

**Polk County Utilities, Florida**

# **WATER CONSERVATION MANUAL**

**Utilities Code Reference Manual 6(F)**



Polk County Board of County Commissioners

## WATER CONSERVATION MANUAL

### SUMMARY OF CHANGES

#### Authorization #1 - Amendments Effective March 31, 2012

1.0 Introduction	Section Name	Change Description
1.0 Introduction	1.4.5: System Deficiencies	Clarified Meter Calibration, Replacement, Audits, Testing, and Reporting Schedule
1.0 Introduction	1.4.10: Institutional and Political Factors	Inserted qualifying statement concerning means of efficiently administering the Water Shortage Ordinance
2.0 Review of Current Water Conservation Measures	2.2.5: Increased Code Enforcement	Polk County Ordinance No. 09-050 describes the means of administering the Water Shortage Ordinance within Polk County; Description of warnings and fines for Water Use Restriction Violations
2.0 Review of Current Water Conservation Measures	2.2.6: Leak Detection and Meter Testing/Replacement	Replacement of old customer meters with a description of the new Automated Meter Radio (AMR) reading devices and how they report data to PCU. Residential Meter Replacement Schedule.
Appendix A-100:	Reference List	Added Polk County Ordinance 09-050; Noted that Polk County Ordinance 03-21 the Utilities Code Ordinance, March 2003 was Repealed

#### Authorization #2 - Amendments Effective December 15, 2012

1.0 Introduction	Section Name	Change Description
1.0 Introduction	1.4.10: Institutional and Political Factors	Added cross reference to Reclaimed Water Policy Manual, Section 4.2; deleted referenced to Ordinance 03-21

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## WATER CONSERVATION POLICY MANUAL

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### 1.0 INTRODUCTION

#### 1.1 General

Polk County Utilities (PCU) owns and operates 16 community PWS systems in six (6) Regional Utility Service Areas that combined, equate to a total service area of 213 square miles (136,320 acres) of Polk County. These Regional Utility Service Areas are as follows: The Central Regional Utility Service Area (CRUSA), Northeast Regional Utility Service Area (NERUSA), the Northwest Regional Utility Service Area (NWRUSA), the Southwest Regional Utility Service Area (SWRUSA), the East Regional Utility Service Area (ERUSA), and the Southeast Regional Utility Service Area (SERUSA). The PCU Regional Utility Service Areas (RUSAs) are illustrated in **Figure I**.

PCU's Public Water Supply (PWS) systems are identified by the customer billing zones and the servicing water treatment plants (WTPs). **Table I** shows the billing zones and corresponding water treatment plants by PCU PWS.

#### 1.2 Purpose

The majority of Polk County is within the Southern Water Use Caution Area (SWUCA). The purpose of the SWUCA is to recognize that the region is in need of specialized water resource management. Water resource concerns associated with the SWUCA involve the decline of lake levels along the Highlands Ridge and advancing coastal saltwater intrusion in the Floridan Aquifer. Water withdrawals at any point in the SWUCA can affect water levels over large areas. **Table II** indicates the PCU PWSs and the Water Use Caution Areas associated with each one.

In 2003, the St. John's River Water Management District was relieved of jurisdiction over the northeast portion of Polk County. Most of the PCU RUSAs are now within the jurisdiction of SWFWMD. A small portion of the SERUSA (Walk-in-Water PWS) and NERUSA (Oak Hills WTP) are within the SFWMD. As all six (6) of PCU's RUSAs have the same basic issues with regard to water conservation and the implementation of most water conservation programs will be conducted for all RUSAs concurrently so as to provide water conservation benefits to all of our customers equally, this MANUAL is being updated to incorporate the MANUAL for each service area into one document with a separate Appendix for each service area to address specific differences in demographics and availability of some programs, such as reclaimed water service. In general, this MANUAL has been developed to support current and future water use permitting efforts with the Southwest Florida and South Florida Water Management Districts (SWFWMD and SFWMD) and will promote effective water resource protection.

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This MANUAL includes a combination of educational, financial, operational, and regulatory initiatives to encourage efficient water use, while remaining consistent with PCU's goals in customer service. New positions and programs have been created at PCU to implement water conservation methods, expand reclaimed water service, and promote public education on water conservation. PCU's problem of minimal staff resources has limited this effort in the past.

### 1.3 **Definitions**

Except where specific definitions are used within a specific section, the following terms, phrases, words, and their derivations shall have the meaning given herein when consistent with the context. Words used in the present tense include the future tense, words in the plural number include the singular number, and words in the singular number include the plural number. The word "shall" is mandatory, and the word "may" is permissive.

**AWWA:** American Water Works Association. Any reference to AWWA Standards shall be taken to mean the most recently published revision unless other wise specified.

**ACCEPTANCE:** formal acceptance of a utility system by the County in open session by way of agenda item approval, as prepared and presented by PCU.

**BUILDING DIVISION:** County Building Division.

**COMMERCIAL:** NON-RESIDENTIAL.

**CONSTRUCTION PLANS:** drawings submitted to Polk County for approval for construction of utility systems.

**COMPREHENSIVE PLAN:** the Polk County Comprehensive Plan (most recent edition).

**CONTRACTOR:** person, firm, or corporation with whom a contract for work has been made by owner, developer, or County.

**CONVEYANCE AND OWNERSHIP OF UTILITY SYSTEMS:** all utility system components to be owned by PCU shall be conveyed to PCU by proper bill of sale immediately after the Board's written acceptance of the construction of said utility system.

**COUNTY:** Polk County Board of County Commissioners, Polk County, Florida.

**COVER SHEET:** the first sheet in a set of engineering drawings or plans.

**DEVELOPER:** person, firm, or corporation engaged in developing or improving real estate for use or occupancy.

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**DEVELOPMENT (AKA DEVELOPER), UTILITIES, OR INTERLOCAL AGREEMENT:** a written agreement between the BOCC and a developer, property owner, or governmental entity setting forth in detail the terms and conditions under which PCU will provide utility service to the developer's project, the property owner's property, or the governmental entity. Such agreement will be made at the option of PCU where it deems such an agreement is in its best interest in order to facilitate the construction of capital project improvements that are designated in the Community Investment Plan and/or Master Plan for a particular RUSA, or as otherwise deemed necessary by PCU.

**DEVELOPMENT COORDINATION:** the Development Review staff located within the Land Development Division.

**DIRECTOR:** the person who is responsible for the day to day administration and management of Polk County Utilities.

**DRAWINGS:** engineering drawings or plans prepared by engineer.

**ENGINEER:** Person or firm that is licensed by the State of Florida as a professional engineer pursuant to F.S. Ch 471.

**EXCLUSIVE PROVIDER:** except as otherwise provided herein and approved by PCU, PCU shall be the exclusive provider of utility service within a PCU RUSA.

**FACILITY:** utility systems and related infrastructure.

**FDOT:** the Florida Department of Transportation.

**INSPECTOR:** an individual empowered by Polk County to inspect potable water, wastewater, and reclaimed water facilities.

**LAND DEVELOPMENT CODE:** the "Polk County Land Development Code".

**MANUAL:** this document titled: "Polk County Utilities Water Conversation Policy Manual".

**NON-RESIDENTIAL:** a land development project intended for construction of infrastructure improvements for non-residential unit(s) and/or use(s). Non-residential units and/or uses include all units/uses that are not individually metered single family dwellings, including, but not limited to: commercial, industrial, institutional, short-term rental, and other business enterprises, and all master-metered residential developments, such as duplex, triplex, quadruplex, apartment, condominium, and other multifamily units/complexes, mobile home parks, recreational vehicle parks, etc.

**OPERATIONS:** the Polk County entity responsible for the operations and maintenance of the Polk County Utilities potable water, wastewater, and

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reclaimed water systems.

**POLK COUNTY UTILITIES (PCU):** the Polk County entity that has the responsibility of administering, operating, and maintaining the Polk County Utilities (PCU) water, wastewater, and reclaimed water utility systems.

**POLK COUNTY UTILITIES EASEMENT:** an easement as specified in the Utilities Standards and Specifications Manual that is dedicated to the use of PCU. Conveyance of any PCU easement not depicted on a recorded plat shall be by separate easement document in recordable form approved by PCU.

**POTABLE WATER SYSTEM:** the pipes, structures, equipment, processes, land, and appurtenances thereto that is required to operate and maintain a system to treat, pump, store, distribute, and meter potable water.

**PLANS:** means drawings as defined herein above.

**RECLAIMED WATER SYSTEM:** the pipes, structures, equipment, processes, land, and appurtenances thereto, that is required to operate and maintain a system which produces and distributes reclaimed water for irrigation purposes and other authorized uses.

**RECORD DRAWINGS:** drawings prepared by a Florida licensed professional engineer or Florida licensed professional land surveyor providing information, both written and drawn, as to the actual locations, elevations, and alignments of valves, fittings, hydrants, manholes, pipes, etc.

**REFERENCE MANUAL 6(A):** the Polk County Utilities Administration Manual, adopted by reference herein.

**REFERENCE MANUAL 6(B):** the Polk County Utilities Standards and Specifications Manual, adopted by reference herein.

**REFERENCE MANUAL 6(C):** the Polk County Utilities Cross-Connection Control Policy Manual, adopted by reference herein.

**REFERENCE MANUAL 6(D):** the Polk County Utilities Reclaimed Water Policy Manual, adopted by reference herein.

**REFERENCE MANUAL 6(E):** the Polk County Industrial Wastewater Pre-Treatment Policy Manual, adopted by reference herein.

**REFERENCE MANUAL 6(F):** this Manual, the Polk County Utilities Water Conservation Policy Manual, adopted by reference herein.

**REFERENCE MANUAL 6(G):** the Polk County Utilities Fats, Oils, and Grease Policy Manual, adopted by reference herein.

**REGIONAL UTILITY SERVICE AREA:** an established area for the purpose

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of planning and the provision of utility service to existing and future PCU customers. Because of the large size and topographic diversity of Polk County, it is not practical to construct a single unified or a completely interconnected system of utility facilities. Therefore, a series of separate utility systems is provided as needed in accordance with reasonable and acceptable engineering standards and economic principles.

**RESIDENTIAL:** a single-family residential dwelling unit served by an individual meter, not including a short-term rental unit.

**SHORT-TERM RENTAL:** a dwelling unit which is made available more than three times a year for periods of fewer than 30 calendar days or one calendar month at a time, whichever is less, for use, occupancy or possession by the public, regardless of the form of ownership of the unit. Dwelling units commonly referred to as “timeshares,” “vacation rentals,” and “holiday rentals” which possess the above characteristics are included within this definition.

**SPECIFICATIONS:** the construction specifications contained in the “Polk County Utilities Standards and Specifications Manual”.

**STANDARDS:** the design standards contained in the “Polk County Utilities Standards and Specifications Manual”.

**SURVEYOR:** A person licensed by the State of Florida as a professional surveyor and mapper pursuant to Chapter 472, F.S.

