5,969	MODEL EST	5,969
Dependent Variable: LOG(CONS_AVG)	1,787	1,787	

Constant	1.773	CURRENT	6.22
Average cost (W&S) per 1,000 gallons of water use	1.827	\$	7.25
Yard area (acres), total lot size less developed area	-1.616	0.20	
Average living area (square feet)	7.430	1,685	
Percent of homes with pool (%)	32	32	
Percent of accounts using reclaimed (%)	6	6	

Average Household Size (US Census)	2.47	Chg in per capita use	(5) gpd
Per Capita Use per Day	79		

ADJ EST	VAR
5,620	(349)
1,726	-6%

ANNUAL USE	
3,181 mgal	

Total Conservation Opportunity	
Customers	44,415
mgal	(186)
	-6%
	(0.5)

% Chg in Price	e =
17%	-0.35

NEW VALUE
\$
7.25

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model A.2

The difference in this model and Model A.1 is that in Model A.1, the cost of water is represented by the average cost of water and sewer service, whereas, in this model the cost of water is represented by the percentage of accounts with sewer service (higher cost than water only accounts).

A Model Summary for Model A.2, including the regression output, is presented on the second following page.

Similar scenarios were developed using Model A.2 as were made with Model A.1, the results of which are presented in Tables A4 through A6, which are presented following the above referenced Model Summary and are described below.

### Table A4 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –

Table A4 presents the results of Model A.2 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 51 gallons per day. The conclusion drawn from this model is that 51 gallons per day per capita is indoor water use and 28 gallons per day per capita (79 – 51) is attributed to outdoor water use.

### Table A5 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use

– Table A5 presents the results of Model A.2 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 65 gallons per day. The conclusion drawn from this model is that 65 gallons per capita per day is indoor water use and 14 gallons per capita per day (79 – 65) is attributed to outdoor water use.

### Table A6 – Price Elasticity Estimate from Change in Average Cost

– Table A6 presents the results of Model A.2 in which percent of accounts with sewer service is increased from 66% to 100%, thus causing a reduction in water use. The “New

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Value” box shows the percent of accounts with sewer is set at 100%, compared to the current percentage of 66%, and the bottom line of the table shows that use per capita is reduced from 79 gallons per day to 73 gallons per day. This represents an elasticity coefficient of -0.20<sup>8</sup>.

---

<sup>8</sup> An additional analysis of the estimate of elasticity is presented in Model A.1, TableA3, by increasing the average cost of water and sewer service, resulting in an elasticity coefficient of -0.35.

**POTENTIAL WATER SAVINGS OF  
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*Utility Model A.2*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(AC-(ADJ_SF/43560)) LOG(HTD_SF)
POOL_PCT SWR_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(AC-(ADJ_SF/43560)) +
C(3)*LOG(HTD_SF) + C(4)*POOL_PCT + C(5)*SWR_PCT +
C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 1.361235183 + 0.0827843541*LOG(AC-
(ADJ_SF/43560)) + 0.08120621526*LOG(HTD_SF) +
0.00440005793*POOL_PCT - 0.002584251798*SWR_PCT -
0.002052883839*REUSE_PCT
```

**Regression Output**

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/24/04 Time: 17:00  
Sample(adjusted): 2 991 IF AVG\_LOC >19  
Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.361235	0.445038	3.058695	0.0023
LOG(AC-(ADJ_SF/43560))	0.082784	0.020402	4.057667	0.0001
LOG(HTD_SF)	0.081206	0.060583	1.340421	0.1806
POOL_PCT	0.004400	0.000663	6.637868	0.0000
SWR_PCT	-0.002584	0.000276	-9.367269	0.0000
REUSE_PCT	-0.002053	0.000497	-4.129360	0.0000
R-squared	0.458533	Mean dependent var	1.786573	
Adjusted R-squared	0.454043	S.D. dependent var	0.335562	
S.E. of regression	0.247943	Akaike info criterion	0.058566	
Sum squared resid	37.06981	Schwarz criterion	0.102032	
Log likelihood	-11.83337	F-statistic	102.1282	
Durbin-Watson stat	1.187321	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE A4. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**UTILITY MODEL A.2**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/24/04 Time: 17:00  
 Sample(adjusted): 2 991 IF AVG\_LOC >19  
 Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.361	0.445	3.059	0.002
LOG(AC-(ADJ_SF/43560))	0.083	0.020	4.058	0.000
LOG(HTD_SF)	0.081	0.061	1.340	0.181
POOL_PCT	0.004	0.001	6.638	0.000
SWR_PCT	-0.003	0.000	-9.367	0.000
REUSE_PCT	-0.002	0.000	-4.129	0.000
R-squared	0.459	Mean dependent var	1.787	
Adjusted R-squared	0.454	S.D. dependent var	0.336	
S.E. of regression	0.248	Akaike info criterion	0.059	
Sum squared resid	37.070	Schwarz criterion	0.102	
Log likelihood	-11.833	F-statistic	102.128	
Durbin-Watson stat	1.187	Prob(F-statistic)	0.000	

<b>ANNUAL USE</b>
3,181 mgal

<b>Total Conservation Opportunity</b>	<b>Customers</b>	<b>mgal</b>
44,415	(1,129)	(3.1)
		-35%

<b>ADJ EST</b>	<b>VAR</b>
3,852	(2,117)
1,348	-35%

<b>NEW VALUE</b>
0.00

<b>CURRENT</b>
0.20
1,685
32
66
6

<b>ACTUAL</b>	<b>MODEL EST</b>
5,969	5,969
1,787	1,787

Constant	1.361
Yard area (acres), total lot size less developed area	-0.134
Average living area (square feet)	0.603
Percent of homes with pool (%)	0.141
Percent of accounts with sewer (%)	-0.172
Percent of accounts using reclaimed (%)	-0.013

Average Household Size (US Census)	2.47
Per Capita Use per Day	79

<b>% Chg in Price</b>
0%
e =
0.00

<b>Chg in per capita use</b>
(28) gpd

<b>ADJ EST</b>	<b>VAR</b>
2.47	
51	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE A5. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

**UTILITY MODEL A.2**

Dependent Variable: LOG(CONS\_AVG)

Method: Least Squares

Date: 09/24/04 Time: 17:00

Sample(adjusted): 2 991 IF AVG\_LOC >19

Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.361	0.445	3.059	0.002
LOG(AC-(ADJ_SF/A3560))	0.083	0.020	4.058	0.000
LOG(HTD_SF)	0.081	0.061	1.340	0.181
POOL_PCT	0.004	0.001	6.638	0.000
SWR_PCT	-0.003	0.000	-9.367	0.000
REUSE_PCT	-0.002	0.000	-4.129	0.000
R-squared	0.459	Mean dependent var	1.787	
Adjusted R-squared	0.454	S.D. dependent var	0.336	
S.E. of regression	0.248	Akaike info criterion	0.059	
Sum squared resid	37.070	Schwarz criterion	0.102	
Log likelihood	-11.833	F-statistic	102.128	
Durbin-Watson stat	1.187	Prob(F-statistic)	0.000	

<b>ANNUAL USE</b>	3,181 mgal
-------------------	------------

<b>Total Conservation Opportunity</b>	mgal
<b>Customers</b>	44,415
	(556)
	-17%
	(1.5)

<b>ADJ EST</b>	<b>VAR</b>
4.926	(1,043)
1.595	-17%

<b>NEW VALUE</b>
-1.616
7.430
32
66
100
100

<b>CURRENT</b>
0.20
1.685
32
66
100

<b>ACTUAL</b>	<b>MODEL EST</b>
5,969	5,969
1.787	1.787

Average monthly use (gal)

Constant	1.361
Yard area (acres), total lot size less developed area	-0.134
Average living area (square feet)	0.603
Percent of homes with pool (%)	0.141
Percent of accounts with sewer (%)	-0.172
Percent of accounts using reclaimed (%)	-0.013

Average Household Size (US Census)  
Per Capita Use per Day

2.47	Chg in per capita use
79	(14) gpd

% Chg in Price	0%	e =	0.00
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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A6. PRICE ELASTICITY ESTIMATE FROM CHANGE IN AVERAGE COST**

**UTILITY MODEL A.2**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/24/04 Time: 17:00  
 Sample (adjusted): 2 991 IF AVG\_LOC > 19  
 Included observations: 609 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.361	0.445	3.059	0.002
LOG(AC-(ADJ_SF/43560))	0.083	0.020	4.058	0.000
LOG(HTD_SF)	0.081	0.061	1.340	0.181
POOL_PCT	0.004	0.001	6.638	0.000
SWR_PCT	-0.003	0.000	-9.367	0.000
REUSE_PCT	-0.002	0.000	-4.129	0.000
R-squared	0.459	Mean dependent var	1.787	
Adjusted R-squared	0.454	S.D. dependent var	0.336	
S.E. of regression	0.248	Akaike info criterion	0.059	
Sum squared resid	37.070	Schwarz criterion	0.102	
Log likelihood	-11.833	F-statistic	102.128	
Durbin-Watson stat	1.187	Prob(F-statistic)	0.000	

<b>ACTUAL</b>	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>
5,969	5,969	5,474	(495)
1,787	1,787	1,700	-8%

<b>ANNUAL USE</b>	<b>Total Conservation Opportunity</b>
3,181 mgal	mgal
	Customers
	44,415
	(264)
	-8%
	(0.7)

<b>NEW VALUE</b>	<b>% Chg in Price</b>
CURRENT	
0.20	
1,685	
32	
66	42%
6	e =
	-0.20

Average monthly use (gal)	5,969
Dependent Variable: LOG(CONS_AVG)	1,787

Constant	1.361
Yard area (acres), total lot size less developed area	-0.134
Average living area (square feet)	0.603
Percent of homes with pool (%)	0.141
Percent of accounts with sewer (%)	-0.172
Percent of accounts using reclaimed (%)	-0.013

Average Household Size (US Census)	2.47
Per Capita Use per Day	79

<b>Chg in per capita use</b>
(7) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model A.3

Models A.1 and A.2 were run on the total data set received from Utility A (which included customers in other municipal jurisdictions to whom Utility A provided water and/or sewer service), whereas, this model was run on only a subset of the primary utility municipal customers of Utility A. Also, in this model the cost of water is represented by the percentage of accounts with sewer service (higher cost than water only accounts).

A Model Summary for Model A.3, including the regression output, is presented on the following page.

Similar scenarios were developed using Model A.3 as were made with Model A.1 (except that price elasticity was not run in Model A.3), the results of which are presented in Tables A7 and A8, which are presented following the above referenced Model Summary and are described below.

### Table A7 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –

Table A4 presents the results of Model A.3 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 76 gallons per day to 54 gallons per day. The conclusion drawn from this model is that 54 gallons per capita per day is indoor water use and 23 gallons per capita per day  $(76 - 54)$ <sup>9</sup> is attributed to outdoor water use.

---

<sup>9</sup> The difference between 23 and  $(76-54)$  is attributable to rounding

**POTENTIAL WATER SAVINGS OF  
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*APPENDIX C – ECONOMETRIC MODELING*

*Table A8 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use*

– Table A8 presents the results of Model A.3 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 76 gallons per day to 59 gallons per day. The conclusion drawn from this model is that 59 gallons per capita per day is indoor water use and 17 gallons per capita per day (76 – 17) is attributed to outdoor water use.

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*Utility Model A.3*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(AC-(ADJ_SF/43560)) LOG(HTD_SF)
POOL_PCT SWR_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(AC-(ADJ_SF/43560)) +
C(3)*LOG(HTD_SF) + C(4)*POOL_PCT + C(5)*SWR_PCT +
C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 1.558990358 + 0.06175770473*LOG(AC-
(ADJ_SF/43560)) + 0.03598714446*LOG(HTD_SF) +
0.006608687609*POOL_PCT - 0.0008243399716*SWR_PCT -
0.002805536843*REUSE_PCT
```

