Charlotte County Utilities

2006 Annual Report

CHARLOTTE COUNTY, FLORIDA

Prepared by: **PB Americas, Inc.**

Charlotte County Utilities

2006 Annual Report

CHARLOTTE COUNTY, FLORIDA

April 20, 2007

Prepared for:

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CERTIFICATION

This document was prepared under the responsible charge of the undersigned Professional Engineer(s) or Geologist. The material and data presented in the report are based solely upon the information made available to or gathered by PB. PB does not assume responsibility for conditions that were unknown or conditions not recognized as unacceptable at the time this report was prepared, or any modifications made to the document or data by others. This report was prepared in accordance with commonly accepted engineering practices for the exclusive use of the Charlotte County Utilities on the subject project.

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2005
SANITARY
SEWER
CHARLOTTE COUNTY

1 INTRODUCTION

1.1 A Message from the director

Charlotte County Government

"To exceed expectations in the delivery of public services."

www.CharlotteCountyFL.com

A MESSAGE FROM THE DIRECTOR

This Charlotte County Utilities Annual Report affords us the opportunity to present you with details of the products and services we provide to our customers: Quality drinking water, sanitary wastewater treatment and reclaimed water for irrigation. Each day, CCU employees work around-the-clock to ensure that the services we provide meet or exceed all standards and expectations for safety, reliability and quality.

Not only is our drinking water of high quality, we are proud to report that it was also recognized as one of the best-tasting in the state in 2006 by the Florida Section of the American Water Works Association (FSAWWA). Charlotte County Utilities won the Drinking Water Taste Test for FSAWWA Region X and went on to place third in the state at the FSAWWA Annual Drinking Water Day in Tallahassee, Fla.

The Southwest Florida Water Management District recently declared a modified Phase II severe water shortage condition throughout the 16-county district. Cutting back on drinking water use and following water restrictions is one way our customers can help the region recover from these drought conditions.

Sometimes we forget that the water we use at home to wash clothes or dishes, cook, bathe and water our lawns is actually drinking water. It isn't hard to conserve water, and it doesn't require drastic lifestyle changes, but the benefits are priceless. Water conservation saves money, saves energy and helps protect our beautiful natural environment. It's mostly a matter of using good common sense, like conserving energy, recycling and not littering. We urge you to join us in practicing water conservation year round, by adopting new water conservation practices, and reviewing how you and your family uses water at home, work, school and play.

We are thankful that most of our customers are extremely conservation-minded. Because of this, Charlotte County Utilities is among the leaders in low per-capita water usage, with some of the lowest usage numbers in the state.

Thanks to the efforts of our hard-working and dedicated CCU employees, CCU continues to provide our valued customers with exceptional services and products, 24 hours per day, seven days a week, 365 days a year.

Jeff Pearson
Director
Charlotte County Utilities

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Engineering Services | Finance | Operations
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1.2 Acknowledgements

PB Americas, Inc. (PB) would like to acknowledge the invaluable assistance and information they received from the following Charlotte County staff: Jeff Pearson, Terri Kesner, Matt Taylor, P.E., James Huish, Joan Brown, Deb Smith, Leigh Sprimont, Bernard Milosky, Tom Dunn, Rick Stander, P.E., Vincent Li Causi, Stephen Kipfinger, George Ellison, Kenneth P. Greenhorn, Lynda Freas, David Cain, Alicia Accardi, James Drake, Norma Corso, Inga Williams, and Bob Pryor. PB would also like to thank Alicia Accardi, Jim Drake and Leigh Sprimont for providing many of the photographs in this report. Ms. Leigh Sprimont deserves special recognition for her assistance and support in coordinating this report.

CCU Management Team*: (Back row, left to right), Bernard Milosky, Regulatory Liaison; Matt Taylor, Engineering Services Manager; Jeff Pearson, Utilities Director; Deb Smith, Financial Manager; (Front row, left to right) Leigh Sprimont, Community Relations Manager; James Huish, Operations Manager; Terri Kesner, Assistant Director. Not pictured, Joan Brown, Business Services Manager.*

1.3 General

PB has been retained by Charlotte County Utilities (CCU) to create an Annual Report with dual purposes; 1) to inform the general public of the efforts being made to ensure excellence in service to the surrounding Charlotte County area and; 2) to satisfy the requirements of the bond covenants set forth by the bondholders. The Annual Report encompasses a review of the operation of the CCU water, wastewater and reclaimed water systems for the period of October 1, 2005, through September 30, 2006.

1.4 Authority

PB has been authorized by Charlotte County to prepare the Fiscal Year 2006 Annual Report. PB's Scope of Work will govern the purpose and content of the Annual Report.

1.5 Purpose and Scope

Charlotte County's interest in preparing an Annual Report derived from the need to inform the public as to the status of its utility and to fulfill the requirements of Revenue Bonds issued to Charlotte County. The bonds require the County to retain the services of a registered engineer to ensure the quality of the operation. The bond covenant states:

"The issuer shall at all times employ Consulting Engineers, whose duties shall be to make any certificates and perform any other acts required or permitted of the Consulting Engineer under this Resolution, and also to review the construction and operation of the System at least once a year, and, not more than 120 days prior to the end of each Fiscal Year, to submit to the Issuer a report with recommendations as to the proper maintenance, repair and, operation of the System during the ensuing Fiscal Year, including recommendations for expansion and additions to the System to meet anticipated service demands, and an estimate of the amount of money necessary for such purposes. Copies of such reports, recommendations and estimates made as here in above provided shall be filed with the issuer for the inspection by bondholders, if such inspection is required."

Bonds issued to Charlotte County are as follows:

- Utility System Revenue Bonds, Series 2001 $24,530,000
- Utility System Refunding Revenue Bonds, Series 1998 $22,655,000
- Utility System Refunding Revenue Bonds, Series 1996A $59,370,000
- Utility System Refunding Revenue Bonds, Series 1996B $ 1,680,000
- Utility System Revenue Bonds, Series 2003A $56,095,000
- Utility System Refunding Revenue Bonds, Series 2003B $30,205,000
- Utility System Refunding Revenue Bonds, Series 2006 $34,870,000

Commercial Loan outstanding:

- Amount outstanding end of FY06: $ 9,640,000

The Report has been broken down into the following sections:

1 **Introduction**: General information concerning the report's preparation.

2 **Administration**: A breakdown of the County's infrastructure and finances.

3 **Water Distribution**: Description and records concerning the conveyance of potable water.

4 **Wastewater Collection**: Description and records concerning the collection of wastewater.

5 **Treatment Facilities**: Description and records concerning the facilities used to treat water and wastewater.

6 **Engineering**: Records regarding major engineering reports completed for the County.

7 **Consolidation Conclusions and Recommendations**: Overall report results and recommendations for Fiscal Year 2007.

1.6 Information on Charlotte County

Charlotte County is located on the southwest coast of Florida about 96 miles south of Tampa. It covers 832 square miles, and contains about 126 square miles of waterways. With an elevation ranging from 5 to 25 feet above sea level, Charlotte County enjoys a sub-tropic climate where the extreme temperatures of both summer and winter are subdued by the prevailing gulf breezes. There are also numerous upland and aquatic preservation areas. Covering an area of 270 square miles and 219 linear miles of protected shoreline, Charlotte County has one of the largest protected marine estuaries.

A large portion of this costal community's urban development is located in the western third of the county, including the barrier islands abutting the Gulf of Mexico. A large development known as Rotonda is also located in this area. Every lot within the Rotonda is within one-half mile of a golf course. Punta Gorda, located near both the picturesque Peace River and Charlotte Harbor, contains miles of canals, most of which directly connect to the harbor and provide a waterfront setting for much of this urban area. A rapidly growing area located to the extreme south of the county, near the Lee County border, is known as the Burnt Store Corridor because of its location on and near Burnt Store Road. This area encompasses eight square miles subdivided with water and sewer, and is currently only at 15 percent buildout.

Commercial growth located along many of the main corridors constitutes over 1,500 acres. Most of the commercial epicenters are located along U.S. 41 and in the Murdock area of Port Charlotte. Recently, commercial zones have developed along Kings Highway, Rampart Boulevard and SR-776. Less than 0.1 percent consists of industrial development within the Community Redevelopment Area (CRA) in Charlotte Harbor.

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2 ADMINISTRATION

2.1 General

The current population of Charlotte County is approximately 154,438, as of July 2006, and it continues to experience rapid growth. In 1997, Charlotte County was named "Best Place in the South" by *Money* magazine and the community has received similar recognition from that and other sources almost every year since.

Charlotte County Utilities (CCU) has also recently received recognition. In February 2006, CCU won the Best Tasting Drinking Water Taste Test, hosted by the Florida Section of the American Water Works Association (FSAWWA) Region 10. In March, CCU staff traveled to Tallahassee, Fla. with a sample of their award-winning water to compete in the statewide Drinking Water Taste Test, part of National Drinking Water Day. CCU faced two judging panels and placed third overall, surpassing hundreds of public and private utilities throughout the state of Florida. CCU is proud to offer its customers safe, clean and award-winning drinking water.

2.2 County Government (Organizational Structure)

Charlotte County operates under an elected County Commission and an appointed County Administrator form of government. The Charlotte County Board of County Commissioners (BCC) is the governing body of the county and is composed of one representative from each of the five county commissioner districts. Each member serves a staggered term of four years. The BCC is responsible for the legislative duties of the County government.

The executive branch of county government falls under the jurisdiction of the County Administrator. The County Administrator is appointed by, and is responsible to, the BCC. The County Administrator is responsible for appointing County department heads.

Charlotte County Utilities, a department of the Charlotte County Government, provides potable water, wastewater treatment and reclaimed water for irrigation, serving more than 53,000 homes and businesses in the Greater Port Charlotte area, El Jobean, Gulf Cove, East Englewood, Rotonda, and Burnt Store, as well as bulk customers, including El Jobean, Riverwood and Encore. Additionally, Charlotte Harbor Water Association and Gasparilla Island Water Association can purchase bulk water from CCU in an emergency. CCU's mission is to protect the health, safety and welfare of Charlotte County residents and improve the environment. Exhibit 2-1 shows the service areas of Charlotte County Utilities and the location of the main infrastructure components.

The Utilities Department consists of five divisions: Business Services, Community Relations, Engineering Services, Operations and Finance. Operations consists of Water Distribution, Wastewater Collection and Facilities. CCU had 214 full-time employees and three part-time employees at the end of FY 2006.

CCU is headed by a Utilities Director, who works under the direction of the County Administrator. CCU Administration includes the Utilities Director, Assistant Director and support staff. This division manages the utility as a whole and supervises all other utilities divisions. The Director's responsibilities include:

- Planning for water and wastewater needs;
- Development of a regional potable water distribution system;
- Development of a regional wastewater treatment/collection system;
- Development of a regional reclaimed water distribution system;
- Operation of the County's water and wastewater systems; and
- Expansion of the County's existing utility service area.

The Business Services division includes Customer Service, Human Resources, Billing and Collections, and Meter Services, and is overseen by a Business Services Manager.

The Community Relations division is responsible for internal and external communications with CCU employees, County departments, the media, and the community at large. This division is overseen by a Community Relations Manager.

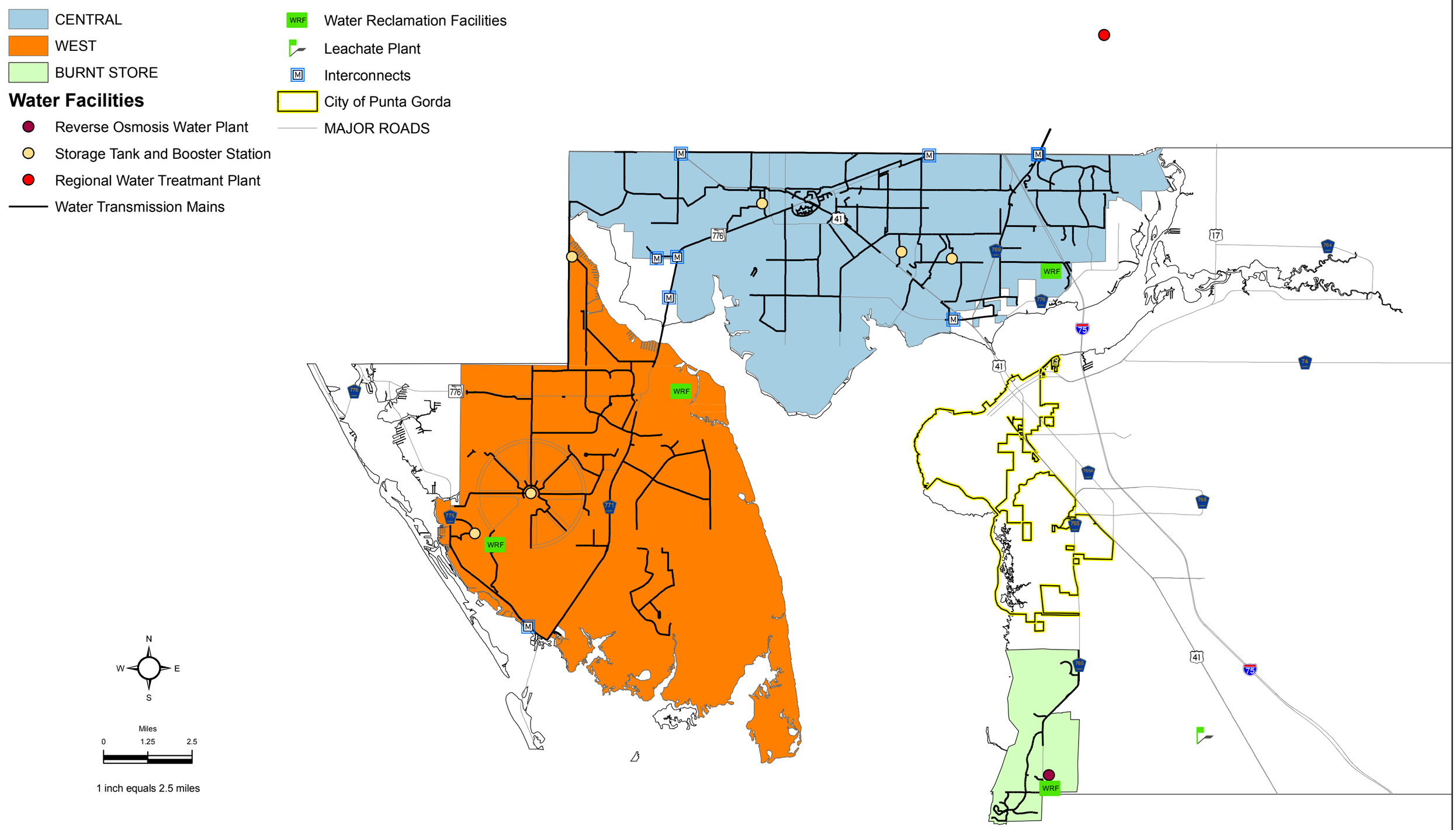
The Engineering Services division provides engineering and inspection services to residential and commercial utility customers. The division is overseen by an Engineering Services Manager.

The Operations division is responsible for the operation and maintenance of all County-owned and -operated water, wastewater and reclaimed-water facilities, including plants, booster stations, lift stations, fire hydrants, valves and the entire distribution and collection system. This division is overseen by an Operations Manager.

The Finance division manages operational and departmental budgets, inventory, CIPs and payroll for the Utility as a whole. This division is overseen by a Finance Manager.

Exhibits 2-2 and 2-3 show the organizational structure as of February 2007.

Exhibit 2-1 CCU Service Area and Major Infrastructure Map



This map is for illustrative purposes only. Reuse of, and improper reliance on, this document without written authorization and adaptation by Charlotte County Utilities shall be without liability to Charlotte County Utilities.
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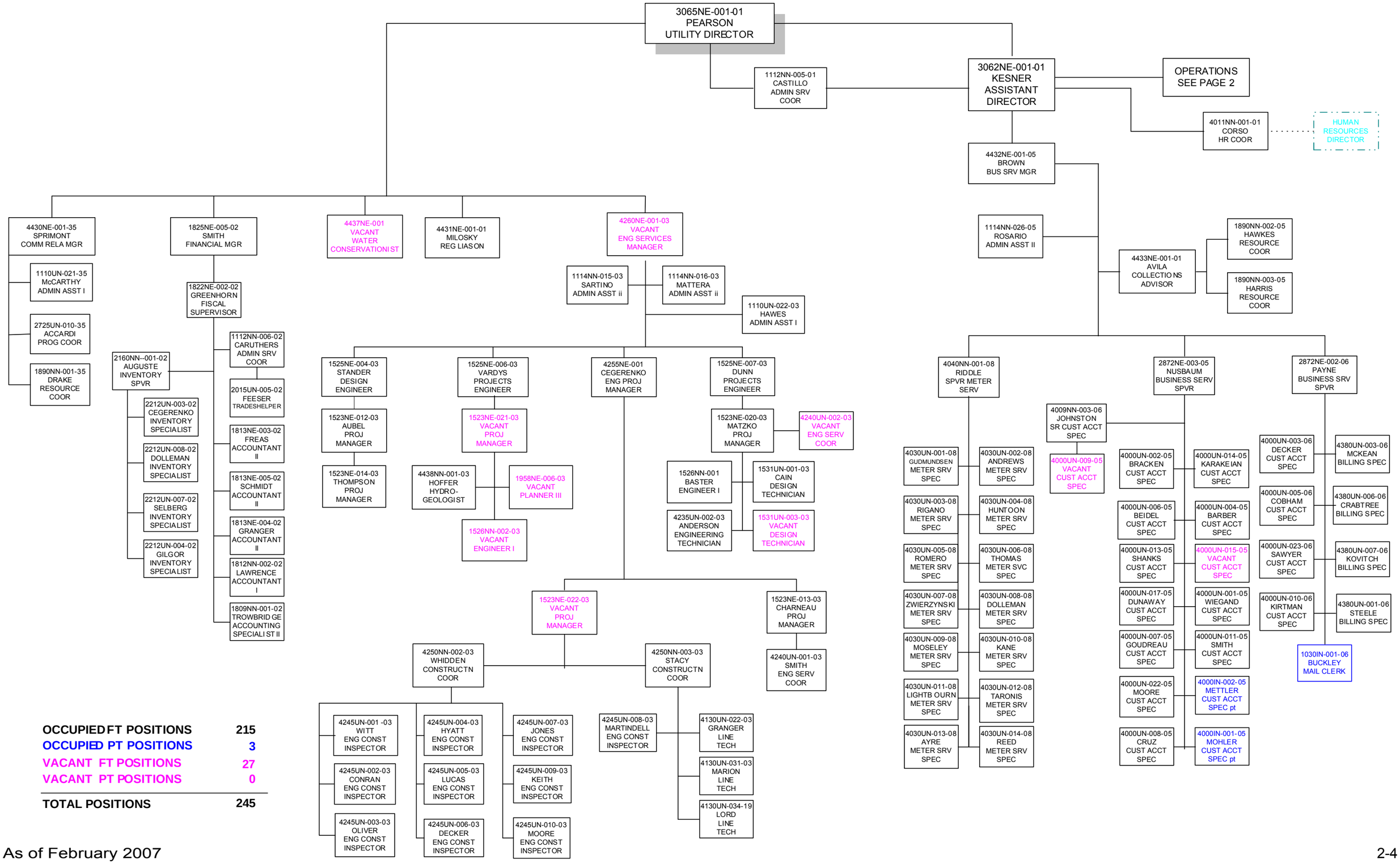
Map Document: (W:\Projects\Certificated Areas\2007_REPORT.mxd) 03/23/2007 -- 1:03:19 PM

Exhibit 2-2

CHARLOTTE COUNTY UTILITIES - ORGANIZATIONAL CHART

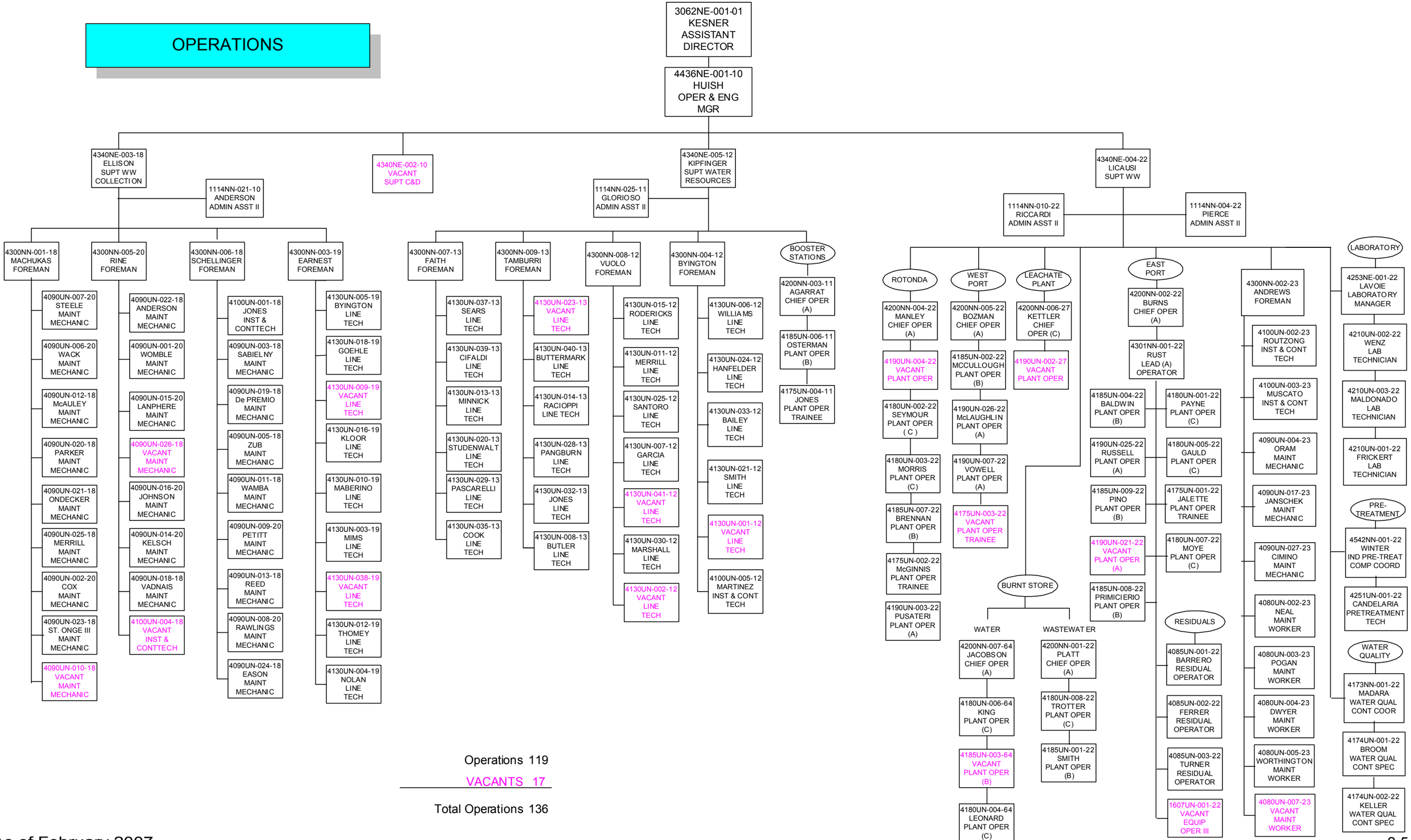


OCCUPIED FT POSITIONS	215
OCCUPIED PT POSITIONS	3
VACANT FT POSITIONS	27
VACANT PT POSITIONS	0
TOTAL POSITIONS	245

As of February 2007

Exhibit 2-3

CHARLOTTE COUNTY UTILITIES - ORGANIZATIONAL CHART



Operations 119

VACANTS 17

Total Operations 136

As of February 2007

2.3 Communications

CCU recognizes the importance of good communication and continually strives to improve both internal and external communications with CCU employees, County departments, the BCC, the media and the community at large.

CCU keeps its employees up to date on the latest utility news and information through the distribution of its monthly employee newsletter, “On Tap.” Both printed and electronic copies of the newsletter are distributed to CCU staff, and it is also available to other County employees via the County Intranet site. Distribution of the newsletter via e-mail saves staff time and printing-related costs.

CCU has held monthly meetings between Utilities, Public Works, Building Construction Services and Community Development to discuss common projects and issues and to improve communication between County departments. When appropriate, Community Development and Public Works staff have participated in meetings on various water and wastewater projects.

One of the goals of the Community Relations division is to work with the local media to ensure accurate and positive reporting on utility related topics, such as water conservation, awards and recognition, rate structures and other current events.

A wealth of information is available to the community on the Charlotte County Utilities Web site, which includes water conservation tips, water restrictions, online bill payment, FAQs, press releases, presentations, rates, forms and information on other essential Utility products, programs and services.

In an effort to improve customers’ online experience, Community Relations has been working with the County’s Communications and Marketing Department to enhance the content of the CCU Web page, including updating information, adding new features and improving site navigation.