**UTILITY SERVICE:** the provision of potable water, wastewater, and/or reclaimed water service to a customer.

**UTILITY SYSTEM:** potable water, reclaimed water, and wastewater transmission mains, distribution mains, pipes, fittings, valves, hydrants, services, meters, pumps, pump stations, production facilities, treatment facilities, and miscellaneous related appurtenances.

**WASTEWATER SYSTEM:** the structures, equipment, processes, land, and appurtenances thereto, required to operate and maintain a system to collect, convey, and treat wastewater and dispose of the effluent and sludge. Wastewater systems do not include storm water facilities.

**WORK:** the labor, materials, equipment, supplies, services, and other items necessary for the execution, and completion of the utility system.

### 1.4 Data Collection

The challenge of water resource planning is to maintain a high quality service and sufficient supply in the face of a steady increase in water demand, decrease in resource availability and inflation in the cost of operation. SWFWMD has outlined the required information that must be

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compiled and analyzed before establishing a Water Conservation Policy for an identified service area. The applicable data components for this plan are discussed below.

### 1.4.1 Current Use

**Table III** depicts the number of residential services, industrial/commercial services and the overall water use by year and region. The type of water use and percentage of each type is also shown.

### 1.4.2 Per Capita Consumption

To calculate per capita consumption, the total average usage of a region is divided by the average functional population. PCU follows SWFWMD's compliance methodology for the calculation of functional population (*Chapter 40D-2, Florida Administrative Code (F.A.C.), Water Use Permit Information Manual Part D – Requirements for the Estimation of Permanent and Temporal Service Area Populations, Effective January 20, 2009*). The functional population estimates and per capita calculations for each of the service areas are found in **Table IV**. PCU has established a goal of 132 gallons per capita per day (gpcd) in support of complying with the standard of 150 gpcd for the SWFWMD.

### 1.4.3 Demographics and Demand Projections

The connections for the PCU RUSAs are primarily single-family homes/trailers on large lots, but also include a large number of mobile homes, multi-family units, as well as some commercial facilities. **Table V** gives the demographic breakdown for each of the service areas.

Population and corresponding water demand rates are the most important factors in determining the need for additional water supply and treatment facilities. Historical rates of water usage are analyzed to better understand demand factors. The methodology to calculate the demand projections shall involve the development of a baseline population and then project population growth at a reasonable rate consistent with the appropriate demand factors within each service area. An average residential per capita rate is then calculated for the baseline water usage in each service area and then multiplied by the population projection for each service area to determine the future water demand. The population projections and future water demands



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are included in the **Table VI** for each service area.

### 1.4.4 Supply Sources

The existing water supply source for all of PCU's RUSAs is from groundwater wells drilled into the Upper Floridan Aquifer. SWFWMD has permitted a groundwater withdrawal of nearly 26 MGD (annual average daily flow (AADF) basis). SWFWMD has permitted an additional 3.1 MGD (AADF). A breakdown of the permitted quantities for each of the service areas is shown in **Table VII**.

### 1.4.5 System Deficiencies

When water use reports are found to be irregular, it is usually due to correlation discrepancies between well meters and the billing procedures. PCU continually reviews its billing system for coding errors to help alleviate the problem and they continually utilize Best Management Practices to reduce unaccounted for water loss in the field. While PCU is prompt in repairing leaks and faulty meters, staff has found that most unaccounted for water events are due to flushing reports that are not promptly submitted or never completed as well as unrecovered quantities from the issuance of credits to water accounts when customers have a line break or leak.

PCU is approaching leak detection and water use audits from two ways. The first is through PCU's Leak Detection and System Maintenance/Repair Program. The Operations and Maintenance Division handles leak detection on an operator detection or complaint basis only. PCU works quickly and diligently to repair any discovered leaks. Most work orders regarding leaks are generated by customer calls.

All meters for pipe sizes two (2) inches in diameter and greater are retrofitted by the Customer Services Section of PCU. The Section calibrates large commercial meters annually, and replaces any meters which are reported inaccurate. Upon request, residential meters are audited and/or tested for accuracy. Daily reports on meters and readings are monitored for accuracy, if the reports reflect inconsistency, the meter is changed out. Residential meters are on a preventive maintenance program and are subject for change every ten (10) years. Annually, commercial meters and water and wastewater plant meters are tested and calibrated. All services with cross connection control assemblies are tested once a calendar year. Defective meters are repaired and rebuilt or replaced. Unscheduled

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services are handled through work orders generated by customer requests.

PCU has implemented an illegal connection detection program. Private developers originally owned many of the water systems currently owned by the PCU. Thus, specific information regarding the location of all main line connections is not available. It has been discovered that a number of these systems may have numerous unmetered connections. Also, with all of the on-going new development, tie-ins to the lines occur and often the water is used for site construction without being metered or paid for. PCU has instituted a program to detect "illegal" connections and seal them off. Water pumpage records can now be compared to the billing records. Individual systems with high unaccounted for water use are then systematically evaluated for unmetered connections.

The second approach is aimed at the customer base to identify water loss and leaks on the customer side of the meter. This program, handled by the Customer Service Division, consists of audits on meters indicating irregular meter readings. These audits will include calibration checks on each source meter, the identification of service meters that have recorded zero consumption three months in a row, the isolation of water consumption by subdivision for targeting conservation efforts and identifying system leaks. Prior to July 1, 2004, PCU contracted with Water Works of America to perform individual home water audits. On July 1, 2004, PCU hired a Mobile Irrigation Lab Technician to replace the contract for the individual home water audits. This individual would set appointments with customers who are having high water bills and reviews their irrigation system for water conserving improvements. In 2007, PCU completed a meter change out program to replace existing customer meters with automatic read meters. The Customer Service Division can evaluate exception reports for meters reading constantly more than 24 hours and identify other unusual use patterns without having to send out a technician.

Flow meter calibrations are required to be within 5% of any test meter result (high or low), which if the well pump contributes a large amount to the total water supply, can account for a significant portion of the unaccounted for water loss. The overall average unaccounted for water loss percentage for PCU is less than 10%. The unaccounted for water loss by service area is shown in **Table VIII**.

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### 1.4.6 Interlocal Service Agreements

Most of PCU's water customers are located in one of six large PWS systems within the six (6) RUSAs. The remaining customers are located in smaller, isolated systems within the six (6) regions. Due to the distance these isolated systems are from the larger systems, the entire RUSA cannot be interconnected, within the region or between regions. Some of these PWS systems have emergency interconnects with local municipalities or neighboring communities. **Table IX** indicates any interconnections PCU has with other municipalities or counties by region.

### 1.4.7 Water Quality and Treatment and Distribution Systems

PCU conducts water quality assessments for raw water supply wells and the points of entry (WTP-source). The samples are taken and analyzed every three years for primary and secondary drinking water standards, as defined in Chapter 62-550, F.A.C.

Each PWS is comprised of separate WTPs that are owned and operated by PCU. Each WTP uses variations on the same process of treatment; raw water is pumped from the well, chlorinated for disinfection, and pumped to hydro-pneumatic tanks for distribution. The individual plants differ somewhat in equipment and structure. Differences in treated water quality would be due to point of chlorine application and the corrosion control treatment. Some systems require additional treatment to address specific water quality issues. These treatment processes are summarized by PWS in **Table X**.

### 1.4.8 Reclaimed Water Service Potential

PCU has a Public Access Reclaimed Water Program for golf courses, common area irrigation, and residential landscape irrigation. However, this service is available in only three of the RUSAs (NERUSA, NWRUSA, and SWRUSA). The characteristics of each of PCU's public access reclaimed water systems are illustrated in **Table XI**. The existing transmission mains and status of each subdivision are depicting in the Reclaimed Water System Maps, included as **Figures 2, 3 and 4** for the SWRUSA, NERUSA and NWRUSA, respectively.

The remaining systems, CRUSA, ERUSA, and SERUSA, do not have a high potential demand for residential reuse because the region is characterized as rural. There are scattered residential subdivisions, which are older and do not contain reclaimed water lines. In addition,

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the wastewater treatment facilities in these regions do not have enough flow to supply sufficient reclaimed water to the area to make the capital outlay expense feasible. Currently, effluent disposal is through percolation ponds onsite and offsite. Based on the rural setting, few established subdivisions and limited change of large-scale subdivisions; it is not feasible, nor possible, under the current County ordinance to provide reclaimed water to existing residents. The potential for reclaimed water use will be addressed in each update of the region-specific Master Plan.

One of the main objectives of the updated conservation program will be an emphasis on the promotion of reclaimed water and alternative water supply exploration.

### **1.4.9 Environmental Aspects**

To identify potential environmental impacts to existing legal users and natural systems, PCU contracts groundwater modeling services to evaluate any requested withdrawals for such impacts. Should modeling scenarios indicate potential affects, PCU works closely with the Water Management Districts to establish Environmental Monitoring Plans (EMPs) specifically designed to detect any actual impacts associated with the permitted withdrawal rates. EMPs have been developed for the NERUSA, NWRUSA, SERUSA and the CRUSA. An EMP for the SWRUSA is currently in development.

### **1.4.10 Institutional and Political Factors**

The Polk County Building and Codes Division requires the guidelines established for municipality in the Florida Plumbing Code. Through the Comprehensive Plan and Land Development, the County promotes the use of water conserving plumbing fixtures and Florida-friendly landscaping practices. Water efficient landscaping and irrigation requirements for non-residential development were addressed in revisions to the Land Development Code in 2003. Subsequently in 2009, additional landscape and irrigation requirements were adopted and became applicable to single family residential lots as well.

Polk County has adopted a *Flood Plain Ordinance (No. 00-009 Land Development Code)* as required to participate in the National Flood Insurance Program (NFIP) administered through the Federal Emergency Management Act (FEMA). All development is required to receive the proper building and site alteration permits. All new structures are required to be placed above the base flood elevation

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(when the base flood elevation is known). The County is also a participant in FEMA's Community Rating System and has received a Class 7 Rating.

The County has in place a *Water Shortage Ordinance No. 92-35*, which states that PCU will follow water restrictions in place by the water management districts, dependent on region. This Ordinance was issued in October 1992. PCU issued an *Emergency Ordinance for Water Supply No. 00-25* in June 2000. This Ordinance consolidates the water restrictions by proclaiming all PCU customers be governed by only the rules established by SWFWMD for consistency. Polk County's *Year Round Water Conservation Measures and Water Shortage Ordinance (No. 04-07)*, approved on February 18, 2004, allows for improved enforcement of watering restrictions as set by the SWFWMD and allows for localized limits on the use of reclaimed water that could be the same as irrigation standards for potable water. This ordinance authorizes law enforcement officers and representatives of any agency from within Polk County to levy fines for violations. *Sections 8 and 9 of Polk County Ordinance No. 04-07* were amended by *Ordinance No. 09-050* providing a more expeditious and efficient means of administering the Water Shortage Ordinance. Currently, cases are handled by a Codes Enforcement Officer position funded by PCU and by Environmental Deputies from the Polk County Sheriff's Office. Stronger watering restrictions were implemented in our Northeast Regional Utility Service Area in order to further conserve water.