**Regression Output**

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/25/04 Time: 13:24  
Sample(adjusted): 4 955 IF SUB\_UTILA = 1 AND AVG\_LOC >19  
Included observations: 117 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.558990	0.632051	2.466559	0.0152
LOG(AC-(ADJ_SF/43560))	0.061758	0.020811	2.967489	0.0037
LOG(HTD_SF)	0.035987	0.087100	0.413168	0.6803
POOL_PCT	0.006609	0.001413	4.677902	0.0000
SWR_PCT	-0.000824	0.000363	-2.272988	0.0250
REUSE_PCT	-0.002806	0.000710	-3.954115	0.0001
R-squared	0.641399	Mean dependent var	1.782035	
Adjusted R-squared	0.625246	S.D. dependent var	0.225243	
S.E. of regression	0.137888	Akaike info criterion	-1.074836	
Sum squared resid	2.110440	Schwarz criterion	-0.933186	
Log likelihood	68.87793	F-statistic	39.70729	
Durbin-Watson stat	1.329227	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE A7. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**UTILITY MODEL A.3**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/25/04 Time: 13:15  
 Sample (adjusted): 4 955 IF SUBUTILA = 1 AND AVG\_LOC >19  
 Included observations: 117 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.559	0.632	2.467	0.015
LOG(AC-(ADJ_SF/43560))	0.062	0.021	2.967	0.004
LOG(HTD_SF)	0.036	0.087	0.413	0.680
POOL_PCT	0.007	0.001	4.678	0.000
SWR_PCT	-0.001	0.000	-2.273	0.025
REUSE_PCT	-0.003	0.001	-3.954	0.000
R-squared	0.641	Mean dependent var	1.782	
Adjusted R-squared	0.625	S.D. dependent var	0.225	
S.E. of regression	0.138	Akaike info criterion	-1.075	
Sum squared resid	2.110	Schwarz criterion	-0.933	
Log likelihood	68.878	F-statistic	39.707	
Durbin-Watson stat	1.329	Prob(F-statistic)	0.000	

<b>ANNUAL USE</b>
594 mgal

<b>Total Conservation Opportunity Customers</b>	mgal	(175)	(0.5)
		-30%	

<b>ADJ EST</b>	<b>VAR</b>
4,188	(1,754)
1,432	-30%

<b>ACTUAL</b>	<b>MODEL EST</b>
5,942	5,942
1,782	1,782

<b>NEW VALUE</b>
0.00

<b>CURRENT</b>
0.29
1,437
16
52
10

<b>ADJ EST</b>	<b>VAR</b>
2.55	Chg in per capita use
76	(23) gpd

<b>CURRENT</b>
1.559
-0.077
0.262
0.108
-0.043
-0.027

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A8. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

**UTILITY MODEL A.3**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/25/04 Time: 13:15  
 Sample (adjusted): 4 955 IF SUBUTILA = 1 AND AVG\_LOC > 19  
 Included observations: 117 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.559	0.632	2.467	0.015
LOG(AC-(ADJ_SF/43560))	0.062	0.021	2.967	0.004
LOG(HTD_SF)	0.036	0.087	0.413	0.680
POOL_PCT	0.007	0.001	4.678	0.000
SWR_PCT	-0.001	0.000	-2.273	0.025
REUSE_PCT	-0.003	0.001	-3.954	0.000
R-squared	0.641	Mean dependent var	1.782	
Adjusted R-squared	0.626	S.D. dependent var	0.225	
S.E. of regression	0.138	Akaike info criterion	-1.075	
Sum squared resid	2.110	Schwarz criterion	-0.933	
Log likelihood	68.878	F-statistic	39.707	
Durbin-Watson stat	1.329	Prob(F-statistic)	0.000	

<b>ANNUAL USE</b>	594 mgal
-------------------	----------

<b>Total Conservation Opportunity</b>	
Customers	8,327 (133) -22%
mgal	(0.4)

<b>ADJ EST</b>	<b>VAR</b>
4,612 (1,330)	-22%
1,529	

<b>CURRENT</b>	<b>NEW VALUE</b>
1,559	
-0.077	0.29
0.262	1,437
0.108	16
-0.043	52
-0.027	10
	100

Average monthly use (gal)  
 Dependent Variable: LOG(CONS\_AVG)

Constant	1.559
Yard area (acres), total lot size less developed area	-1.244
Average living area (square feet)	7.270
Percent of homes with pool (%)	16
Percent of accounts with sewer (%)	52
Percent of accounts using reclaimed (%)	10

Average Household Size (US Census)	2.55
Per Capita Use per Day	76
<b>Chg in per capita use</b>	<b>Chg in per capita use</b>
(17) gpd	(17) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

### Model A.4

Models A.1 and A.2 were run on the total data set received from Utility A (which included customers in other municipal jurisdictions to whom Utility A provided water and/or sewer service) and Model A.3 was run on a subset of the primary utility municipal customers of Utility A; whereas, this model was run on only a subset of customers in a secondary municipal jurisdiction served by Utility A. As in Model A.3, in this model the cost of water is represented by the percentage of accounts with sewer service (higher cost than water only accounts).

A Model Summary for Model A.4, including the regression output, is presented on the following page.

The only scenario developed using Model A.4 was to test the elimination of outdoor water use by setting the percentage of accounts with reclaimed water to 100% since the size of yard variable was not found to be significant in this model. The results are presented in Table A9, which is presented following the above referenced Model Summary and is described below.

Table A9 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use  
– Table A9 presents the results of Model A.4 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 99 gallons per day to 48 gallons per day. The conclusion drawn from this model is that 48 gallons per capita per day is indoor water use and 51 gallons per capita per day (99 – 48) is attributed to outdoor water use.

**POTENTIAL WATER SAVINGS OF  
CONSERVATION TECHNIQUES  
APPENDIX C – ECONOMETRIC MODELING**

*Utility Model A.4*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(HTD_SF) LOG(AGE) POOL_PCT
SWR_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(HTD_SF) + C(3)*LOG(AGE) +
C(4)*POOL_PCT + C(5)*SWR_PCT + C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = -1.101014973 + 0.4662684389*LOG(HTD_SF) -
0.1275383556*LOG(AGE) + 0.004051538026*POOL_PCT -
0.002109416099*SWR_PCT - 0.007481539979*REUSE_PCT
```

**Regression Output**

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/26/04 Time: 20:07  
Sample(adjusted): 2 991 IF SUB\_UTILB =1 AND AVG\_LOC >19  
Included observations: 205 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.101015	0.850315	-1.294832	0.1969
LOG(HTD_SF)	0.466268	0.108880	4.282411	0.0000
LOG(AGE)	-0.127538	0.032719	-3.897983	0.0001
POOL_PCT	0.004052	0.001057	3.831744	0.0002
SWR_PCT	-0.002109	0.000404	-5.225148	0.0000
REUSE_PCT	-0.007482	0.001071	-6.984391	0.0000
R-squared	0.712489	Mean dependent var		1.972886
Adjusted R-squared	0.705266	S.D. dependent var		0.400243
S.E. of regression	0.217290	Akaike info criterion		-0.186337
Sum squared resid	9.395769	Schwarz criterion		-0.089078
Log likelihood	25.09953	F-statistic		98.62972
Durbin-Watson stat	1.252190	Prob(F-statistic)		0.000000

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE A9. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**UTILITY MODEL A.4**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/26/04 Time: 20:07  
 Sample (adjusted): 2 991 IF MERITT = 1 AND AVG\_LOC > 19  
 Included observations: 205 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.101	0.860	-1.295	0.197
LOG(HTD_SF)	0.466	0.109	4.282	0.000
LOG(AGE)	-0.128	0.033	-3.898	0.000
POOL_PCT	0.004	0.001	3.832	0.000
SWR_PCT	-0.002	0.000	-5.225	0.000
REUSE_PCT	-0.007	0.001	-6.984	0.000
R-squared	0.712	Mean dependent var	1.973	
Adjusted R-squared	0.705	S.D. dependent var	0.400	
S.E. of regression	0.217	Akaike info criterion	-0.186	
Sum squared resid	9.396	Schwarz criterion	-0.089	
Log likelihood	25.100	F-statistic	98.630	
Durbin-Watson stat	1.252	Prob(F-statistic)	0.000	

<b>ANNUAL USE</b>
1,063 mgal

<b>Total Conservation Opportunity</b>			
Customers	12,316	(550)	(1.5)
		-52%	

<b>ADJ EST</b>	<b>VAR</b>
3,471	(3,720)
1,245	-52%

<b>NEW VALUE</b>
7,449
3,219
40
62
100

<b>ACTUAL</b>	<b>MODEL EST</b>
7,191	7,191
1,973	1,973
7,449	-1.101
3,219	3,473
40	-0.411
62	0.162
3	-0.131
	-0.020

<b>CURRENT</b>
1,717
25
40
62
3

<b>Chg in per capita use</b>
2.38
48
(51) gpd

Average monthly use (gal)	7,191
Dependent Variable: LOG(CONS_AVG)	1,973
Constant	-1.101
Average living area (square feet)	3,473
Age of housing unit (years)	-0.411
Percent of homes with pool (%)	0.162
Percent of accounts with sewer (%)	-0.131
Percent of accounts using reclaimed (%)	-0.020
Average Household Size (US Census)	2.38
Per Capita Use per Day	99

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## UTILITY B

The billing history provided by this utility covered roughly 31,000 residential customers. This utility was able to provide account data that included types of service by account (i.e. water, sewer, and reclaimed), as well as identifiers for service areas or whether accounts are located within City limits. No data was provided for the total charge by account bill.

The property data appended to this billing history included a good range of physical characteristics of properties by subdivision and census tract. This data included total lot size, land, building, and total property values, heated square footage, and data regarding pools.

The following model was specified and estimated using this utility data set: (Model B.1) – natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average heated square footage of the household [LOG(SF)], and the percentage of homes with a pool [(POOL\_PCT)], percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].

This model also provided a reasonable fit with an  $R^2$  of 47%. In addition, the estimated coefficients were consistent with the previous model in terms of expected sign and relative impact on water use. Using the same method of altering the size of the yard and percentage of accounts using reclaimed generated consistent estimates of indoor water use in a range between **57** and **62** gallon per capita per day (see Table B1 and B2).

### **Model Results**

The modeling results for Utility B are presented on the following pages and are described below.

**POTENTIAL WATER SAVINGS OF  
CONSERVATION TECHNIQUES  
APPENDIX C – ECONOMETRIC MODELING**

**Model B.1**

A Model Summary for Model B.1, including the regression output, is presented on the following page.

Two scenarios were developed using Model B.1, the results of which are presented in Tables B1 and B.2, which are presented following the above referenced Model Summary and are described below.

*Table B1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –*

Table B1 presents the results of Model B.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 78 gallons per day to 57 gallons per day. The conclusion drawn from this model is that 57 gallons per capita per day is indoor water use and 21 gallons per capita per day (78 – 57) is attributed to outdoor water use.

*Table B2 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use*

Table B2 presents the results of Model B.1 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 78 gallons per day to 62 gallons per day. The conclusion drawn from this model is that 62 gallons per capita per day is indoor water use and 16 gallons per capita per day (78 – 62) is attributed to outdoor water use.

**POTENTIAL WATER SAVINGS OF  
CONSERVATION TECHNIQUES  
APPENDIX C – ECONOMETRIC MODELING**

*Utility Model B.1*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(AC-(ADJ_SF/43560)) LOG(SF)
LOG(AGE) POOL SWR_PCT RUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(AC-(ADJ_SF/43560)) +
C(3)*LOG(SF) + C(4)*LOG(AGE) + C(5)*POOL + C(6)*SWR_PCT +
C(7)*RUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 7.546806041 + 0.0620034969*LOG(AC-
(ADJ_SF/43560)) + 0.1373772839*LOG(SF) +
0.01195204429*LOG(AGE) + 0.003407126604*POOL -
0.0008207762348*SWR_PCT - 0.002292338443*RUSE_PCT
```