2.4 Training and Preparedness

Good training and preparation are key to the success of the Utility. Employees are encouraged to participate in training classes and seminars offered by CCU and by outside agencies, such as professional organizations and government agencies. Professional organizations such as the Florida Water and Pollution Control Operator’s Association, the American Water Works Association, Water Environment Federation and the Government Finance Officers Association offer various training and certification programs available to CCU staff. Also, CCU staff are encouraged to participate in cross-training programs, which provides continuity of services and processes.

2.4.1 CCU University

Charlotte County Utilities University (CCUU) was founded in 2005. In response to the accelerated growth of the Utility and the rapid increase in the number of its employees, CCU management saw the need for staff to be guided through a broader view of utility operations and functions, to provide a clearer perspective of each employee’s contribution to the goals and success of the utility.

Facilitators, managers, supervisors and instructors collaborate to provide this innovative educational opportunity to CCUU students. CCUU's instructors, which number over 40, are highly talented and offer skilled representation and insight into every division of the Utility. Multimedia presentations include slide shows, lectures and hands-on demonstrations, as well as site visits and facility tours.

Classes consist of 10 students, chosen by management to attend each 12-week session of CCUU. New employees are eligible to participate upon completion of a satisfactory probationary period, with a preference for those with less than two years of service with the Utility. All students enrolled in the University are expected to attend all courses in the program. In the event that a student cannot attend a given course, he or she is required to complete any missed courses during the next session.

University studies are held at the East Port Environmental Campus. Classroom size is based on a proportionate representation of CCU divisions: Operations (five students), Business Services and Finance (three students) plus Administration and Engineering (two students each). Attendance is taken at the beginning of each course, and maintained by facilitators for tracking purposes.

Charlotte County Utilities University Session: *Mike Vuolo, a Foreman in Water Resources, demonstrates to CCU University students how his group flushes fire hydrants to maintain disinfectant levels in the distribution system.*

Upon completion of the entire session, students receive a Certificate of Achievement and class photo in recognition of their accomplishment. The graduation celebration, attended by CCU Administration, management and course instructors, celebrates the new skills and knowledge of the graduating class. These are the newest Ambassadors of Charlotte County Utilities.

Charlotte County Utilities University Graduating Class Number 2

2.4.2 Safety Training

It is the goal of Charlotte County Government to provide its employees with the safest possible working environment and to train employees to work safely in that environment. To this end, all Charlotte County Government employees must complete at least two hours of safety training each year.

In addition to this countywide requirement, CCU employees continuously train for certification and recertification in the following safety related areas: First Aid; Cardio Pulmonary Resuscitation (CPR); Bloodborne Pathogens; Lock Out/Tag Out; Confined Space Entry; MSDS/Material Handling; Fork Lift Operator; Maintenance of Traffic (MOT); Trenching and Excavating Safety; Basic Driver Improvement (BDI); Atmospheric Monitoring; and Personal Protective Equipment (PPE).

CCU also has an established Workplace Safety Committee. The Committee meets monthly and reviews each injury or accident for adherence to the safety program and recommends possible actions or policies to prevent future incidents or injuries. The committee also inspects all CCU facilities at least once a year for safety and security compliance.

Fire Safety Training at the East Port Campus

2.4.3 Emergency Management

Charlotte County Utilities ranks Emergency Management and Emergency Preparedness among its top priorities. As a result of several Homeland Security Presidential Directives, which clearly identify utility facilities as critical infrastructure and utility employees as first responders to emergencies and disasters, Charlotte County Utilities personnel continue to train and enhance their capabilities to prepare for, respond to and recover from any emergency or disaster they may face. Employees have completed and continue to complete extensive training in the areas of Incident Command System (ICS) and the National Incident Management System (NIMS).

Additionally, CCU is the lead agency for Emergency Support Function 12 (ESF12) at the Charlotte County Emergency Operations Center (EOC). During an emergency or disaster, ESF12 is responsible for coordinating the response and recovery resulting from disruption of service of any utility, including electric, natural gas, water, wastewater, telephone and cable television services operating in Charlotte County.

Charlotte County Utilities is also a member of FlaWARN. This system is designed to coordinate mutual aid from one utility to another during times of manmade or natural disasters. Similar to triage at a hospital, utility personnel from outside utilities are brought in to assess and assist the impacted water and wastewater system.

2.5 Community Services

Community service projects provide Charlotte County Utilities with excellent opportunities to interact with the community. Through these projects, CCU is able to educate the community about its products and services, water conservation issues and solutions. CCU also participates in various fund-raising projects that directly benefit the Charlotte County community.

2.5.1 Water Conservation

More than 1,000 people move to Florida every day and southwest Florida is one of the fastest-growing areas in the state. As a result, water conservation is a high priority.

CCU is actively pursuing new water sources and working to expand the reclaimed water system for irrigation. The Utility is also actively taking steps to encourage water conservation throughout the community. Conservation measures include year-round water restrictions, a conservation-based rate structure, working with the Sheriff's Office to enforce water restrictions and, of course, customer education.

Community Relations has been focusing efforts on water-conservation awareness, including an annual Water Conservation Month program, including proclamation, press releases, community outreach and education, newspaper articles and TV and radio interviews regarding conservation and water restrictions. The County Web site provides water saving tips, water restriction information and videos that provide additional water conservation tips and information.

The engineering consulting firm, Malcom Pirnie, was selected to develop a goal-based countywide water-conservation plan as a means of reducing potable water demand. The scope of work for this project includes a detailed assessment of indoor and outdoor water use for existing and new customers, the incorporation of Conserve Florida goals, software and guidelines, SWFWMD rules and regulations, AWWA standards, FDEP rules and regulations and any other Federal, State or Local legal guidelines. Work on the conservation plan is expected to begin in 2007.

2.5.2 Community Outreach

Charlotte County Utilities is proud to offer community outreach and education opportunities to its citizens. From public speaking engagements showcasing CCU products and services to school outreach through water conservation programs, CCU has a group of talented and energetic public speakers available to bring the Utility to you.

Presentations showcasing CCU products and services range from casual speakers to multimedia presentations, with a focus on what CCU is doing for you through water, wastewater treatment and reclaimed water programs. CCU has recently participated in presentations to community groups, such as Charlotte County's Citizen's Academy, Charlotte Harbor Environmental Center's Water School, public workshops hosted by the Charlotte County Board of County Commissioners and local Homeowner's Associations. In addition, CCU is a member of the Charlotte County Chamber of Commerce and representatives frequently collaborate with local groups and organizations to present water-related community education programs upon request.

Educating the youngest citizens and fostering good water saving behaviors is the goal of CCU's S.I.P. program, an outreach opportunity encouraging water conservation for kids.

Saving water is as easy as S.I.P:
Save water by cutting back on the amount you use
Investigate your home for leaks and stop them
Place water saving devices in your toilet, on your faucets and on your hoses.

Outreach Demonstration at the Mid-County Library

Based on community-based social marketing, this school-age program observes the philosophy that there are three basic ways to conserve water: By identifying and changing our habits; by finding and fixing leaks; and by learning how to use and implementing water-saving devices. This outreach program includes presentations in classrooms, after-school programs and child-friendly facilities, offering educational materials and take-home conservation tools to promote good water use behaviors among our young citizens, and their families.

2.5.3 Charlotte County Care Team, Inc.

In collaboration with the County's Environmental and Extension Services and Animal Control departments, Charlotte County Utilities staff sit on the planning committee, and are proud to support, the Charlotte County Care Team, Inc. The Care Team is an outreach program that assists organizations within our community.

Since 2003, and supported strictly by Charlotte County employees, the Care Team has organized monthly fundraisers and events, donating thousands of dollars in funds and supplies to a variety of local non-for-profit programs. Working with local agency representatives, the Team researches and selects only recipients who are dedicated to making a local impact, with funds raised staying in Charlotte County.

Past recipients of Care Team efforts have included the Charlotte County chapters of the Humane Society, Children's Home Society, American Cancer Society's Project Detect, Juvenile Diabetes, Special Olympics, Alzheimer's Association, Good Samaritans of Charlotte County, Peace River Wildlife Center, Shoes for Kids, Project C.A.R.E, Adopt-A-Road and 4H's Camp Cloverleaf. Over the years, contributions have remained strong from the many Charlotte County employees dedicated to making a difference in their community.

Tee Off for Hope, a breast cancer awareness golf tournament and the Care Team's largest annual event, is a big step towards providing even more support to community efforts.

Care Team First Annual Breast Cancer Awareness Golf Tournament

2.6 Administration Facilities

The Charlotte County Environmental Campus is located on an out-parcel of the East Port Water Reclamation Facility. The campus is home to an Administration Building and Operations Center/Warehouse, shared by CCU, Environmental and Extension Services and Animal Control.

The Operations Service Center/Warehouse was damaged beyond repair when Hurricane Charley passed overhead in 2004. Operations personnel have been working in temporary trailers located at the WRF site ever since.

Construction on the new East Port Operations Service Center/Warehouse began August 14, 2006, and is expected to be completed in early 2007.

In order to achieve additional internal office space without incurring external rental fees, the Utilities offices at the East Port Environmental Campus were reconfigured in 2006 to maximize existing space. This achieved 16 additional workspaces (four offices and 12 cubicles), for a total of 1,104 additional square feet of usable space. CCU reused existing materials whenever possible to minimize cost.

The San Casa customer service satellite facility, located in a County building on San Casa Boulevard in western Charlotte County, was also reconfigured. This created two additional workspaces to assist the public.

2.7 Insurance

Charlotte County Utilities is self-insured. The self-insurance is provided by the County and is administered by the Gehring Group. In addition, CCU is also covered by general property and liability insurance, excess property insurance, boiler and machinery insurance and pollution liability insurance. Utility buildings and contents are covered up to 100 percent of the replacement cost without depreciation. Kurt Gehring of the Gehring Group is the agent of record for Charlotte County. In Mr. Gehring's opinion, there is adequate insurance on CCU and its facilities. Therefore, the County complied with the bond covenant property insurance requirements as set forth below.

> "Insurance - The Issuer will carry such insurance as is ordinarily carried by private or public corporations owning and operating utilities similar to the System with a reputable insurance carrier or carriers, including public and product liability insurance in such amounts as the Issuer shall determine to be sufficient and such other insurance against loss or damage by fire, explosion (including underground explosion), hurricane, tornado or other hazards and risks, and said property loss or damage insurance shall at all times be in an amount or amounts equal to the fair appraisal value of the buildings, properties, furniture, fixtures and equipment of the System, or such other amount or amounts as the Consulting Engineers shall approve as sufficient.
>
> The Issuer may establish certain minimum levels of insurance for which the Issuer may self-insure. Such minimum levels of insurance shall be in amounts as recommended in writing by an insurance consultant who has a favorable reputation and experience and is qualified to survey risks and to recommend insurance coverage for persons engaged in operations similar to the System.
>
> The Issuer shall, immediately upon receipt, deposit the proceeds from property loss and casualty insurance to the credit of the Revenue Fund. The proceeds from property loss and casualty insurance shall be applied as follows: (A) if such proceeds, together with other available funds of the Issuer, are sufficient to repair or replace the damaged portion of the System, such proceeds and other available funds shall be deposited to the credit of the Renewal and Replacement Funds and, together with any other available funds of the Issuer, applied to such repair or replacement; or (B) if such proceeds, together with other available funds of the Issuer, are not sufficient to repair or replace the damaged portion of the System or if the Issuer makes a determination in accordance with Section 5.07 hereof that such portion of the System is no longer necessary or useful in the operation of the System, such proceeds shall (1) if such proceeds equal or exceed $50,000, (a) be applied to the redemption or purchase of Bonds or (b) be deposited in irrevocable trust for the payment of Bonds in the manner set forth in Section 9.01, provided the Issuer has received an opinion of Bond Counsel to the effect that such deposit shall not adversely affect the exclusion, if any, from gross income of interest on the Bonds for purposes of federal income taxation, or (2) if such proceeds are less than $50,000, be deposited in the Revenue Fund."

2.8 Financial

CCU is a government-owned enterprise fully funded by customer rates, not by tax dollars. Savings opportunities (or profits) are passed through to the benefit of the utility customers. The department's policies, rates and security deposits are established by the BCC. The County Clerk of Circuit Court serves as the accountant and auditor for the BCC and is responsible for the collection and disbursement of county funds.

2.8.1 Revenues

CCU's rates reflect the actual cost of providing safe drinking water and environmentally sound wastewater treatment and effluent disposal to its customers. These services have become more intensively regulated over the years as concerns over health and protection of the environment have grown. Rates and charges also reflect the cost of water purchased, utility financing, operation and administration.

Following a year-long rate study conducted by noted financial consultant PRMG, the BCC approved a new rate plan that will ensure financial stability for CCU. The plan incorporates projected water and wastewater demands based on growth estimates. This allows CCU to have in place the capital and operational funds needed to meet the needs of current and future customers. It also includes conservation-minded rate tiers that reward customers for responsible use of drinking water.

Meter reading, billing and collections for CCU are the responsibility of the Business Services Manager. The Meter Services Supervisor oversees customer meter readings. Water meters are read monthly. Customers are charged a Base Facility Charge, whether or not they use water. This charge is structured so that each customer pays a fair share of the fixed and non-variable costs incurred to provide water and sewer service. Sewer charges are based on water usage. Residential customers are charged sewer only up to the first 10,000 gallons of water used each month. Sewer rates are designed to take into account that not all water used ends up in the sewer system.

Two years ago, Charlotte County Utilities embarked upon a meter replacement project, replacing existing water meters with Automatic Meter Readers (AMR). AMR technology has allowed staff to read meters from a moving vehicle via radio signal, rather than manually reading and recording the data, and reducing the time required to read meters by 82 percent. Currently, more than 33 percent of CCU customers have AMR meters installed.

Over the past two years, AMR technology has improved. The new Orion radio system offers a better warranty and the meters can be read by a lightweight laptop rather than a fixed, vehicle-mounted computer. It also offers integrated GPS mapping, tampering and leak detection, and, in the future, could be combined with wireless Internet technology to allow meter reading to take place from a single remote location, such as CCU's business offices. The new Orion system costs $36 less per unit than the previous technology, but can function concurrently with those AMR meters already installed.

CCU utility bills are rendered within three days of meter reading and are payable directly to Charlotte County Utilities. CCU has an active collections and lien program in place in the event that a bill is not paid.

All residential water service accounts are retained in the property owner's name, thereby allowing CCU to place a lien on the property for non-payment of the utility bill. The County

has the authority to discontinue water service if the utility bill is not paid, including any service fees charged. In Fiscal Year 2006, the total debt for uncollected bills was $121,882.51.

Automatic Meter Reading Equipment

The new EZ-Pay service was implemented in 2006. This electronic payment program allows CCU customers to pay their utility bill online with a checking account or credit card. The service offers convenience to CCU customers and its automated features free up Customer Service Representatives' time to focus on other business tasks, creating operational efficiencies as well.

The HeartShip Program is available to help members of our community who are faced with a period of personal or family crisis and do not have sufficient money to pay their utility bill. The program is funded by contributions from caring members of the community. The County's Human Services Department, in cooperation with CCU's Business Services Division, administers HeartShip funds.

The total Operation and Maintenance (O&M) revenue for Fiscal Year 2006 water and sewer services was $44,204,720. The total O&M connection charge revenue was $5,238,036 and total connection fee revenue was $14,319,543. See Table 2-1 for monthly CCU revenues.

2.8.2 CCU Customer Base

During FY 2006, the number of active water services increased from 50,940 to 53,374, while the number of active sewer services increased from 29,313 to 31,066. Consequently, 2,434 active water services and 1,753 active sewer services were added to the CCU customer base during FY 2006, which represents annual increases of 4.8 percent for water services and 6.0 percent for sewer services.

Table 2-1 Fiscal Year2006 Revenues

CONSOLIDATED

O & M Fund	FY 05/06 Est Revenues	FY05/06 Projections	Total Revenues YTD	% of Revenues	% of Projections	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
Water			**Benchmark**	**100.00%**	**100.00%**												
Residential	19,955,214	20,573,627	20,763,571	104.05%	100.92%	1,519,255.88	1,528,964.11	1,589,120.20	1,698,817.48	1,719,687.12	1,784,706.09	2,029,643.05	2,020,810.98	1,962,033.34	1,665,119.58	1,563,723.07	1,681,689.64
Multi-family	1,565,663	1,683,300	1,745,638	111.50%	103.70%	127,050.98	133,566.70	128,686.65	139,037.84	167,575.74	159,132.92	163,294.57	153,368.34	146,240.85	147,157.86	135,150.22	145,375.08
Commercial	2,551,675	2,621,688	2,581,374	101.16%	98.46%	193,557.29	192,998.76	211,647.48	218,091.78	208,971.02	220,644.97	217,984.24	245,058.52	231,874.39	233,909.27	195,113.55	211,522.58
Bulk	1,043,529	610,524	577,115	55.30%	94.53%	40,487.05	41,283.08	40,582.27	48,702.76	42,549.97	56,530.02	60,336.88	68,398.62	56,912.54	48,710.14	34,868.68	37,752.72
Irrigation	165,530	148,678	194,870	117.72%	131.07%	14,346.15	11,714.84	10,374.44	12,303.46	13,580.95	12,647.57	17,080.32	17,938.73	20,643.08	22,667.97	17,973.43	23,599.12
Fireline Sales	228,289	237,285	348,480	152.65%	146.86%	14,740.00	4,800.00	892.37	195,210.00	14,477.63	12,340.00	14,570.00	12,970.00	25,480.00	28,030.00	9,770.00	15,200.00
Mobile Homes	449,201	931,573	483,663	107.67%	51.92%	31,341.18	32,554.42	40,802.84	46,598.41	54,419.30	50,721.35	51,715.93	42,161.42	36,277.47	32,511.00	32,621.69	31,938.16
Miscellaneous Revenue	337,993	450,000	687,551	203.42%	152.79%	50,254.55	53,332.35	40,604.42	49,597.85	42,402.29	55,726.21	73,323.83	65,149.34	96,165.21	55,046.85	65,712.37	40,235.84
Misc Revenue-Penalty Chg	150,000	150,000	248,288	165.53%	165.53%	20,170.23	15,888.52	22,904.37	18,698.31	17,039.03	24,585.08	19,960.98	20,600.39	21,889.50	23,079.50	21,365.79	22,106.61
Total Water Revenue	**26,447,094**	**27,406,675**	**27,630,550**	**104.47%**	**100.82%**	**2,011,203.31**	**2,015,102.78**	**2,085,615.04**	**2,427,057.89**	**2,280,703.05**	**2,377,034.21**	**2,647,909.80**	**2,646,456.34**	**2,597,516.38**	**2,256,232.17**	**2,076,298.80**	**2,209,419.75**
Sewer																	
Residential	10,258,935	10,643,869	10,942,753	106.67%	102.81%	829,524.91	841,739.69	878,679.16	927,069.92	879,512.69	944,487.02	982,797.90	970,707.83	960,389.56	934,466.84	878,804.95	914,572.56
Multi-family	2,095,701	2,302,850	2,275,462	108.58%	98.81%	170,924.96	176,480.71	172,577.56	182,209.02	209,481.28	202,777.42	208,608.43	201,065.98	192,015.66	193,290.35	180,236.58	185,793.99
Commercial	2,009,434	1,985,457	2,028,465	100.95%	102.17%	153,885.87	161,137.07	160,820.88	172,656.70	174,184.16	168,863.12	172,393.87	177,224.29	175,094.61	175,549.16	163,451.95	173,203.33
Bulk	-		-	100.00%	100.00%	-	-	-	-	-	-	-	-	-	-	-	-
Mobile Homes	517,311	493,584	499,504	96.56%	101.20%	36,512.90	34,607.72	40,567.57	45,349.99	48,555.39	49,188.85	47,827.88	41,563.25	39,565.44	38,698.04	38,501.77	38,565.25
Reclaimed Water / Irrigation	72,828	49,688	82,567	113.37%	166.17%	8,132.07	2,215.52	10,610.93	5,366.46	6,846.23	6,876.65	6,697.11	9,454.97	9,877.22	6,544.57	6,079.11	3,865.95
Transportation Waste	623,774	600,000	745,420	119.50%	124.24%	450.00	500.00	161,451.98	550.00	114,277.08	65,968.30	62,066.03	61,880.17	74,514.33	72,921.52	64,074.06	66,766.14
Total Sewer Revenue	**15,577,983**	**16,075,448**	**16,574,170**	**106.39%**	**103.10%**	**1,199,430.71**	**1,216,680.71**	**1,424,708.08**	**1,333,202.09**	**1,432,856.83**	**1,438,161.36**	**1,480,391.22**	**1,461,896.49**	**1,451,456.82**	**1,421,470.48**	**1,331,148.42**	**1,382,767.22**
Total Water & Sewer Charges for Services	**42,025,077**	**43,482,123**	**44,204,720**	**105.19%**	**101.66%**	**3,210,634.02**	**3,231,783.49**	**3,510,323.12**	**3,760,259.98**	**3,713,559.88**	**3,815,195.57**	**4,128,301.02**	**4,108,352.83**	**4,048,973.20**	**3,677,702.65**	**3,407,447.22**	**3,592,186.97**

Connection Charges recognized in the O & M Fund	FY 05/06 Est Revenues	FY05/06 Projections	Total Revenues YTD	% of Revenues	% of Projections	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
			Benchmark	**100.00%**	**100.00%**												
Guaranteed Revenue-Water	36,031	359,684	239,447	664.56%	66.57%	37,112.35	102,922.67	13,956.35	25,730.06	79,586.39	26,005.44	33,911.05	12,032.86	(48,936.88)	(8,489.20)	(8,997.60)	(25,386.20)
Guaranteed Revenue-Sewer	-	621,209	402,293	100.00%	64.76%	63,630.62	155,656.86	19,745.83	71,571.07	121,126.15	14,585.61	53,528.96	16,116.34	8,661.26	(59,042.42)	(14,899.32)	(48,388.46)
Water-AGRF/Non-refundable	900,060	1,961,528	2,765,295	307.23%	140.98%	222,764.57	454,715.20	208,671.89	154,376.38	375,619.20	236,779.76	176,671.30	176,037.13	106,730.38	93,192.09	184,272.24	375,464.83
Sewer-AGRF/Non-refundable	326,486	619,366	720,234	220.60%	116.29%	71,902.63	128,801.86	56,786.49	67,027.25	107,360.50	41,389.06	43,513.62	41,982.72	22,626.43	(14,901.99)	43,917.12	109,828.07
Water-Meter Connection Fee	606,870	700,000	1,078,447	177.71%	154.06%	78,447.32	237,515.00	97,750.00	52,540.00	123,470.00	102,840.00	79,415.00	76,455.00	61,680.00	(22,620.00)	68,460.00	122,495.00
Sewer-Low Pressure Conn Fee	621,551	590,473	32,320	5.20%	5.47%	7,320.00	3,660.00	3,538.00	2,440.00	3,660.00	3,810.00	-	-	1,220.00	3,660.00	1,220.00	1,792.38
Total O & M Connection Charges Revenue	**2,490,998**	**4,852,260**	**5,238,036**	**210.28%**	**107.95%**	**481,177.49**	**1,083,271.59**	**400,448.56**	**373,684.76**	**810,822.24**	**425,409.87**	**387,039.93**	**322,624.05**	**151,981.19**	**(8,201.52)**	**273,972.44**	**535,805.62**

Connection Fee Fund	FY 05/06 Est Revenues	FY05/06 Projections	Total Revenues YTD	% of Revenues	% of Projections	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
Connection Fees			**Benchmark**	**100.00%**	**100.00%**												
Water - Plant Capacity Fee	2,324,594	3,582,634	3,888,882	167.29%	108.55%	302,498.73	637,035.19	292,363.84	217,315.00	527,486.48	347,280.72	64,997.26	246,795.33	150,517.69	308,050.67	258,340.52	536,200.66
Water - Transmission Capacity Fee	922,365	1,243,098	1,429,591	154.99%	115.00%	113,018.62	233,916.51	107,739.11	79,370.00	193,867.63	130,233.98	23,453.76	90,378.93	55,319.92	113,544.17	94,622.15	194,126.49
Water - Distribution Fee	621,874	499,765	581,768	93.55%	116.41%	38,623.68	37,630.60	37,527.81	41,004.21	41,304.32	67,485.52	66,801.11	65,870.55	49,316.37	37,144.73	57,829.83	41,229.30
Wastewater - Plant Capacity Fee	2,773,681	5,099,381	4,576,827	165.01%	89.75%	419,029.85	826,922.42	474,185.78	315,407.58	685,392.64	274,888.34	27,981.28	272,073.79	144,071.12	149,541.94	282,030.25	705,302.09
Wastewater - Transmission Capacity Fee	2,356,887	3,379,386	3,174,550	134.69%	93.94%	287,392.38	576,316.45	253,158.89	296,354.90	476,384.02	185,288.78	19,804.04	189,105.62	100,137.02	103,939.54	196,025.90	490,642.93
Wastewater - Collection Fee	815,697	558,826	667,924	81.88%	119.52%	49,643.04	35,040.00	35,760.96	63,695.52	43,493.28	82,976.64	84,167.04	80,916.00	51,766.08	37,722.24	64,510.08	38,233.52
Total Connection Fee Revenue	**9,815,098**	**14,363,090**	**14,319,543**	**145.89%**	**99.70%**	**1,210,206.30**	**2,346,861.17**	**1,200,736.39**	**1,013,147.21**	**1,967,928.37**	**1,088,153.98**	**287,204.49**	**945,140.22**	**551,128.20**	**749,943.29**	**953,358.73**	**2,005,734.99**

3 WATER DISTRIBUTION

Charlotte County used an average of 9.42 Million Gallons per Day (MGD) of water in FY 2006, of which 9.04 MGD (96 percent) was supplied by the Peace River/Manasota Regional Water Supply Authority (PR/MRWSA) and the balance of 0.37 MGD was supplied by the County-owned Burnt Store Water Treatment Facility (WTF). The total average water consumed was 9.41 MGD.