On March 5, 2003, the County adopted *Ordinance No. 03-21 the Polk County Utilities Code*, which included regional water conservation plans for the six (6) PCU's service areas. As indicated in the Introduction, this MANUAL is intended to be an updated replacement of the previous six regional plans.

PCU's Reclaimed Water Program continues to be an integral part of the Polk County's conservation efforts. Connection requirements related to the County's reclaimed water system may be found in the Reclaimed Water Policy Manual, Section 4.2: Requirement to Install Onsite Distribution and Irrigation Systems. The cost to the customer for using PCU's reclaimed water service is currently lower than for using potable water service.

The Polk County Board of County Commissioners (BoCC) has also created a Water Policy Committee, whereby the BoCC will be able to take a leadership role in protecting and developing the County's water

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resources for the benefit of its citizens and environment. Since the adoption of the Water Policy Advisory Committee in early 2003, PCU has commenced metering and charging for reclaimed water, implementing a water shortage ordinance and coordinating The Heartland Water Alliance between Polk, Hardee, and Highlands Counties. In addition, the Polk County Water Alliance between the County and the municipalities within the County may further assist the water management districts in integrating the cities and utilities toward incorporating uniform guidance standards for water conservation efforts and future water supplies.

### **1.4.11 Financial Resources**

PCU budgets considerable funds every year for water conservation activities. PCU also applies annually and receives Community Education Grants to help with the costs of public education events for water conservation awareness. To date, PCU has partnered with the SWFWMD and SFWMD on a number of Cooperative Funding agreements to fund reclaimed water ground storage reservoirs, transmission mains and pumping systems as well as a Low-Flow Toilet Rebate Program. The County will continue to explore such opportunities in order to fund additional projects.

### **1.4.12 Fiscal Structure**

PCU has an inclining block water conservation rate structure. The current rate structure is provided as **Appendix A**.

### **1.4.13 Potential Problems with Conservation**

PCU is implementing this MANUAL to protect future water resources from overuse and to meet regulatory criteria. The success of the MANUAL largely depends on the attitude of the public and the individual customer's commitment. Initial enthusiasm does not guarantee continued efforts to conserve water. Therefore, the County must devote sufficient resources to the promotion of a program that is focused on changing the attitudes of the public toward water conservation by educating them on issues such as declining aquifer and lake levels and eliminating water wastefulness.

Enforcement has been especially difficult because there is limited staff. The public information programs have been restricted by a lack of funding and low attendance at water conservation workshops. Current cost-effective plans for expanding the promotion and

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marketing of our program will include developing a Conservation web page accessible from our Polk County website, sponsoring video conservation messages on a local television channel, Polk County Government Television (PGTV) which is carried on three (3) cable television suppliers and increasing public outreach opportunities through Polk's Nature Discovery Center at Circle B Bar Preserve.

### **1.4.14 Public Relations**

The awareness of the public is considered one of the most important aspects of a water conservation plan. PCU's Public Information and Education Program previously consisted of brochures, pamphlets, and public workshops. In 2003, PCU expanded water conservation efforts throughout the County. From the first annual water conservation art contest to specialized logos on PCU vehicles aimed at sending a strong conservation message to our customers, PCU strived for cost-effective ways to support our efforts on demand reduction.

In 2003, PCU partnered with Anne Yasalonis of the Polk County Extension Office to jointly present water conservation and efficient landscape irrigation information at a number of public events. This effort has been expanded to include activation meetings for potential reuse customers as subdivisions are brought on to the reclaimed water system. In addition, PCU co-sponsored a conservation program on public television entitled, "Water's Journey" along with 145 public service announcements emphasizing the need for water conservation. The County Extension Office, in cooperation with the Community Education Grant Program of the Peace River Basin Board of SWFWMD, also provided funding to implement a Demonstration Florida-Friendly Landscape Garden at the main Utilities Administration building.

PCU maximizes water conservation opportunities by submitting its own projects to SWFWMD's Peace River Basin Board for consideration in the Community Education Grant Program. This annual grant has assisted PCU in the implementation of a conservation give-a-way program that has resulted in the distribution of thousands of educational brochures on conservation, rain gauges, leak detection kits, low-flow showerheads, and faucet aerators. Since 2003, PCU has sponsored an Annual Water Conservation Art Contest for students in grades K through 12. Submissions are judged on presentation of water conservation message and originality. Winning entries are awarded with ribbons and are showcased in an annual Water Conservation Calendar, also published by PCU. This activity is

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highlighted every year during PCU's display for National Public Works Week in May.

In addition to the promotional ideas listed above, PCU is currently considering several avenues of marketing our water conservation programs. "Bill stuffers" were used in 2008 to promote the District's Water CHAMP program for restaurants and hotels/motels. Future programs under consideration are:

- Posters for placement in public libraries, PCU customer service offices, and other county offices to reinforce the availability of a particular program as well as to keep the overall conservation message in the minds of the public;
- Press releases to local papers and radio stations on upcoming public events sponsored by PCU;
- Messages on customers' water bills;
- Promotion on Polk County's tourism website.

## **2.0 REVIEW OF CURRENT WATER CONSERVATION MEASURES**

### **2.1 Water Conservation Measures**

PCU is currently implementing water conservation measures from the previous editions of the Regional Water Conservation Plans as prepared by Boyle Engineering Corporation, dated November 2002. Although some of the measures are difficult to quantify in terms of water savings, these measures are beneficial and have assisted the County in identifying, promoting and even implementing other programs which do have quantifiable benefits. These points are highlighted below for each measure. The County will continue to fund these efforts as they are essential to having a complete and successful Water Conservation Program.

- (A) Public Information and Education Program
- (B) Promotion of Florida Friendly Landscaping
- (C) Conservation Oriented Rate Structure
- (D) Evaluation of Codes, Regulations, and Ordinances
- (E) Increased Code Enforcement
- (F) Leak Detection and Meter Testing/Replacement
- (G) Water Policy Committee



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(H) Rebate Programs

(I) Alternative Water Supply Projects/Reclaimed Water Program

### **2.2 Water Conservation Benefits and Savings**

As indicated above, most of these programs are difficult to describe in terms of measurable benefits. For those programs that are measurable, preliminary results from the NERUSA indicate that the largest savings are achieved through the conservation rate structure and the Reclaimed Water Programs. The NERUSA is used as an indicator of success due to its history of extraordinarily high per capita usage and ability to participate in all the above-listed programs. In the NERUSA, it appears that the rolling annual average per capita water use has dropped primarily due to the effectiveness of the above-listed water conservation programs. Currently, all of the RUSAs are reporting per capita usage below the 150 gpcd District's standard and every effort will be used to maintain per capita figures below the 150 gpcd standard. PCU has been working on appropriate methods of monitoring the effectiveness of each measure. The most important indication of effectiveness in the data evaluated is that while growth and population increases are continuing to occur in the NERUSA, PCU's water conservation efforts have managed to keep the annual average per capita rate relatively constant.

The benefits for the conservation measures currently being implemented in all service areas are as follows:

#### **2.2.1 Public Information and Education Program**

Public Education is the most important element of any water conservation plan. Water waste by residents can be positively affected through simple education. This program is multi-faceted, providing information to customers on how to implement some of the water saving measures on their own. While the actual water savings for these customers cannot be readily quantified, the effectiveness of the information provided would be the same for customers who implemented a project on their own as it would be if they had participated in a project implemented by the County. Most residents become interested in adopting water conserving measures when they are informed about the water resource concerns. PCU's customer service offices all have informational flyers on display for the public to assist customers with: retro-fitting with low-flow emitters, replacing high-flow toilets; planting Florida-Friendly Gardens, installing or retro-fitting with low-flow irrigation systems, as well as conservation publications aimed at making conservation fun and exciting for

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children.

PCU's water conservation educational program for children has been a tremendous success in getting the conservation message out to the public early, while good habits can be taught and bad habits can be avoided. PCU recently won an award from AWWA for our annual Water Conservation Art Contest and resulting Water Conservation Calendar. This subprogram attracts an average of 300 student artists throughout the county and results in distribution of 3,000 calendars annually. Each calendar month highlights a selected student's artwork and includes tips on how to conserve water, most of them specific to the season.

PCU actively participates in a number of public events held annually by Polk County. Water, Wings & Wild Things – Polk Naturefest is local version of National Earth Day, with attendance estimated at 4,000 guests. PCU promotes Water Conservation by having a question/answer program whereby the guest answers a conservation question and their correct/incorrect answer is recorded. Then, they get to spin a prize wheel and receive whichever prize is won, which is always a low flow/conservation item or a conservation awareness item. The answers received are reviewed and assist PCU in determining what areas need more attention for public education efforts. Other public events drawing thousands of participants include Public Works Week (PWW), where PCU's presentation also includes more in-depth information on the services we provide, and the Polk County's Citizen's Academy, where PCU can inform interested citizens about the necessity of water conservation, as well as the services that are provided.

### **2.2.2 Promotion of Florida Friendly Landscaping**

In recognition of the volume of water waste that can occur due to residential landscape irrigation, PCU has managed appropriate resources to efficiently design, construct and maintain a Florida-Friendly garden at the Utilities Administration office. Photographs and maps of the garden are displayed at public events through the County Extension office, at landscaping classes and during the Citizen's Academies held by Polk County Board of County Commissioners. As a picture is worth a thousand words, a live example speaks volumes in illustrating how beautiful and functional a Florida-Friendly garden can be to customers who may have preconceived ideas or bias to changing from a high-water use lawn. Details on different irrigation systems that would be appropriate in different microenvironments are

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also provided.

### **2.2.3 Conservation-Oriented Rate Structure**

Upon implementation of the first adoption of water conservation rates in July of 2003, PCU noted an immediate reduction in per capita water use in all RUSAs. While there is still an increase of water use during the drier months, the relatively constant rolling annual average per capita water use indicates that the water conservation rate structure is helping to keep usage down overall, even during the dry months.

### **2.2.4 Evaluation of Codes, Regulations, and Ordinances**

As supported by the District, the County has made significant advances in updating its Utilities Code, watering restriction regulations and landscape ordinance to help enforce our water conservation efforts. While these few examples are recent demonstrations, developing such tools for changing people's perspectives and habits on water use have been years in the making. Polk County Utilities will continue to review existing policies, codes and ordinances to keep pace with developing technology, new information and regulations, and results of collected data on older methodologies. These tools help policy-makers demonstrate where focus is needed and guide financial planning efforts to be more cost-effective. Without this, many of the water conservation programs in place for PCU would not have been possible.