***Regression Output***

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/10/04 Time: 11:22  
Sample(adjusted): 1 441 IF AC<.5  
Included observations: 405 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.546806	0.513446	14.69835	0.0000
LOG(AC-(ADJ_SF/43560))	0.062003	0.033992	1.824064	0.0689
LOG(SF)	0.137377	0.060768	2.260677	0.0243
LOG(AGE)	0.011952	0.014666	0.814970	0.4156
POOL	0.003407	0.000542	6.284126	0.0000
SWR_PCT	-0.000821	0.000407	-2.014369	0.0446
RUSE_PCT	-0.002292	0.000718	-3.191403	0.0015
R-squared	0.482082	Mean dependent var	8.571013	
Adjusted R-squared	0.474274	S.D. dependent var	0.196507	
S.E. of regression	0.142481	Akaike info criterion	-1.042081	
Sum squared resid	8.079751	Schwarz criterion	-0.972878	
Log likelihood	218.0214	F-statistic	61.74362	
Durbin-Watson stat	1.585549	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE B1. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

<b>UTILITY MODEL B</b>																	
Variable	Coefficient	Std. Error	t-Statistic Prob.														
C	7.5468	0.5134	14.6984	0.0000													
LOG(AC-(ADJ_SF/43560))	0.0620	0.0340	1.8241	0.0689													
LOG(SF)	0.1374	0.0608	2.2607	0.0243													
LOG(AGE)	0.0120	0.0147	0.8150	0.4156													
POOL	0.0034	0.0005	6.2841	0.0000													
SWR_PCT	-0.0008	0.0004	-2.0144	0.0446													
RUSE_PCT	-0.0023	0.0007	-3.1914	0.0015													
R-squared	0.4821	Mean dependent var	8.5710														
Adjusted R-squared	0.4743	S.D. dependent var	0.1965														
S.E. of regression	0.1425	Akaike info criterion	-1.0421														
Sum squared resid	8.0798	Schwarz criterion	-0.9729														
Log likelihood	218.0214	F-statistic	61.7436														
Durbin-Watson stat	1.5855	Prob(F-statistic)	0.0000														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>ANNUAL USE</b></td> <td>1,976 mgal</td> </tr> </table>				<b>ANNUAL USE</b>	1,976 mgal												
<b>ANNUAL USE</b>	1,976 mgal																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Total Conservation Opportunity Customers</b></td> <td>31,202</td> <td style="background-color: #e0e0e0;"><b>mgal</b></td> <td>(532)</td> <td style="background-color: #e0e0e0;"><b>mgd</b></td> <td>(1.5)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>-27%</td> <td></td> <td></td> </tr> </table>				<b>Total Conservation Opportunity Customers</b>	31,202	<b>mgal</b>	(532)	<b>mgd</b>	(1.5)				-27%				
<b>Total Conservation Opportunity Customers</b>	31,202	<b>mgal</b>	(532)	<b>mgd</b>	(1.5)												
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<b>ACTUAL</b>	<b>MODEL EST</b>	<b>EST</b>	<b>VAR</b>														
5,276	5,276	3,856	(1,420)														
8,571	8,571	8,2575	-27%														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>NEW VALUE</b></td> <td>0.00</td> </tr> </table>				<b>NEW VALUE</b>	0.00												
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>CURRENT</b></td> <td>7.5468</td> </tr> <tr> <td>-1.8626</td> <td>-0.1149</td> </tr> <tr> <td>7.7573</td> <td>1.0657</td> </tr> <tr> <td>3.2427</td> <td>0.0388</td> </tr> <tr> <td>34</td> <td>0.1161</td> </tr> <tr> <td>96</td> <td>-0.0786</td> </tr> <tr> <td>1</td> <td>-0.0028</td> </tr> </table>				<b>CURRENT</b>	7.5468	-1.8626	-0.1149	7.7573	1.0657	3.2427	0.0388	34	0.1161	96	-0.0786	1	-0.0028
<b>CURRENT</b>	7.5468																
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Chg in per capita use</b></td> <td>2.22</td> </tr> <tr> <td></td> <td>57</td> </tr> <tr> <td></td> <td>(21) gpd</td> </tr> </table>				<b>Chg in per capita use</b>	2.22		57		(21) gpd								
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Constant</b></td> <td>7.5468</td> </tr> <tr> <td>Yard area (acres), total lot size less developed area</td> <td>-0.1149</td> </tr> <tr> <td>Living area (square feet)</td> <td>1.0657</td> </tr> <tr> <td>Average age of housing unit (years)</td> <td>0.0388</td> </tr> <tr> <td>Percent of homes with Pool (%)</td> <td>0.1161</td> </tr> <tr> <td>Percent of customers with sewer (%)</td> <td>-0.0786</td> </tr> <tr> <td>Percent of accounts using reclaimed (%)</td> <td>-0.0028</td> </tr> </table>				<b>Constant</b>	7.5468	Yard area (acres), total lot size less developed area	-0.1149	Living area (square feet)	1.0657	Average age of housing unit (years)	0.0388	Percent of homes with Pool (%)	0.1161	Percent of customers with sewer (%)	-0.0786	Percent of accounts using reclaimed (%)	-0.0028
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Average monthly use (kgal)</b></td> <td>5,276</td> </tr> <tr> <td><b>Dependent Variable: LOG(CONS_AVG)</b></td> <td>8,571</td> </tr> </table>				<b>Average monthly use (kgal)</b>	5,276	<b>Dependent Variable: LOG(CONS_AVG)</b>	8,571										
<b>Average monthly use (kgal)</b>	5,276																
<b>Dependent Variable: LOG(CONS_AVG)</b>	8,571																

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE B2. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

<b>UTILITY MODEL B</b>																	
Variable	Coefficient	Std. Error	t-Statistic														
C	7.5468	0.5134	14.6984														
LOG(AC-(ADJ_SF/43560))	0.0620	0.0340	1.8241														
LOG(SF)	0.1374	0.0608	2.2607														
LOG(AGE)	0.0120	0.0147	0.8150														
POOL	0.0034	0.0005	6.2841														
SWR_PCT	-0.0008	0.0004	-2.0144														
RUSE_PCT	-0.0023	0.0007	-3.1914														
R-squared	0.4821	Mean dependent var	8.5710														
Adjusted R-squared	0.4743	S.D. dependent var	0.1965														
S.E. of regression	0.1425	Akaike info criterion	-1.0421														
Sum squared resid	8.0798	Schwarz criterion	-0.9729														
Log likelihood	218.0214	F-statistic	61.7436														
Durbin-Watson stat	1.5855	Prob(F-statistic)	0.0000														
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>Total Conservation Opportunity</b></td> <td>Customers</td> <td>31,202</td> <td>mgal</td> <td>(400)</td> <td>(1.1)</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>-20%</td> <td></td> </tr> </table>				<b>Total Conservation Opportunity</b>	Customers	31,202	mgal	(400)	(1.1)					-20%			
<b>Total Conservation Opportunity</b>	Customers	31,202	mgal	(400)	(1.1)												
				-20%													
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<b>ACTUAL</b>	<b>MODEL EST</b>	<b>EST</b>	<b>VAR</b>														
5,276	5,276	4,207	(1,069)														
8,571	8,571	8,3446	-20%														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>CURRENT</b></td> <td style="background-color: #e0e0e0;"><b>NEW VALUE</b></td> </tr> <tr> <td>0.16</td> <td>-1.8526</td> </tr> <tr> <td>2,338</td> <td>7,7573</td> </tr> <tr> <td>26</td> <td>3,2427</td> </tr> <tr> <td>34</td> <td>34</td> </tr> <tr> <td>96</td> <td>96</td> </tr> <tr> <td>1</td> <td>100</td> </tr> </table>				<b>CURRENT</b>	<b>NEW VALUE</b>	0.16	-1.8526	2,338	7,7573	26	3,2427	34	34	96	96	1	100
<b>CURRENT</b>	<b>NEW VALUE</b>																
0.16	-1.8526																
2,338	7,7573																
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<b>ACTUAL</b>	<b>MODEL EST</b>	<b>EST</b>	<b>VAR</b>														
7,5468	7,5468	4,207	(1,069)														
-0.1149	-0.1149	8,3446	-20%														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>CURRENT</b></td> <td style="background-color: #e0e0e0;"><b>NEW VALUE</b></td> </tr> <tr> <td>0.16</td> <td>-1.8526</td> </tr> <tr> <td>2,338</td> <td>7,7573</td> </tr> <tr> <td>26</td> <td>3,2427</td> </tr> <tr> <td>34</td> <td>34</td> </tr> <tr> <td>96</td> <td>96</td> </tr> <tr> <td>1</td> <td>100</td> </tr> </table>				<b>CURRENT</b>	<b>NEW VALUE</b>	0.16	-1.8526	2,338	7,7573	26	3,2427	34	34	96	96	1	100
<b>CURRENT</b>	<b>NEW VALUE</b>																
0.16	-1.8526																
2,338	7,7573																
26	3,2427																
34	34																
96	96																
1	100																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0;"><b>ACTUAL</b></td> <td style="background-color: #e0e0e0;"><b>MODEL EST</b></td> <td style="background-color: #e0e0e0;"><b>EST</b></td> <td style="background-color: #e0e0e0;"><b>VAR</b></td> </tr> <tr> <td>2.22</td> <td>2.22</td> <td>2.22</td> <td>Chg in per capita use</td> </tr> <tr> <td>78</td> <td>78</td> <td>62</td> <td>(16) gpd</td> </tr> </table>				<b>ACTUAL</b>	<b>MODEL EST</b>	<b>EST</b>	<b>VAR</b>	2.22	2.22	2.22	Chg in per capita use	78	78	62	(16) gpd		
<b>ACTUAL</b>	<b>MODEL EST</b>	<b>EST</b>	<b>VAR</b>														
2.22	2.22	2.22	Chg in per capita use														
78	78	62	(16) gpd														

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## UTILITY C

The billing history provided by this utility covered roughly 36,000 residential customers. This utility was able to provide account data that included types of service by account (i.e. water, sewer, and reclaimed), as well as identifiers for service areas or whether accounts are located within City limits. No data was provided for the total charge by account bill.