The CCU water distribution system is comprised of the following major components:

- Regional transmission mains to supply water from the PR/MRWSA Facility
- CCU transmission mains that supply water to the distribution mains from the regional mains and from the Burnt Store WTF
- Distribution mains, which supply water from the transmission mains to customers
- Fire hydrants, which are also used for flushing the system for maintenance purposes, and valves, which allow the operators to shut off the flow in a pipe section for maintenance purposes.
- Storage tanks, which also provide pressure for customer demand and for firefighting
- Booster stations that pump water to the storage tanks and the distribution system

The CCU water distribution system consists of two systems which are not adjacent and are not interconnected.

3.1 PR/MRWSA - Regional Transmission System

3.1.1 Distribution System

PR/MRWSA owns and operates the Peace River/Manasota Regional Water Supply Facility (PR/MRWSF).

PR/MRWSA was created by agreement on February 26, 1982, by Charlotte, DeSoto, Manatee, Hardee and Sarasota Counties. Hardee County ceased to be a member the following year. The initial term of the agreement is 35 years, renewable for an equal consecutive term.

Under the agreement, each Authority member is allocated water in terms of three parameters:

1. Average Annual Daily Flow (MGD) – computed as the total flow for the Fiscal Year divided by the number of days in the year. The current allocation is 12.758 MGD. Until 2002, PR/MRWSA had allocated 12 MGD to its members, with CCU being allocated 10.758 MGD (90 percent) of it. Since then, the Facility has been expanded by 6 MGD, of which 2 MGD were allocated to CCU to reach the current allocation.
2. Peak Monthly Average Day Flow (MGD) – computed as the total flow for the calendar month that demanded the most water, divided by the number of days in the month in question. Factors that increase water demand are prolonged lack of rain and influx of seasonal residents. The current allocation is 15.310 MGD

3. Maximum Day Flow (MGD) – computed as the greatest flow demanded in one day. This day may have occurred outside of the peak flow month. The current allocation is 17.861 MGD.

Allocations for future Fiscal Years are shown below, except for Manatee County, which to date has not requested an allocation.

Table 3-1 Allocations for Future Fiscal Years

Annual Average Daily (MGD)					
Contract Fiscal Year	**Charlotte County**	**DeSoto County**	**Sarasota County**	**City of North Port**	**Total**
FY05	12.525	0.535	3.048	1.192	17.300
FY06	12.758	0.550	3.500	1.192	18.000
FY07	12.758	0.550	3.500	1.192	18.000
FY08	12.758	0.550	3.500	1.192	18.000
FY09	13.895	0.593	6.808	1.705	23.001
FY10	15.031	0.635	10.116	2.218	28.000
FY11	16.100	0.675	13.225	2.700	32.700
FY12	16.100	0.675	13.225	2.700	32.700
FY13	16.100	0.675	13.225	2.700	32.700
FY14	16.100	0.675	13.225	2.700	32.700
Remaining Years	16.100	0.675	13.225	2.700	32.700

Peak Monthly Average Day (MGD)					
Contract Fiscal Year	**Charlotte County**	**DeSoto County**	**Sarasota County**	**City of North Port**	**Total**
FY05	15.030	0.642	3.658	3.146	22.476
FY06	15.310	0.660	4.200	3.146	23.316
FY07	15.310	0.660	4.200	3.146	23.316
FY08	15.310	0.660	4.200	3.146	23.316
FY09	16.187	0.690	7.931	3.146	27.954
FY10	17.512	0.740	11.785	3.146	33.183
FY11	18.757	0.786	15.407	3.146	38.096
FY12	18.757	0.786	15.407	3.146	38.096
FY13	18.757	0.786	15.407	3.146	38.096
FY14	18.757	0.786	15.407	3.146	38.096
Remaining Years	18.757	0.786	15.407	3.146	38.096

Maximum Day (MGD)					
Contract Fiscal Year	**Charlotte County**	**DeSoto County**	**Sarasota County**	**City of North Port**	**Total**
FY05	17.535	0.749	4.267	3.780	26.331
FY06	17.861	0.770	4.900	3.780	27.311
FY07	17.861	0.770	4.900	3.780	27.311
FY08	17.861	0.770	4.900	3.780	27.311
FY09	19.453	0.830	9.531	3.780	33.594
FY10	21.043	0.889	14.162	3.780	39.874
FY11	22.540	0.945	18.515	3.780	45.780
FY12	22.540	0.945	18.515	3.780	45.780
FY13	22.540	0.945	18.515	3.780	45.780
FY14	22.540	0.945	18.515	3.780	45.780
Remaining Years	22.540	0.945	18.515	3.780	45.780

Reference: PR/MRWSA Master Water Supply Contract, Exhibit “B”

Members are not allowed to sell water supplied by the Authority outside of the member's service area. Each member does have an equal right to reasonably increase its allocation of water if the member can demonstrate the need for the increase because of future water demands, or to meet current demands that cannot be met by the current supply, and if PR/MRWSA is able to obtain all environmental permits for the expansion.

Water is supplied to CCU through two PR/MRWSA-owned regional transmission mains. The original pipeline is 36 inches in diameter. In September 2001, a 24-inch main became operational to provide an emergency backup to the older main. In a worst-case scenario, the smaller main can provide water to the supply area at the FDEP-mandated minimum pressure of 20 psi.

At the end of FY 2006, there were 53,374 customer accounts served by 1,280 miles of mains, ranging in size from 2 to 10 inches in diameter for the distribution mains, and from 12 to 16 inches for the transmission mains. The vast majority of the piping is comprised of 4-inch and 6-inch distribution mains. The system grew by 18 miles (1.4 percent) in FY 2006.

There were 4,167 fire hydrants at the end of FY 2006, which is an increase of 99 hydrants (increase of 2.4 percent) from the prior FY. There are over 14,000 valves.

Within each service area, the distribution system is looped, which means that flow can travel in both directions in response to a pressure differential. A looped system greatly improves the level of service to the customers, because water can be delivered from more than one route. For example, a high demand on one part of the system is met by the flow reversal that occurs naturally and equalizes pressure.

As a further safeguard, CCU has three emergency interconnections with the water distribution system of the City of North Port. The combined capacity of these interconnections is 1 MGD. CCU also has existing interconnections with Charlotte Harbor Water Association and Gaparilla Island Water Association, is planning interconnections with the water distribution systems of the City of Punta Gorda and the Englewood Water District, and has completed feasibility studies for interconnections with the City of Cape Coral and Lee County.

In 2006, CCU and Englewood Water District staff negotiated a potable water interconnect, which will not only provide redundancy for both water systems in the event of an emergency, but also have the potential for either entity to buy or sell excess water, if needed. The project was approved in August and both entities are moving forward with design and construction, which is expected to be completed in 2007. The BCC has approved Phase I of the Punta Gorda emergency interconnect, from the East Port Campus, under the Peace River to Punta Gorda. Future phases of this project could include the interconnection of the Burnt Store RO WTF to the remainder of the CCU distribution system.

3.1.1.1 System Expansion

An existing water model is used as a tool for planning expansion. The model is being maintained by consultant DMK Associates.

3.1.2 Water Booster Pump Stations

There are four booster pump stations in the CCU service area, three of which are currently operational and all of which are located in the area served by the PR/MRWSF. The power grid provides reliable power (outages are of short duration). Three of the booster pump stations have backup power: Rotonda, Walenda and the Port Charlotte Golf Course. The

largest pump in the system is only three years old. At this writing, three stations are operational and one station is being upgraded to be operational in August 2008. Specific information is presented below. Two additional booster stations, Gertrude and Fivelands, are in the process of being decommissioned. These booster stations have been offline and it was determined in FY 2006 that it would not be cost effective to rehabilitate them to usable condition.

3.1.2.1 Gulf Cove Booster Station

Built in 1980, the station has four pumps ranging in size from 40 horsepower (hp) to 100 hp The station is in service and undergoing the following improvements, to be completed in FY 2007:

- Replacement of existing chlorine and ammonia gaseous storage and injection facilities with liquid-handling facilities to improve operator safety
- Modifications of site to accommodate chemical delivery trucks

3.1.2.2 Rotonda Booster Station

Built in 1973, the station has one pair of 100 hp pumps and one pair of 60 hp pumps. The station is in service. The existing chlorine and ammonia gaseous storage and injection facilities will be replaced with liquid handling facilities during FY 2007.

3.1.2.3 Walenda Booster Station

Built in 1994, the station has two 50 hp pumps and three 75 hp pumps. The station is in service and undergoing the following improvements, to be completed in FY 2007:

- Replacement of existing chlorine and ammonia gaseous storage and injection facilities with liquid-handling facilities to improve operator safety
- Modifications of site to accommodate chemical delivery trucks
- Upgrade of both 40 hp pumps to 70 hp pumps

3.1.2.4 Golf Course Booster Station

Built in 1966, the station is not operational because it is being upgraded. It is expected to be online in August 2008. The improvements will be:

- New booster pumps to provide sufficient pressure to fill the storage tank
- Replacement of existing chlorine and ammonia gaseous storage and injection facilities with liquid-handling facilities to improve operator safety
- New bathroom and wastewater collection infrastructure
- Upgrades to the operations/controls area of the station building

3.1.3 Storage

Water storage tanks are typically located at water treatment plants and booster pump stations. The tanks are designed to be filled by the booster stations and to be drained by gravity. They provide the following functions for the CCU water supply system:

- Store water in case of an interruption of service at the water treatment plant or at the booster station;

- Provide pressure for firefighting that is more cost effective than relying solely on pumping;
- Forgo the expense to build water treatment plants and booster stations to meet peak demand by storing water during low-use periods for release during high-use periods

There are four water storage tanks in the service area served by the PR/MRWSF. The tanks range in capacity from 0.5 million gallons (MG) to 5 MG, for a total capacity of 10 MG. The tank at the Golf Course Booster Station will not return to service until upgrades are completed in August 2008. The list of tanks and their respective capacities are shown in Table 3-2 below.

Table 3-2 Tank Capacities

Booster Station Name	Storage Tank Capacity (MG)
Gulf Cove	2.00
Golf Course	1.00
Walenda	2.00
Rotonda	5.00
Total	10.00

There are also three, 2 MG tanks at the PR/MRWSF. This stored volume is available to Charlotte County and the other members for water supply or in case of an emergency.

Specific information on each of the water storage tanks is presented below:

- Gulf Cove Storage Tank – planned upgrades include painting and scaling of the interior and exterior of the tank
- Golf Course Storage Tank – not in service; being upgraded, including modifications to the inlet/outlet piping. Planned to be in service in August 2008.
- Walenda Storage Tank – planned upgrades include painting and scaling of the interior and exterior of the tank
- Rotonda Storage Tank – upgrades completed in March 2007, including replacement of the suction piping, which will increase the operational storage volume and improve mixing. The tank was also coated on the inside and painted on the outside.

3.1.4 Water Quality (CCR)

As required by federal and state regulations of all utilities, CCU distributes to every customer an annual water quality report, also known as the Consumer Confidence Report (CCR). The report tabulates the results of water quality testing to identify the level of pollutants that may be in the drinking water.

All water, including bottled water, originates from rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and it can also absorb substances that originate from animal or human activity. These contaminants may include:

- Microbial contaminants, such as viruses and bacteria

- Inorganic contaminants, such as salts, metals, pesticides, and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses
- Organic chemical contaminants, including synthetic and volatile organic chemicals
- Radioactive contaminants, which can be naturally occurring

To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk.

The results as reported in the latest CCR, for calendar year 2005, indicate that the levels of tested CCU water contaminants in the service area are safely below the maximum contaminant level allowed by federal and state regulations, and in most cases, well below the levels. A copy of the latest CCR is included in the Appendix.

3.1.5 Operations

The flow from the PR/MRWSF enters the service area via two regional transmission mains, where it is metered. Although the system is looped, the flow generally continues to the Walenda booster station, then to the Gulf Cove booster station, and lastly to the Rotonda booster station. Chlorine and ammonia are injected into the main from the pumps to maintain the water quality standards so that it can be safely stored in the storage tanks.

Each tank is topped off when its level falls below the halfway point unless there is reason for caution, such as during the hurricane season. In such situations, a tank is topped off even if it is just a few hundred gallons below full.

CCU system integrity is maintained by sound operating and maintenance processes, implemented by a well-trained staff, and by anticipating capacity needs through capital improvements.

The Water Distribution workgroup is responsible for dozens of operations processes with the common goal of maintaining adequate flow rate, volume, quality and pressure to CCU customers. To this end, CCU has a proactive training program for its staff, as discussed in more detail in Section 2 of this report. The County uses the well-recognized University of California/Sacramento study books to assist staff in obtaining their operator licenses. Taking this course is a CCU requirement for staff who will be taking state certification tests. CCU is well prepared for the upcoming FDEP requirement that all utility operators be state-certified.

During adverse conditions, CCU aims to maintain its level of service to customers to the extent that conditions allow. CCU participates in the countywide Hurricane Preparedness Plan. This plan was written after Hurricane Charley in 2004, it has been rehearsed, and is ready to be implemented in the event of a hurricane. Plan elements include predetermined assignments by individual staff members as to reporting location and function. Further information on emergency preparedness and response is presented in Section 2 of this report.

3.1.6 Maintenance

CCU performs three types of maintenance on the system: predictive, preventive and reactive. In predictive maintenance, tests and observations are performed on equipment to predict when failure of the component might occur. An example of a CCU predictive maintenance procedure occurs during the daily inspection of booster stations. While at the station, the operator takes infrared readings on motors and other components to measure abnormally high temperature readings. In so doing, an impending failure can be averted by addressing the cause of the temperature spike. Predictive maintenance is more suitable for equipment that is in essentially continuous operation, and it would be detrimental if it failed abruptly.

Preventive maintenance involves exercising components, such as valves and hydrants, changing lubricants, and replacing wearable parts on a schedule of time or usage. Preventive maintenance is more suitable for equipment that must be ready to be operated even though it is typically not in use.

Reactive maintenance occurs when there is an abrupt failure or when the system is compromised by others, such as a cable installer puncturing a water main. Reactive maintenance focuses on restoring service as soon as possible, even with a temporary repair to be upgraded later.

There are design standards for pipes, valves and hydrants. Having standards allows the maintenance staff to be more efficient.

3.1.6.1 Service Orders

All maintenance begins with a service order (SO). Predictive and preventive SOs are generated by staff, so there is flexibility as to when they are performed. They are scheduled at such a time to be most efficient in terms of the availability of resources, especially labor.

Reactive SOs are usually generated by a customer phone call. During normal office hours, a CCU dispatcher documents the information and contacts the appropriate foreman to respond. During off-hours, an answering service records the information and contacts the duty line technician on call for response. The on-call line technician has the resources to muster a four-person crew after-hours, if needed. The level of service, from the customer's perspective, is that a live voice will respond to an emergency call on a 24-hour/seven-day basis.

Some reactive SOs are generated by a telemetered alarm when certain parameters are breached; for example, high water level at a storage tank. The telemetry system sends a message to the cell phone of the Chief Operator in charge of the booster stations. This procedure allows for a problem to be addressed before there has been a loss or reduction of service to the customer.

The response time by the repair crew, even to the farthest point of the service area, is less than 45 minutes. This level of service is maintained in part by distributing crews geographically to reduce response distance, and by having two warehouses – one approximately in the center of the service area and the other towards the west end. When the East Port Operations Service Center/Warehouse (damaged during Hurricane Charley) is operational again in April 2007, the response time will be shortened further because of its central location. To maintain this level of service during off-hours, emergency staff is

equipped with beepers and/or cell phones to expedite communication, and a wireless-enabled laptop computer.

In addition to daily temperature checks, each booster station is visited at least monthly to perform mechanical and electrical tests, greasing and lubrication. The staff is also able to perform repairs on the pumps even though they are from several manufacturers. Staff are able to replace booster station pumps and motors rather than rely on outsourced services, which are expensive and not as responsive.

As a result of the maintenance practices in place, the booster stations, especially the pumps, are operating well, and have not ceased to operate because of a sudden failure. The pumps and motors at the Rotonda station were recently replaced. It now has a spare pump and motor. The site inspection revealed that the surface pipes are in good condition.

The Gulf Cove storage tank has been reconditioned with an epoxy coating on the inside, and the Rotonda tank will be completed in March 2007.

Water valves have been surveyed using a global positioning system (GPS). This allows for any valve to be quickly located if it needs to be shut off. In FY 2006, 3,218 valves were exercised to increase reliability probability if needed in a reactive maintenance mode.

Water meters are on a 10-year replacement cycle, which is the optimum time for replacement. Beyond 10 years, meters begin to degrade and underscore usage, thus under-billing costumers. During the Fiscal Year, the Division replaced 799 water meters, in addition to installing 1,650 new meters.

3.1.6.2 Data Management

SOs generate valuable data that can be used to improve operations and maintenance based on actual performance. Data is currently maintained in several media, including electronic and paper-based, and is not always easily retrievable. The current condition will be greatly improved with a computerized maintenance management system (CMMS) that CCU is currently implementing. The DataStream CMMS will allow for data to be located on a file server and be accessible to all properly authorized users. The CMMS has standard reports, but custom reports can be created for specific purposes. The CMMS will greatly reduce paperwork and improve efficiency. Staff is presently undergoing training. The CMMS will be fully implemented in 2007 for the entire Utility, although the current system will be maintained during the start-up period.

Information to be maintained will include costs to complete an SO in terms of labor, parts and equipment use, including vehicles, and outside contractors, if needed. The data can be used to generate budgets, evaluate the efficiency of processes and particular components of equipment, perform “what-if” scenarios, and many other analyses that are too cumbersome to perform currently.

3.1.6.3 Leak Detection

At present, most main breaks are caused by contractors excavating for various other utility installations or infrastructure. As an example, new telephone systems are being changed from copper to fiber and pole lines are being replaced by underground lines.

For FY 2006, the water loss was 6.1 percent for the system in the PR/MRWSA service area and 4.8 percent in the system served by the Burnt Store WTF. These results are well below

the 10 percent level that triggers a report to the Florida Department of Environmental Protection.

At the end of FY 2006, 17,794 customer accounts (approximately 33 percent) had automatic meter reading (AMR) meters, which are read remotely. This practice not only reduces the billing cost, but once expanded, can be used to compute water losses by comparing actual water used by a sector of customers to water supplied. As described in Section 2.8.1, the system currently requires the meter reader to drive by the meter to remotely upload the data onto a laptop computer. CCU plans to update the system to eliminate the need for drive-by data collection; instead, the data would be transmitted wirelessly to a central location. If coupled with meters strategically located within the distribution system, the computation for leak detection could be performed more accurately and in real time than the present technology allows.

3.1.7 Review of 2005 Annual Report Recommendations

Listed below are the recommendations from the *2005 Annual Report* that are applicable to the water distribution system.

Recommendation: Continue the 10-year Water Meter Replacement Program.

Progress: Program continues. Residential water meter accuracy begins to decrease after 10 years, resulting in a loss of revenue. At the end of FY 2006 there were 17,794 AMR meters installed, approximately 33 percent of the customers.

Recommendation: Analyze the need to extend the new 16-inch transmission main from SR 776 to the Rotonda storage tank to serve the growing demand for water in western Charlotte County.

Progress The main has been constructed and is in service.

Recommendation: Continue a program to periodically inspect and repair, as necessary, all water storage tanks in the CCU system.

Progress: Work continues. During the fiscal year, one tank was reconditioned and another tank is being reconditioned.

Recommendation: Continue to make improvements at the Rotonda Water Storage Tank/Booster Pumping Station Facilities to promote mixing within the tank.

Progress: The improvements were completed in March 2007 as part of the five-year tank inspection/maintenance program. The improvements consisted of installing a new mixing system and replacing the suction line, which also increased the operational (storage) capacity of the tank. In addition, the inside of the tank was coated and the outside of the tank was painted.

Recommendation: Increase water pressure in the Deep Creek subdivision.

Progress: The increase in water pressure was achieved by the opening of bypass valves and the removal of in-line flow meters that are no

longer needed to measure water flow into the subdivision for bulk billing purposes. (Customers are now billed individually as are all CCU customers.) The presence of the water meters created an unavoidable interference in the flow, which caused the loss of pressure. The improvements also increased flow rates throughout the distribution system.

Recommendation: Continue construction of the 24-inch secondary transmission main from the Peace River transmission main on Kings Highway at the DeSoto County line to the "heart" of the Port Charlotte distribution system.

Progress: Phase I is complete (from Sandhill Blvd. to Presque Isle on Veterans Blvd.). Phase II is in design (Presque Isle to Harbor Blvd. and Sandhill Blvd. to County line).

3.1.8 Summary and Recommendations

There are two sources of water to CCU customers, although virtually all of it (96 percent) is provided by the Peace River/Manasota Regional Water Supply Authority. The PR/MRWSA water treatment plant is located just north of Charlotte County, in DeSoto County. The balance of the water is supplied by the Burnt Store Water Treatment Facility, which is owned and operated by Charlotte County.

The PR/MRWSA water is supplied via two large regional transmission mains that are 36 inches and 24 inches in diameter. The smaller main has the capacity to serve CCU customers if the other main is out of service, including providing the minimum requirement of 20 psi of pressure.

The level of service is further enhanced with three current interconnections with the City of North Port, to be used in case of an emergency. CCU is also under discussion with four neighboring utilities to establish other interconnections. The distribution system served by the Burnt Store WTF, because of its small size and isolated location, does not have an interconnection.

CCU supplies water to over 53,000 customer accounts over a distribution system comprised of 1,280 miles of pipe and four booster stations with storage tanks. Water Distribution staff ensures that equipment is operational through a maintenance program. A site inspection showed facilities to be in working condition and working areas to be safe and organized.

In addition to continuing implementation of recommendations carried over from last year's Annual Report, the following are recommended:

1. Perform a water audit in accordance with AWWA procedures and establish a leak detection program. Although the annual water loss is low, the monthly fluctuations are too large to allow the data to be used for ongoing maintenance purposes. The results of the audit may point to formally establish leak detection as an ongoing maintenance activity.
2. Perform a water audit in accordance with AWWA procedures and establish a leak detection program. Although the annual water loss is low, the monthly fluctuations are too large to allow the data to be used for ongoing maintenance purposes.

3. Continue program to replace existing water meters with meters that can be automatically read; that is, gradually convert the system to an automated meter reader (AMR) system. The AMR program should include additional non-billing meters to be able to perform leak detection at the neighborhood level.
4. Review operations and maintenance processes for efficient use of the CMMS. Once implemented, all data will be centrally located and accessible to authorized personnel. Document processes.
5. Begin the process to establish an asset management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.
6. Compute the value of the distribution system and the percentage that is annually replaced or renewed. As the system grows so will the cost to maintain the system at its design capacity.
7. Consider implementing the alternate method in asset valuation per GASB 34.
8. Continue the current long-term look at interconnections as part of maintaining the level-of-service reliability. Consider including risk management in the analysis.
9. Complete calibration of water model.
10. Continue to make improvements at the Rotonda Water Storage Tank/Booster Pumping Station Facilities to promote mixing within the tank.

3.2 Burnt Store Water Distribution

Water is transmitted from the Burnt Store WTF through a 12-inch main, which is connected to the distribution mains that supply water to customers. Because this service area is significantly smaller, there are no booster stations or storage tanks within the distribution system; however, there are two 500,000-gallon storage tanks at the Burnt Store WTF, thus totaling 1 MG of storage available for the service area. See Section 5.3.5 for a detailed description.

3.2.1 Distribution System

The inventory of assets in the distribution system tributary to the plant is not kept separately. This system has no interconnections.

3.2.2 Water Quality (CCR)

As required by federal and state regulations of all utilities, CCU distributes to every customer an annual water quality report, also known as the Consumer Confidence Report (CCR). The regulatory requirements for issuance of the CCR and the contaminants that are tested for are the same as described in Section 3.1.1.4.

The results as reported in the latest CCR, for calendar year 2005, indicate that the levels of tested CCU water contaminants in the Burnt Store Water Treatment Plant service area are safely below the maximum contaminant level allowed by federal and state regulations, and in most cases, well below the levels. A copy of the latest CCR is included in the Appendix.