### **2.2.5 Increased Code Enforcement**

Enforcement of water use restrictions is outlined in Polk County Ordinance No. 04-07 and amended by Polk County Ordinance No. 09-050. Ordinance 09-050 authorizes law enforcement officers and other representatives as directed by the County Manager within Polk County to issue Written Warnings, First Violation (\$50.00); Second Violation (\$200.00); Third and Subsequent Violations (\$500.00); Gross Water Waste Violations (\$1,000.00). The Polk County Board of County Commissioners approved the establishment of a Code Enforcement Officer position, funded by Utilities, to enforce water use restrictions. The position has been filled and the individual began enforcement efforts on June 30, 2003. The local press has been providing significant coverage of our enforcement efforts in the NERUSA. In addition to the Code Enforcement Officer, the Polk County Sheriff's Office (PCSO) began enforcement of the District's water use restrictions beginning May 23, 2003. Citation reports have

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been linked to PCU's customer service consumption files for reporting of trends associated with those accounts receiving citations. Program analyses for the Codes Enforcement efforts show that the annual average daily flow savings are estimated to be 124 gallons per day per connection (more than 45,000 gallons per year per violation). For the PCSO violators, the annual average daily flow savings are estimated to be 193 gallons per day per connection (more than 70,000 gallons per year per violation).

### **2.2.6 Leak Detection and Meter Testing/Replacement**

PCU has replaced all older-model residential water meters with Automated Meter Radio (AMR) reading devices. These AMR devices have the capability of detecting continuous water flow. When the meter detects a period of 24 hour continuous flow, and the meter continues to record these conditions, data is reported to PCU during the monthly meter reporting of the finding. This enables PCU to notify the consumer, in writing, that a leak and/or continuous flow has been detected. Additionally, residential meters are replaced every ten (10) calendar years during a preventative maintenance program for accuracy.

### **2.2.7 Water Policy Advisory Committee**

The Polk County Board of County Commissioners (BOCC) appointed a volunteer citizen Water Policy Advisory Committee (WPAC) in 2001. This committee meets approximately every six weeks to advise the Board on water related issues. In addition to the development of a general County Water Policy, they have developed a more detailed Water Reuse Policy that has subsequently been adopted by the Commission. Since the adoption of this policy in early 2003, Polk County has commenced metering and charging for reclaimed water and has implemented a water shortage ordinance. The goals of the committee are summarized in the in the official Water Policy, which was adopted by the BOCC on December 17, 2003, and is included as an exhibit in the Water Conservation Plan. The Year Round Water Conservation Measures and Water Shortage Ordinance (Ordinance No. 04-07), approved on February 18, 2004, facilitates the enforcement of watering restrictions and limits the use of reclaimed water to the same irrigations standards for potable water.

The Water Policy Committee operates as a clearing house for the promotion of important resource management ideas and goals for Polk County. The effectiveness of such an entity can be qualified in

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terms of the momentum generated by the Committee in pushing conservation goals and programs forward throughout the County. Once a program or goal is established as being supported by the Water Policy Committee, it generally receives approval for implementation by the BOCC. As such, the Committee has and will continue to be a tremendous resource to PCU for generating support of various programs and projects needing BOCC approval.

### **2.2.8 Rebate Programs**

PCU sponsored a Rain Sensor Rebate Program (2003-2004) and a Low-Flow Toilet Rebate Program (2004-2005) in all six (6) PCU service areas. A total of 207 rain sensors and a total of 413 low-flow toilets were installed.

The rolling annual average water usage for those customers receiving rain sensor rebates indicate an average savings in water usage of 49 gallons per day (nearly 18,000 gallons per year per home having a rain sensor). Water use savings from the Low-Flow Toilet Rebate Program indicate an average savings in water usage of 11 gallons per day (over 4,000 gallons per year per toilet replaced).

### **2.2.9 Alternative Water Supply Projects/Reclaimed Water Program**

Locations in PCU's RUSAs with a reclaimed water connection show a decrease of as much as 57% of their annual average potable water usage after connecting to the reclaimed system. This equates to an annual average water savings of 308 gallons per day, or approximately 163,520 gallons per connection per year.

## **3.0 PLANNING GOALS AND OBJECTIVES**

### **3.1 Reduce Unaccounted Water Losses**

Unaccounted for water is a serious problem to face a utility. PCU is committed, on a continuous basis, to investigate all incidences and causes for unaccounted for water.

#### **3.1.1 Billing**

Billing is accomplished with PCU's conservation rate structure on the administrative side. The majority of unaccounted for water can be identified through increased communication between the PCU Divisions and discrepancies in billing data versus flow data. PCU purchased a new system for billing operations in late 1999 that has

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helped alleviate some unaccounted for water. Continual reductions in unaccounted water loss due to billing errors must be achieved through routine review of account codes and ensuring appropriate designations for the PWS serving each account.

### **3.1.2 Leak Detection and Elimination of Illegal Connections**

Specific information regarding the location of all main line connections is not available. Ground-Penetrating Radar (GPR) is now utilized to locate all unmapped water line connections. Global Positional System is also used by inspectors to assist in mapping all available water lines. Inspections should be increased to eliminate tie-ins to existing active lines prior to payment of connection fees and meter sets. Water pumpage records are continually reviewed and compared to billing records to systematically identify unmetered connections.

### **3.1.3 System Flushing**

A portion of the non-metered water use within PCU's RUSAs is routine system flushing. Intermittent water quality issues at the treatment facilities and throughout the system necessitate the routine flushing. The resolution of such water quality treatment and distribution issues through implemented capital investment projects could help achieve withdrawal reduction and alleviate the need for system flushing. In the interim, system flushing must be properly recorded and reported to the appropriate staff for inclusion in the water use reports.

### **3.1.4 Line Breaks**

A program for reporting all line breaks is in place and water loss is estimated and recorded by the PCU Operation and Maintenance Division. Line breaks are recorded on an individual basis by Operations personnel. Initial reports are generated by customer calls or Operations staff detection. These reports are completed by the field staff who are investigating the event and are turned in daily, along with a separate water loss report, if applicable. The water loss data is tracked in a database for later use in the Annual Public Supply Surveys. The incident report is completed in a work order system database for developing preventative maintenance programs and tracking costs.

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### **3.2     Reduce Total Usage**

#### **3.2.1     Public Education**

PCU will continually add to its public information and education program. Currently, brochures providing information on the importance of water conservation are available to customers. The use of pamphlets is geared towards residents who can alleviate individual water waste. Teachers are currently required to present water conservation materials as part of the curriculum. PCU will assist the Polk County School Board by supplying conservation material that is geared appropriately toward children in schools. The importance of water conservation will be stressed while making conservation "fun" and therefore appealing to children.

Additional public information and education program methods and audiences will be developed on both long-term and short-term water conserving practices. Staff members of PCU have been available to speak to schools or other groups whenever requested. A formal community announcement of the Water Conservation Advisory Committee will provide public awareness of the County's goals. When financially feasible, through possible donations/assistance, the County plans to organize additional public service announcements and water conservation events with demonstrations and conservation handouts and/or promotional items. The month of April, "Water Conservation Month", the second week in May, "Drinking Water Week" and the third week in May, "Public Works Week" will continue to be recognized by PCU.

This program will be enhanced through numerous proactive endeavors. Given the area's growing population, the County will continue education efforts and reinforce a conservation ethic aimed at changing water use habits for the future.

#### **3.2.2     Evaluation of Codes, Regulations, and Ordinances**

The County will continue to follow water conservation plumbing codes and landscape ordinances in the Comprehensive Plan, Conservation Element, Section 2.306-B: D: Water Conservation and Reuse Program (Appendix 1). The plan requires low-volume water conserving plumbing fixtures and Florida Friendly Landscaping with drought-tolerant native vegetation (Revised August 2000) as set by the Florida Statutes (Revised by CPA-99B-32 and Ordinance 99-80 as adopted by BoCC on December 15, 1999).

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Florida-Friendly Landscaping requirements have been adopted by the Polk County Board of County Commissioners as part of a revision to the Land Development Code in 2009 (Revised by Ordinance 09-006 on March 18, 2009). These requirements will be reviewed periodically for water use efficiency by a team of key County staff.

PCU will continue to follow water use restrictions declared by SWFWMD. County Ordinance #00-25 lists all of the water shortage problems associated with the area: low well water levels, low water pressure that could hinder firefighting efforts, and irrigation that is excessively high and nonessential.

Continuation of the Water Policy Advisory Committee will provide a forum for public input, as members of the public will be included as well as PCU staff, and regulatory interests. The opportunity for public input can also be provided at proposed workshops and public education events. In addition, PCU responds to customer input on a daily basis and will continue to do so.

### **3.2.3 Conservation Oriented Rate Structure**

PCU's current inclining block water conservation rate structure is provided within **Appendix A**. PCU will constantly be reviewing the rate structure for its effectiveness in encouraging water conservation.

### **3.2.4 Fiscal Incentives**

PCU will constantly be reviewing the rate structure for its effectiveness in encouraging water conservation. Any modifications to the existing rate structure that are deemed necessary to promote the conservation of PCU's water resources will be presented to the Board of County Commissioners (BoCC) for approval.

## **3.3 Improve Quality of Service**

A goal of any utility's Water Conservation Program should be to implement the most efficient and cost-effective measures aimed at reducing water waste without lowering the quality of service to the utility's customers. This section was provided to assert the County's position to always keep that in the fore front as we plan and implement these programs. This will be accomplished by providing prompt responses to customer concerns and making provisions for adequate staffing to perform these programs.



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### **3.3.1 Prompt Response**

Prompt response is the greatest priority for line breaks and leaks. PCU responds immediately to these emergencies to prevent loss of life or property through diminished pressure in the distribution system and to limit the needless loss of water. PCU is also committed to responding quickly to customer requests for assistance when they have received a larger than normal bill or experienced some water loss.

### **3.3.2 Staff**

Staff is readily available to assist with water conservation issues. The Utilities Environmental Manager, in the Utilities Technical Services Division, devotes time and staff to the implementation of these conservation measures, as well as other water resource issues. Public input will be utilized to assess the most favorable way to develop involvement with the community. PCU will continue to host public events including Water Conservation Workshops in conjunction with SWFWMD and the City of Lakeland, Earth Day, and Public Works Week activities in conjunction with other public agencies. In addition, PCU will continue to participate in Town Hall Meetings at which water conservation information and give-aways will be provided to interested participants.

While Polk County has established a Water Policy Committee for County-wide water resource issues, a water resource and conservation committee within PCU is proposed to evaluate the success of the water conservation measures that PCU will put into practice. Reclaimed water usage, potable water usage, and other important information are to be documented in progress reports with suggestions to the local government from the committee. Within PCU, key staff members from each of PCU's four divisions will establish appropriate measures for the water resources under the control of PCU.