The property data appended to this billing history included a good range of physical characteristics of properties by subdivision and census tract. This data included total lot size, land, building, and total property values, heated square footage. No data regarding the presence of pools was available.

The following model was specified and estimated using this utility data set: (Model C.1) – natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], total building value per square foot [LOG(BLDG/SF)], the age of the dwelling LOG[(AGE)], and percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].

This model also provided a very high fit with an  $R^2$  of 75%. However, the variable for the size of yard is not significant and the square footage of the dwelling was not included due to a very insignificant t-score. Using the same method of altering the size of the yard and percentage of accounts using reclaimed generated estimates of indoor water use in a range between **39** and **43** gallon per capita per day (see Table C1 and C2). Given the weak individual significance of some of the explanatory variables and prior measures of indoor water use, these estimates should be considered as less significant as well. This utility clearly has a higher level of outdoor water use compared with prior utility models. However, more analysis is required in order to develop a more acceptable model of the demand for water use.

### Model Results

The modeling results for Utility C are presented on the following pages and are described below.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model C.1

A Model Summary for Model C.1, including the regression output, is presented on the following page.

Two runs were made of Model C.1, the results of which are presented in Tables C.1 and C.2, which are presented following the above referenced Model Summary and are described below.

Table C1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area – Table C1 presents the results of Model C.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 173 gallons per day to 39 gallons per day. The conclusion drawn from this model is that 39 gallons per capita per day is indoor water use and 133 gallons per capita per day  $(173 - 39)^{10}$  is attributed to outdoor water use.

Table C2 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use – Table C2 presents the results of Model C.1 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 173 gallons per day to 43 gallons per day. The conclusion drawn from this model is that 43 gallons per capita per day is indoor water use and 130 gallons per capita per day  $(173 - 43)$  is attributed to outdoor water use.

---

<sup>10</sup> The difference between 133 and  $(173-39)$  is attributable to rounding

**POTENTIAL WATER SAVINGS OF  
CONSERVATION TECHNIQUES  
APPENDIX C – ECONOMETRIC MODELING**

*Utility Model C.1*

Estimation Command:

```
=====
LS LOG(CONS_AVG/SF) C LOG(AC-(SF/43560)) LOG(BLDG/SF) LOG(AGE)
SWR_PCT RUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG/SF) = C(1) + C(2)*LOG(AC-(SF/43560)) + C(3)*LOG(BLDG/SF) +
C(4)*LOG(AGE) + C(5)*SWR_PCT + C(6)*RUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG/SF) = -4.734968302 - 0.09943028733*LOG(AC-(SF/43560)) +
0.05859643595*LOG(BLDG/SF) - 0.09912130643*LOG(AGE) -
0.001770632973*SWR_PCT - 0.01628172866*RUSE_PCT
```

Regression Output

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 08/10/04 Time: 08:53  
Sample(adjusted): 1 91  
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.734968	1.474058	-3.212199	0.0019
LOG(AC-(SF/43560))	-0.099430	0.092071	-1.079929	0.2832
LOG(BLDG/SF)	0.058596	0.335211	0.174804	0.8616
LOG(AGE)	-0.099121	0.056859	-1.743298	0.0849
SWR_PCT	-0.001771	0.000590	-3.002548	0.0035
RUSE_PCT	-0.016282	0.001049	-15.52649	0.0000
R-squared	0.762533	Mean dependent var	-4.824107	
Adjusted R-squared	0.748564	S.D. dependent var	0.457679	
S.E. of regression	0.229496	Akaike info criterion	-0.042204	
Sum squared resid	4.476807	Schwarz criterion	0.123347	
Log likelihood	7.920291	F-statistic	54.58875	
Durbin-Watson stat	2.034434	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE C1. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

<b>UTILITY MODEL C</b>				
Dependent Variable: LOG(CONS_AVG)				
Method: Least Squares				
Date: 08/09/04 Time: 17:20				
Sample (adjusted): 1 90 IF AGE<15				
Included observations: 48 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic Prob.	
C	-5.9537	3.1249	-1.9053	0.0636
LOG(AC-(SF/43560))	0.2843	0.2109	1.3482	0.1848
LOG(BLDG/SF)	0.6060	0.6010	1.0083	0.3191
LOG(SF)	0.9340	0.2106	4.4352	0.0001
SWR_PCT	-0.0018	0.0011	-1.7318	0.0906
RUSE_PCT	-0.0160	0.0012	-13.6525	0.0000
R-squared	0.8469	Mean dependent var	2.7575	
Adjusted R-squared	0.8287	S.D. dependent var	0.5401	
S.E. of regression	0.2235	Akaike info criterion	-0.0420	
Sum squared resid	2.0988	Schwarz criterion	0.1919	
Log likelihood	7.0073	F-statistic	46.4741	
Durbin-Watson stat	1.9566	Prob(F-statistic)	0.0000	
Average monthly use (kgal)				
Dependent Variable: LOG(CONS_AVG)				
	<b>ACTUAL</b>	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>
	15,760	15,761	3,599	(12,161)
	2,757	2,758	1,281	-77%
Constant				
	-5.9537	<b>CURRENT</b>	<b>NEW VALUE</b>	
Yard area (acres), total lot size less developed area	-1.714	0.18	0.00	
Building value per square foot (\$)	4.019	55.67	6.908	
Living area (square feet)	7.612	2,022	4.019	
Percent of water customers with sewer (%)	79	79	7.612	
Percent of accounts using reclaimed (%)	13	13	79	
	13	-0.2008	13	
Average Household Size				
	2.99		2.99	
Per Capita Use per Day				
	173		39	
				Chg in per capita use
				(133) gpd
ANNUAL USE				
	6,764			mgal
Total Conservation Opportunity				
	35,767			mgal
		(5,220)		(14.3)
				-77%

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE C2. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

<b>UTILITY MODEL C</b>																		
Dependent Variable: LOG(CONS_AVG)																		
Method: Least Squares																		
Date: 08/09/04 Time: 17:20																		
Sample (adjusted): 1 90 IF AGE<15																		
Included observations: 48 after adjusting endpoints																		
Variable	Coefficient	Std. Error	t-Statistic	Prob.														
C	-5.9537	3.1249	-1.9053	0.0636														
LOG(AC*(SF/43560))	0.2843	0.2109	1.3482	0.1848														
LOG(BLDG/SF)	0.6060	0.6010	1.0083	0.3191														
LOG(SF)	0.9340	0.2106	4.4352	0.0001														
SWR_PCT	-0.0018	0.0011	-1.7318	0.0906														
RUSE_PCT	-0.0160	0.0012	-13.6525	0.0000														
R-squared	0.8469	Mean dependent var																
Adjusted R-squared	0.8287	S.D. dependent var																
S.E. of regression	0.2235	Akaike info criterion																
Sum squared resid	2.0988	Schwarz criterion																
Log likelihood	7.0073	F-statistic																
Durbin-Watson stat	1.9566	Prob(F-statistic)																
<table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="text-align: center;"><b>ANNUAL USE</b></td> <td style="text-align: center;">6,764</td> <td style="text-align: center;">mgal</td> </tr> </table>					<b>ANNUAL USE</b>	6,764	mgal											
<b>ANNUAL USE</b>	6,764	mgal																
<table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="text-align: center;"><b>Total Conservation Opportunity</b></td> <td style="text-align: center;">Res Cust</td> <td style="text-align: center;">mgal</td> <td style="text-align: center;">mgd</td> </tr> <tr> <td style="text-align: center;">35,767</td> <td style="text-align: center;">(5,097)</td> <td style="text-align: center;">-75%</td> <td style="text-align: center;">(14.0)</td> </tr> </table>					<b>Total Conservation Opportunity</b>	Res Cust	mgal	mgd	35,767	(5,097)	-75%	(14.0)						
<b>Total Conservation Opportunity</b>	Res Cust	mgal	mgd															
35,767	(5,097)	-75%	(14.0)															
Average monthly use (kgal)																		
Dependent Variable: LOG(CONS_AVG)																		
<table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="text-align: center;"><b>ACTUAL</b></td> <td style="text-align: center;"><b>MODEL EST</b></td> <td style="text-align: center;"><b>ADJ EST</b></td> <td style="text-align: center;"><b>VAR</b></td> </tr> <tr> <td style="text-align: center;">15,760</td> <td style="text-align: center;">15,761</td> <td style="text-align: center;">3,885</td> <td style="text-align: center;">(11,875)</td> </tr> <tr> <td style="text-align: center;">2,757</td> <td style="text-align: center;">2,758</td> <td style="text-align: center;">1,357</td> <td style="text-align: center;">-75%</td> </tr> </table>					<b>ACTUAL</b>	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>	15,760	15,761	3,885	(11,875)	2,757	2,758	1,357	-75%		
<b>ACTUAL</b>	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>															
15,760	15,761	3,885	(11,875)															
2,757	2,758	1,357	-75%															
Constant																		
Yard area (acres), total lot size less developed area																		
Building value per square foot (\$)																		
Living area (square feet)																		
Percent of water customers with sewer (%)																		
Percent of accounts using reclaimed (%)																		
<table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="text-align: center;"><b>CURRENT</b></td> <td style="text-align: center;"><b>NEW VALUE</b></td> </tr> <tr> <td style="text-align: center;">-5.9537</td> <td style="text-align: center;">-1,714</td> </tr> <tr> <td style="text-align: center;">-0.4874</td> <td style="text-align: center;">4,019</td> </tr> <tr> <td style="text-align: center;">0.18</td> <td style="text-align: center;">7,612</td> </tr> <tr> <td style="text-align: center;">55.67</td> <td style="text-align: center;">79</td> </tr> <tr> <td style="text-align: center;">2,022</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">13</td> <td style="text-align: center;">100</td> </tr> </table>					<b>CURRENT</b>	<b>NEW VALUE</b>	-5.9537	-1,714	-0.4874	4,019	0.18	7,612	55.67	79	2,022	100	13	100
<b>CURRENT</b>	<b>NEW VALUE</b>																	
-5.9537	-1,714																	
-0.4874	4,019																	
0.18	7,612																	
55.67	79																	
2,022	100																	
13	100																	
Average Household Size																		
Per Capita Use per Day																		
<table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="text-align: center;">2.99</td> <td style="text-align: center;">Chg in per capita use</td> </tr> <tr> <td style="text-align: center;">173</td> <td style="text-align: center;">(130)</td> </tr> <tr> <td style="text-align: center;">43</td> <td style="text-align: center;">gpcd</td> </tr> </table>					2.99	Chg in per capita use	173	(130)	43	gpcd								
2.99	Chg in per capita use																	
173	(130)																	
43	gpcd																	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## UTILITY D