3.2.3 Operations

There are no booster stations in the Burnt Store WTF distribution system; notwithstanding, there is no distinction in operations procedures between the two systems. See Section 3.1.1.6 for detailed information.

3.2.4 Maintenance

There is no distinction in maintenance procedures between the two systems. See Section 3.1.1.7 for detailed information.

3.2.5 Review of 2005 Annual Report Recommendations

Listed below are the recommendations from the *2005 Annual Report* that are applicable to the water distribution system.

Recommendation: Continue the 10-year Water Meter Replacement Program.

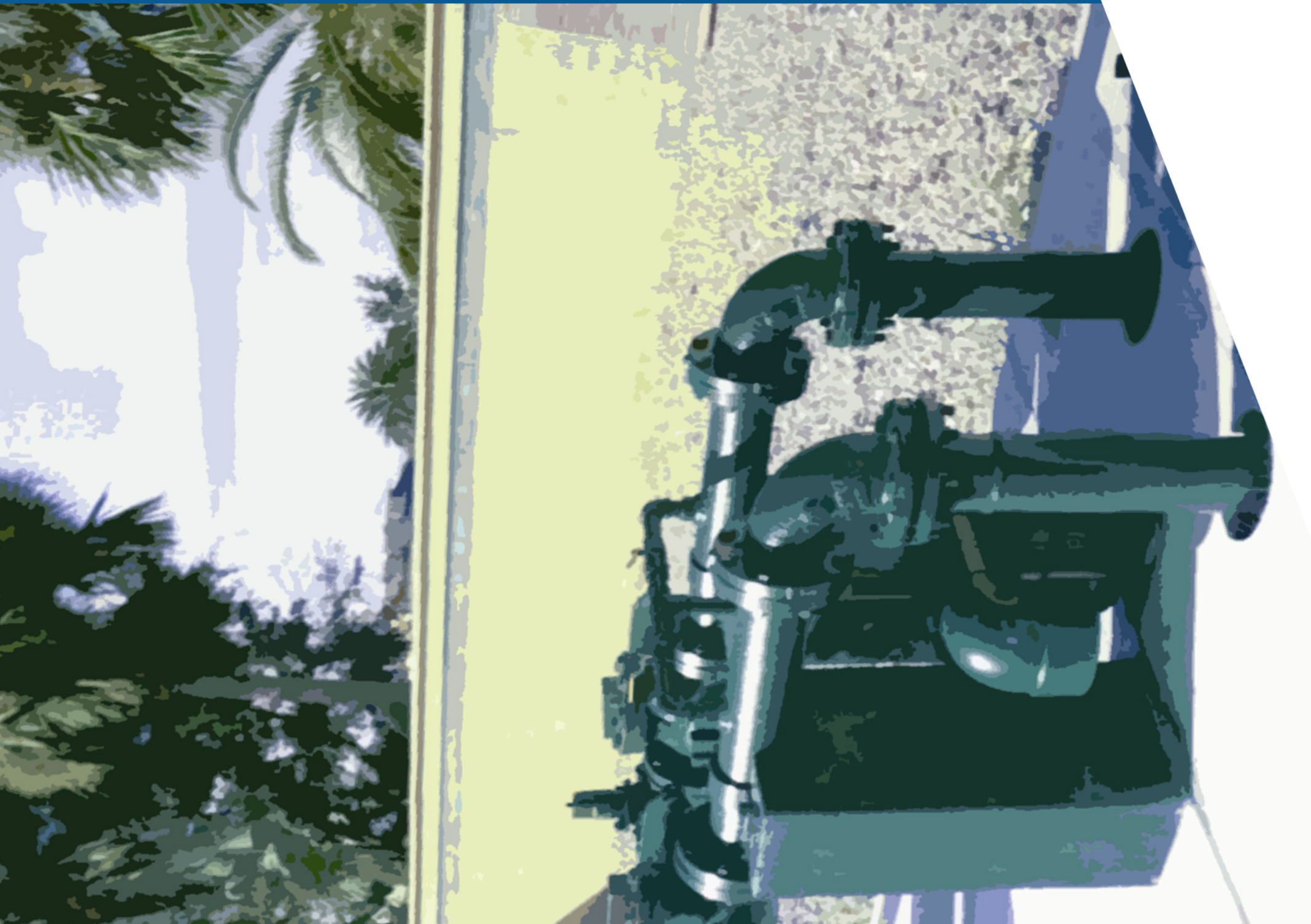
Progress: Program continues. Based on general industry practices and observations, residential water meter accuracy typically begins to decrease after 10 years, resulting in a loss of revenue.

3.2.6 Summary and Recommendations

The water distribution system that is supplied by the Burnt Store Water Treatment Plant provided approximately four percent of all the water demand for CCU in FY 2007. Although information is kept by asset, such as inventory and SOs, the current data management does not allow for easy querying by area. This issue will be corrected upon implementation of the CMMS.

The recommendations itemized for the area served by PR/MRWSA apply equally to the area served by Burnt Store. See Section 3.1.9.

In addition, upgrade transmission main along Burnt Store Road to meet future demands. Replace 6-inch and 8-inch pipe with C-900 SDR-18 pipe.



4 WASTEWATER COLLECTION

4.1 Central Sewer Systems: Gravity Sewers, Force Mains and Low Pressure Sewer

The purpose of a wastewater collection system is to transport wastewater from customer structures to a wastewater treatment plant. The system is comprised of the following components:

- Gravity Sewers, as the name implies, is piping that has been installed at a negative slope that allows wastewater to flow exclusively by the energy of gravity. Gravity sewers include manholes that allow for the entry of maintenance staff. Flow in gravity sewers is always moving until it reaches a lift station or the treatment plant.
- Force Mains, are piping through which wastewater travels against the pull of gravity. The energy required for the operation of a force main is provided by the lift station located at the lower end of the sewer main.
- Low Pressure Sewers (LPS), an alternative to gravity sewers, require a small pump at each property. They cost less to construct (smaller, shallower piping) but cost more to operate and maintain (electrically driven equipment). Flows within an LPS move only when pushed by new flow contributions.
- Pump Stations and Lift Stations, provide energy where reliance on gravity would require the gravity sewer to be unacceptably deep to maintain the proper slope. Pump stations and lift stations are common in Florida because of the flat terrain.

The CCU service area is served by four collection systems, each of which is tributary to a wastewater treatment plant, as listed in Table 4-1 below.

Table 4-1 Water Reclamation Facilities and Capacities

Treatment Plant	Permitted Capacity (MGD)
East Port	6.000
West Port	1.200
Rotonda	0.625
Burnt Store	0.500
Total	**8.325**

The Rotonda collection system is interconnected to the West Port system because it has grown beyond the capacity of the Rotonda Wastewater Treatment Plant. Approximately 150,000 to 300,000 gallons are diverted on a typical day.

At the end of FY 2006, there were 31,066 customers served by 367 miles of gravity sewer, 252 miles of LPS mains and 147 miles of force mains, for a total of 806 miles of wastewater conduit, and 9,040 manholes. Since FY 2005, the gravity system grew by over 13,000 linear feet and 65 manholes. Over 97 percent of the gravity piping is comprised of 8-inch diameter sewers with other gravity sewers ranging in size from 6-inch pipe to 16-inch pipe. The number of LPS customers added in FY 2006 also grew, but the number is not yet kept

separately; however, approximately 10 miles of piping was added in FY 2006. Nearly 80 percent of the LPS system is comprised of 4-inch diameter low pressure sewers.

4.1.1 System Expansion

As part of a Countywide wastewater expansion study, consultant Jones Edmunds is modeling the existing wastewater system using SewerGems software. Both current and future modeling should be complete by mid-2007. The model will identify areas where capacity upgrades are needed to support future growth, as well areas for future system expansion, based on age of existing septic systems, proximity to surface water bodies and other factors.

Currently, Municipal Services Benefit Units (MSBUs) are the preferred method of funding wastewater expansion projects. MSBUs are created by County ordinance as a funding mechanism to provide specific services to defined areas. The associated project costs are evenly assessed on each property within the benefit unit as non-ad valorem assessments that appear on the property tax bills as a separate line item.

In FY 2006, three wastewater expansion MSBUs were approved: Rotonda Sands and Rotonda Meadows in West County and Pirate Harbor in South County. The three subdivisions are already served by CCU water. By summer 2008, installation of infrastructure is expected to be completed for Pirate Harbor, and by January 2009, for Rotonda Sands and Meadows.

4.2 Major Lift Stations

There were 300 lift stations in the system at the end of FY 2006, which is an increase of four stations from the end of the prior Fiscal Year. Three of these stations are defined by CCU as Regional Master lift stations because each has at least 20 tributary lift stations. They are the South Port, Quesada and East Port lift stations. A master lift station has at least 3 or more tributary lift stations. Currently, there are 24 master lift stations.

The three Regional Master lift stations have permanent alternate power. CCU has been purchasing standby power equipment for the rest of the system, with the intent to eventually have one portable generator or portable pump for every 10 lift stations.

4.2.1 East Port Regional Master Lift Station

The East Port Regional Master Lift Station is a new station that has all of the accumulated design standards that CCU has developed during the last few years.

Significant design features of this station are:

- Both pumps are variable-speed type, which allows them to vary their pumping rate to match the incoming flow rate. Although more expensive than constant-speed pumps, variable-speed pumps save on power usage in locations characterized by significant fluctuations in the incoming flow rate.
- Permanently installed alternate power.
- Corrosion protection coating is applied to the wet well walls as part of the construction. This proactive practice differs from the norm, when corrosion protection is applied after corrosion has been observed.
- The wet well has a redundant float to trigger a high-level alarm.

- The area is well lit to allow ease of work without the need for handheld lighting.

Approximately 40 new and existing lift stations are in various stages of planning, design or construction. As needed, they will also have one variable-speed pump and will incorporate all of the other features of the East Port Regional Master Lift Station.

4.3 Operations

Whereas a water distribution system distributes water to customers, a wastewater collection system collects the used water and transports it to a water reclamation facility (WRF). Each WRF has its own dedicated collection system, and only the Rotonda and West Port systems are interconnected.

The training provisions reported in Section 3.1.5 apply exactly to Wastewater Collection. Their involvement in hurricane preparedness and plan implementation are also identical.

The older gravity pipes are clay, which, because of their age and brittleness, tend to have more cracks than other pipes in the system. CCU's wastewater system rehabilitation program (test and seal) is currently funded at $1,200,000 annually. A majority of the repairs involve a cured-in-place lining that restores the integrity of the system without excavation.

If there is a power failure, there are approximately 20 minutes of wastewater storage in the LPS system. In response, CCU has eight trailer-mounted portable generators and two trailer-mounted portable pumps. The goal is to eventually have either one portable generator or emergency pump for every 10 lift stations.

CCU has developed a preparedness program for the various LPS systems that was originally implemented in the aftermath of Hurricane Charley. CCU has a 4,000-gallon tank truck, which is used in conjunction with a rental fleet of trucks equipped with similar capacity tanks, generators and pumps. The plan calls for the trucks to pump out the individual LPS tanks.

4.4 Maintenance

Maintenance procedures for the wastewater collection system are the same as for the water distribution system. The maintenance types, SO generation and data management practices are the same as described in Section 3.1.6.1.

Although many of the lift stations are monitored by Radio Telemetry Units (RTUs), each station is visited weekly. Most of the stations are relatively small in size and do not require an operator on site. In case of an emergency, all stations have visible and audible alarms, and a toll-free telephone number prominently noted for an observer to call.

4.4.1 Service Orders

The process for generating and completing service orders is the same in the Wastewater Collection workgroup as it is in the Water Distribution workgroup. As in Water Distribution, SOs are generated internally and processed in a similar manner. Reactive SOs are generated by customer calls. The identification of an SO as being related to wastewater or water is deemed by the dispatcher.

4.4.2 Data Management

Currently some of the maintenance data generated by Wastewater Collection is not shareable; however, the implementation of the CMMS as described in the Water Distribution section of this report will allow for all data to be shared. For example, a manager will be able to query the system to determine if there are open work orders in a neighborhood, regardless of whether they are water or wastewater related.

LPS customers generate about 250 reactive SOs monthly. It is not cost-effective to perform any other type of maintenance because of the high cost to visit numerous sites and the low parts cost. By contrast, lift stations generate eight to 10 SOs monthly.

In the planning stages of a new collection system, CCU engaged an engineering consultant to perform a feasibility study that includes an economic comparison of installing a conventional gravity system, with its network of lift stations and force mains, versus an LPS system. The major components of the comparison are initial construction costs and future maintenance costs over the life of the system. Future costs are brought to present-day costs, much like an annuity, and added to construction costs to determine total project cost. To date, an LPS system has been shown to have a lower total cost compared to a gravity system, because its lesser construction cost outweighs its higher maintenance cost.

The new CMMS will allow for this economic analysis to be performed with greater precision in future studies, because costs will be more accurately known. For example, the gravity manhole or lift station wet well to which an LPS discharges tends to be subjected to more corrosion than other locations. The increase in hydrogen sulfide gas generation occurs within the LPS because of the longer flow travel times compared to a gravity system. Currently, this added cost to repair the corrosion damage cannot be pulled from the data, so it is assigned as a cost to the gravity system.

In terms of preventive maintenance, the condition of the wet well of each lift station is inspected regularly; problems are addressed as they are found. In addition, groups of three or four stations are rehabilitated, as recommended by an outside engineering firm, following a thorough inspection and study.

A maintenance program for the gravity system is ongoing, which includes infiltration identification, closed-circuit television inspection and cleaning. Areas will be targeted for inspection by analysis of pump run times during wet-weather and high groundwater periods. Repairs performed during the Fiscal Year have included manhole coating and lining of 16,800 linear feet of sewer in the Rotonda area. The defects that were repaired were identified by staff inspections. In the future, the data to be generated by this program and the ensuing analysis will be performed with the aid of the CMMS under implementation.

Because of the CCU maintenance practices, there are few blockages in the gravity system, most of which are the result of a collapsed manhole caused by corrosion.

4.4.3 Groundwater Infiltration

Whereas water can leak out of a distribution system, groundwater can infiltrate into a wastewater collection system. The average age of the gravity system is 20 years; older sewers were typically installed in swales, which made them more prone to infiltration. Also, design and construction standards were not as tight as is the current practice. The average infiltration for 2006 was approximately five percent of the total flows to the WRFs.

4.5 Review of 2005 Annual Report Recommendations

The status of recommendations from last year's Annual Report is summarized below:

Recommendation: Continue the scheduled repair of sanitary lift stations that have deteriorated due to use and hydrogen sulfide presence.

Progress: Plan continues. The plan calls for an annual "top/down" study of 12 lift stations and for implementation of recommendations of upgrades, repairs and rehabilitation.

Recommendation: Use the wastewater lift station and force main computer model to assess the need for upgrades to the system based on anticipated demand for services.

Progress: As part of a County-wide wastewater expansion study, consultant Jones Edmunds is modeling the existing wastewater system using SewerGems software. Both current and future modeling should be complete by mid-2007. The model will identify areas where capacity upgrades are needed to support future growth, as well as identifying areas for future system expansion, based on age of existing septic systems, proximity to surface water and other factors.

Recommendation: Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

Progress: This work continues, and it is an integral part of maintaining a wastewater collection system, as older components deteriorate. The effectiveness of the program will improve with the implementation of the CMMS.

Recommendation: Install odor control systems at lift stations where hydrogen sulfide concentrations cause odors and deterioration of structures.

Progress: Installed four air scrubbers and five pit evacuators in FY 2006 for odor control.

Recommendation: Plan for the next phases of sewer expansion in the Port Charlotte area.

Progress: In the 1990s, 12 areas were identified in Port Charlotte for sewer expansion. To date, the expansions have been completed in 11 areas. The remaining area, Area I, is being included in a sewer expansion feasibility analysis. In addition, three wastewater expansion MSBUs were approved in FY 2006: Rotonda Sands and Rotonda Meadows in West County, and Pirate Harbor in South County.

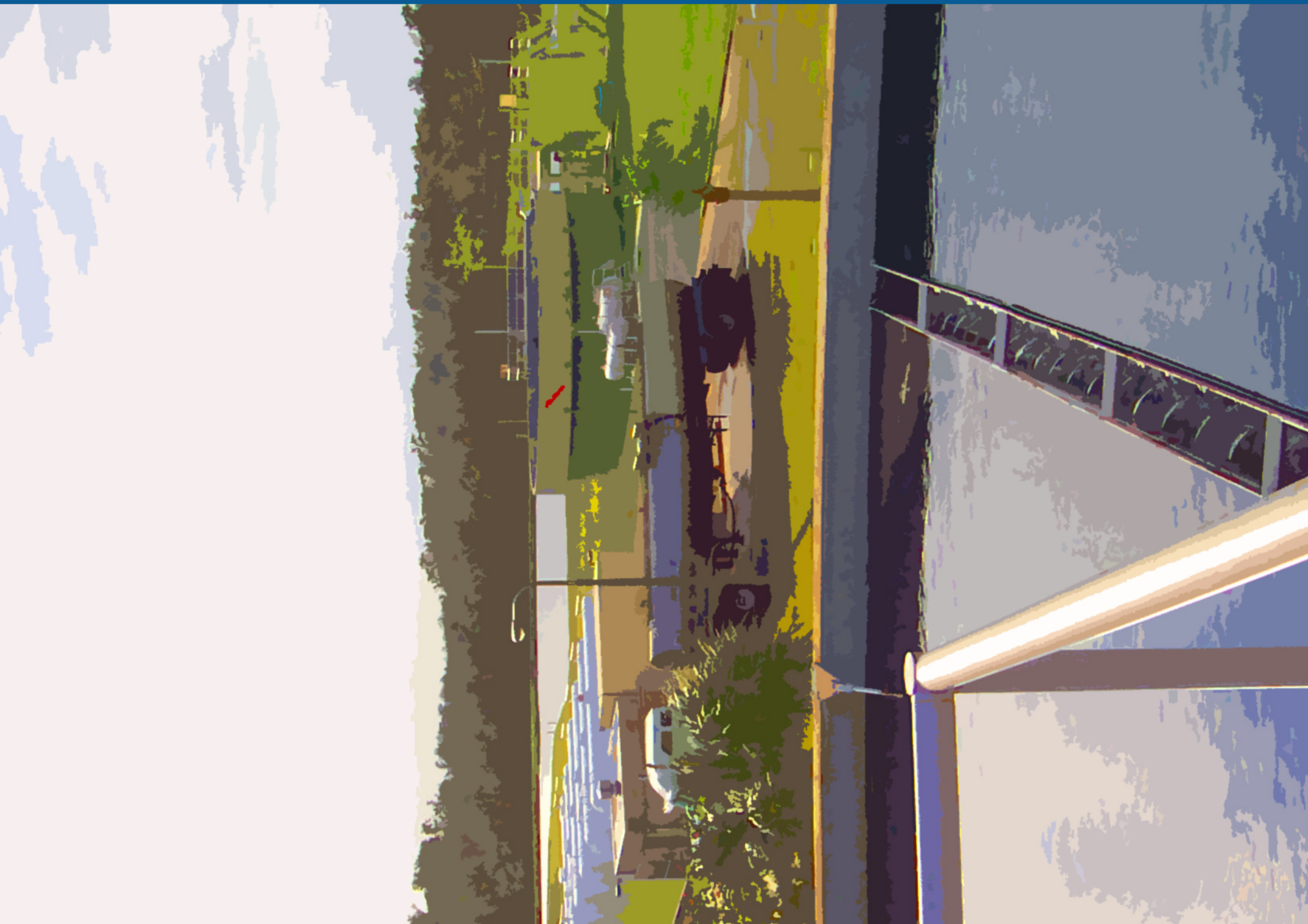
4.6 Summary and Recommendations

There are over 31,066 wastewater customer accounts served by CCU. Individual facilities are connected to a sewer system network comprised of 806 miles of gravity sewers, lift station force mains, and low pressure sewers. The system includes 300 lift stations.

Wastewater from each customer is transported to one of four water reclamation facilities, depending on the location of the customer. The Wastewater Collection staff has a maintenance program in place that includes inspections for condition assessment, including closed-circuit TV inspections and cleaning of sewer lines to restore/maintain hydraulic capacity. A site inspection showed facilities to be in working condition and working areas to be safe and organized.

In addition to continued implementation of recommendations carried over from last year's report, the following are recommended:

1. Develop an inflow/infiltration detection monitoring program that will provide, among other benefits, flow data to be used in ongoing maintenance, planning and quantification of infiltration and inflow rates.
2. Review operations and maintenance processes for efficient use of the CMMS. Once implemented, all data will be centrally located and accessible to authorized personnel. Document processes.
3. Begin the process to establish an asset management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.
4. Compute the value of the collection system and the percentage that is annually replaced or renewed. As the system grows, so will the cost to maintain the system at its design capacity.
5. Consider implementing the alternate method in asset valuation, per GASB 34.
6. In comparing the life-cycle costs between gravity-based and LPS systems, ensure that all costs are included; for example, the cost to line a gravity system manhole that has corroded because of gases from the LPS discharge, and a life longer than 20 years.
7. Perform an internal, informal CMOM self-audit.



5 TREATMENT FACILITIES

5.1 State Certified Laboratory

The East Port Water Reclamation Facility (WRF) supports a comprehensive environmental testing laboratory. The State of Florida Department of Health certifies the laboratory in several categories. These categories include Nutrients, Demands, Physical Constituents, Organics and Microbiology. As part of the certification process, the laboratory must demonstrate capability in all of the above categories by participating in proficiency testing of quality control samples at least two times per year and obtaining successful results. Additionally, the Laboratory must maintain an approved Comprehensive Quality Assurance Plan and successfully complete an onsite inspection by the State of Florida Department of Health. The Laboratory uses State-approved analytical methods, including EPA and/or APHA Standard Methods, to analyze more than 3,000 samples annually, requiring more than 20,000 analyses. Sample sources include the East Port WRF, West Port WRF, Burnt Store WRF, Leachate Treatment Facility and the Rotonda WRF. The East Port Laboratory is a well equipped testing facility providing close monitoring of the Port Charlotte wastewater system.

5.2 Wastewater Residuals Transport, Processing and Disposal

At the East Port WRF, wastewater residuals or waste activated sludge (biosolids) from the secondary clarifiers are discharged into a 1.4 MG aerated holding tank. Although the original design provided two rotary drum thickeners, decanting in the aerated holding tank has proven to be equally effective and less costly in thickening the waste sludge. Waste biosolids from all other CCU wastewater treatment plants are trucked to the East Port WRF as liquid sludge (1.5 percent dry solids) and pumped into the aerated holding tank using a sludge transfer pump station at ground level. The aerated holding tank is not operated as an aerobic digester, since the required 38 percent volatile solids reduction is not practical for an activated sludge process with an aeration solids retention time (SRT) greater than 15 days.

East Port Dewatering Facility

The stabilized biosolids are dewatered at a new 2-meter belt filter press facility located near the aerobic digester. In previous years, the East Port WRF permit required sludge sampling every quarter and annually. In FY 2006, concurrent with the operation of the new dewatering facility, the dewatered biosolids cake is transported to a Class I solid waste landfill privately owned by Synagro. Consequently, the biosolids sampling is no longer required.

5.3 Burnt Store RO Water Treatment Facility

The Burnt Store Reverse Osmosis (RO) Water Treatment Facility (WTF) provides potable water service to the Burnt Store service area. The facility is located on Burnt Store Road near the Charlotte/Lee County line. The Burnt Store facility is designated by the Florida Department of Environmental Protection (FDEP) as Public Water Supply No. 6080318.

The Burnt Store service area encompasses approximately eight square miles of land located in Charlotte County and two square miles located in Lee County (due to provision of service to the Burnt Store Marina development, which is located in both counties). Presently, the Burnt Store Water System is a standalone system that is not connected to the remainder of the CCU water distribution system.

The majority of the service area consists of platted, single-family lots. As of September 30, 2006, there were 2,059 metered water services within the Burnt Store service area.

5.3.1 Capacity

Water supply capacity is permitted by the Southwest Florida Water Management District (SWFWMD). In September 2006, a renewed Water Use Permit (WUP) was issued by SWFWMD for the Burnt Store WTF (Permit No. 20003522.007). This new WUP, which expires on September 26, 2012, provides for an annual average daily flow (AADF) capacity of 3.172 million gallons per day (MGD), and a peak month capacity of 4.118 MGD.

For most of FY 2006, the Burnt Store WTF was operating under the previous WUP (No. 20003522.005) that expired on November 28, 2005. This permit expiration did not create a regulatory issue, since the permit renewal application was submitted prior to the permit expiration date. Consequently, the water allocations in effect at the time of permit expiration continued to remain in effect during the permit renewal process. The corresponding allocations were 0.914 MGD on an AADF basis, and 1.5528 MGD on a peak monthly basis. These allocations were sufficient during FY 2006.