## **3.4 Expand Service Area and Supply Capabilities**

### **3.4.1 Population**

The existing population projections, approved through the appropriate water management district, for each service area are provided in the appropriate appendices. The overall population increase necessitates the implementation of the reuse and water conservation methods to

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help alleviate some of the demand placed on the increasing volume of groundwater withdrawal. In 2006, PCU began implementing a capacity tracking program that has provided for a more efficient planning of water resources.

### **3.4.2 Facilities**

Implementation of water conservation methods increases the efficiency of a utility. Increasing water efficiency through conservation efforts will have several benefits. The need for additional water and wastewater infrastructure will be delayed. In addition, decreasing the demand placed on our groundwater resources will extend the availability of the supply.

### **3.4.3 Reclaimed Water**

The potential for reclaimed water use, in areas where reclaimed water service is not currently available, will be addressed in future updates of the Master Plan for each region.

### **3.4.4 Desalination**

Not applicable for the current raw water quality of PCU's wells or the location of the County's infrastructure from a salt water intake feature.

### **3.4.5 Shallow Wells**

The use of shallow wells is discouraged due to the possible influence of surface water in the surficial aquifer and what affect it may have on the health of the general public. In addition, PCU has been in discussion with District staff members regarding the potential impact a large number of individual shallow wells may have on the surficial aquifer locally and consequently, adjacent environmental features such as lakes, streams and wetlands. Accordingly, the County is reviewing alternatives to shall wells and intends to adopt policies that would discourage the use of these wells within the County's utility service areas, as appropriate.

### **3.4.6 Deep Lower Floridan Aquifer Wells**

PCU has partnered with the Peace River Basin Board of SWFWMD for the exploration of the Lower Floridan Aquifer as a potential additional water supply source in the NERUSA. The project has been completed but will require additional testing to determine its suitability as a

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sustainable water supply source. In addition, the SFWMD has partnered with PCU to drill another well in the SERUSA. Pending suitable water quality results, the Lower Floridan Aquifer may provide future water supplies to the southeast region of Polk County as well.

### **3.5 Benefits versus Costs**

SFWMD recommends that municipalities investigate the benefits and costs of water conservation measures before implementation. PCU plans to carefully choose measures capable of meeting water conservation goals and objectives without incurring unnecessary costs. Through preparation of this plan, agencies and municipalities were contacted to review water conservation practices for similarly sized public supply facilities. Professional experience of the contacted individuals led to practical estimations of water savings for specific methods of conservation. The following list highlights these findings:

#### **3.5.1 System Efficiencies**

- (A) Leak detection is viewed as essential maintenance of a system, but not necessarily as a water conservation method. All water supply permittees within the SWUCA shall implement water audit programs within 2 years of permit issuance. Water audits which identify a greater 12% unaccounted water shall be followed by appropriate remedial actions. A thorough water audit can identify what is causing unaccounted water and alert the utility to the possibility of significant losses in the distribution system. A utility expert recommended annual Water Audits (<8% Unaccounted for Water-UAW usually means there are no significant leaks) and Leak Detection Survey (required if UAW is >12%).
- (B) Many municipalities have a progressive toilet/showerhead replacement program, retrofit, and irrigation program. Retrofit usually entails high costs to the customer and utility, however, toilet and showerhead programs may be eligible for funding assistance through the District's Cooperative Funding Initiative Program. Faucet water use can be reduced by up to 50% with a low-flow faucet or faucet aerator. Years of program data indicate the cost benefit for these programs is less than \$2.00/1,000 gallons, including program administration.
- (C) O&M personnel recommend testing and calibrating large meters leaving the Water Treatment Plant for proper function. For public supply utilities, usually large meters (3" and up) make up

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½ of 1% of pipeline. However, they make up approximately 30% of the total billable flow. Their maintenance should be a priority.

- (D) Literature from SWFWMD documents a study done for a similar area, Highlands Ridge. Residential water audits for indoor and outdoor use were estimated to cost \$39.00 (1989). The study indicates that low flow showerheads can reduce per capita water use by 9.7% or 7.8 gpcd if all are replaced for the home. Outdoor audits resulted in a reduction of irrigation by 39%.
- (E) Residential irrigation and landscape audits resulted in 10% overall reduction in water use for a study done in Tampa, FL. Irrigation audits have been contracted out at a cost of \$162 per residence and the landscape evaluations at \$75 per residence (1995).
- (F) A water utility near Tampa, Florida credits a decrease in gpcd to an aggressive inclining rate structure, updated annually. The customer monthly bill is highly detailed, and displays how much water was used in each price level. They are investigating implementing a surcharge for the dry season. Water use since implementation of water conserving rate structure and toilet replacement:
  - 1989=146 gpcd
  - 1999=103 gpcd
  - 2001=110 gpcd (due to an increase in new development)
- (G) To date, the SWFWMD research on soil moisture sensors has shown a water savings of 28% to 92%, depending on weather conditions.. It was noted that these types of sensors would be applicable to seasonal residences since they require virtually no maintenance. The appropriate cost (parts and labor) for the addition of simple sensor systems to an existing irrigation timer is about \$250-\$350 per installation. It is recommended that PCU seek cooperative funding from the Districts for these programs.

## 4.0 MEASURES AND IMPLEMENTATION

### 4.1 Demand Management

Demand management will be carried out with prescribed decided actions and time schedules. The following measures are required by the Water Management Districts as part of an approved MANUAL: Regulatory

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measures include plumbing and landscaping codes, irrigation and water use ordinances. Economic measures include metering, charge rates, impact and connection fees, and incentives. Educational measures include informational programs. Operational measures include distribution efficiency, reuse, enhanced supply and storage, monitoring and record keeping, and forecasting.

### **4.1.1 Regulatory Measures**

#### **a) Water Efficient Plumbing Fixtures & Landscaping Codes:**

The Polk County Building Department requires and enforces the guidelines established for municipalities set in the 1994 Standard Plumbing Code (amended by Ordinance 98-02). These standards apply to all new and replacement plumbing fixtures. All toilets manufactured since 1995 use 1.6 gallons per flush or less. In FY2005, PCU implemented a low-flow toilet program (1.6 gal/flush) and low-flow showerheads and faucets are distributed through public events with fixture discounts and/or rebates by PCU.

PCU promotes Florida Friendly Landscaping, as in FS 166.048, and promotes the use of drought-tolerant native vegetation for municipalities and residents in its Comprehensive Plan, Conservation Element. Rain sensors are required for any new automatic landscaping systems to prevent water waste. PCU implemented a rain-sensor rebate program to issue credits to those customers providing documentation that they had installed a rain-sensor on their automatic irrigation systems. The adoption of all necessary water conserving ordinances will apply to the entire County.

#### **b) Water Conservation Rate Structure:**

PCU will constantly be reviewing the rate structure for its effectiveness in encouraging water conservation. Any modifications to the existing rate structure that are deemed necessary to promote the conservation of the County's water resources will be presented to the Board of County Commissioners (BoCC) for approval.

This effort is ongoing.

#### **c) Water Shortage:**

In the event of a water shortage, as declared by the Southwest Florida Water Management District, the County has enacted an Ordinance to address these situations. The County has revised the

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current Water Shortage/Emergency Ordinance No. 00-25. The updated Ordinance No. 04-07 provides for the application and the authority to implement prescribed water restrictions and enforcement as specified by SWFWMD.

This plan is ongoing.

### **4.1.2 Educational Measures**

#### **a) Presentations and Speaker's Bureau:**

Conservation staff will establish contacts with Polk County schools and interested groups to serve as a resource for water efficiency and water quality issues. PCU staff will be available for, or will coordinate, presentations and other activities upon request. Water plant tours are also coordinated.

PCU has and will continue to participate with SWFWMD on Earth Day, other agencies for Public Works Week, and to host Town Hall meetings where the promotion of water conservation measures can be demonstrated to large groups of interested participants.

The use of public service announcements, dependent on cost and available funds, will be explored. This would be especially desirable in Polk County, with its growing population.

This effort is ongoing.

#### **b) Water Conservation Month, Drinking Water Week, and Public Works Week:**

PCU staff will continue to coordinate various educational activities to recognize and celebrate Water Conservation Month (April), Drinking Water Week (the first full week of May) and Public Works Week (also in May). The Water Wise Council as a statewide campaign for promoting water conserving issues initiated water Conservation Month. The Governor recognizes the initiative by proclamation. Drinking Water Week is the international celebration of clean drinking water. National Public Works Week publicizes the importance of public works to the community. School students, PCU staff, and the general public are the target audiences and diverse educational materials will be developed for dispersal via mail.

This effort is scheduled for implementation in early February to mid May, each year.

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c) Water Use Audits:

Auditing water use is an essential component of formulating water efficiency strategies for a customer. The information gathered during an audit can also serve as a foundation for other projects within the utility. By employing modern technology and consultation, residential, commercial, and irrigation audits can be performed for customers showing higher than normal water bills.

This effort will be continued.

### **4.2 Supply Enhancement**

#### **4.2.1 Economic Measures**

Accounting methods allow PCU to track water use through the revenue generated by water bills. The following accounting methods are ongoing programs for PCU.

a) Metering:

Accurate metering is essential to the utility's financial and production accountability. PCU will work cooperatively with related departments to ensure proper meter replacement, accuracy, and monitoring. It is the policy of PCU to test and calibrate residential meters every seven years. Commercial meters are tested and calibrated on an annual basis. New metering technologies will be evaluated on an as needed basis.

This effort is ongoing.

b) Unaccounted For Water:

PCU will work cooperatively with relevant departments to identify and account for water produced versus water delivered. As negative trends are identified, conservation staff will assist in problem solving activities. Quantitative and financial methods for monitoring aggregate water use are employed.

PCU has a program to search out "illegal" connections and seal them off. Since billing records are sorted by water system, PCU has instituted a program to compare pumpage records to billing records. Individual systems with high unaccounted for water use are then systematically evaluated for unmetered connections.

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A portion of the non-metered water use within PCU's service areas is routine system flushing. This system flushing is necessitated by a significant number of long dead-end mains that serve very few customers and account for less than desirable water quality in some areas. The looping of these dead-end water mains is in PCU's 5-year Capital Expansion Program (started in 1991) and reduces the need for system flushes and the loss of water. This plan also allows for replacement of poor quality wells and the construction of water treatment.

This effort is ongoing.

c) **Permanent Irrigation Ordinance:**

PCU has adopted the rules of SWFWMD including Executive Order No. SEF 00-18. The District prohibits landscape irrigation during periods of high evaporation and further prohibits landscape irrigation system to be operated in a manner causing water to be wasted. The order prohibits irrigation between hours of 10:00 a.m. and 4:00 p.m., seven days a week. The orders of the District are authorized by F.S. 373.036 and reinforced by County Ordinance #04-07.

d) **Leak Detection:**

Utilities Operations and Maintenance detect leaks that can be identified as main breaks, operational practices, and other miscellaneous occurrences. As these types of incidents occur, PCU will assist other departments to ensure quantification for any water loss. PCU checks the systems for leaks that have documented discrepancies in water billing to meter readings. New leak detection technology will be evaluated in the future as needed.