The billing history provided by this utility covered roughly 36,000 residential customers. This utility was able to provide account data that included water service by account as well as identifiers for service areas or whether accounts are located within City limits. No data was provided regarding sewer and reclaimed services. Estimates of reuse were appended to subdivision and census tracts using SJRWMD data. No data was provided for the total charge by account bill.

The property data appended to this billing history included a good range of physical characteristics of properties by subdivision and census tract. This data included total lot size, land, building, and total property values, heated square footage, and data regarding the presence of pools.

The following model was specified and estimated using this utility data set: (Model C.1) – natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], total heated square footage [LOG(HTD\_SF)], the age of the dwelling [LOG(AGE)], and percentage of homes with a pool [(POOL\_PCT)], the percentage of accounts with sewer [(SWR\_PCT)], and percentage of accounts using reclaimed water [(REUSE\_PCT)].

This model also provided a high fit with an  $R^2$  of 65%. All explanatory variables met significance test with the exception of the reclaimed water use. Since actual reclaimed water accounts were not identified by this utility<sup>11</sup> this variable provides a very suspect estimate when increased to 100%, inferences using the calculated coefficient should be avoided. Using the same method of altering the size of the yard generated a consistent estimate of indoor water use of **62** gallon per capita per day (see Table D1).

### **Model Results**

The modeling results for Utility D are presented on the following pages and are described below.

---

<sup>11</sup> This is the only utility that did not identify reclaimed water availability by account. Reclaimed water availability for this utility was determined by overlay of a GIS layer of reclaimed water that was obtained from another SJRWMD source.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model D.1

A Model Summary for Model D.1, including the regression output, is presented on the following page.

Two scenarios were developed using Model D.1, the results of which are presented in Tables D.1 and D.2, which are presented following the above referenced Model Summary and are described below.

*Table D1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area* – Table D1 presents the results of Model D.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. This model was unique in that this utility did provide data regarding a targeted conservation program aimed at outdoor water use. Thus, in order to fully estimate the impact of going to a ‘zero’ yard, the targeted conservation program is also required to be ‘turned-off’. The “New Value” box shows the yard area set to zero and 0% for the targeted conservation program and the bottom line of the table shows that use per capita is reduced from 138 gallons per day to 63 gallons per day. The conclusion drawn from this model is that 63 gallons per capita per day is indoor water use and 75 gallons per capita per day (138 – 63) is attributed to outdoor water use.

*Table D2 – Percent of Customers in Targeted Conservation Area* – Table D2 presents the results of Model D.1 in which the percent of customers in the targeted conservation area is set at 0%. The “New Value” box shows the percent of customers in the targeted conservation area set to 0% and the bottom line of the table shows that use per capita is increased from 138 gallons per day to 140 gallons per day. Therefore, by deduction, the conclusion that can be drawn from this model is that this conservation initiative, as implemented in this utility, has resulted in a reduction in water use of 0.2 mgd for the entire utility, or 2 gpcd. Conversely, if the program were implemented to 100% of utility customers, the impact is estimated to be an 0.8 mgd reduction in total, or 8 gpcd (see Table D3).

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Utility Model D.1

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(AC-(TOT_SF/43560)) LOG(HTD_SF) LOG(AGE) POOL_PCT
CONSV_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(AC-(TOT_SF/43560)) + C(3)*LOG(HTD_SF) + C(4)*LOG(AGE) +
C(5)*POOL_PCT + C(6)*CONSV_PCT + C(7)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 6.5765321 + 0.1074753106*LOG(AC-(TOT_SF/43560)) +
0.4387322021*LOG(HTD_SF) - 0.2209144483*LOG(AGE) + 0.003862920582*POOL_PCT -
0.0007247627773*CONSV_PCT - 0.0005386675998*REUSE_PCT
```

## Regression Output

Dependent Variable: LOG(CONS\_AVG)

Method: Least Squares

Date: 09/24/04 Time: 11:13

Sample(adjusted): 1 473 IF AVG\_LOC >30

Included observations: 361 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.576532	0.925869	7.103091	0.0000
LOG(AC-(TOT_SF/43560))	0.107475	0.023961	4.485465	0.0000
LOG(HTD_SF)	0.438732	0.118588	3.699629	0.0003
LOG(AGE)	-0.220914	0.029283	-7.544204	0.0000
POOL_PCT	0.003863	0.001118	3.454524	0.0006
CONSV_PCT	-0.000725	0.000451	-1.606411	0.1091
REUSE_PCT	-0.000539	0.000852	-0.632274	0.5276
R-squared	0.651796	Mean dependent var	9.331923	
Adjusted R-squared	0.645894	S.D. dependent var	0.458383	
S.E. of regression	0.272769	Akaike info criterion	0.258819	
Sum squared resid	26.33868	Schwarz criterion	0.334226	
Log likelihood	-39.71678	F-statistic	110.4409	
Durbin-Watson stat	1.453130	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE D1. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

<b>UTILITY MODEL D</b>			
Variable	Coefficient	Std. Error	t-Statistic
C	6.577	0.926	7.103
LOG(AC-(TOT_SF/43560))	0.107	0.024	4.485
LOG(HTD_SF)	0.439	0.119	3.700
LOG(AGE)	-0.221	0.029	-7.544
POOL_PCT	0.004	0.001	3.455
CONSV_PCT	-0.001	0.000	-1.606
REUSE_PCT	-0.001	0.001	-0.632
R-squared	0.652	Mean dependent var	9.332
Adjusted R-squared	0.646	S.D. dependent var	0.458
S.E. of regression	0.273	Akaike info criterion	0.259
Sum squared resid	26.339	Schwarz criterion	0.334
Log likelihood	-39.717	F-statistic	110.441
Durbin-Watson stat	1.453	Prob(F-statistic)	0.000

Dependent Variable: LOG(CONS_AVG)	Method: Least Squares
Date: 09/24/04	Time: 11:13
Sample(adjusted): 1 473	IF AVG LOC >30
Included observations: 361	after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ANNUAL USE	5,211	mgal		
Total Conservation Opportunity	38,450	mgal		(7.8)
Res Cust	(2,937)			-54%

Variable	ADJ EST	VAR
NEW VALUE	6.577	0.000
CURRENT	-9.210	0.168
	7.602	2.002
	2.423	11
	42	42
	0	17
	3	3

Variable	ACTUAL	MODEL EST
Average monthly use (kgal)	11,293	11,296
Dependent Variable: LOG(CONS_AVG)	9.332	9.332

Variable	ACTUAL	MODEL EST
Constant	6.577	0.000
Yard area (acres), total lot size less developed area	-1.781	-0.191
Living area (square feet)	7.602	3.336
Age (years)	2.423	-0.536
Percent of customers with a pool (%)	42	0.161
Percent of customers in targetd conservation (%)	17	-0.013
Percent of accounts with reclaimed available (%)	3	-0.002

Variable	ADJ EST	VAR
Chg in per capita use	2.68	
	63	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE D2. PERCENT OF CUSTOMERS IN TARGETED CONSERVATION AREA**

<b>UTILITY MODEL D</b>			
Variable	Coefficient	Std. Error	t-Statistic
C	6.577	0.926	7.103
LOG(AC-(TOT_SF/43560))	0.107	0.024	4.485
LOG(HTD_SF)	0.439	0.119	3.700
LOG(AGE)	-0.221	0.029	-7.544
POOL_PCT	0.004	0.001	3.455
CONSV_PCT	-0.001	0.000	-1.606
REUSE_PCT	-0.001	0.001	-0.632
R-squared	0.652	Mean dependent var	9.332
Adjusted R-squared	0.646	S.D. dependent var	0.458
S.E. of regression	0.273	Akaike info criterion	0.259
Sum squared resid	26.339	Schwarz criterion	0.334
Log likelihood	-39.717	F-statistic	110.441
Durbin-Watson stat	1.453	Prob(F-statistic)	0.000

Dependent Variable: LOG(CONS_AVG)	Method: Least Squares	Date: 09/24/04	Time: 11:13
Sample (adjusted): 1 473	IF AVG_LOC > 30	Included observations: 361	after adjusting endpoints

ADJ EST	VAR
11,440	143
9,345	1%

ANNUAL USE
5,211 mgal

Total Conservation Opportunity	mgal	mgd
Res Cust	38,450	66
		1%

ACTUAL	MODEL EST
11,293	11,296
9,332	9,332

ADJ EST	VAR
11,440	143
9,345	1%

NEW VALUE

CURRENT
6.577
-0.191
0.168
3.335
2,002
-0.535
11
42
0.161
17
-0.013
3
-0.002

Chg in per capita use
2.68
140

Chg in per capita use
2
gpd

ACTUAL	MODEL EST
-1.781	6.577
7.602	-0.191
2.423	3.335
42	-0.535
17	0.161
3	-0.013
	-0.002

Constant	Yard area (acres), total lot size less developed area	Living area (square feet)	Age (years)	Percent of customers with a pool (%)	Percent of customers in targeted conservation (%)	Percent of accounts with reclaimed available (%)
6.577	-1.781	7.602	2.423	42	17	3
-0.191						
3.335						
-0.535						
0.161						
-0.013						
-0.002						

Average Household Size	Per Capita Use per Day
2.68	138

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE D3. PERCENT OF CUSTOMERS IN TARGETED CONSERVATION AREA**

<b>UTILITY MODEL D</b>			
Variable	Coefficient	Std. Error	t-Statistic
C	6.577	0.926	7.103
LOG(AC-(TOT_SF/43560))	0.107	0.024	4.485
LOG(HTD_SF)	0.439	0.119	3.700
LOG(AGE)	-0.221	0.029	-7.544
POOL_PCT	0.004	0.001	3.455
CONSV_PCT	-0.001	0.000	-1.606
REUSE_PCT	-0.001	0.001	-0.632
R-squared	0.652	Mean dependent var	9.332
Adjusted R-squared	0.646	S.D. dependent var	0.458
S.E. of regression	0.273	Akaike info criterion	0.259
Sum squared resid	26.339	Schwarz criterion	0.334
Log likelihood	-39.717	F-statistic	110.441
Durbin-Watson stat	1.453	Prob(F-statistic)	0.000

Dependent Variable: LOG(CONS_AVG)	
Method: Least Squares	
Date: 09/24/04	Time: 11:13
Sample(adjusted): 1 473	IF AVG_LOC >30
Included observations: 361 after adjusting endpoints	

Variable	Prob.
ADJ EST	10,640
VAR	(657)
	-6%

ANNUAL USE	
	5,211 mgal

Total Conservation Opportunity	
Res Cust	38,450
	(303)
	-6%
	(0.8)

Variable	ACTUAL	MODEL EST	ADJ EST	VAR	NEW VALUE
Average monthly use (kgal)	11,293	11,296	10,640	(657)	
Dependent Variable: LOG(CONS_AVG)	9.332	9.332	9.272	-6%	
Constant	6.577				
Yard area (acres), total lot size less developed area	-1.781	0.168	-1.781		
Living area (square feet)	7.602	2.002	7.602		
Age (years)	2.423	-0.535	2.423		
Percent of customers with a pool (%)	42	42	42		100
Percent of customers in targetd conservation (%)	17	-0.013	100		
Percent of accounts with reclaimed available (%)	3	-0.002	3		
Average Household Size	2.68		2.68		
Per Capita Use per Day	138		130		
					Chg in per capita use
					(8) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## UTILITY E

The billing history provided by this utility covered roughly 7,800 residential customers. This utility was able to provide account data that included water service by account as well as identifiers for service areas or whether accounts are located within City limits. No data was provided regarding sewer and reclaimed water services. Estimates of reuse were appended to subdivision and census tracts using SJRWMD data. No data was provided for the total charge by account bill.

The property data appended to this billing history included a good range of physical characteristics of properties by subdivision and census tract. This data included total lot size, land, building, and total property values, heated square footage, and data regarding the presence of pools.

The following model was specified and estimated using this utility data set: (Model E.1) – natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], total heated square footage [LOG(HTD\_SF)], the age of the dwelling [LOG(AGE)], and percentage of homes with a pool [(POOL\_PCT)] and percentage of accounts using reclaimed water [(REUSE\_PCT)].

This model also provided a high fit with an  $R^2$  of 63%. All explanatory variables reasonably met significance tests. Based on the prior models, when information regarding sewer accounts is not provided, the resulting estimates of indoor water use can have significant variance. Again, since reclaimed water data for this utility is not actual account data and it provides a very suspect estimated when increased to 100%, inferences using the calculated coefficient should be avoided. Using the same method of altering the size of the yard generated a consistent estimate of indoor water use of 54 gallon per capita per day (see Table E1).

### Model Results

The modeling results for Utility E are presented on the following pages and are described below.

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**Model E.1**

A Model Summary for Model E.1, including the regression output, is presented on the following page.

One scenario was develop using E.1, the results of which are presented in Table E.1, which is presented following the above referenced Model Summary and are described below.

*Table E1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –*

Table E1 presents the results of Model E.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 89 gallons per day to 54 gallons per day. The conclusion drawn from this model is that 54 gallons per capita per day is indoor water use and 36 gallons per capita per day  $(89 - 54)^{12}$  is attributed to outdoor water use.

---

<sup>12</sup> The difference between 54 and (89-54) is attributable to rounding

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*Utility Model E.1*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(AC-(TOT_SF/43560)) LOG(HTD_SF) LOG(AGE)
POOL_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(AC-(TOT_SF/43560)) + C(3)*LOG(HTD_SF) +
C(4)*LOG(AGE) + C(5)*POOL_PCT + C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 0.02481364302 + 0.09758316677*LOG(AC-(TOT_SF/43560)) +
0.2493101323*LOG(HTD_SF) + 0.06268385082*LOG(AGE) +
0.002587372837*POOL_PCT - 0.002296276749*REUSE_PCT
```