Treatment plant capacity is permitted by FDEP. The current FDEP permitted treatment capacity for the Burnt Store WTF is 1.127 MGD. A planned expansion of the treatment capacity is currently in the design phase. It is anticipated that the expanded plant will be completed in FY 2009, and will have a permitted treatment capacity that approximately matches the new water supply allocation granted by SWFWMD.

During Fiscal Year 2006, the total AADF produced by the Burnt Store WTF wellfield was 0.422 MGD. Concerning projected flows, a Capacity Analysis Report was prepared for the Burnt Store WTF in January 2006[1]. This report predicted the following annual average water demands for fiscal years 2010 and 2015:

- Fiscal Year 2010 (1.380 MGD AADF)
- Fiscal Year 2015 (1.770 MGD AADF)

[1] Charlotte County Utilities Burnt Store RO Water Treatment Plant, Capacity Analysis Report, Dufresne-Henry, January 2006.

Through use of the above historic and projected flow figures, it is possible to provide a comparison of permitted capacity versus projected water demand through FY 2012, which corresponds to the expiration date of the recently renewed WUP (September 26, 2012). This comparison is provided in Table 5-1.

Table 5-1
Burnt Store RO Water Treatment Facility
Comparison of Permitted Capacity to Projected Water Demand

Fiscal Year	Projected AADF Water Demand, MGD (See Note 1)	Permitted SWFWMD Water Supply Capacity, MGD (See Note 2)	Permitted FDEP WTF Treatment Capacity, MGD (See Note 3)
2007	0.662	3.172	1.127
2008	0.910	3.172	1.127
2009	1.141	3.172	3.172
2010	1.380	3.172	3.172
2011	1.458	3.172	3.172
2012	1.536	3.172	3.172

Table Notes

1. The projected AADF water demands assume a linear extrapolation of the FY 2006 historic AADF (0.422 MGD), the predicted year 2010 AADF (1.380 MGD) and the predicted year 2015 AADF (1.770 MGD).
2. The permitted 3.172 MGD AADF water supply capacity is specified in SWFWMD WUP No. 20003522.007, issued September 26, 2006, and expiring September 26, 2012.
3. The planned expansion of the Burnt Store WTF is currently in the design phase. The expanded plant is anticipated to be online in FY 2009. The expanded treatment capacity is anticipated to at least match the permitted water supply capacity. Therefore, for purposes of this table, the expanded permitted treatment capacity is assumed equal to the permitted water supply capacity. The actual permitted treatment capacity will be established during the design process.

As indicated in Table 5-1, it appears that the permitted Burnt Store WTF capacity will be adequate to meet projected water demands through the expiration date of the recently renewed WUP (September 26, 2012). A permit renewal application for the WUP will be submitted by CCU in advance of this expiration date.

5.3.2 Supply Wells

The Burnt Store WTF is served by five existing wells that draw water from the Intermediate Aquifer. Three of these wells are located on the WTF site, while two of the wells are located offsite, along Burnt Store Road. The well water is treated by the reverse osmosis method. All five wells are fenced and operational.

Table 5-2 provides a summary of the existing wells. The permitted yield for each existing well, expressed in terms of gallons per day (gpd), is specified in the recently renewed WUP for the Burnt Store WTF.

Table 5-2 Existing Burnt Store Water Supply Wells				
Well No. (Location)	Drilled Depth	Diameter	Permitted Yield	
			Average (gpd)	Peak Month (gpd)
7 (Onsite)	596’	8”	291,500	291,600
8 (Onsite)	600’	8”	291,500	291,600
9 (Onsite)	602’	12”	291,500	291,600
11 (Offsite)	600’	12”	459,500	648,600
12 (Offsite)	600’	12”	459,500	648,600
Total Existing Permitted Yield			1,793,500	2,172,000

The recently renewed WUP also authorizes the construction of three new wells, two in the Intermediate Aquifer and one in the Upper Floridan Aquifer. Table 5-3 provides a summary of these new wells.

Table 5-3 Proposed Burnt Store Water Supply Wells				
Well No.	Proposed Depth	Diameter	Permitted Yield	
			Average (gpd)	Peak Month (gpd)
14	650’	12”	459,500	648,600
15	1050’	12”	459,500	648,600
16	650’	12”	459,500	648,800
Total Permitted Yield			1,378,500	1,946,000

The sum of the average permitted yield provided by the existing and proposed wells is 3,172,000 gpd, which equals the AADF allocation granted by the recently renewed WUP. Likewise, the sum of the peak month permitted yield provided by the existing and proposed wells is 4,118,000 gpd, which equals the peak month allocation granted by the recently renewed WUP. It is anticipated that the new wells will be constructed commensurate with the WTF expansion, which is expected to be online in FY 2009.

5.3.3 Treatment Components

Raw water produced by the Burnt Store wellfield is treated via the reverse osmosis (RO) process. Raw water flowing from the wellfield is injected with a scale-inhibitor, and then passes through prefilter units for the removal of large impurities. From that point, RO booster pumps transfer the prefiltered flow stream into the RO system for demineralization.

The existing RO system consists of four separate operating skids (A, B, E and F). The existing capacity of each skid is summarized in Table 5-4.

Burnt Store WTF Onsite Supply Well (Typical)

Table 5-4
Capacity of Existing Burnt Store WTF RO Skids

Train	Capacity (gpm)	Comments
A	500,000	Primary Unit
B	500,000	Primary Unit
C	Future	Piping and conduit, no existing equipment
D	Future	Piping and conduit, no existing equipment
E	250,000	Secondary Unit (Peak Flow Attenuation and Standby)
F	250,000	Secondary Unit (Peak Flow Attenuation and Standby)

During a field visit conducted on February 22, 2007, it was observed that secondary units E and F were not in operation. Rather, they were in the process of being refurbished with new replacement membranes. Therefore, the current online skid capacity is 1.0 MGD, which is more than adequate to meet current water demands. Once the refurbished secondary skids are brought online, the available RO skid capacity will be 1.5 MGD. Skids C and D will be installed as part of the aforementioned WTF expansion project. The total combined capacity of the RO skids will be established during the design process.

After leaving the RO system, the RO permeate is blended with filtered, bypassed well water. The combined stream is designed to flow through one of two degasifiers installed on a single clearwell. From the clearwell, treated water is pumped to two ground storage tanks, with each tank providing a storage capacity of 500,000 gallons.

The following four chemicals are used as necessary to produce potable water at the Burnt Store WTF:

1. Sulfuric acid for RO feedwater pH control (applied if necessary).
2. Scale inhibitor to reduce or prevent the formation of mineral scale on the RO membranes.
3. Sodium hydroxide to raise the pH of the finished water to make it less corrosive.
4. Sodium hypochlorite for disinfection.

All of the chemical storage and feed systems are adequate for the current operating capacity of the plant. Of course, additional and/or upgraded chemical storage and feed systems will be required to support the planned WTF expansion.

Burnt Store WTF Prefilter Units

Burnt Store WTF RO Skids

5.3.4 High-Service Pump Station

The high-service pump station draws treated water from the ground storage tanks for distribution to water service customers. The existing high-service system consists of the following pumping units:

- Two "jockey" pumps designed to meet low to intermediate water demands. Each jockey pump is equipped with a variable frequency drive (VFD), which controls the speed of the pump to match flow and pressure demand.
- Two constant-speed pumps (60 hp) designed to meet larger water demands.

With one 60 hp pump on standby, the existing high-service pumping station can supply up to 1,300 gallons per minute at a pump discharge pressure of 70 pounds per square inch (psi). There is no booster pumping system in the service area. Therefore, fluctuations in demand must be met by the high-service pumps.

As part of the WTF expansion project, it will be necessary to ensure that the expanded high-service pumping station can meet the following peak demand conditions with one unit on standby:

- Peak hour flow.
- Coincident draft (sum of maximum-day demand plus fire flow).

In order to meet the above peak demand conditions, it will be necessary to add additional high-service pumps. It is also anticipated that all pumps will be equipped with VFD units in order to facilitate the matching of service area demand fluctuations while simultaneously providing adequate pressure. In accordance with Rule 62-555.320(15), Florida

Administrative Code (FAC), it is necessary to maintain a minimum pressure of 20 psi throughout the water distribution system under any demand condition.

5.3.5 Storage

The Burnt Store WTF is served by two existing 500,000-gallon concrete ground storage tanks, thus providing a total storage capacity of 1,000,000 gallons. As part of the WTF expansion project, it will be necessary to ensure that the water storage capacity meets one of the following requirements as specified in Rule 62-555.320(19), FAC:

- The storage capacity shall at least equal 25 percent of the maximum-day demand, excluding any consideration of design fire-flow demand, or;
- The storage capacity shall be demonstrated to be sufficient for operational equalization, excluding any consideration of design fire-flow demand, or;
- In conjunction with the source, treatment and finished water pumping facilities, the storage capacity shall be demonstrated to be sufficient to meet the peak hour water demand for at least four consecutive hours, excluding any consideration of design fire-flow demand.

The selected water storage option will be determined during the design process for the Burnt Store WTF expansion.

Burnt Store WTF High-Service Pumps

Burnt Store WTF Clearwell and Ground Storage Tank

5.3.6 Injection Wells

The Burnt Store WTF is served by an existing deep injection well (IW-1) that has a permitted capacity of 0.564 MGD. The purpose of the injection well is to dispose of reject water from the RO skids. The RO reject water has historically been injected via pressure provided by the RO booster pumps. However, during FY 2006, a new injection pumping station was constructed. This station will enable the simultaneous disposal of RO reject, as well as excess effluent produced by the adjacent Burnt Store WRF.

Although the existing injection well capacity will be shared by the WTF and WRF, the WTF has priority. The current plan is to allocate approximately two-thirds of the well capacity to the WTF (0.376 MGD), and one-third of the well capacity to the WRF (0.188 MGD). At a 78 percent product-water-to-reject ratio, the injection well has enough allocated capacity for 1.7 MGD of potable water demand, which is adequate for the existing 1.127 MGD permitted treatment capacity.

In order to provide additional RO reject disposal capacity for the WTF expansion, CCU intends to construct a new 9.5 MGD deep injection well on the WTF site. This new well will be constructed commensurate with the WTF expansion project. In addition to meeting the RO reject needs of the expanded WTF, the new well will also be able to meet the needs of the planned Burnt Store WRF expansion.

5.3.7 Water Quality

CCU conducts the following water system sampling and analysis for the Burnt Store water system to comply with regulatory requirements:

- Chlorine Residual Sampling - daily at the Burnt Store WTF and at the furthest points in the distribution system.

- Bacteriological Sampling – monthly.
- Disinfection Byproduct Sampling – every three years.
- Lead and Copper Sampling – every three years.
- Nitrate/Nitrite Sampling – annually.
- Primary and Secondary Standards Sampling – every three years.
- Synthetic Organic Contaminant Triennial Testing – every three years.

A review of the Monthly Operating Reports indicates that the Burnt Store water system is in compliance with applicable chlorine residual and bacteriological standards. In addition, the Burnt Store water system has been granted reduced monitoring status (every three years) for disinfection byproduct sampling and lead and copper sampling. This reduced monitoring status indicates that the associated water quality parameters are well below the allowable maximum contaminant levels (MCLs).

The most recent analysis for annual nitrite and nitrate occurred in February 2006. These test results are provided in Table 5-5. As indicated in the table, the measured nitrite and nitrate levels are well below the allowable MCLs.

Table 5-5
Burnt Store Distribution System
Nitrite and Nitrate Sampling Results

Sample Date	Nitrite (mg/L)	Nitrate (mg/L)
2/1/2006	0.017	0.018

Source: Charlotte County Utilities
Note: Maximum Contaminant Levels: Nitrite = 1 mg/L; Nitrate = 10 mg/L

Consumer Confidence Reports were prepared in May 2006 by Charlotte County Utilities for the Burnt Store water system. The report, entitled “2005 Burnt Store Water Quality Report,” described the source of the Utility’s water and water quality testing results for 2005. The reports were mailed to all CCU customers and are available on the CCU Web site.

5.3.8 Regulatory Considerations

Through U.S. Environmental Protection Agency (EPA) regulations, the federal government has set forth water quality standards for the protection of water for public users, including operation standards and quality controls for public water systems. The important federal regulations affecting future operations of the water treatment plant are provided in the Safe Drinking Water Act (SDWA), Public Law 93-523. This law directed EPA to establish minimum drinking water standards. These standards are divided into primary (those required for public health) and secondary (those recommended for aesthetic quality) regulations. The National Primary Drinking Water Regulations have been in effect since June 25, 1977. Chapters 62-550, 62-555 and 62-560 of the FAC classify and define water supplies and establish regulations for their use. In Florida, both the primary and secondary standards set forth by the SDWA are mandatory. Enforcement of the standards is the responsibility of FDEP. FDEP issued changes in January 1989 to Chapter 62-550, FAC, which include MCLs for several volatile organic and synthetic organic contaminants. The rule requires sampling and analysis of 126 compounds by all community systems.

Water use permits (WUPs) are issued by SWFWMD and limit the amount of water which may be withdrawn from a source, based on the population served and the ability of the water source to provide the quantity and quality of water needed. WUPs are generally issued for a five- to six-year period and may be modified by SWFWMD at anytime. Modifications can be based on a demonstrated need for increased water use.

5.3.9 Operations

Table 5-6 presents a summary of water production and water usage within the Burnt Store service area for FY 2006. Flow quantities shown for production water, water sold, hydrant flushing and construction fill are based on meter records. Water usage associated with construction flushing and line breaks are estimated.

As shown in Table 5-6, the unaccounted water percentage is estimated to be 4.80 percent for FY 2006. This relatively low percentage indicates a good accounting of water usage within the Burnt Store water system.

Table 5-6
Burnt Store Water System
Water Production and Usage
Fiscal Year 2006

Water Use Type	Total Gallons (See Note 1)
Production Water (Metered)	154,145,527
Water Sold (Metered)	136,406,000
Hydrant Flushing (Metered)	1,737,150
Construction Fill (Metered)	203,743
Construction Flushing	1,570,950
Line Breaks	6,830,790
Total Accounted for Water	146,748,633
Total Unaccounted for Water (See Note 2)	7,396,894
Unaccounted for Water % (See Note 3)	4.80%

Table Notes

1. All flow figures provided by Charlotte County Utilities.
2. Total Unaccounted for Water equals Production Water minus Total Accounted for Water.
3. Unaccounted for Water Percentage equals Total Unaccounted for Water divided by Production Water, multiplied by 100.

The Burnt Store WTF is classified by FDEP as a Category II, Class B facility. As such, the facility must be staffed by a Class C (or higher) operator for 16 hours per day, seven days per week. In addition, the Chief Operator must be Class B or higher.

5.3.10 Maintenance

The Burnt Store water supply and treatment system is generally in good condition. The main building, which includes the RO membranes, pumps, chemical equipment, and control room, was constructed in 2001 and is in good condition. The RO skids are maintained as

necessary to ensure adequate treatment capacity. Currently, the secondary RO units (Skids E and F) are in the process of being refurbished with new replacement membranes.

The only apparent maintenance issues involve the concrete clearwell and the prefilter units. The clearwell has developed a crack which must be monitored, but does not pose an immediate problem. Concerning the prefilter units, the disposable filter media was clogging prematurely, requiring the operators to replace the media on a too-frequent basis. This maintenance problem was eliminated during FY 2006 via extensive flushing and disinfection of the raw water main. This cleaning activity greatly extended the operating life of the filter media.

During a field inspection conducted February 22, 2007, it was noted that the existing polyethylene sodium hypochlorite storage tank was not equipped with a wind restraint system. Such a system should be installed to prevent possible structural damage to the tank during high wind conditions.

During FY 2006, a new computerized supervisory control and data acquisition system was installed at the Burnt Store WTF. On September 22, 2006, the Burnt Store WTF was struck by lightning, which damaged the Central Processing Unit (CPU) that controls the new computerized system. CCU has replaced the CPU and has ordered an optical isolator to reduce the chances of damage from future storms. CCU has also contacted a company for a grounding survey of the plant to ensure proper electrical grounding during future storms.

5.3.11 Review of 2005 Annual Report Recommendations

Following is a summary of recommendations concerning the Burnt Store WTF as contained within the 2005 Annual Report. Following each recommendation is a summary of associated progress during FY 2006.

Recommendation: Continue the development of options for water service in the southern area of the County to meet the growing demand for municipal utility services.

Progress: CCU obtained a renewed Water Use Permit (WUP) for the Burnt Store water system from SWFWMD in September 2006. This new WUP provides for increased water supply allocations, including an annual average daily flow capacity of 3.172 MGD, and a peak month capacity of 4.118 MGD.

Recommendation: Upgrade the Burnt Store Water Treatment Plant, supply wells and brine disposal deep injection well to meet the demands for water service in south Charlotte County along Burnt Store Road.

Progress: The current FDEP permitted treatment capacity for the Burnt Store WTF is 1.127 MGD. A planned expansion of the treatment plant is currently in the design phase. It is anticipated that the expanded plant will be completed in FY 2009, and will have a permitted treatment capacity that approximately matches the new water supply allocation granted by SWFWMD.

The new SWFWMD WUP authorizes the construction of three new wells, two in the Intermediate Aquifer and one in the Upper Floridan Aquifer. These three new wells will be constructed commensurate

with the WTF expansion project. Once these new wells are brought into service, they will provide a combined annual average flow capacity of 1,378,500 gpd. This additional capacity, coupled with the existing well capacity (1,793,500 gpd), will provide a total annual average wellfield capacity of 3,172,000 gpd.

The Burnt Store WTF is served by an existing deep injection well (IW-1) that has a permitted capacity of 0.564 MGD. The purpose of the injection well is to dispose of reject water from the RO skids. The RO reject water has historically been injected via pressure provided by the RO booster pumps. However, during FY 2006, a new injection pumping station was constructed. This station will enable the simultaneous disposal of RO reject water as well as excess effluent produced by the adjacent Burnt Store WRF.

In order to provide additional capacity for the planned WTF expansion, CCU intends to construct a new 9.5 MGD deep injection well on the WTF site. This new well will be constructed commensurate with the WTF expansion project. In addition to meeting the RO reject needs of the expanded WTF, the new well will also be able to meet the needs of the planned Burnt Store WRF expansion.

Recommendation: Plan for future water demands in the Burnt Store service area by analyzing the water distribution system using the computer water model completed in 2004.

Progress: The model has been presented to CCU staff for their use.

5.3.12 Summary and Recommendations

The Burnt Store WTF appears to be well-operated and in good physical condition. The facility has the ability to meet existing water demands, and will be undergoing a significant expansion in order to meet future water demands within the Burnt Store service area. A renewed WUP was obtained from SWFWMD during FY 2006. This new WUP provides increased water supply allocations. Based on water demand projections for the Burnt Store WTF[2], adequate permitted raw water capacity will be available through the expiration date of the WUP (September 26, 2012). A permit renewal application for the WUP will be submitted by CCU in advance of this expiration date.

A planned expansion of the Burnt Store WTF is currently in the design phase. It is anticipated that the expanded plant will be completed in FY 2009, and will have a permitted treatment capacity that approximately matches the new water supply allocation granted by SWFWMD. A new 9.5 MGD deep injection well will be constructed as part of the planned water plant expansion. In addition, the expanded plant will include three new water supply wells, as authorized by the renewed SWFWMD WUP.

A summary of recommendations for the Burnt Store WTF for the upcoming Fiscal Year is presented as follows. These recommendations are divided into two main categories: Capital Improvements; and Operations and Maintenance.

[2] Charlotte County Utilities Burnt Store RO Water Treatment Plant, Capacity Analysis Report, Dufresne-Henry, January 2006.

Summary of Capital Improvement Recommendations:

1. Continue with the design and permitting of the planned expansion of the Burnt Store WTF. The expanded plant should be online by FY 2009 in order to meet projected water demands within the Burnt Store service area.
2. Construct the three new water supply wells as authorized by the recently renewed SWFWMD WUP. These new wells should be operational commensurate with the WTF expansion project.
3. Construct the new 9.5 MGD deep injection well. This new well should be operational commensurate with the Burnt Store WTF expansion project, or commensurate with the Burnt Store WRF expansion project (whichever occurs first).

Summary of Operations and Maintenance Recommendations:

1. Continue to monitor the condition of the concrete clearwell leak. Repair the leak if it begins to threaten the structural integrity of the clearwell.
2. Install a wind-restraint system for the existing polyethylene sodium hypochlorite storage tank.
3. Install the planned improvements to the computerized control and data acquisition system, including a new optical isolator and any required electrical grounding improvements.

5.4 East Port WRF and Reuse System

East Port WRF – Aerial View

The East Port WRF is owned and operated by Charlotte County Utilities and has a permitted capacity of 6.0 MGD-AADF. The facility is located at 3100 Loveland Boulevard in Port Charlotte on approximately 700 acres. It was acquired as part of the General Development Utilities purchase in 1991 and was upgraded and expanded in 1996. The East Port WRF is an activated sludge wastewater treatment facility using the anoxic MLE process and can produce filtered reclaimed water for reuse on restricted irrigation sites, as well as public-access irrigation sites. The restricted irrigation system consists of 315 acres onsite using slow-rate irrigation (R-002 Spray Fields). Two onsite Class I deep injection wells provide disposal for wet-weather as well as alternate disposal for the plant. Much of the East Port site is dedicated to wildlife, woodlands and conservation. Fifty-one acres have been set aside as an official conservation easement, and the remaining land is mainly woodlands. The site is home to more than 20 varieties of birds, including great egrets, osprey, and Carolina wrens. Many other wildlife species make East Port their home as well. Gopher tortoises, scrub jays, bobcats, armadillos, cottontails and alligators are among the inhabitants.

5.4.1 Wastewater Characteristics

A review of the 2006 (calendar year) data provided by CCU indicates that the average influent CBOD5 was 196 mg/L and the Total Suspended Solids (TSS) was 258 mg/L. The average influent CBOD5 is below the design criteria of 200 mg/L and is average for domestic wastewater. The average influent TSS is slightly higher than the design TSS of 200 mg/L, however, the facility's operation has not been hindered and it has no problems meeting its treatment limits for the deep injection wells.

The higher than normal TSS concentration of 258 mg/L can be explained in part by the additional loading contributed by the septage receiving station at the East Port WRF. In its first year of operation, the facility received and treated a little in excess of 5 MG of septage and grease. The East Port WRF recently received a permit modification to add an additional septage machine, which is currently online. In reviewing the grease and septage flows from the haulers, it is estimated that 18.8 MG (51,560 gpd) of septage and grease were received in calendar year 2006, while 1.59 MG (4,360 gpd) of restaurant grease were received and treated at the East Port WRF. This loading is considered minimal, since it accounts for less than one percent of the total influent loading to the plant. During this same time period, 664 grease interceptor inspections were performed by CCU staff and 541 systems were found to be in compliance. In calendar year 2006, 75 haulers were permitted to use the septage/grease facility, while in the first year of operation (January 2000), only 19 haulers were permitted.

18.8 MG of septage and grease were treated in 2006. In reviewing this data, approximately 7,639 gallons of high-strength grease is treated at the plant each day. This is slightly lower than last year's treated grease flow (8,400 gpd).

5.4.2 Diurnal Storage

Two storage ponds are located to the west of the treatment units. Pond 1 has a capacity of 45 MG and receives excess effluent from either chlorine contact tank (CCT) 1 or 2, as well as flow from Pond 2 via a valved interconnection between the two ponds. Pond 2 has a capacity of 95 MG and receives flow primarily from CCT 2 (secondary treated effluent) for deep injection well disposal as well as excess reclaimed water from CCT 1. Both the reclaimed water high-service pumps (HSPs) over CCT 1 wet well and the pond transfer pumps over CCT 2 wet well are variable speed. The speed of the reclaimed water HSPs are controlled by system pressure (reclaimed water demand) and high and low wet well levels. The speed of the pond transfer pumps are controlled by the wet well levels. The reclaimed HSPs and the pond transfer pumps are interconnected at their respective discharge manifolds with an in-line pressure sustaining valve that allows water to bleed off to the storage ponds when there is insufficient reclaimed water demand to maintain the water level in the CCT 1 wet well.

The deep injection well pump station located on the east bank of Pond 1 pumps secondary effluent to the deep injection wells and to the restricted onsite slow-rate irrigation system. The pond transfer pumps located over the wet well for CCT 2 (and bleed off from the reclaimed HSPs) discharge to Pond 2 or 1 (by valving), while the HSPs located over the wet well for CCT 1 pump to the reclaimed water distribution system and the onsite Non-Potable Water (NPW) system. No storage is provided for reclaimed water diurnal variations.

During FY 2005, the polyethylene liner for the 45 MG storage reservoir (Pond 1) was replaced after being torn beyond repair by Hurricane Charley. The walls and bottom of the storage reservoir were reshaped to allow for complete coverage of the walls and bottom with 60 millimeter thick polyethylene liner. Previously, only the walls were lined with polyethylene and the bottom was clay-lined.