This effort is ongoing.

### **4.2.2 OPERATIONAL MEASURES**

PCU implements operational measures and practices to improve the PCU's efficiency. The following methods are ongoing programs for PCU:

a) **Reclaimed Water Use:**

Currently three of PCU's wastewater treatment facilities provide reclaimed water service. The effluent flow for the other facilities is disposed of via percolation ponds or sprayfields. PCU has researched



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the possibility of public access reclaimed water in these areas. However, at this time, due to the rural spread of Polk County in these areas, limited flows and the lack of new planned subdivisions for the area, reclaimed water service is not feasible.

b) Distribution Efficiency:

Distribution efficiency will be maximized as PCU's transmission systems are constructed and interconnected. When considering the age of much of the distribution system, it is in good condition due to sound maintenance practices. PCU has allocated a considerable portion of funds from the Community Investment Program to construct new and upgraded water distribution systems.

This effort is ongoing.

### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

In closing, this MANUAL provides guidance to PCU in planning, developing, and managing water use. The following recommendations are applicable to all of PCUs RUSAs:

- For PCU to continue to review and evaluate existing codes and ordinance to enhance water conservation;
- For PCU to maintain a dedicated water conservation staff whose responsibilities in the support of the MANUAL will include implementing the public information measures for presentations, Water Conservation Month, Drinking Water Week, Earth Day, and Public Works Week promotion and an Advisory Committee.
- For PCU to continue the pursuit of funding through the water management districts and other appropriate agencies for Community Education Grants and other Water Conservation or Alternative Water Supply projects.
- For the Utilities Customer Service Division to establish a comprehensive, documented program for large meter calibration.
- For the Utilities Operations and Maintenance Division to continue with an accurate program for determining water loss from line breaks, development tie-ins, and line flushing.
- For PCU to continual evaluate the effectiveness of the existing Water Conservation Rate Structures on both the potable water system and the reclaimed water system.

This Water Conservation Plan will be presented before the Polk County Board of County Commissioners (BoCC) for approval and adoption. It is anticipated that the BoCC will accept the plan in its entirety with implementation immediately

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following adoption. It is recognized that this Manual is a guidance document that can and will be modified as practices, technology, and feasibility warrants.

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### **APPENDIX A-100**

### **Reference List**

- Chapter 40D-2, Florida Administrative Code, Water Use Permit Information Manual Part D – Requirements for the Estimation of Permanent and Temporal Service Area Populations, Effective January 20, 2009.
- Chapter 62-550, Florida Administrative Code, Effective September 18, 2007.
- 1994 Standard Plumbing Code (Amended by County Ordinance No. 98-02).
- Polk County Comprehensive Plan, Ordinance 92-36, as amended.
- Florida Building Code, 2007.
- Florida Statutes 373.0391 - Technical assistance to local governments, 2008.
- Florida Statutes 166.048 - Conservation of water; Xeriscape, 2008.
- Polk County Land Development Code, Ordinance 00-09, as amended.
- Polk County Ordinance 04-09
- Polk County Ordinance 04-80
- Polk County Flood Plain Ordinance (Section 630 of the Land Development Code)
- Polk County Water Shortage Ordinance No. 92-35, October 1992.
- Polk County Emergency Ordinance for Water Supply No. 00-25, June 2000.
- Polk County Year Round Water Conservation Measures and Water Shortage Ordinance (No. 04-07), February 2004.
- Polk County Ordinance 09-050
- Polk County Ordinance No. 03-21 the Utilities Code Ordinance, March 2003 (Repealed).
- Polk County Official Water Policy, December, 2003.
- Polk County Ordinance No. 99-80, December 1999.
- Southwest Florida Water Management District Executive Order No. SELF 00-18 and Chapter 40D-22, Florida Administrative Code, Year-Round Water Conservation Measure, Effective date: September 2003.

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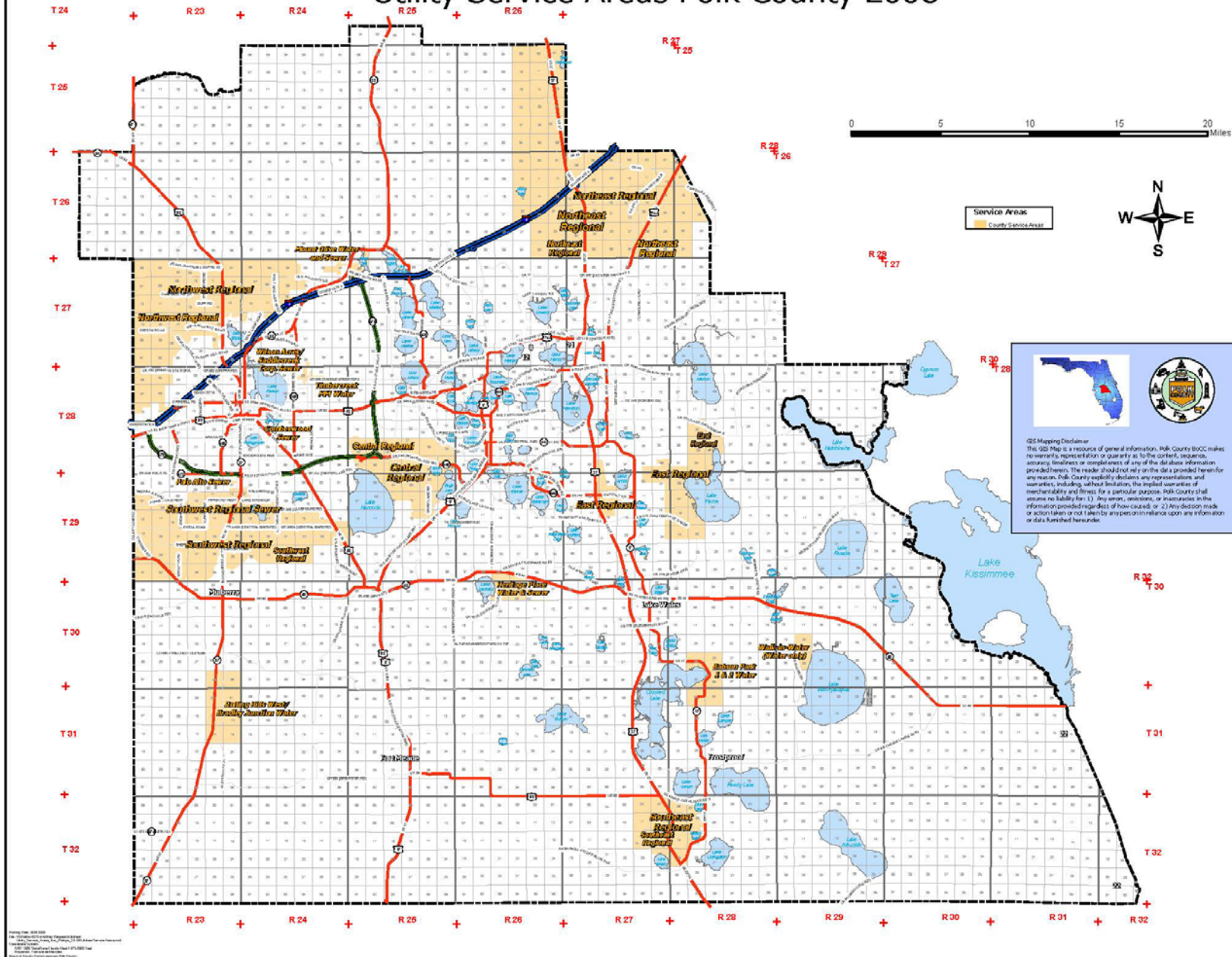
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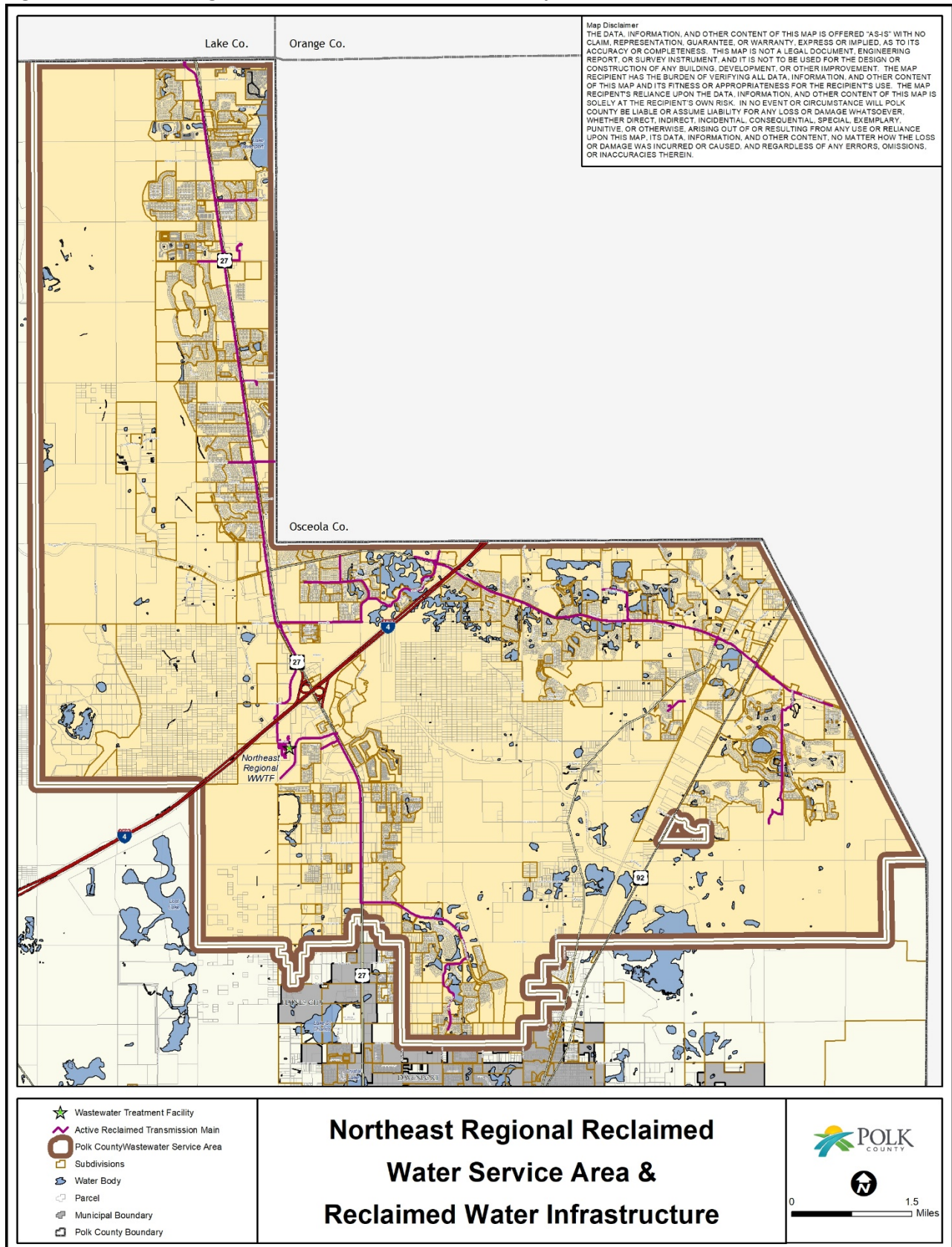
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FIGURE 1.