***Regression Output***

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 09/24/04 Time: 10:12  
Sample(adjusted): 1 144 IF AVG\_LOC >10  
Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024814	1.111453	0.022325	0.9822
LOG(AC-(TOT_SF/43560))	0.097583	0.033749	2.891444	0.0045
LOG(HTD_SF)	0.249310	0.128155	1.945382	0.0540
LOG(AGE)	0.062684	0.065030	0.963925	0.3370
POOL_PCT	0.002587	0.001247	2.074689	0.0401
REUSE_PCT	-0.002296	0.000381	-6.032808	0.0000
R-squared	0.642905	Mean dependent var	1.880762	
Adjusted R-squared	0.628389	S.D. dependent var	0.306404	
S.E. of regression	0.186783	Akaike info criterion	-0.472338	
Sum squared resid	4.291233	Schwarz criterion	-0.339324	
Log likelihood	36.46581	F-statistic	44.28923	
Durbin-Watson stat	2.037473	Prob(F-statistic)	0.000000	



# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

### COMBINED UTILITIES

The combined billing history of all utilities modeled results in data for roughly 158,000 residential customers (see table).

Utility	Average Customers	Average Monthly Water Use (gal)	Subdivisions	Census Tracts
Utility A	44,415	5,969	993	41
Utility B	31,202	5,276	441	38
Utility C	35,767	15,760	91	38
Utility D	38,450	11,293	473	33
Utility E	7,826	6,559	144	15
Combined Utilities	157,660	9,381	2,142	165

The models run for the combined utilities were based upon census tract aggregation, providing 165 total observations. The following models were specified and estimated using this utility data set:

1. Model F.1 – this included all utilities except for Utility C (Utility C did not provide an indicator for the presence of a pool) and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of the effective rate of a water 1,000 gallons of water use at 10,000 gallons of consumption [LOG(EFF\_RATE\_10)], average persons per household [LOG(PPH)], average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average property value per square foot [LOG(TOTAL/HTD\_SF)], and the percentage of homes with a pool [POOL\_PCT] and percentage of accounts using reclaimed water [REUSE\_PCT].
2. Model F.2 – this included all utilities, excluded the percentage of homes with a pool and estimated the natural log of average water use [LOG(CONS\_AVG)] as a function of the natural logs of the average yard area excluding developed areas [LOG(AC-(ADJ\_SF/43560))], average water rate per 1,000 gallons @ 10,000 gallons [LOG(EFF\_RATE\_10)], average household size [LOG(PPH)], average total property value per square feet [LOG(TOTAL/HTD\_SF)], and percentage of accounts using reclaimed water [REUSE\_PCT].

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model Results

The modeling results for Models F.1 and F.2 for Combined Utilities are presented on the following pages and are described below.

### Model F.1

A Model Summary for Model F.1, including the regression output, is presented on the second following page.

Four scenarios were developed using Model F.1, the results of which are presented in Tables F1 through F4, which are presented following the above referenced Model Summary and are described below.

*Table F1 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area* – Table F1 presents the results of Model F.1 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 99 gallons per day to 59 gallons per day. The conclusion drawn from this model is that 59 gallons per capita per day is indoor water use and 40 gallons per capita per day (99 – 59) is attributed to outdoor water use.

*Table F2 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use* – Table F2 presents the results of Model F.1 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 99 gallons per day to 86 gallons per day. The conclusion drawn from this model is that 86 gallons per capita per day is indoor water use and 13 gallons per capita per day (99 – 86) is attributed to outdoor water use.

*Table F3 – Price Elasticity Estimate from Change in Average Cost* – Table F3 presents the results of Model F.1 in which average water rate per 1,000 gallons at 10,000 gallons is increased, thus causing a reduction in water use. The “New Value” box shows the average water rate per 1,000 gallons at 10,000 gallons is increased from \$2.37 to \$4.00, an increase of 68%, and the

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bottom line of the table shows that use per capita is reduced from 99 gallons per day to 74 gallons per day. This represents an elasticity coefficient of -0.4.

*Table F4 – Impact of Household Size on Water Use* – Table F4 presents the results of Model F.1 in which average household size is set at 0 persons per household. The “New Value” box shows the household size set to 0 persons per household, and the bottom line of the table shows that use per capita is reduced from 99 gallons per day to 0 gallons per day. The conclusion drawn from this model is that the model is properly assigning water use relative to household size because a “vacant” household is predicted to have no water use, assuming that there is no irrigation system continuing to run and no leaks.