East Port Deep Well Injection Pump Station

At the time of inspection (February 23, 2007), Ponds 1 and 2 were interconnected to allow the deep injection well pump station located on the east bank of Pond 1 to pump down both ponds. East Port staff has requested the design and construction of improvements to Ponds 1 and 2 to convert Pond 2 into a reclaimed water storage pond and allow greater utilization of the reclaimed water, since the lack of diurnal storage greatly limits reclaimed water pumping.

Another operational issue noted during inspection is that the high-service injection well pumps located on the bank of Pond 1 cannot fully pump down the pond. Once the high-service injection pumps drain the pond down to three feet (measured from the pond bottom), the pumps begin to cavitate. The normal high water level in the ponds is 5.5 feet, measured from the bottom of the pond. It was also noted during inspection that the high-service injection well pumps do not have the capacity to fully utilize the capacity of the two injection wells.

Two, 0.5 MG ground storage tanks and high-service repump stations have been planned for the western reclaimed water service area for the East Port WRF to provide remote storage of reclaimed water.

5.4.3 Reclaimed Water Pumping

Public-access reclaimed water is pumped from a wet well section of CCT 1 with the use of three variable-speed 100 hp vertical turbine pumps. Pressure is maintained at 88 psi at the pump station to maintain a pressure of at least 60 psi in the remote portions of the reclaimed water distribution system. The pumps operate at high speeds to match demand in the distribution system and at other times operate at low speeds to provide non-potable water onsite for the plant's dewatering operation, clarifiers and pump seal water systems. When pumping to the reclaimed water distribution system, the flow rate varies from an average of 400 gpm to a peak flow of about 700 gpm.

During the field inspection (February 23, 2007), it was noted that the filters were not operating due to the reoccurring problem with grease. Grease in the secondary effluent from the clarifiers congeals in the sand and anthracite and causes the sand filter to prematurely plug. The filters must be taken out of service about once a month to clean the sand with degreasers and chlorine. Because the filters were out of service at the time of inspection, secondary effluent was completely bypassed around the filters and discharged only to CCT

2. In this instance, the reclaimed water HSPs over the CCT 1 wet well were pumping secondary effluent from CCT 2 through an open slide gate that isolates the two wet wells.

East Port VFD Reclaimed HSPs

The reoccurring problem with grease should be corrected as soon as possible by one or all of the following methods: 1) determine the sources of grease in the wastewater collection system and eliminate these sources, 2) provide grease removal for the influent wastewater, 3) provide backup filtration and 4) provide potable water backup (with backflow prevention) to onsite water demands when suitable reclaimed water is not available (i.e., polymer water demand). CCU has a very proactive grease interceptor inspection program that reveals sources of grease in the wastewater collection system which can be isolated or removed from the system. Also, the East Port WRF will add another operator and shift to the grease treatment facility as well as an additional grease holding tank.

5.4.4 Capacity

The East Port WRF is permitted at a capacity of 6.0 MGD, effective December 2004. For calendar year 2006, the Annual Average Daily Flow (AADF) is reported to be 4.36 MGD, while the Three Month (Moving) Average Daily Flow (TMMADF) is reported to be 5.1 MGD and the Peak Hourly Flow is 15 MGD. These flow rates equate to a TMMADF Peaking Factor of 1.17 and a Peak Hour Factor of 2.5 (based on the 6.0 MGD design criteria). The Maximum Month Flow is typically found in early fall (September) and the Maximum Month Flow (MMF) to ADF ratio (MMPF) has varied from a low of 1.16 to a high of 1.42 (2005), with an average of about 1.30. The AADF for 2006 was 4.335 MGD.

The increase in wastewater flow in the East Port service area has been minimal in the past with an annual rate of about 2 percent per year. However, in evaluating recent growth trends in Charlotte County, there has been much more growth than typically seen in the past. In 2006, the wastewater flow increased 4.5 percent to 4.7 percent from January to November. Flow projections provided by CCU based on a historical average usage rate of 80 gallons per capita per day and a growth rate of 5 percent per year indicate that the plant's capacity of 6.0 MGD will be exceeded by 2013.

5.4.5 Regulatory Considerations

In 1994, FDEP issued a Consent Order to Charlotte County, giving strict deadlines to improve the wastewater treatment system. These ordered improvements included the introduction of reclaimed water to the Port Charlotte area. On December 17, 2004, FDEP issued a permit (No. FL0040291) to modify the East Port WRF permit by increasing the capacity of the plant from a 5 MGD to 6 MGD activated sludge process plant with filtered reclaimed water to comply with reuse standards for public-access application. The East Port operating permit (Permit No. FL0040291) was revised on December 16, 2005, to include new operating procedures. The new permit expires December 16, 2009.

The two deep injection wells at the East Port WRF have a combined capacity of 9.7 MGD. The permit for Injection Well 1 (Permit No. 44274-033-UO) was issued July 17, 2006. The

permit for Injection Well 2 (Permit No. 44274-115-UO) was renewed on May 24, 2004 and expires on May 23, 2009. A mechanical integrity test for IW-1 was completed and approved by FDEP in January 2005. A mechanical integrity test for IW-2 was completed and approved by FDEP on October 31, 2005. The tests, which include an internal TV inspection of the well casing, are required by FDEP every five years.

The sludge dewatering facility was approved in FY 2006 and placed into operation.

5.4.6 Treatment Components

Raw wastewater is pumped to the East Port WRF through a 36-inch force main to the pre-treatment structure at the head of the plant. Just prior to the pretreatment structure, the influent flow is measured and recorded through a magnetic flow meter. The pretreatment structure consists of a single mechanical bar screen with a manual bar screen bypass and one, 12-foot diameter vortex grit-removal unit. After pretreatment, the screened and degritted wastewater flows to two, 3 MGD Carrousel aeration basins, which use the anoxic MLE process for nitrogen removal. Aeration is provided by four, two-speed surface aerators, and mixing is provided in the anoxic basins using submersible mixers. The mixed liquor of treated wastewater and Return Activated Sludge then flows to the two, 100-foot diameter clarifiers for sedimentation, where the activated sludge is separated from the clear liquid.

The flow can be split between two completely different flow paths; one for secondary treatment and the other for public-access level treatment. A portion of the flow can be diverted to CCT 2 for basic disinfection and discharge to the onsite storage ponds. After storage, the treated wastewater is then pumped to the injection wells for disposal or to the onsite restricted access slow-rate irrigation system. The other flow path is dedicated to public-access treatment, whereby a portion (or, as presently operated, the entire flow) of the clarified effluent is diverted to two traveling bridge sand filters. After filtration, the flow is diverted to CCT 1 for high-level disinfection. The public-access reclaimed water is then pumped offsite (no storage) with variable-speed pumps to reuse customers and to the East Port WRF for non-potable water use for pump seal water, dewatering operations and washdown.

The East Port WRF includes the following components:

- Two Septage receiving/pretreatment systems
- Grease holding tank and grease treatment system using vacuum coil filter
- Self-cleaning mechanical bar screens (Parkson Aquaguard)
- Manually cleaned bar rack
- One, 12-foot diameter Pista Grit-removal system
- Two grit pumps
- Grit classifier
- Two Anoxic MLE basins with submersible mixers
- Two, 3 MGD Carrousel aeration basins with four, two-speed Emico mechanical surface aerators
- Four internal recycle pumps
- Two, 100-foot diameter scraper clarifiers with scum collector and pumping system

- Three Return Activated Sludge (RAS) pumps
- Two Waste Activated Sludge (WAS) pumps
- Two traveling bridge automatic backwash filters
- Two dual chlorine contact tanks
- Reclaimed Water High-Service Pumps
- Effluent Transfer/Pump Station
- Deep Well Injection/Irrigation Pump Station
- Two Sodium hypochlorite storage tanks with containment
- Two Sodium hypochlorite feed metering pumps
- 1.4 MG aerated sludge holding tank
- Sludge dewatering facility with one, 2-meter belt filter press
- 95 MG effluent storage pond (lined)
- 45 MG effluent storage pond (lined)
- Electrical power distribution system with emergency generator
- Continuous online monitoring of chlorine and turbidity
- Two Class I underground injection wells (IW-1 and IW-2)

5.4.7 Treatment Objectives

The East Port WRF is designed to treat wastewater to two effluent standards; one for disposal at the deep injection well and onsite slow-rate irrigation (CBOD5=20 mg/L, TSS=20 mg/L) requiring basic disinfection and the other for public-access level of treatment (CBOD5=20 mg/L, TSS=5 mg/L) requiring high-level disinfection.

5.4.8 Effluent Quality

A review of the calendar year 2006 data provided by CCU indicates that the average effluent CBOD5 was 2.3 mg/L and the TSS was 1.67 mg/L with high concentration of 2.86 mg/L and 2.66 mg/L, respectively, in January 2006.

5.4.9 Irrigation and Other Reclaimed Water Applications

The existing reuse system (R-001) is a 1.419 MGD annual average daily flow consisting of four existing public-access sites. Additional future sites to this system, including 2.77 MGD irrigation at major users, will increase the total capacity to 4.19 MGD. Additionally, the restricted public-access onsite slow-rate irrigation system (R-002) provides 2.44 MGD of reclaimed water disposal over approximately 315 acres.

The ultimate capacity of the reclaimed water irrigation system in the East Port system is extensive, due to the number of residential developments, golf courses and other reclaimed water demands in the area. Table 5-7 is a listing of current reclaimed water users for the East Port system and Table 5-8 lists the potential future users.

Exhibit 5-1 SCADA Schematic of East Port WRF

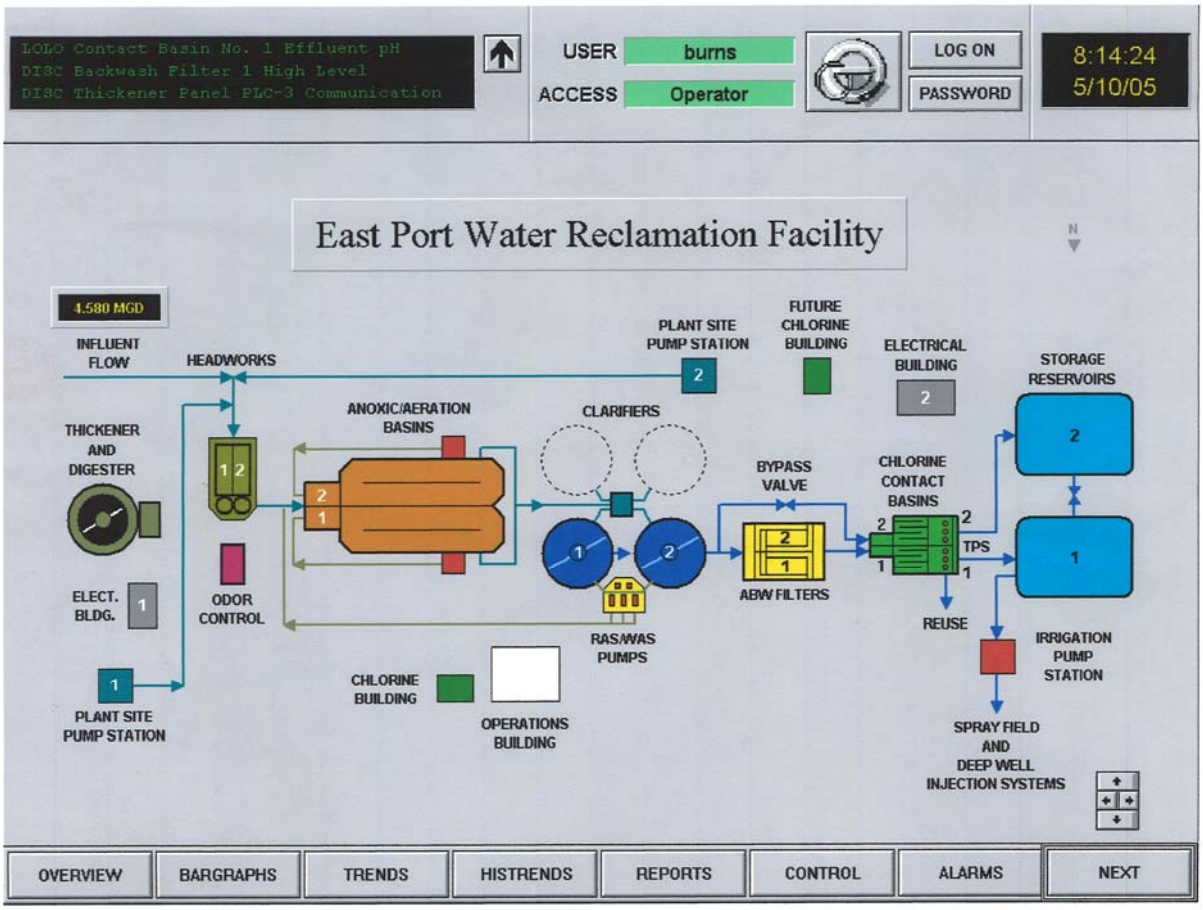


Table 5-7 East Port WRF Current Reclaimed Water Major Users

Reuse Major User	Type of User	Rated Capacity (MGD)	2006 Actual (MGD)
Kingsway Country Club	Residential Developments	0.388	0.103
Maple Leaf Golf Course	Golf Course	0.338	0.00
Port Charlotte Country Club	Residential Developments	0.613	0.161
Suncoast Lakes	Residential Developments	0.137	0.062
Mary-Lu MHP	Mobile Home Park	0.03	0.048
Total		**1.556**	**0.374**

Kingsway Country Club and the Maple Leaf Golf Course both have stormwater storage lake systems (D-001 and D-002, respectively) with intermittent overflows (STM-001 and STM-002, respectively) to stormwater ditches that drain into the Peace River state surface waters.

Table 5-8 East Port WRF Future Reclaimed Water Major Users

Reuse Major User	Type of User	Reuse Demand (MGD)
Deep Creek Golf Course	Golf Course	0.334
Victoria Estates (Kings Gate)	Golf Course	0.310
Kings Island Golf Course	Golf Course	0.130
Murdock Village	Residential Developments	0.684
Charlotte Co. 2400 El Jobean Rd	Landscape Irrigation	0.275
Charlotte County Stadium	Athletic Complexes/Parks	0.171
U.S. 41 Beautification, U.S. 41	Landscape Irrigation	0.161
Other Major Users	Miscellaneous	0.3845
Total		**2.767**

5.4.10 Reject Storage or Alternate Disposal

The East Port WRF has two Class I underground injection wells (IW-1 and IW-2) with a permitted capacity of 1,420 gpm (2.045 MGD) and 5,250 gpm (7.560 MGD). These wells discharge to class G-IV groundwater.

Field inspections of the plant revealed that the deep injection well pump station does not have enough capacity to fully utilize the total capacity of the injection wells. Also, it was noted that the piping system between the injection well pump station and the injection wells does not have any means of isolating the flow to respective injection wells; i.e., the pumped flow splits between the two injection wells by virtue of the back pressure and system losses at each well.

5.4.11 Wet-weather Storage

Effluent is stored at the East Port WRF in two wet-weather storage ponds, with a combined capacity of 140 MG.

5.4.12 Operations

The flow split between the filters (reclaimed water) and CCT 2 (deep injection well) is controlled by an automatic valve located in the bypass piping around the filters. This control valve was designed to control the flow split between the filters and the secondary CCT, based upon filter flow input parameters selected by the operator. Apparently, the valve does not respond quickly enough to fluctuations in flow. When flow splitting is practiced, the flow to CCT 1 is insufficient to maintain adequate operating levels in the wet well while the pumps try to maintain system pressure and reclaimed water demand. Consequently, the water level in the wet well drops below the required level to maintain proper net pressure suction head for the reclaimed water HSPs, resulting in pump cavitation and loss of flow.

Because of this operational circumstance, normal operation diverts the total secondary effluent to either the filters or to CCT 2. When the filters are operating normally, all flow is diverted to the filters, which discharge to CCT 1.

During emergency power situations, plant staff is required to manually shut off equipment and to restart specific critical equipment, so as to not overload the existing emergency

generator. The existing electrical generator is undersized and should be addressed in the upcoming expansion project.

5.4.13 Maintenance

The following is a listing provided by CCU of equipment that requires replacement because of maintenance or equipment reliability issues:

- Bar Screen at Influent Headworks
- Gear Reducer at Grit-removal System
- Grit Dewatering Conveyor at Grit Pump 1
- Grit Dewatering Conveyor at Grit Pump 2
- Air Compressor at Scum Ejector 1
- Air Compressor at Scum Ejector 2
- WAS Pump 1
- WAS Pump 2
- Submersible Pump at Filter Skimmer
- Submersible Pump at Filter Backwash
- Submersible Pump at Filter Wash Water
- Submersible Pump at Filter Skimmer
- Submersible Pump at Filter Backwash
- Submersible Pump at Filter Wash Water
- Grease Processing Equipment

East Port WRF – Blower Building

At field inspection, the plant appeared to be well maintained. The only observed need for maintenance was minor and understandable – the inlet filters for the aerobic digester blowers required replacement. These filters are difficult to replace due to the height of the inlet filter/silencer.

5.4.14 Review of 2005 Annual Report Recommendations

Recommendation: Continue to provide for the disposal of septage tank and grease separation tank contents at the East Port WRF.

Progress: Two septage and grease treatment units are in place at the East Port WRF. Only one of the units was operating at the time of inspection.

Recommendation: Seek ways to increase the use of public-access reuse water currently produced by CCU water reclamation facilities.

Progress: Two, 0.5 MG ground storage tanks and high-service repump stations have been planned for the western reclaimed water service area for the East Port WRF to provide remote storage of reclaimed water.

Recommendation: Continue planning for the next upgrade of the East Port WRF.

Progress: Jones Edmunds and Associates is currently providing design services for the expansion and upgrade of the East Port WRF.

Recommendation: Implement the Central and West County Reuse Master Plan recommendations for new reuse transmission mains and customers for the effluent from the East Port WRF.

Progress: Two, 0.5 MG ground storage tanks and high-service repump stations planned for the western reclaimed water service area and the irrigation system for the U.S. 41 Beautification project are projects which were identified as future reclaimed water projects for the Central and West County Reuse service area. Other potential reuse customers include Charlotte Sports Park, the Riverwood development and several County parks and facilities.

5.4.15 Summary and Recommendations

Recommendation: Install variable-speed drives at major wastewater pumping stations to reduce peak hourly flows and the impact of peak hourly flows on the East Port WRF. An example of this construction is the wastewater pump station for the Deep Creek subdivision that will contain a VFD drive to control peak flows and is scheduled for operation in February 2007.

Recommendation: The existing electrical generator is undersized and should be addressed in the expansion project.

Recommendation: The reoccurring problem with grease should be corrected as soon as possible by one or all of the following methods: 1) determine the sources of grease in the wastewater collection system and eliminate these sources, 2) provide grease removal for the influent wastewater, 3) provide backup filtration and 4) provide potable water backup (with back flow prevention) to onsite water demands when suitable reclaimed water is not available (i.e., polymer water demand). CCU has a very proactive grease interceptor inspection program that reveals sources of grease in the wastewater collection system which can be isolated or removed from the system. Also, the East Port facility is scheduled to add another operator and shift to the grease treatment facility as well as an additional grease holding tank.

Recommendation: Upgrade the capacity of the high-service injection well pumps to fully utilize the capacity of the two injection wells.

Recommendation: Convert Pond 2 (95 MG) into a reclaimed water storage pond to allow greater utilization of the reclaimed water.

Recommendation: As the automated diversion valve located in the bypass around the filters is hydraulically in a gravity flow profile, it is problematic. If flow splitting is desired by plant staff, it is recommended that the ongoing design for the upgrade and expansion of the East Port WRF consider a gravity flow splitting structure consisting of an adjustable inverted slide gate or weir gate (to the filters) and two long fixed overflow weirs (to CCT 2).

East Port WRF – Seagull in Clarifier No. 2

5.5 West Port WRF and Reuse System

5.5.1 Wastewater Characteristics

A review of the 2006 data provided by CCU indicates that the average influent CBOD5 was 120 mg/L and the TSS was 87 mg/L. The average influent CBOD5 and TSS is significantly below the design criteria of 200 mg/L for domestic wastewater. The monthly average high CBOD5 of 163 mg/L occurred in March 2006 and the monthly average high TSS of 117 mg/L occurred in August 2006.

The previous year influent data indicates extremely low CBOD5 and TSS values of 85 mg/L and 63 mg/L, respectively. Historical data since 1998 has shown no definitive trend in CBOD5 and TSS. As noted, the influent waste concentrations are lower than typical domestic wastewater concentrations, most likely due to the high contribution of STEP flow to the West Port WRF. A significant portion of the West Port collection system consists of low-pressure sewer (LPS) collection systems.

5.5.2 Diurnal Storage

In addition to the construction of treatment process units in 2001, 10 MG of effluent storage was also constructed onsite. This stored volume is used for reuse effluent storage during periods of rainy weather and later pumped to the golf course irrigation sites during dry weather periods.

5.5.3 Reclaimed Water Pumping

The reclaimed water pump station discharges through a 12-inch force main to the reclaimed water distribution system. The major reclaimed water users in the distribution system are the Long Marsh Golf Course and the Coral Creek Golf Course. As both the Rotonda WRF and the West Port WRF are connected to the same reclaimed water distribution system, either plant can pump independently to the distribution system by opening and closing isolation valves in the distribution system.

West Port WRF Reclaimed Water Pump Station

5.5.4 Capacity

The West Port WRF is in excellent condition because most of the facility is new construction as part of the 2004 upgrade to a 1.2 MGD facility. The two secondary clarifiers, constructed in 1995 and 2004, are in good condition although the oldest needs to be painted. The new headworks, four aeration tanks, two additional clarifiers, dual train chlorine contact tanks, effluent filters, hypochlorite disinfecting system, and effluent pumps are in excellent condition.

A review of the 2006 data provided by CCU indicates that the average annual daily flow for the West Port WRF in 2006 was 0.451 MGD with a high monthly average of 0.568 MGD in August and a low monthly average of 0.345 MGD in May. The TMADF annual average flow was 0.44 MGD for the West Port WRF in 2006, with a high monthly TMADF of 0.54 MGD in September and a low monthly TMADF of 0.371 MGD in June 2006.

Based on highest Three Month Average Daily Flow in calendar year 2006, the West Port WRF was operating at 45 percent of its 1.2 MGD capacity. The 2006 Capacity Analysis Report for the West Port WRF projected population growth for the West Port service area at 8.5 percent per year. Using a Three Month Average Daily Flow ratio of 1.2 to AADF, the West Port WRF will have sufficient capacity to handle the flows for the next five years and will not require an expansion until 2012.

While the Annual Average Daily Flow (AADF) for the West Port WRF was 0.451 MGD in 2006, the total of all disposal systems was 0.605 MGD. The public-access reclaimed AADF was 0.242 MGD, the onsite restricted-access slow-rate irrigation AADF was 0.004 MGD and the AADF flow to the deep injection well was 0.359 MGD, for a total of 0.605 MGD. The difference between the influent AADF of 0.451 MGD and the disposal flow of 0.605 MGD is the disposal of reclaimed water from the Rotonda WRF in FY 2006. Due to limited disposal capacity at the Rotonda WRF, treated effluent (0.154 MGD AADF) is pumped from the Rotonda WRF to the West Port WRF through the existing reclaimed water distribution system that interconnects the two plants. During the periods that the Rotonda WRF sends flow to the West Port WRF for disposal, the West Port WRF cannot pump reclaimed water to the reclaimed water distribution system.

5.5.5 Regulatory Considerations

The West Port WRF operates under permit No. FLA014048, issued on February 16, 2000. The permit expired on February 15, 2005. An application to renew the permit with an increased capacity of 1.2 MGD was submitted to the Florida Department of Environmental Protection and a new permit was issued February 16, 2006. The new permit will expire February 15, 2011.

West Port WRF – Aqua Disk Filters

On November 27, 1991, FDEP issued permit No. UC08-194115 to construct a deep injection well at the West Port WRF. The permit specifies that a nominal 12-inch diameter Class I injection well be constructed for permitted disposal of 4.75 MGD of non-hazardous secondary effluent from West Port WRF. Construction was completed in 1996. The West Port IW-1 is permitted for 4.75 MGD under permit No. 43678-018-UO, issued May 24, 2004. A mechanical integrity test was performed on West Port IW-1 in September 2005 and the FDEP permit for IW-1 was issued February 16, 2006 and will expire on February 15, 2011.

The permit requires public-access reuse water to contain less than 5 mg/L TSS and a minimum of 1 mg/L of chlorine residual. The recently revised operating protocol requires a continuous turbidity reading of 3 nephelometric turbidity units (NTU) or less to allow the effluent to be applied to a golf course. Meeting the 3.0 NTU turbidity limit has been a persistent problem for the cloth media filters under the current operating protocol. The permit condition of less than 5 mg/L of suspended solids is met frequently with turbidity levels well above 3 NTU.