# Utility Service Areas Polk County 2008

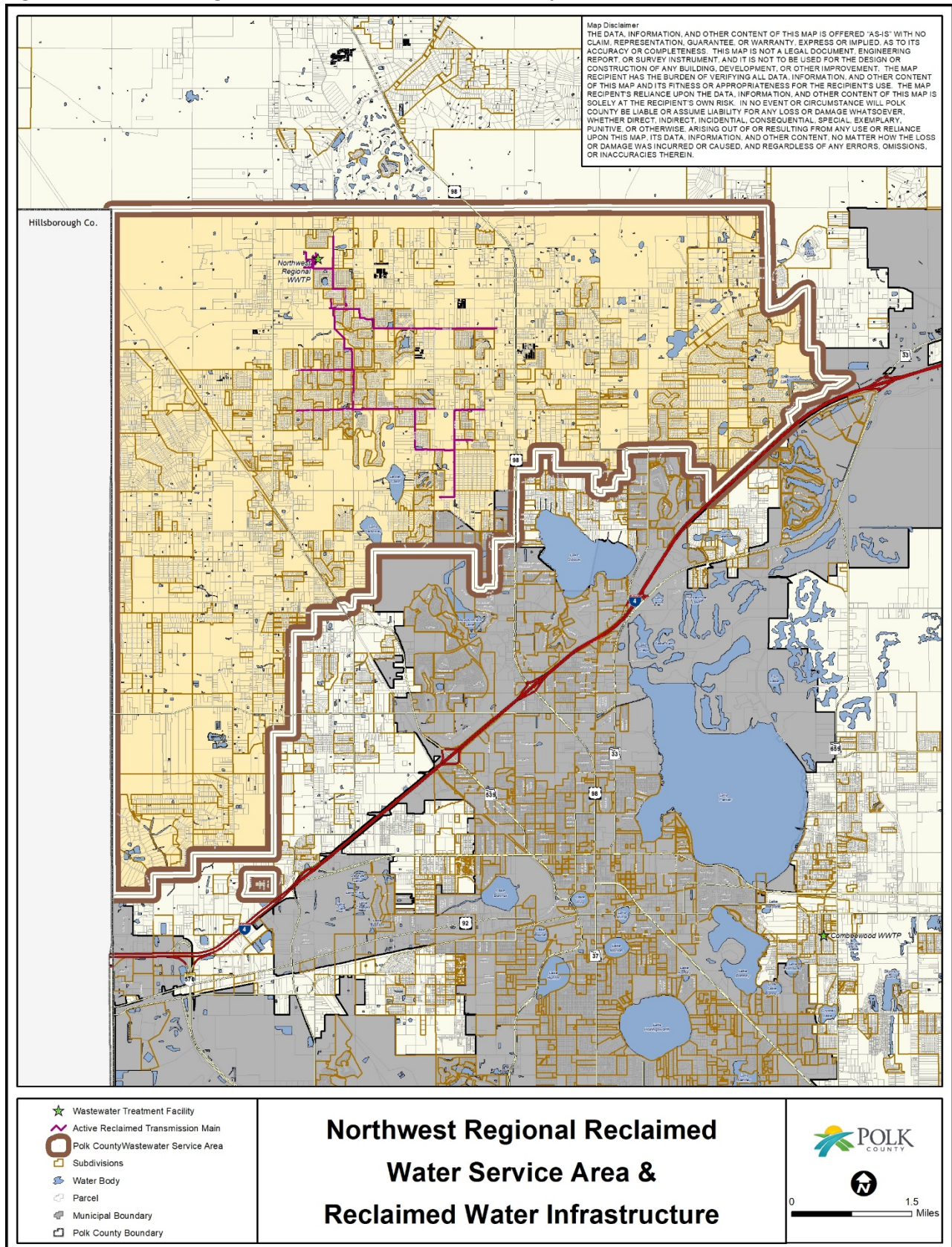


**Figure 2. Northeast Regional Master Reuse Service Area Map.**



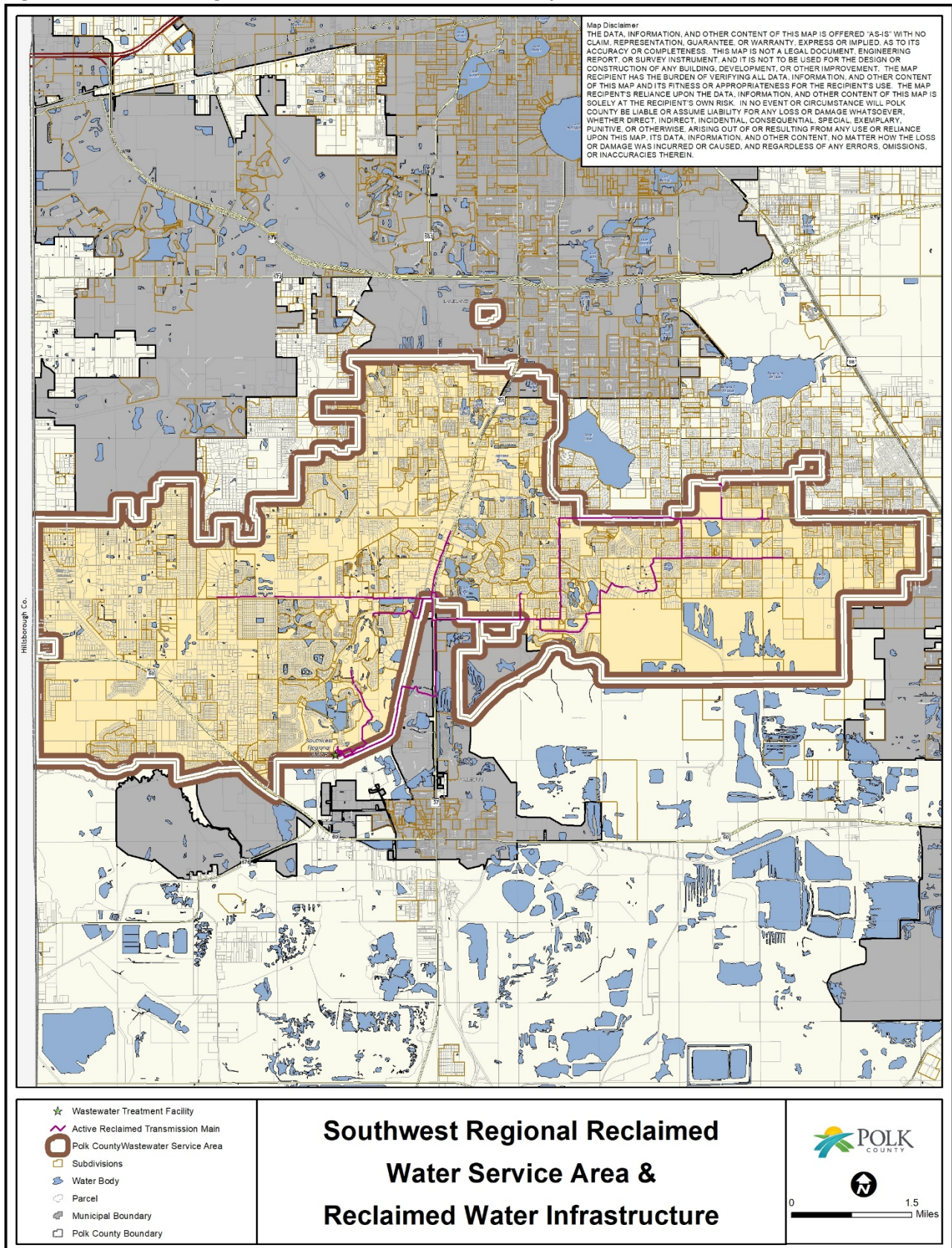


**Figure 3. Northwest Regional Master Reuse Service Area Map.**





**Figure 4. Southwest Regional Master Reuse Service Area Map.**





**TABLE I.**  
**POLK COUNTY UTILITIES**  
**WATER TREATMENT FACILITIES AND ASSOCIATED PUBLIC WATER SYSTEMS (BY REGION)**

WATER TREATMENT FACILITY	PUBLIC WATER SYSTEM (PWS)	REGIONAL UTILITY SERVICE AREA	NUMBER OF WELLS
Gordonville	Central	Central	1
Jan Phyl Village #2	Central	Central	1
Tanamora	Central	Central	1
Wolf Run	Central	Central	1
Dinner Lake South	Central	Central	1
Lake Garfield	Lake Garfield	Central	2
Loma Linda	Northeast	Northeast	3
Van Fleet	Northeast	Northeast	4
Holly Hill	Northeast	Northeast	2
Oak Hills/Providence	Northeast	Northeast	5
Polo Davenport	Northeast	Northeast	2
Edgehill	Northeast	Northeast	2
Regal Inn	Northeast	Northeast	1
Country Class	Country Class	Northwest	2
Homestead	Northwest	Northwest	1
Indianwood	Northwest	Northwest	1
Lake Gibson	Northwest	Northwest	1
Mann Road	Northwest	Northwest	2
Sherwood Lakes	Northwest	Northwest	1
Timberidge	Northwest	Northwest	1
Foxwood Lake Estates (Consecutive)	City of Lakeland	Northwest	N/A
The Pines (Consecutive)	City of Lakeland	Northwest	N/A
Timbercreek (Consecutive)	City of Lakeland	Northwest	N/A
Turner Road	Southwest	Southwest	1
Imperialakes	Southwest	Southwest	3
Pollard Road	Southwest	Southwest	3
Bradley Junction	Bradley Junction	Southwest	1
Rolling Hills West	Bradley Junction	Southwest	1
Waverly/Polk County School Board	Waverly	East	1
Hodge Street	Waverly	East	1
Oak Acres	East	East	1
Pleasant Acres	East	East	1
Sun Air	East	East	1
Timberlake	East	East	1
Lakeview	Southeast	Southeast	1
Polk County Correctional Institute	Southeast	Southeast	2
Babson Park #1	Babson Park	Southeast	1
Babson Park #2	Babson Park	Southeast	1
Walk-in-Water	Walk-in-Water	Southeast	2

Source of Data: Polk County Utilities Water Use Permits (As of December 31, 2018).