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Utility Model F.1

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(EFF_RATE_10) LOG(PPH) LOG(AC-(ADJ_SF/43560))
LOG(TOTAL/HTD_SF) POOL_PCT REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(EFF_RATE_10) + C(3)*LOG(PPH) +
C(4)*LOG(AC-(ADJ_SF/43560)) + C(5)*LOG(TOTAL/HTD_SF) + C(6)*POOL_PCT +
C(7)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 1.201847781 - 0.5544453583*LOG(EFF_RATE_10) +
0.7230171465*LOG(PPH) + 0.09066719188*LOG(AC-(ADJ_SF/43560)) +
0.1355730687*LOG(TOTAL/HTD_SF) + 0.005524022964*POOL_PCT -
0.001577285125*REUSE_PCT
```

## Regression Output

Dependent Variable: LOG(CONS\_AVG)

Method: Least Squares

Date: 09/27/04 Time: 11:36

Sample(adjusted): 3 164 IF AVG\_LOC >19

Included observations: 116 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.201848	0.590038	2.036900	0.0441
LOG(EFF_RATE_10)	-0.554445	0.059533	-9.313314	0.0000
LOG(PPH)	0.723017	0.160726	4.498434	0.0000
LOG(AC-(ADJ_SF/43560))	0.090667	0.032736	2.769611	0.0066
LOG(TOTAL/HTD_SF )	0.135573	0.122294	1.108580	0.2701
POOL_PCT	0.005524	0.001521	3.632828	0.0004
REUSE_PCT	-0.001577	0.000838	-1.882025	0.0625
R-squared	0.736510	Mean dependent var	1.958379	
Adjusted R-squared	0.722006	S.D. dependent var	0.401715	
S.E. of regression	0.211805	Akaike info criterion	-0.207859	
Sum squared resid	4.889865	Schwarz criterion	-0.041694	
Log likelihood	19.05581	F-statistic	50.77970	
Durbin-Watson stat	1.585698	Prob(F-statistic)	0.000000	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE F.1. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**COMBINED UTILITY MODEL F.1**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:36  
 Sample (adjusted): 3 164 IF AVG\_LOC > 19  
 Included observations: 116 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.2018	0.5900	2.0369	0.0441
LOG(EFF_RATE_10)	-0.5644	0.0595	-9.3133	0.0000
LOG(PPH)	0.7230	0.1607	4.4984	0.0000
LOG(AC-(ADJ_SF/43560))	0.0907	0.0327	2.7696	0.0066
LOG(TOTAL/HTD_SF)	0.1356	0.1223	1.1086	0.2701
POOL_PCT	0.0055	0.0015	3.6328	0.0004
REUSE_PCT	-0.0016	0.0008	-1.8820	0.0625

R-squared	0.7365	Mean dependent var	1.9584
Adjusted R-squared	0.7220	S.D. dependent var	0.4017
S.E. of regression	0.2118	Akaike info criterion	-0.2079
Sum squared resid	4.8899	Schwarz criterion	-0.0417
Log likelihood	19.0558	F-statistic	50.7797
Durbin-Watson stat	1.5857	Prob(F-statistic)	0.0000

Average monthly use (gal)	ACTUAL	MODEL EST
	7,288	7,288
Dependent Variable: LOG(CONS_AVG)	1,958	1,986

ADJ EST	VAR
4,366	(2,922)
1,474	-40%

Constant	CURRENT	NEW VALUE
Average water rate per 1,000 gallons @10,000 gallons	1.202	
Average household size (pph)	-0.479	2.37
Yard area (acres), total lot size less developed area	0.637	2.41
Average total property value per square feet (\$)	-0.114	0.28
Percent of homes with pool (%)	0.587	76.12
Percent of accounts using reclaimed (%)	31	31
	11	11

ANNUAL USE	mgal
11,746	

Total Conservation Opportunity	Customers	mgal	mgd
	134,312	(4,710)	(12.9)
		-40%	

% Chg in Price	0%	e =	0.0
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Average Household Size (US Census)	2.41
Per Capita Use per Day	99

Chg in per capita use	(40) gpd
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# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE F2. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

<b>COMBINED UTILITY MODEL F.1</b>				
Variable	Coefficient	Std. Error	t-Statistic Prob.	
C	1.2018	0.5900	2.0369	0.0441
LOG(EFF_RATE_10)	-0.5644	0.0595	-9.3133	0.0000
LOG(PPH)	0.7230	0.1607	4.4984	0.0000
LOG(AC-(ADJ_SF/43560))	0.0907	0.0327	2.7696	0.0066
LOG(TOTAL/HTD_SF)	0.1356	0.1223	1.1086	0.2701
POOL_PCT	0.0055	0.0015	3.6328	0.0004
REUSE_PCT	-0.0016	0.0008	-1.8820	0.0625
R-squared	0.7365		Mean dependent var	1.9584
Adjusted R-squared	0.7220		S.D. dependent var	0.4017
S.E. of regression	0.2118		Akaike info criterion	-0.2079
Sum squared resid	4.8899		Schwarz criterion	-0.0417
Log likelihood	19.0558		F-statistic	50.7797
Durbin-Watson stat	1.5857		Prob(F-statistic)	0.0000
Average monthly use (gal)				
Dependent Variable: LOG(CONS_AVG)	<b>ACTUAL</b>	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>
	7,288	7,288	6,330	(957)
	1,958	1,986	1,845	-13%
Constant				
Average water rate per 1,000 gallons @10,000 gallons	0.8646	1.202	0.8646	
Average household size (pph)	0.8809	-0.479	0.8809	
Yard area (acres), total lot size less developed area	-1.2559	0.637	-1.2559	
Average total property value per square feet (\$)	4.3324	-0.114	4.3324	
Percent of homes with pool (%)	31	0.587	31	
Percent of accounts using reclaimed (%)	11	0.170	100	
Average Household Size (US Census)				
Per Capita Use per Day	2.41	99	2.41	
ANNUAL USE				
	11,746	mgal	134,312	mgal
Total Conservation Opportunity				
Customers	134,312	mgal	(1,543)	mgal
			-13%	(4.2)
% Chg in Price				
	0%		0%	e =
NEW VALUE				
				100
Chg in per capita use				
				(13) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE F3. PRICE ELASTICITY ESTIMATE FROM CHANGE IN AVERAGE COST**

**COMBINED UTILITY MODEL F.1**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:36  
 Sample(adjusted): 3 164 IF AVG\_LOC >19  
 Included observations: 116 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.2018	0.5900	2.0369	0.0441
LOG(EFF_RATE_10)	-0.5644	0.0696	-9.3133	0.0000
LOG(PPH)	0.7230	0.1607	4.4984	0.0000
LOG(AC-(ADJ_SF/43560))	0.0907	0.0327	2.7696	0.0066
LOG(TOTAL/HTD_SF)	0.1366	0.1223	1.1086	0.2701
POOL_PCT	0.0055	0.0015	3.6328	0.0004
REUSE_PCT	-0.0016	0.0008	-1.8820	0.0625
R-squared	0.7365	Mean dependent var	1.9584	
Adjusted R-squared	0.7220	S.D. dependent var	0.4017	
S.E. of regression	0.2118	Akaike info criterion	-0.2079	
Sum squared resid	4.8899	Schwarz criterion	-0.0417	
Log likelihood	19.0558	F-statistic	50.7797	
Durbin-Watson stat	1.5857	Prob(F-statistic)	0.0000	

ACTUAL	MODEL EST
7.288	7.288
1.958	1.986

ADJ EST	VAR
5.457	(1.830)
1.697	-25%

CURRENT	NEW VALUE
\$ 2.37	\$ 4.00
2.41	
0.28	
\$ 76.12	
31	
11	

11,746	mgal	ANNUAL USE
134,312	mgal	Total Conservation Opportunity Customers
(2,960)	mgd	(8.1)
-25%		
68%		% Chg in Price
e =		-0.4
2.41	74	Chg in per capita use
(25)	gpd	

Average monthly use (gal)  
 Dependent Variable: LOG(CONS\_AVG)  
 Constant  
 Average water rate per 1,000 gallons @10,000 gallons  
 Average household size (pph)  
 Yard area (acres), total lot size less developed area  
 Average total property value per square feet (\$)  
 Percent of homes with pool (%)  
 Percent of accounts using reclaimed (%)

Average Household Size (US Census)  
 Per Capita Use per Day

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

**TABLE F4. IMPACT OF HOUSEHOLD SIZE ON TOTAL WATER USE**

**COMBINED UTILITY MODEL F.1**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:36  
 Sample (adjusted): 3 164 IF AVG\_LOC > 19  
 Included observations: 116 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.2018	0.5900	2.0369	0.0441
LOG(EFF_RATE_10)	-0.5644	0.0595	-9.3133	0.0000
LOG(PPH)	0.7230	0.1607	4.4984	0.0000
LOG(AC-(ADJ_SF/43560))	0.0907	0.0327	2.7696	0.0066
LOG(TOTAL/HTD_SF)	0.1356	0.1223	1.1086	0.2701
POOL_PCT	0.0055	0.0015	3.6328	0.0004
REUSE_PCT	-0.0016	0.0008	-1.8820	0.0625
R-squared	0.7365	Mean dependent var	1.9584	
Adjusted R-squared	0.7220	S.D. dependent var	0.4017	
S.E. of regression	0.2118	Akaike info criterion	-0.2079	
Sum squared resid	4.8899	Schwarz criterion	-0.0417	
Log likelihood	19.0558	F-statistic	50.7797	
Durbin-Watson stat	1.5857	Prob(F-statistic)	0.0000	

Average monthly use (gal)  
 Dependent Variable: LOG(CONS\_AVG)

ACTUAL	MODEL EST
7,288	7,288
1,958	1,986

ADJ EST	VAR
0	(7,287)
-8,640	-100%

Constant  
 Average water rate per 1,000 gallons @10,000 gallons  
 Average household size (pph)  
 Yard area (acres), total lot size less developed area  
 Average total property value per square feet (\$)  
 Percent of homes with pool (%)  
 Percent of accounts using reclaimed (%)

CURRENT	NEW VALUE
1,202	
-0.479	2.37
0.637	\$ 2.41
-0.114	0.28
0.587	\$ 76.12
0.170	31
-0.017	11

% Chg in Price  
 0%  
 e = 0.0

Average Household Size (US Census)  
 Per Capita Use per Day

2.41	Chg in per capita use
99	(99) gpd

11,746	ANNUAL USE
mgal	

134,312	Total Conservation Opportunity
(11,745)	Customers
-100%	mgal
(32.2)	

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES APPENDIX C – ECONOMETRIC MODELING

## Model F.2

This model differs from Model F.1 in that it includes all utilities and excludes percentage of properties with a pool, whereas Model F.1 includes percentage of properties with a pool and excludes Utility C, for which there was no data regarding percentage of properties with a pool.

A Model Summary for Model F.2, including the regression output, is presented on the second following page.

Four runs were made of Model F.2, the results of which are presented in Tables F5 through F8, which are presented following the above referenced Model Summary and are described below.

### Table F5 – Indoor/Outdoor Water Use Estimate by Eliminating Yard Area –

Table F5 presents the results of Model F.2 in which Yard Area is set at zero, thus eliminating all outdoor water use. The “New Value” box shows the yard area set to zero and the bottom line of the table shows that use per capita is reduced from 101 gallons per day to 55 gallons per day. The conclusion drawn from this model is that 55 gallons per capita per day is indoor water use and 46 gallons per capita per day (101 – 55) is attributed to outdoor water use.

### Table F6 – Indoor/Outdoor Water Use Estimate with 100% Reclaimed Water Use

Table F6 presents the results of Model F.2 in which reclaimed water use is set at 100%, thus eliminating all outdoor water use. The “New Value” box shows the percent of accounts using reclaimed water set to 100% and the bottom line of the table shows that use per capita is reduced from 101 gallons per day to 75 gallons per day. The conclusion drawn from this model is that 75 gallons per capita per day is indoor water use and 26 gallons per capita per day (101 – 75) is attributed to outdoor water use.

### Table F7 – Price Elasticity Estimate from Change in Average Cost –

Table F7 presents the results of Model F.2 in which average water rate per 1,000 gallons at 10,000 gallons is increased, thus causing a reduction in water use. The “New

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Value” box shows the average water rate per 1,000 gallons at 10,000 gallons is increased from \$2.22 to \$4.00, an increase of 192%, and the bottom line of the table shows that use per capita is reduced from 101 gallons per day to 58 gallons per day. This represents an elasticity coefficient of -0.2.

*Table F8 – Impact of Household Size on Water Use* – Table F8 presents the results of Model F.2 in which average household size is set at 0 persons per household. The “New Value” box shows the household size set to 0 persons per household, and the bottom line of the table shows that use per capita is reduced from 101 gallons per day to 0 gallons per day. The conclusion drawn from this model is that the model is properly assigning water use relative to household size because a “vacant” household is predicted to have no water use, assuming that there is no irrigation system continuing to run and no leaks.

**POTENTIAL WATER SAVINGS OF  
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*Utility Model F.2*

Estimation Command:

```
=====
LS LOG(CONS_AVG) C LOG(EFF_RATE_10) LOG(PPH) LOG(AC-(ADJ_SF/43560))
LOG(TOTAL/HTD_SF) REUSE_PCT
```

Estimation Equation:

```
=====
LOG(CONS_AVG) = C(1) + C(2)*LOG(EFF_RATE_10) + C(3)*LOG(PPH) +
C(4)*LOG(AC-(ADJ_SF/43560)) + C(5)*LOG(TOTAL/HTD_SF) + C(6)*REUSE_PCT
```

Substituted Coefficients:

```
=====
LOG(CONS_AVG) = 0.01636101655 - 0.5203361223*LOG(EFF_RATE_10) +
0.8220004024*LOG(PPH) + 0.1082853045*LOG(AC-(ADJ_SF/43560)) +
0.4321077287*LOG(TOTAL/HTD_SF) - 0.003325006728*REUSE_PCT
```

***Regression Output***

Dependent Variable: LOG(CONS\_AVG)  
Method: Least Squares  
Date: 09/27/04 Time: 11:53  
Sample(adjusted): 3 164 IF AVG\_LOC >19  
Included observations: 142 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016361	0.511771	0.031969	0.9745
LOG(EFF_RATE_10)	-0.520336	0.066011	-7.882585	0.0000
LOG(PPH)	0.822000	0.156706	5.245504	0.0000
LOG(AC-(ADJ_SF/43560))	0.108285	0.037551	2.883702	0.0046
LOG(TOTAL/HTD_SF)	0.432108	0.098354	4.393396	0.0000
REUSE_PCT	-0.003325	0.000854	-3.895540	0.0002
R-squared	0.636331	Mean dependent var		2.007449
Adjusted R-squared	0.622961	S.D. dependent var		0.416272
S.E. of regression	0.255606	Akaike info criterion		0.150973
Sum squared resid	8.885461	Schwarz criterion		0.275867
Log likelihood	-4.719110	F-statistic		47.59323
Durbin-Watson stat	1.677748	Prob(F-statistic)		0.000000

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE F5. INDOOR/OUTDOOR WATER USE ESTIMATE BY ELIMINATING YARD AREA**

**COMBINED UTILITY MODEL F.2**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:53  
 Sample (adjusted): 3 164 IF AVG\_LOC > 19  
 Included observations: 142 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0164	0.5118	0.0320	0.9745
LOG(EFF_RATE_10)	-0.5203	0.0660	-7.8826	0.0000
LOG(PPH)	0.8220	0.1567	5.2455	0.0000
LOG(AC-(ADJ_SF/43560))	0.1083	0.0376	2.8837	0.0046
LOG(TOTAL/HTD_SF)	0.4321	0.0984	4.3934	0.0000
REUSE_PCT	-0.0033	0.0009	-3.8955	0.0002

R-squared 0.6363 Mean dependent var 2.0074  
 Adjusted R-squared 0.6230 S.D. dependent var 0.4163  
 S.E. of regression 0.2556 Akaike info criterion 0.1510  
 Sum squared resid 8.8855 Schwarz criterion 0.2759  
 Log likelihood -4.7191 F-statistic 47.5932  
 Durbin-Watson stat 1.6777 Prob(F-statistic) 0.0000

ACTUAL	MODEL EST
7,664	7,663
2,007	2,039

ADJ EST	VAR
4,186	(3,497)
1,432	-46%

ANNUAL USE
12,385 mgal

Total Conservation Opportunity	mgal
Customers	134,312
	(5,637)
	-46%
	(15.4)

Constant 0.0164  
 Average water rate per 1,000 gallons @10,000 gallons -0.4159 \$ 2.22  
 Average household size (pph) 0.7497 2.49  
 Yard area (acres), total lot size less developed area -1.2989 0.27  
 Average total property value per square feet (\$) 1.8668 75.20  
 Percent of accounts using reclaimed (%) 11 -0.0373 11

CURRENT	NEW VALUE
\$ 2.22	0.00
2.49	
0.27	
75.20	
11	

% Chg in Price	e =
0%	0.0

Chg in per capita use
(46) gpd

Average Household Size (US Census) 2.49  
 Per Capita Use per Day 101

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE F.6. INDOOR/OUTDOOR WATER USE ESTIMATE WITH 100% RECLAIMED WATER USE**

<b>COMBINED UTILITY MODEL F.2</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Dependent Variable: LOG(CONS_AVG)				
Method: Least Squares				
Date: 09/27/04 Time: 11:53				
Sample(adjusted): 3 164 IF AVG_LOC >19				
Included observations: 142 after adjusting endpoints				
C	0.0164	0.5118	0.0320	0.9745
LOG(EFF_RATE_10)	-0.5203	0.0660	-7.8826	0.0000
LOG(PPH)	0.8220	0.1567	5.2455	0.0000
LOG(AC-(ADJ_SF/43560))	0.1083	0.0376	2.8837	0.0046
LOG(TOTAL/HTD_SF)	0.4321	0.0984	4.3934	0.0000
REUSE_PCT	-0.0033	0.0009	-3.8955	0.0002
R-squared	0.6363	Mean dependent var	2.0074	
Adjusted R-squared	0.6230	S.D. dependent var	0.4163	
S.E. of regression	0.2556	Akaike info criterion	0.1510	
Sum squared resid	8.8855	Schwarz criterion	0.2759	
Log likelihood	-4.7191	F-statistic	47.5932	
Durbin-Watson stat	1.6777	Prob(F-statistic)	0.0000	
Average monthly use (kgal)				
Dependent Variable: LOG(CONS_AVG)				
Constant	0.0164	<b>MODEL EST</b>	<b>ADJ EST</b>	<b>VAR</b>
Average water rate per 1,000 gallons @10,000 gallons	-0.4159	7.684	5.719	(1.964)
Average household size (pph)	0.7497	2.007	1.744	-26%
Yard area (acres), total lot size less developed area	-1.2989			
Average total property value per square feet (\$)	4.3201			
Percent of accounts using reclaimed (%)	11			
Total Conservation Opportunity				
Customers mgal (3,165) -26% (8.7)				
ANNUAL USE mgal 12,385				
% Chg in Price 0% e = 0.0				
NEW VALUE 100				
CURRENT 100				
Average Household Size (US Census) 2.49				
Per Capita Use per Day 101				
Chg in per capita use (26) gpd				

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE F7. PRICE ELASTICITY ESTIMATE FROM CHANGE IN AVERAGE COST**

**COMBINED UTILITY MODEL F.2**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:53  
 Sample (adjusted): 3 164 IF AVG\_LOC > 19  
 Included observations: 142 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0164	0.5118	0.0320	0.9745
LOG(EFF_RATE_10)	-0.5203	0.0660	-7.8826	0.0000
LOG(PPH)	0.8220	0.1567	5.2455	0.0000
LOG(AC-(ADJ_SF/43560))	0.1083	0.0376	2.8837	0.0046
LOG(TOTAL/HTD_SF)	0.4321	0.0984	4.3934	0.0000
REUSE_PCT	-0.0033	0.0009	-3.8955	0.0002
R-squared	0.6363		Mean dependent var	2.0074
Adjusted R-squared	0.6230		S.D. dependent var	0.4163
S.E. of regression	0.2556		Akaike info criterion	0.1510
Sum squared resid	8.8855		Schwarz criterion	0.2759
Log likelihood	-4.7191		F-statistic	47.5932
Durbin-Watson stat	1.6777		Prob(F-statistic)	0.0000

ACTUAL	MODEL EST
7,664	7,663
2,007	2,039

ADJ EST	VAR
5,661	(2,022)
1,734	-26%

ANNUAL USE
12,385 mgal

Total Conservation Opportunity	Customers	Opportunity
134,312	mgal	(3,259)
		-26%
		(8.9)

Constant	CURRENT	NEW VALUE
0.0164	2.22	\$ 4.00
0.7994	2.49	
0.9121	0.27	
-1.2989	75.20	
4.3201	11	
11		

% Chg in Price	80%	e =	-0.3
----------------	-----	-----	------

Average water rate per 1,000 gallons @10,000 gallons	2.49
Average household size (pph)	101
Yard area (acres), total lot size less developed area	
Average total property value per square feet (\$)	
Percent of accounts using reclaimed (%)	
Average Household Size (US Census)	2.49
Per Capita Use per Day	75
	(27) gpd

# POTENTIAL WATER SAVINGS OF CONSERVATION TECHNIQUES

## APPENDIX C – ECONOMETRIC MODELING

**TABLE F8. IMPACT OF HOUSEHOLD SIZE ON TOTAL WATER USE**

**COMBINED UTILITY MODEL F.2**

Dependent Variable: LOG(CONS\_AVG)  
 Method: Least Squares  
 Date: 09/27/04 Time: 11:53  
 Sample(adjusted): 3 164 IF AVG\_LOC >19  
 Included observations: 142 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0164	0.5118	0.0320	0.9745
LOG(EFF_RATE_10)	-0.5203	0.0660	-7.8826	0.0000
LOG(PPH)	0.8220	0.1567	5.2455	0.0000
LOG(AC-(ADJ_SF/43560))	0.1083	0.0376	2.8837	0.0046
LOG(TOTAL/HTD_SF)	0.4321	0.0984	4.3934	0.0000
REUSE_PCT	-0.0033	0.0009	-3.8955	0.0002
R-squared	0.6363		Mean dependent var	2.0074
Adjusted R-squared	0.6230		S.D. dependent var	0.4163
S.E. of regression	0.2556		Akaike info criterion	0.1510
Sum squared resid	8.8855		Schwarz criterion	0.2759
Log likelihood	-4.7191		F-statistic	47.5932
Durbin-Watson stat	1.6777		Prob(F-statistic)	0.0000

ACTUAL	MODEL EST
7,664	7,663
2.007	2.039

ADJ EST	VAR
0	(7,663)
-8.174	-100%

Average monthly use (kgal)  
 Dependent Variable: LOG(CONS\_AVG)

Constant	CURRENT	NEW VALUE
0.7994	2.22	
0.9121	2.49	0.00
-1.2989	0.27	
4.3201	75.20	
11	11	

Average water rate per 1,000 gallons @10,000 gallons  
 Average household size (pph)  
 Yard area (acres), total lot size less developed area  
 Average total property value per square feet (\$)  
 Percent of accounts using reclaimed (%)

Average Household Size (US Census)	2.49	Chg in per capita use
Per Capita Use per Day	101	(101) gpd

ANNUAL USE	mgal
12,385	mgal

Total Conservation Opportunity	mgal
Customers	134,312
	(12,382)
	-100%
	(33.9)

% Chg in Price 0% e = 0.0