CCU installed a continuous monitoring TSS analyzer in March 2006. This analyzer samples the combined flow from all cloth filters just prior to the inlet to the chlorine contact tank. The data from the TSS analyzer has been erratic and has not shown direct correlation with the NTU data. For the most part, the inconsistency is perhaps due to the different sampling points for the NTU analyzer and the TSS analyzer; that is, the NTU analyzers takes a sample from each respective cloth filter, while the TSS analyzer samples the combined streams just prior to the chlorine contact tank. Also, the TSS analyzer has been plagued with operational problems the last several months of 2006.

Having the NTU analyzer take samples from each respective cloth filter has created another operational issue. In FY 2006, it was discovered that the shaft seal on the cloth filter was leaking. Consequently, each time a cloth filter was backwashed, the filter NTU would exceed FDEP criteria.

5.5.6 Treatment Components

Construction of the West Port WRF expansion to 1.2 MGD was completed in September 2004 and consists of the following components:

- Four Rotary Drum Screens

- Manually cleaned bar racks
- Four aeration bays with three blowers
- Four, 0.3 MGD 30-foot-diameter clarifiers
- Four RAS pumps
- Three Aqua Aerobic disc filters (four discs per shaft)
- Two double-chamber chlorine contact tanks
- Dual compartment Aerobic Digester
- Reclaimed water high-service pumps
- Injection Well Pump Station
- Two sodium hypochlorite storage tanks
- 12 MG reclaimed water storage reservoir

West Port WRF – Aerial View

The aeration system has no provision to reduce air flow to match diurnal oxygen demands, especially during nighttime operations. Over-aeration is costly and can cause treatment problems associated with the settleability of the mixed liquor. At a minimum, timers can be used for nighttime operation to cycle the blowers on and off, based on dissolved oxygen concentrations in the aeration tank. A better solution would be to install motor-operated butterfly valves on the inlet to the blowers to regulate the air flow from the blowers.

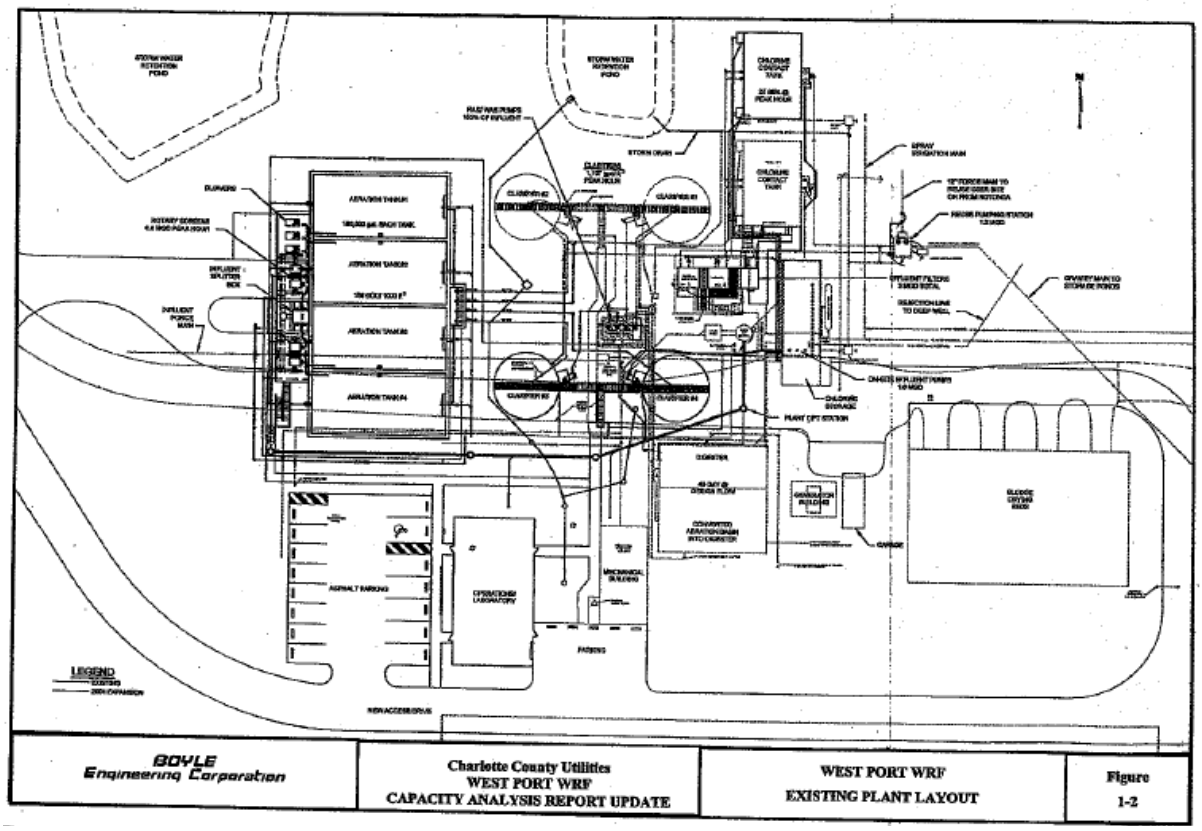
At the time of inspection (February 21, 2007) it was noted that the chlorine contact tank is provided with four individual tanks having a common inlet pipe connecting the tanks at the inlet boxes to each tank. Because of the common inlet piping to the chlorine contact tanks, it is very difficult to hydraulically split the flow equally to each contact tank.

RAS flow is returned to the pretreatment structure using an arrangement of flow meters and manually-operated control valves for each of the four aeration bays. The pretreatment structure does not feature a grit-removal system.

The Aqua Aerobic filters are currently operated individually with only one unit online at any given time. This operating scheme is mandated by the existing protocol and the individual NTU analyzers. A single filter bay is not sufficient to meet peak hourly demands and potentially may cause overflows and bypass of unsuitable water to the reclaimed water system. The filter bays taken offline in this operating scheme contain low stagnant water and are prone to degradation due to UV sunlight. Algae production is another concern when water is stagnant in the filter bay, but periodic flushing of each bay minimizes these problems. The cloth media was replaced in FY 2006 with newer cloth material, which eliminated the need for the high-pressure backwash system.

Residuals are stabilized and thickened prior to hauling to the East Port WRF for dewatering. The diffuser aeration system for the aerobic digester was upgraded in FY 2006.

Exhibit 5-2 Drawing Site Plan, West Port WRF



5.5.7 Treatment Objectives

The West Port WRF is designed to treat wastewater to two effluent standards; one for disposal at the deep injection well and onsite, slow-rate irrigation (CBOD5=20 mg/L, TSS=20 mg/L) requiring basic disinfection and the other for public-access level of treatment (CBOD5=20 mg/L, TSS=5 mg/L) requiring high-level disinfection.

5.5.8 Effluent Quality

A review of the 2006 data provided by CCU indicates that the average effluent CBOD5 was 2.25 mg/L and the TSS was 1.58 mg/L with high concentrations occurring in January 2006.

5.5.9 Irrigation and Other Reclaimed Water Applications

The West Port facility encompasses approximately 97 acres of land; 29 acres of which are dedicated to restricted-access, slow-rate irrigation of reclaimed water. Due to

West Port WRF – RAS Meter

inclement weather, at times, only 18 acres of land are used for slow-rate irrigation because of ponding.

The West Port WRF reclaimed water system is interconnected with the Englewood Water District and the Rotonda WRF. In FY 2006, the Rotonda WRF transferred reclaimed water to the West Port WRF reclaimed water system for several days, while the Englewood Water District likewise transferred reclaimed water.

5.5.10 Reject Storage or Alternate Disposal

The West Port WRF is provided with one Class I underground injection well (IW-1) with a permitted capacity of 3,330 gpm (4.75 MGD). The well discharges to class G-IV groundwater at a depth of 1,650 feet under a discharge pressure of approximately 20 psi.

The existing injection well pump station consists of two 20 hp pumps and one 30 hp pump. In FY 2006, the piping between the injection well and the injection well pump station was increased in size from 8 to 12 inches to help increase the pumping capacity. Additionally, the wiring to the pump station was upgraded to allow all three pumps to run simultaneously. Pumping capacity was increased from 700 gpm to 1,200 gpm. However, the pump station still has operational problems in keeping up with present peak flow conditions. Field inspections of the plant (February 21, 2007) revealed that the deep injection well pump station does not have enough capacity to fully utilize the total capacity of the injection well. The pumps and motors cannot be increased in size at this time, due to an electrical service limitation to the pump station.

West Port WRF –
Reclaimed Water Storage Ponds

5.5.11 Wet-weather Storage

In addition to the construction of treatment process units in 2001, 10 million gallons of reclaimed water storage was also constructed onsite. This stored volume is used for reuse effluent storage during periods of rainy weather and later pumped to the golf course irrigation site during dry weather periods.

5.5.12 Operations

The permit requires public-access reuse water to contain less than 5.0 mg/L TSS and a minimum of 1.0 mg/L of chlorine residual. The recently revised operating protocol requires a continuous turbidity reading of 3.0 NTU or less (with alarm at 2.8 NTU) to allow the effluent to be applied to a golf course. Meeting the 2.0 NTU turbidity limit has been a persistent problem for the cloth media filters. The permit condition of less than 5.0 mg/L of suspended solids was met frequently, with turbidity level well above 2.0 NTU. The operational problems associated with the sampling points are noted above. These inconsistencies can be resolved by petitioning FDEP to revise the operating protocol to change the location of the sampling point for NTU from the outlet of each filter to the inlet pipe to the chlorine contact tanks, consistent with the sampling point for the TSS analyzer.

Currently, 13 lift stations are diverted from the Rotonda WRF to the West Port WRF collection system. Flow diversion from the Rotonda WRF to the West Port WRF is expected to continue until the Rotonda WRF is expanded to accommodate the required capacity. Based on the average daily run times and the pump drawdowns, an estimated average of 150,000 gpd is diverted from the Rotonda WRF collection system to West Port WRF collection system.

5.5.13 Maintenance

The following is a list, provided by CCU, of equipment that requires replacement because of maintenance or equipment reliability issues:

- RAS #1 Pump motor (was replaced in upgrade)
- RAS #2 Pump motor (was replaced in upgrade)
- RAS #3 Pump motor (was replaced in upgrade)
- RAS #4 Pump and Motor Added (added in upgrade)
- Purge Pump at DIW Monitoring Well Zone 1 (annual replacement)
- Purge Pump at DIW Monitoring Well Zone 1 (annual replacement)

At field inspection, the plant appeared to be well maintained.

5.5.14 Review of 2005 Annual Report Recommendations

Recommendation: Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

Progress: CCU is continually involved in the inspection and repair of the wastewater collection system. For example, In FY 2006, 16,800 linear feet of gravity sewers was lined in the Rotonda service area.

Recommendation: Seek ways to increase the use of public-access reuse water currently produced by CCU water reclamation facilities.

Progress: CCU has encouraged many potential reclaimed water users to connect to the area-wide reclaimed water system.

Recommendation: Begin planning and design for the next upgrade of the West Port WRF.

Progress: Using a Three Month Average Daily Flow ratio of 1.2 to AADF, the West Port WRF will have sufficient capacity to handle the flows for the next five years and will not require an expansion until 2012.

5.5.15 Summary and Recommendations

Recommendation: Petition FDEP to revise the operating protocol and sampling points for NTU analysis.

Recommendation: Upgrade the deep injection well pump station to more fully utilize the capacity of the injection well.

Recommendation: Provide means to distribute flow evenly to all four chlorine contact basins. As flow increases at facility, test ability to evenly distribute flows to two or more chlorine contact tanks.

Recommendation: Operate all three cloth filters at the same time.

Recommendation: Provide a cover over the cloth filters to protect the filter cloth from UV light and to prevent algae growth.

Recommendation: Provide timers on the blowers that can be used for nighttime operation to cycle the blowers on and off based on dissolved oxygen concentrations in the aeration tank. A better solution to the over-aeration problem would be to install motor-operated butterfly valves on the inlet to the blowers to regulate the air flow from the blowers.

5.6 Rotonda WRF and Reuse System

5.6.1 Wastewater Characteristics

A review of the influent plant loadings for TSS and BOD for 2006 indicates an average influent BOD concentration of 139 mg/L and average influent TSS concentration of 244 mg/L. The influent TSS concentration is within the design criteria of 300 mg/L and is considered somewhat high for domestic wastewater when compared to the average monthly BOD values.

The average influent TSS concentration from 2001 through 2004 steadily increased, with a spike in concentration in 2004 of 440 mg/L. The average influent TSS concentration in 2005 and 2006 reversed this trend with a steady decrease in TSS concentrations; however, there was another average monthly TSS spike in January of 2006 at a concentration of 729 mg/L. The average influent BOD5 concentration from 2001 to 2006 fell within the same range (100 -150 mg/L).

5.6.2 Diurnal Storage

There are three onsite ponds (A, B and C) and one offsite pond (D). Pond A is reuse storage (3.70 MG), Pond B is reuse storage (2.64 MG), and Pond C is reject storage (1.50 MG). Pond D is reuse storage (7.44 MG) located at the Palm Golf Course. Reject Pond C also functions as a percolation pond.

Rotonda WRF – Reclaimed Pump Station

5.6.3 Reclaimed Water Pumping

The Rotonda WRF and the West Port WRF are interconnected by a 12-inch diameter reclaimed water transmission main. Reclaimed water can be pumped to several reuse irrigation sites along this transmission main by either wastewater reclamation facility by opening or closing specific isolation valves. Excess reclaimed water can also be disposed during wet-weather by pumping reclaimed water through the 12-inch transmission main to the West Port WRF deep injection well. When excess reclaimed water is disposed of in this manner, the West Port WRF cannot pump reclaimed water to the distribution system.

The Rotonda WRF reuse transfer pumping station, wet well and high-service pumps are located on the bank of the reuse storage pond and primarily pump reclaimed water to the Links and Palms Golf Course. The pump station has a capacity of about 1,000 gpm when pumping to the West Port WRF through the 12-inch transmission main.

5.6.4 Capacity

CCU owns and operates the Rotonda WRF, located on Kendall Drive off of Cape Haze Drive south of Rotonda in western Charlotte County. In 2006, the Rotonda WRF received an Annual Average Daily Flow (AADF) of 0.595 MGD and a maximum Three Month Moving Average Daily Flow (Max TMMADF) of 0.682 MGD. These flow rates equate to a maximum TMMADF to AADF Peaking Factor of 1.146. The Maximum Monthly Average Daily Flow (MMADF) is typically found in early fall (September, 0.762 MGD) and the MMADF to AADF ratio (MMPF) for FY 2006 is 1.28 (historically has averaged about 1.30). The current areas served by the Rotonda WRF include the inside of the circular Boundary Boulevard of the Rotonda development; areas filling in the northeast and northwest corners outside of the circular development of the total 36 square miles; adjacent areas along Cape Haze Boulevard; and a large underdeveloped area located southeast of Rotonda Circle. The additional areas served by Rotonda are Pine Valley, White Marsh, Long Meadow, Boardmoor, Pinehurst, Pebble Beach, Oakland Hills, Cape Haze, Northwest Corner, and the southeast area. CCU has plans to expand presently unsewered areas in western Charlotte County that currently use septic tank/leach fields for wastewater treatment and disposal. This expansion will include Rotonda Sands with an additional 2,532 ERUs and Rotonda Meadows with an additional 2,697 ERUs.

The AADF for the Rotonda WRF for 2006 was 0.609 MGD and was slightly greater than the previous year AADF of 0.600 MGD. Currently, 13 lift stations are diverted from the Rotonda WRF to the West Port WRF collection system. Flow diversion from the Rotonda WRF to the West Port WRF is expected to continue until the Rotonda WRF is expanded to accommodate the required capacity. Based on the average daily run times and the pump drawdowns of the diverted pump stations, an estimated average of 150,000 gpd is diverted from the Rotonda WRF collection system to the West Port WRF collection system. Consequently, if not for the flow diversion to the West Port WRF, the Rotonda WRF AADF would have been 0.759 MGD.

In addition, CCU currently has 0.4 MGD of purchased capacity at the Englewood Water District (EWD) Water Reclamation Facility and is diverting approximately 0.3 MGD to EWD for treatment. Most of the flow within that area is generated by residential use; however, several adjacent areas are zoned commercial. No industries are served by the collection system. Charlotte County obtained 0.400 MGD of treatment capacity at the EWD South Treatment Plant with the purchase of the Rotonda service area from Aqua Source in December 2000. The interconnecting force main to the EWD treatment plant had been constructed prior to the acquisition by Charlotte County Utilities. The force main was first activated in July 2001. Approximately 0.325 MGD of wastewater can be sent to EWD under the current collection system piping arrangement.

If the diversion of raw wastewater flow to EWD is taken into consideration, the normalized, undiverted raw wastewater flow to the Rotonda WRF would be 1.059 MGD for 2006. This conclusion is somewhat skewed, because both raw wastewater diversions did not take place during the full 2006 calendar year. However, this estimate was confirmed by staff operators during inspection.

5.6.5 Regulatory Considerations

The current Rotonda WRF permit No. FLA014098 was issued on December 2, 2004, and will expire January 1, 2008. The permitted capacity of the plant is 0.625, MGD based on AADF, with a total reuse capacity of 1.005 MGD (AADF). On December 2, 2004, a Consent Order with FDEP requiring plant upgrading and expansion was signed. One of the required upgrades involved a new secondary clarifier sludge withdrawal system, which was completed by CCU staff in 2005. The final design for the plant expansion was completed in February 2007. Construction of the first phase of the plant expansion is scheduled to begin in 2007, with completion scheduled for September 2008.

Recent growth trends indicate that the average growth of the population within the sewered areas in Western Charlotte County may be as high as 8.5 percent per year for the next 20 years. The increased growth above the overall County growth is due to the evaluation of specific sub-areas and also the availability of lots in that area. However, the County is also planning to expand the sewered areas in and around Rotonda. Therefore, in order to provide a conservative estimate for the future, a 10 percent growth rate is considered reasonable for the Rotonda WRF for the near term. This growth rate is extremely conservative and may not be realistic. However, CCU is currently monitoring new development and will readjust as necessary until buildout is achieved, which is estimated to be near 3.0 MGD of plant capacity for the Rotonda service area.

Currently, the Rotonda WRF is operating within its design parameters and permit requirements. As the system grows, additional reuse storage, transmission lines and reuse sites should be pursued to handle the additional flow. For example, CCU is currently evaluating the potential of an aquifer storage and recovery (ASR) system at the plant site for additional reuse storage.

A phased, 2 MGD expansion is underway for the Rotonda WRF. Until the expansion is completed, Rotonda will continue to divert part of its flows to the West Port WRF and EWD. The initial phase expanding Rotonda to 1 MGD is currently scheduled to be complete by September 2008. Another year of construction is anticipated to be required before 2.0 MGD is available. The proposed expansion is anticipated to include a new headworks, flow equalization, additional aeration with anoxic zones, four membrane bioreactors, additional chlorine contact basin, a lined reject pond and a 3 MG reuse storage tank. Under this construction program, the existing digester is to be converted to an equalization tank and the existing clarifiers are to be converted to aerobic digesters.

Rotonda WRF – Aerial View

5.6.6 Treatment Components

The current treatment process within the facility is conventional, activated sludge domestic wastewater treatment process. Residuals are transported to

the East Port WRF for dewatering and transport to a Class I solid waste landfill. When acquired in December 2000, the facility was in need of repair. A replacement aeration system, including a separate blower for the aerated sludge digestion tank, was installed in May 2002. The installation of a new effluent filter with a capacity of 1 MGD was completed in August 2003. This new filter and rehabilitation of both of the existing sand filters increased the reliability and quality of the effluent. The plant lift station pumps were replaced in 2004, which further increased the reliability of the plant.

The Rotonda WRF presently includes the following treatment unit components:

- Two manual bar screens
- Two 161,000 gallon aeration basins
- Aeration blowers
- Two 40-foot diameter clarifiers
- Dual secondary effluent filter structure
- Cloth filter system
- 36,358 gallon chlorine contact basin
- Liquid hypochlorite system
- A reuse transfer pumping station (wet well and high-service pumps - Links and Palms)
- 250,000 gallon aerobic sludge digester with sludge beds
- Three return sludge pumps

Rotonda WRF – Effluent Filters

The Rotonda WRF's treatment capacity is 0.625 MGD annual average daily flow (AADF). The total reuse permitted capacity is 1.005 AADF.

5.6.7 Treatment Objectives

The Rotonda WRF is designed to treat wastewater to two effluent standards; one for disposal at the percolation pond (CBOD5=20 mg/L, TSS=20 mg/L) requiring basic disinfection and the other for public-access level of treatment (CBOD5=20 mg/L, TSS=5 mg/L) requiring high-level disinfection. Normal operation of the treatment facility provides public-access level of treatment with the operation of the traveling bridge filter and the backup Aqua Aerobics cloth media filter during peak monthly flows.

5.6.8 Effluent Quality

The annual average BOD5 and TSS are 2.27 and 0.97 mg/L, respectively for the Rotonda WRF. The CBOD5 ranges from a monthly average low of 1.63 mg/L to a high monthly average of 3.05 mg/L. The TSS ranges from a monthly low of 0.72 mg/L to a high monthly average of 1.44 mg/L. The CBOD5 and TSS are well within FDEP allowable design criteria of 30 mg/L and 5 mg/L respectively.

5.6.9 Irrigation and Other Reclaimed Water Applications

The reuse system includes a rapid infiltration basin (system R-001) that is located at the plant site (Pond C) and a slow-rate public-access reuse system (R-002) used for irrigation of golf courses (Palms and Cape Haze Links Golf Course) and a residential development (Windward Patio Homes). This system includes two reclaimed water storage ponds that are

located at the plant site (Ponds A and B) and a reclaimed water storage pond located at the Palms Golf course (Pond D). The Rotonda West WRF's reuse transmission main is interconnected with the West Port WRF's reuse transmission line and EWD transmission line. Effluent, meeting public-access water quality, is disposed of though reuse irrigation to Palms Golf Course (0.423 MGD), Cape Haze Golf and Country Club (0.290 MGD) and residential landscaping (0.043 MGD). Effluent not meeting the public reuse quality, but meeting secondary treatment standards, is disposed of through the onsite percolation pond. The FY 2006 plant records indicate that the golf course irrigation averages 0.511 MGD-AADF, the residential irrigation averages 0.047 MGD-AADF and the reclaimed water effluent disposed of via the West Port interconnection averages 0.174 MGD-AADF. The 0.174 MGD-AADF treated effluent diverted to the West Port WRF corresponds closely with the flow reported by the West Port WRF (0.154 MGD AADF).

Table 5-9 lists potential reuse sites for the Rotonda WRF service area.

Table 5-9 Rotonda WRF Future Reclaimed Water Major Users

Name of Property	Irrigable Acres	Irrigation Rate (inches/week)	Proposed Capacity (MGD)
Hills Golf Club	140	1	0.543
Rotonda NW Golf Club	120	1	0.466
Charlotte Co. 100 Rotonda Circle	3	1	0.012
Water Tank Site	7	1	0.027
Cape Haze Pioneer Trail	11	1	0.043
Cape Haze Residential Reuse	100	1	0.388
Charlotte Co. SR-771	11	1	0.043
Charlotte Co. S. Gulf Cove	8	1	0.031
South Gulf Cove	106	1	0.411
Total	**506**		**1.964**

5.6.10 Reject Storage or Alternate Disposal

There are three onsite ponds (A, B and C) and one offsite pond (D). Pond A is reuse storage (3.70 MG), Pond B is reuse storage (2.64 MG), and Pond C is reject storage (1.50 MG). Pond D is reuse storage (7.44 MG) located at the Palms Golf Course. Reject Pond C also functions as a percolation pond. Thus, reject storage and alternate disposal is provided by Pond C.

5.6.11 Wet-weather Storage

Ponds A, B and D are available for wet-weather storage.

5.6.12 Operations

The Rotonda WRF is monitored by telemetry during off-hours by the East Port WRF Operations staff. Plant conditions that are monitored include plant lift station wet well level, loss of power, turbidity, chlorine residual and pH.

5.6.13 Maintenance

The following is a listing provided by CCU of equipment that requires replacement because of maintenance or equipment reliability issues:

- Reuse Hydropneumatic Tank for Irrigation

- High-Service Pump Station Building
- High-Service Pump 1 – Reuse Effluent Transmission

At field inspection, the plant appeared to be well maintained.

5.6.14 Review of 2005 Annual Report Recommendations

Recommendation: Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

Progress: CCU is continually involved in the inspection and repair of the wastewater collection system. For example, In FY 2006, 16,800 linear feet of gravity sewers was lined in the Rotonda service area.

Recommendation: Seek ways to increase the use of public-access reuse water currently produced by CCU water reclamation facilities.

Progress: CCU has encouraged many potential reclaimed water users to connect to the area-wide reclaimed water system. Potential reuse customers have been identified for the Rotonda WRF service area with a total reuse capacity of 4.723 MGD.

Recommendation: Upgrade the Rotonda WRF, as necessary, to meet the requirements of the Rotonda Consent Order and to maintain a consistent public-access, reuse-quality effluent.