**TABLE II.****POLK COUNTY UTILITIES****PUBLIC WATER SYSTEMS AND ASSOCIATED WATER USE CAUTION AREAS (BY REGION)**

PUBLIC WATER SYSTEM (PWS)	REGIONAL UTILITY SERVICE AREA	WATER USE CAUTION AREA (WUCA)
Central PWS	Central	Southern Water Use Caution Area*
Lake Garfield PWS	Central	Southern Water Use Caution Area*
Northeast PWS	Northeast	Central Florida Water Initiative
Country Class PWS	Northwest	Southern Water Use Caution Area*
Northwest PWS	Northwest	N/A - Hillsborough River Groundwater Basin*
Foxwood Consecutive PWS	Northwest	N/A - Hillsborough River Groundwater Basin*
Timbercreek Consecutive PWS	Northwest	Southern Water Use Caution Area*
Southwest PWS	Southwest	Southern Water Use Caution Area*
Bradley Junction PWS	Southwest	Southern Water Use Caution Area*
Waverly PWS	East	Southern Water Use Caution Area*
East PWS	East	Southern Water Use Caution Area*
Southeast PWS	Southeast	Southern Water Use Caution Area*
Babson Park PWS	Southeast	Southern Water Use Caution Area*
Walk-in-Water PWS	Southeast	N/A - In the South Florida Water Management District*

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\* All of Polk County is in the Central Florida Water Initiative Area.

**TABLE III.****POLK COUNTY UTILITIES****PERCENTAGE OF RESIDENTIAL AND INDUSTRIAL/COMMERCIAL SERVICES (BY REGION)**

REGIONAL UTILITY SERVICE AREA	RESIDENTIAL		INDUSTRIAL/COMMERICAL	
	NUMBER OF SERVICES	PERCENT OF REGION	NUMBER OF SERVICES	PERCENT OF REGION
Central	5,290	96%	245	4%
Northeast	27,360	97%	784	3%
Northwest	12,340	97%	320	3%
Southwest	16,067	97%	467	3%
East	2,531	98%	64	2%
Southeast*	1,778	96%	76	4%

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\*Walk-in-Water data derived from billing records as of December 31, 2018 and included with the Southeast Regional data.

**TABLE IV.****POLK COUNTY UTILITIES****FUNCTIONAL POPULATION AND RESIDENTIAL PER CAPITA WATER USE (BY REGION)**

REGIONAL UTILITY SERVICE AREA	FUNCTIONAL POPULATION (PERSONS)	AVERAGE DAILY GROSS PER CAPITA WATER USE (GPCD)	AVERAGE DAILY RESIDENTIAL PER CAPITA WATER USE (GPCD)
Central	14,418	68	59
Northeast	73,756	106	87
Northwest	32,287	84	74
Southwest	44,463	73	60
East	6,617	70	49
Southeast	5,985	103	42

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\*Walk-in-Water data derived from billing records as of December 31, 2018 and included with the Southeast Regional data.

**TABLE V.**  
**POLK COUNTY UTILITIES**  
**DEMOGRAPHIC CHARACTERISTICS (BY REGION)**

REGIONAL UTILITY SERVICE AREA	NUMBER OF SERVICES			
	RESIDENTIAL			INDUSTRIAL AND/OR COMMERICAL
	SINGLE FAMILY	MOBILE HOMES	MULTI-FAMILY	
Central	4,671	584	35	245
Northeast	21,734	3,386	2,240	784
Northwest	11,175	1,043	122	320
Southwest	12,235	1,707	2,125	467
East	2,169	330	32	64
Southeast*	1,556	184	38	76

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\*Walk-in-Water data derived from billing records as of December 31, 2018 and included with the Southeast Regional data.

**TABLE VI.**  
**POLK COUNTY UTILITIES**  
**10-YEAR PROJECTED POPULATION (BY REGION)**

REGIONAL UTILITY SERVICE AREA	POPULATION		INCREASE IN POPULATION	
	YEAR 2018	YEAR 2028	FROM 2008 TO 2018	PERCENT INCREASE (ANNUALLY)
Central	14,418	19,531	5,113	3.5%
Northeast	73,756	96,197	2,244	3.0%
Northwest	32,287	40,299	801	2.5%
Southwest	44,463	53,915	945	2.1%
East	6,617	9,784	317	4.8%
Southeast	5,985	6,281	30	0.0%

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\*Walk-in-Water data derived from billing records as of December 31, 2018 and included with the Southeast Regional data.

**TABLE VII.****POLK COUNTY UTILITIES****(ESTIMATED) PERMITTED WATER USE QUANTITIES (BY REGION)**

REGIONAL UTILITY SERVICE AREA	WATER USE PERMIT	PERMITTED CAPACITY “ANNUAL AVERAGE” (MGD) <sup>1,2</sup>	ACTUAL DAILY FLOW “ANNUAL AVERAGE” (MGD) <sup>1,3</sup>	PEAK DEMAND “MAX DAY YEAR” (MGD) <sup>1,4</sup>
Central	Central/SFWWMD 6507	2.003	0.995	1.161
Northeast	Northeast/SFWWMD 6509	10.918	5.150	6.265
Northeast	Oak Hills/SFWMD Permit 53-00126-W	5.000	2.184	3.589
Northeast	Jordan’s Grove/SFWMD Permit	0.158	0.122	0.231
Northeast	Import/ Toho Water Authority	0.001	0.001	0.007
Northwest	Northwest/SFWWMD	5.700	2.416	2.537
Southwest	Southwest/SFWWMD	7.000	3.267	3.897
East	East/SFWWMD	1.373	0.496	0.620
Southeast	Southeast/SFWWMD	1.367	0.586	0.760
Walk in Water Estates	Walk in Water Estates/SFWMD	0.094	0.041	0.061

Source of Data: Polk County Utilities 2018 Public Supply Annual Report and Florida Department of Health Monthly Operating Reports.

**TABLE VIII.**  
**POLK COUNTY UTILITIES**  
**UNACCOUNTED FOR WATER LOSS (BY REGION)**

REGIONAL UTILITY SERVICE AREA	ACCOUNTED USES		UNACCOUNTED LOSSES	
	GALLONS	PERCENT OF TOTAL	GALLONS	PERCENT OF TOTAL
Central	941,277	96.36%	35,570	3.64%
Northeast	7,140,049	91.03%	703,823	8.97%
Northwest	2,565,583	95.07%	132,987	4.93%
Southwest	2,833,790	87.79%	393,953	12.21%
East	364,005	78.22%	101,385	21.78%
Southeast	580,961	94.42%	34,305	5.58%

Source of Data: Polk County Utilities 2018 Public Supply Annual Report.

\*Walk-in-Water data derived from billing records as of December 31, 2018 and included with the Southeast Regional data.



**TABLE IX.****POLK COUNTY UTILITIES****EXISTING INTERLOCAL AGREEMENTS FOR PUBLIC WATER SYSTEMS (BY REGION)**

<b>PUBLIC WATER SYSTEM (PWS)</b>	<b>REGIONAL UTILITY SERVICE AREA</b>	<b>INTERLOCAL AGREEMENT AGENCY</b>
Central PWS	Central	None
Lake Garfield PWS	Central	None
Northeast PWS	Northeast	Tohopekaliga Water Authority, City of Haines City
Country Class PWS	Northwest	None
Northwest PWS	Northwest	City of Lakeland
Foxwood Consecutive PWS	Northwest	City of Lakeland
Timbercreek Consecutive PWS	Northwest	City of Lakeland
Southwest PWS	Southwest	City of Lakeland
Bradley Junction PWS	Southwest	None
Waverly PWS	East	City of Lake Wales
East PWS	East	City of Lake Wales
Southeast PWS	Southeast	None
Babson Park PWS	Southeast	None
Walk-in-Water PWS	Southeast	None

Source of Data: Polk County Utilities Water Use Permits (As of December 31, 2018).

**TABLE X.****POLK COUNTY UTILITIES****PUBLIC WATER SYSTEMS AND ASSOCIATED WATER TREATMENT PROCESSES (BY REGION)**

PUBLIC WATER SYSTEM (PWS)	REGIONAL UTILITY SERVICE AREA	WATER USE CAUTION AREA (WUCA)
Central PWS	Central	Chlorine, poly-orthophosphate
Lake Garfield PWS	Central	Chloramines, water softening, and poly-orthophosphate
Northeast PWS	Northeast	Chlorine, cascade aeration, poly-orthophosphate
Country Class PWS	Northwest	Chlorine, poly-orthophosphate
Northwest PWS	Northwest	Chlorine, poly-orthophosphate
Foxwood Consecutive PWS	Northwest	*City of Lakeland PWS
The Pines Consecutive PWS	Northwest	*City of Lakeland PWS
Timbercreek Consecutive PWS	Northwest	*City of Lakeland PWS
Southwest PWS	Southwest	Chlorine, poly-orthophosphate Greensand filters, cascade aeration
Bradley Junction PWS	Southwest	Chlorine, cascade aeration
Waverly PWS	East	Chlorine, poly-orthophosphate
East PWS	East	Chlorine
Southeast PWS	Southeast	Chlorine, cascade aeration, carbon dioxide (CO <sub>2</sub> ) pH adjustment
Babson Park PWS	Southeast	Chlorine, poly-orthophosphate, cascade aeration, granular activated carbon (GAC)
Walk-in-Water PWS	Southeast	Chlorine, poly-orthophosphate

\*The City of Lakeland PWS uses a variety of treatment processes and blends raw water with softened water to produce the final product. After blending, the water is then filtered utilizing dual media filters consisting of anthracite and sand. Chemical addition includes calcium hydroxide (lime) and polymer in the lime softening process, starch for sludge conditioning, fluoride for dental health, phosphate for calcium sequestration prior to filtration and chlorination to 2.8 ppm free chlorine residual for disinfection.

Source of Data: Polk County Utilities Consumer Confidence Reports (December 31, 2018).

**TABLE XI.**  
**POLK COUNTY UTILITIES**  
**PUBLIC ACCESS REUSE SYSTEM CHARACTERISTICS (BY REGION)**

REGIONAL UTILITY SERVICE AREA	QUANTITIES (MGD)		NUMBER OF METERED CONNECTIONS	
	TOTAL RECLAIMED WATER PRODUCED	BENEFICIAL REUSE	ACTIVE	TOTAL (ACTIVE, DRYLINED AND FUTURE)
Northeast	3.267	3.240	3,553	13,960
Northwest	0.889	0.773	1,411	3,826
Southwest	1.963	1.874	1,856	4,006
<b>TOTAL</b>	<b>6.119</b>	<b>5.887</b>	<b>6,820</b>	<b>21,792</b>

Source of Data: Polk County Utilities 2018 Public Supply Annual Report, 2018 Annual Reuse Report and December 2018 Capacity Summary Report.