Progress: A permit application to expand the Rotonda WRF to 2 MGD was submitted to FDEP on January 30, 2006, with the preliminary design report. Final design is complete. Construction is anticipated to begin in 2007 and the initial phase, expanding Rotonda to 1 MGD, is currently scheduled to be complete by September 2008. Another year of construction is anticipated to be required before 2 MGD is available.

5.6.15 Summary and Recommendations

Recommendation: Actively pursue the expansion and upgrade of the Rotonda WRF in a timely manner.

Recommendation: Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

Recommendation: Continue a study that was begun at the end of FY 2006 to investigate the feasibility of an ASR well for reclaimed water storage at the Rotonda WRF site.

5.7 Burnt Store WRF and Reuse System

5.7.1 Wastewater Characteristics

A review of the influent plant loadings for BOD5 and TSS for 2006 indicates that the average influent BOD5 concentration of 139 mg/L and average influent TSS concentration of 139 mg/L is below the design criteria of 200 mg/L and is considered low for domestic wastewater plant.

5.7.2 Diurnal Storage

The Burnt Store WRF utilizes four percolation ponds that are located on the treatment plant site. Disposal capacity is limited due to percolation constraints. Influent diurnal storage is provided by a flow-through equalization tank and variable-speed pumps which have proven to be very effective in providing 100 percent flow equalization.

5.7.3 Reclaimed Water Pumping

The existing reuse pump station is a constant-speed pump having a capacity of about 900 gpm. A variable-speed pump installation may be needed to properly match pressure and flow for future reclaimed water pumping. The pump station also needs an accurate flow meter to determine the reclaimed water usage.

5.7.4 Capacity

The Burnt Store WRF was acquired with the purchase of the Florida Water Services Burnt Store Division on December 12, 2003. The plant is located along the southern border of Charlotte County on Burnt Store Road and serves four developments: Burnt Store Marina Community, Burnt Store Colony, Burnt Store Village and Burnt Store Lakes. The facility was last permitted on April 17, 2003, at 0.250 MGD three month average daily flow (TMADF) and 0.500 MGD TMADF after the substantial modification to the plant was completed. The plant is a conventional activated sludge plant with effluent filtration and high-rate chlorine disinfection.

At the time of purchase, the plant capacity was being increased under a construction contract. The upgrade from 0.250 MGD to 0.500 MGD includes new aeration tanks, one new clarifier, sludge return pumps, effluent filters, hypochlorite disinfecting equipment, dual chlorine contact tank and effluent (reuse) pumps. The substantially modified treatment plant is permitted for 0.500 MGD TMADF as a conventional activated sludge water reclamation facility and was certified complete in February 2005. However, until the reuse system is in place, the permit limits the flow to the plant to 0.250 MGD due to disposal limitations (percolation ponds) until reuse customers are placed into service. The annual average hydraulic loading rate to the percolation ponds is limited to 1.5 inches per day.

A review of the historical peaking factors showing the ratio between Max Three Month Average Daily Flow (Max TMADF) and Annual Average Daily Flow (AADF) indicates that the average peaking factor for the past 10 years is 1.16, which is less than the design ratio of 1.3.

Seasonal variations in flow can also be attributed to rainfall, which is usually high during the months of June through September. Both seasonal and daily rainfall can affect influent flow. Currently, no significant impact on inflow has been observed due to rainfall variation.

In 2006, the Burnt Store WRF received an annual average daily flow (AADF) of 0.240 MGD and a maximum three-month moving average daily flow (Max TMMADF) of 0.293 MGD. These flow rates equate to a maximum TMMADF to AADF Peaking Factor of 1.222. The Maximum Monthly Average Daily Flow (MMADF) is typically found in early spring (February, 0.312 MGD) and the MMADF to AADF ratio (MMPF) for FY 2006 is 1.303 (historically, it has averaged about 1.30).

The Burnt Store service area is anticipated to include future developments that include Pirate Harbor, Tuckers Grade, Burnt Store Ranch, Burnt Store Groves and Tern Bay. Recent wastewater flow rates have also shown flow increases of as much as 10.5 percent.

The wastewater flow projections for the future Burnt Store WRF, based on a 10 percent population growth rate, shows that the current plant capacity of 0.500 MGD is sufficient until 2012. In order to ensure that adequate future capacity is available, CCU is in the process of authorizing the design for expanding the Burnt Store WRF.

5.7.5 Regulatory Considerations

A Consent Order, issued just prior to CCU taking ownership of the facilities, requires that a reuse customer agreement be initiated within two years of operation of the upgraded facility. CCU has been negotiating with the Tern Bay development to supply reuse water to a proposed 27-hole golf course north of the plant along Burnt Store Road. A tentative agreement with Tern Bay Golf Course was successfully negotiated by CCU for an initial 300,000 gpd. A 12-inch diameter reuse main from the plant to the new golf course was constructed in 2006 as a dry line.

A deep injection well located on the plant site disposes of brine that is produced by the Burnt Store Reverse Osmosis Water Treatment Facility. The injection well operates under permit No. 44562-020-UO. A demonstration test of IW-1 at 0.564 MGD was conducted in November 2005. This injection well has also recently been approved for the disposal of excess treated effluent from the Burnt Store WRF. A new pumping station constructed in 2006 receives RO reject water and excess wastewater treatment plant effluent for disposal in the deep well.

5.7.6 Treatment Components

The Burnt Store WRF includes the following treatment unit processes:

- Manually cleaned influent bar screen with bypass
- 100,000 gallon flow equalization basin
- Dual blower-motor assemblies
- Two clarifiers
- Sodium hypochlorite feed system
- Two chlorine contact chambers
- Four filter disks
- Two aeration basins
- One aerobic digester

In 2006, a control valve and flow meter was installed at the deep injection well pump station inlet piping to regulate the flow to the pump station. Previously, when treated effluent was diverted to the pump station, the water level in the wet well would sometimes drop below a safe operating level and would cause the sample pump to run dry.

Residual solids produced by the biological treatment process are stored in aerobic digesters at the Burnt Store WRF until being hauled in liquid form to the East Port WRF for dewatering and landfill disposal.

Burnt Store WRF – Aerial View

5.7.7 Treatment Objectives

The Burnt Store WRF is designed to treat wastewater for public-access level of treatment (CBOD5=20 mg/L, TSS=5 mg/L) requiring high-level disinfection. The Burnt Store WRF is a Type 1, Class III reclaimed water treatment facility.

5.7.8 Effluent Quality

The annual average BOD5 and TSS are 2.3 and 1.85 mg/L, respectively, for the Burnt Store WRF. The CBOD5 ranges from a monthly average low of 1.0 mg/L to a high monthly average of 4.0 mg/L. The TSS ranges from a monthly low of 1.0 mg/L to a high monthly average of 5 mg/L. The CBOD5 is well within FDEP design criteria allowable of 30 mg/L. These conditions illustrate that effective treatment has been provided and all of the current loadings are within the ranges used to establish the design capacity. Based on the available data, the BOD5 and TSS removal is approximately 98 percent and 99 percent, respectively.

Burnt Store WRF – Aqua Disk Filters

5.7.9 Irrigation and Other Reclaimed Water Applications

In FY 2006, there were no reuse customers. A tentative agreement with Tern Bay Golf Course was successfully negotiated by CCU for an initial 300,000 gpd. Current effluent disposal is by rapid rate land application through four percolation ponds that are located on the treatment plant site and deep injection well disposal shared with the Burnt Store RO WTF.

Restricted onsite slow-rate irrigation is practiced at the Burnt Store WRF. About 15,000 gpd is irrigated on the plant site and another 20,000 gpd is irrigated along the berms of the percolation ponds.

5.7.10 Reject Storage or Alternate Disposal

No reject storage is provided at the Burnt Store WRF. Alternate disposal of unsuitable reclaimed water is provided via the 0.564 MGD injection well and, to a limited extent, the onsite percolation ponds, limited to 0.250 MGD. These alternate disposal means will limit the permitted capacity of the treatment facility. For this reason, a second deep injection well is proposed for the combined Burnt Store water and wastewater treatment facilities. The new deep injection well will have a capacity of approximately 9.5 MGD. Disposal by the injection well is the last option for disposal at the Burnt Store WRF, since the primary disposal is the reclaimed water system and the second option is the onsite percolation ponds.

5.7.11 Wet-weather Storage

Other than the limited storage capabilities of the onsite percolation ponds, no wet-weather storage is provided for the Burnt Store WRF. However, alternate disposal is provided through the use of the onsite deep injection well and the future 9.5 MGD deep injection well.

5.7.12 Operations

The Burnt Store WRF is monitored by continuous analysis instruments. During times when an operator is not present, alarm conditions are monitored by an automatic telephone dialer that is programmed to call several operators and the East Port WRF. Plant conditions that are monitored include three-phase power interruption, turbidity and chlorine residual.

The flow-through flow equalization tank is very effective at holding the daily peak flows to a 0.3 MGD rate. Residual solids produced by the biological treatment process are stored in aerobic digesters at the Burnt Store WRF until being hauled in liquid form to the East Port WRF for dewatering and landfill disposal.

Burnt Store WRF – New Deep Injection Well Pump Station

A permit modification was issued on September 9, 2004, that allowed the construction of a pump station for the facility to inject non-hazardous secondary treated domestic wastewater into the existing 1W-1 Class I injection well. The pump station construction is completed and will be controlled to allow shared usage of the injection well with the Burnt Store RO WTP without impacting the disposal capacity of the RO reject system. The permit indicates a 0.564 MGD maximum injection flow rate for the combined facilities. Both the RO plant and WRF can simultaneously flow to the deep well. There is a rough 2/3, 1/3 split, with 260 gpm dedicated to the RO plant, and 132 gpm dedicated to the WRF. However, the RO plant has priority. This addition of the deep well pump station provides additional disposal capacity for the WRF.

The operation of the deep injection well has improved with operation in the last year; the operating pressure in the past was near 100 psi at 340 gpm, but it is now operating at 80 psi.

The Aqua Aerobics cloth filters have operated well and fairly consistently. Under the new operating permit for the Burnt Store WRF, the NTU limit will be adjusted to 3.0 with an alarm set-point of 2.8.

Plant staff installed a blow-off on the aeration system to help regulate the dissolved oxygen in the aeration basins. During inspection, it was noted that the inlet valves for the blowers could be throttled to also regulate the air flow to the aeration basins.

Burnt Store WRF – Blowers for Equalization and Process Tanks

5.7.13 Maintenance

At field inspection, the plant appeared to be well maintained. The Burnt Store WRF is new and, consequently, no equipment replacement was indicated.

5.7.14 Review of 2005 Annual Report Recommendations

Recommendation: Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

Progress: CCU is continually involved in the inspection and repair of the wastewater collection system. For example, in FY 2006, 16,800 linear feet of gravity sewers was lined in the Rotonda service area.

Recommendation: Seek ways to increase the use of public-access reuse water currently produced by CCU water reclamation facilities.

Progress: CCU has encouraged many potential reclaimed water users to connect to the area-wide reclaimed water system, especially the Tern Bay development. A tentative agreement with Tern Bay Golf Course was successfully negotiated by CCU for an initial 300,000 gpd.

Recommendation: Initiate public-access reuse for the Burnt Store Water Reclamation Facility effluent disposal.

Progress: CCU is making every effort to encourage potential reclaimed water users to connect to the area-wide reclaimed water system.

5.7.15 Summary and Recommendations

Recommendation: If necessary to meet variable reclaimed water demand, provide variable-speed drives for the reclaimed water pump station with a constant-pressure pump control system. Also, install a new meter for measuring reclaimed water flow.

Recommendation: If necessary, provide a dedicated 1 MG reclaimed water storage tank onsite. This recommendation is dependent upon the type of reuse customers connected. If the Tern Bay Golf Course is connected, no onsite storage may be required, since the reclaimed water will be pumped to storage located at the golf course.

Recommendation: Construct the new 9.5 MGD deep injection well. This new well should be operational commensurate with the Burnt Store WTF expansion project, or commensurate with the Burnt Store WRF expansion project (whichever occurs first).

Recommendation: Continue with the design for the expansion of the Burnt Store WRF.

5.8 Leachate Treatment Facility

Charlotte County Utilities operates and maintains the Leachate Treatment plant for the Charlotte County Environmental Services Department, located at 29751 Zemel Road, Punta Gorda, FL 33955. Charlotte County is using state-of-the art treatment technology to treat and dispose of leachate produced at the County's Zemel Road Municipal Solid Waste Landfill. The landfill is located on a 308-acre site and accepts municipal waste from throughout the County.

The 0.25 MGD Powered Activated Carbon Treatment (PACT) plant was constructed in 1992, and it was placed into service in April 1993. The treated leachate meets or exceeds the final effluent standards for disposal to a 1.50 MGD deep well injection system located adjacent to the treatment plant. The landfill has a vertical bentonite (clay soil) slurry wall that blends with the natural confining layer of soil surrounding the landfill below ground. This slurry wall separates the interior landfill leachate, groundwater and lakes from the groundwater outside of the landfill that surrounds the entire site. Leachate seeps down through the landfill to a french-drain type collection system and is pumped to the treatment facility for biophysical treatment. The heart of the facility is the PACT tank system, which uses a combination of powdered activated carbon and aerobic bacteria (called sludge) to simultaneously adsorb and metabolize the leachate contaminants.

Leachate Treatment Tanks

The PACT tank goes through an aeration cycle, and then aeration is shut off to permit settling of the sludge. After the settling is completed, the clear water or effluent is removed by pumping it to the sand filter for final polishing. The PACT tank is then refilled with raw leachate and the aeration blower is restarted to start the process over again. After the bio-physically treated effluent passes through the sand filter, it is chlorinated and is pumped down the deep well injection system to an approximate level of 3,000 feet below ground in a confined saltwater aquifer.

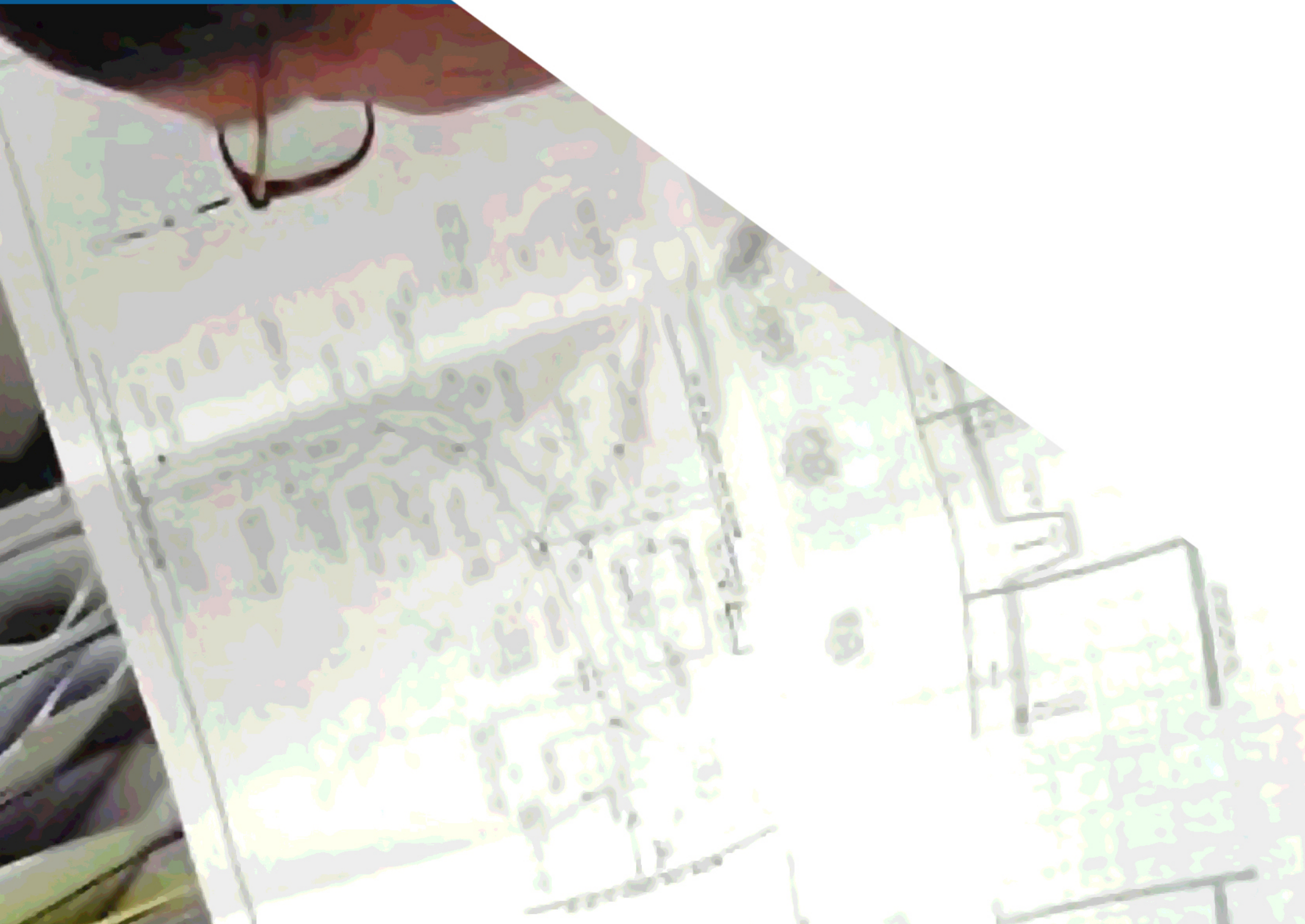
Leachate PACT SBR Aeration System

The initial flow to the PACT Leachate treatment system was 0.035 MGD in 1999 with a total annual flow of 8.07 MG. Current operation generates plant flow of about 0.067 MGD or about 24 MG per year. The Leachate plant is well maintained and is easily operated as a batch sequence reactor. The only maintenance issue found at inspection was the need to replace winches on several of the decant tubes, and this replacement has been scheduled with CCU maintenance staff. From an operational point of view, the 0.25 MGD capacity of the leachate treatment system cannot presently be fully utilized because the leachate pump station, and/or the leachate collection system, appears to be inadequately sized to accommodate this design flow.

Leachate Treatment Facility – Deep Injection Well

Comparison of Leachate influent and effluent water

Leachate waste solids drying in sludge drying beds



6 ENGINEERING

6.1 General

The following section describes the reports and studies submitted by external engineering consultants in FY 2006. The information below is a synopsis of the data gathered.

6.2 Review of Reports and Studies

6.2.1 Burnt Store WRF Capacity Analysis Report

Submitted in August 2006, this capacity analysis report summarizes the capacity and future use of the Burnt Store WRF. In March 2005, the facility was expanded to 0.5 MGD TMADF treatment capacity and is currently in the process of obtaining a permit that will allow for an increased disposal capacity of 0.5 MGD. Although this will provide the facility some reprieve from the growing population in the area, it will not compensate for the vast growth that is expected. There are five planned developments that are expected to increase demand on the facility by 10.5 percent. If no corrective measures are taken to increase the capacity of the treatment plant, it will reach permitted flow limits in 2012. In order to compensate for the additional flow, there is a recommendation to increase the capacity of the facility to 2 MGD.

6.2.2 Babcock Ranch Water Resources Report

In the November 2005 report submitted by Malcolm Pirnie, the potential for water treatment uses at Babcock Ranch were evaluated. Babcock Lake makes up the majority of the Telegraph Creek watershed and consists largely of swamp and low lying marshy areas. It is largely because of these unique ecological features that the ranch is being studied. The report discusses the possibility for coordinated management of the surface and groundwater resources within the watershed, the possibility for seasonal storage capacity in the swamp and the facilitation of production in the Surficial Aquifer System.

6.2.3 East Port WRF Capacity Analysis Report

Prepared by Boyle Engineering Corporation, this report discusses the need for future expansion of the East Port Water Reclamation Facility. As of the December 2005 submittal, the facility is permitted for a capacity of 6 MGD AADF with a maximum daily flow of 9 MGD. However, due to the rapid growth within the service area, the facility's flow is projected to exceed the permitted flow by 2011. With this in mind, Boyle Engineering Corporation recommends an expansion of the facility to 12 MGD. Assuming the population growth rate stays at five percent, this facility expansion will be sufficient until 2025.

6.2.4 Rotonda Sands and Rotonda Meadows Sanitary Sewer and Reclaimed Water System Preliminary Design Report

Rotonda Sands and Rotonda Meadows are two development communities located within the CCU service area. By 2015, it is estimated that 4,788 residential units will make up the two developments, with each unit utilizing septic tanks and drainfields. As of the January 2006 submittal, the proposed design will add a low pressure sewer system that includes a collection tank, an effluent pump and a 2-inch effluent pipeline at each house. There will be two lift stations located within each subdivision, which will discharge the water to a central pump station. Once water reaches the master pump station, it will be connected to the 12- and 16-inch force mains that run to the West Port WRF. Also, reclaimed water could be provided by the West Port WRF and Rotonda WRF.

6.2.5 TM – Reclaimed Water Interconnect Alignment Study

This study, published by Wilson Miller, Inc. in January 2006, outlines Charlotte County's desire to add over 72,000 linear feet of pipe and two pump and storage facilities that would connect the East Port Water Reclamation Facility to the Riverwood Community on State Road 776. This system will have the capacity to provide 1.3 MGD of reclaimed water for several customers within the CCU service area and will decrease the amount of water that is withdrawn from the aquifer. The study consists of routing, utilities, transportation and environmental analyses. CCU has since accepted the proposed alignment of the additional piping, with construction to tentatively begin in late 2006. Total construction cost will be approximately $13,350,750.

6.2.6 Rotonda WRF Capacity Analysis Report

CCU is taking measures to expand the facility to accommodate for growth in the area. Construction is set to begin in 2007. By September 2008, the facility is expected to be treating 1 MGD, with plans to continue construction for another year to reach 2 MGD. If the current growth pattern of 8.5 percent continues, CCU plans to continue construction until the facility reaches build out, which occurs at 3 MGD.

6.2.7 Burnt Store Well Field Sustainability Study

The Burnt Store Water Treatment Facility (WTF) is a reverse osmosis facility that is currently permitted for 1.127 MGD. However, due to rapid growth in the Burnt Store WTF service area, CCU has proposed to increase the raw water demand capacity to 4.5 MGD. In this May 2006 report, Malcolm Pirnie evaluates the sustainability of expanding the well field at the Burnt Store WTF to meet treatment plant demand requirements.

Upon completion of the analysis, Malcolm Pirnie concluded that expansion of the Burnt Store well field is sustainable with the addition of three additional production wells. Furthermore, the additional production is sustainable whether the production is obtained from the Lower Hawthorn Aquifer or the Upper Floridan Aquifer. The analysis also shows minimal drawdown effects at the proposed withdrawal rates.

6.2.8 Burnt Store Water Treatment Plant Expansion – Preliminary Engineering Report

Written in conjunction with 6.2.7 Burnt Store Well Field Sustainability Study, this report outlines the preliminary design for the installation of three wells for the Burnt Store WTF. Factors that were taken into account include water quality, hydrogeology, production requirements and storage. The design and construction will cost approximately $8.4 million and will last just over two years.

6.2.9 Cape Coral Interconnect

Submitted by DMK Associates in May 2006, this report analyzes the construction of a pipeline connecting the City of Cape Coral Utilities and the Burnt Store WTF. The new pipeline would serve as an emergency water interconnect system that would be capable of transferring up to 6 MGD between the city of Cape Coral and Charlotte County Utilities. The proposed pipeline would come online in 2008 and would work in conjunction with a 12 MGD treatment plant under construction in North Cape Coral. With planned capacity improvements to 36 MGD, the treatment plant would have enough capacity to handle the 6 MGD emergency flow.

6.2.10 West Port WRF Capacity Analysis Report

Boyle Engineering Corporation authored the West Port WRF Capacity Analysis Report in May 2006. The West Port facility is currently tied into the Rotonda pipeline to take some of the burden while the Rotonda facility is under construction. The information shows that, over the last few years, the population in this region of Charlotte County has increased by five to eight percent. Even with this sustained growth, however, the facility will have enough capacity to handle the flow for the next five years.

6.2.11 Burnt Store Water Treatment Plant – Deep Injection Well Preliminary Design Report

This June 2006 report provides the preliminary design for a deep injection well located at the Burnt Store WTF. The injection well will be used for disposal of RO concentrate, spent membrane cleaning solution and treated wastewater effluent. The report discusses surrounding environmental conditions, permitting requirements, design, cost estimate and construction schedule.

6.2.12 Charlotte County Utilities Water Interconnect with Lee County for Water Supply Development

Submitted in June 2006, this feasibility study analyzes a water interconnect between Lee County and CCU. The proposed system is designed to transmit 4.0 MGD of potable water to and from Charlotte County. As a part of the analysis, Jones Edmunds evaluated the routes based on a list that included physical inspection of routes, engineering perspectives and environmental impacts. Upon completion of the analysis, there is an estimated project cost of $33,144,000.

6.2.13 TM - Evaluation of Alternative Sanitary Sewer Collection Systems

This July 2006 report details Charlotte County's proposed construction of wastewater collection systems in the presently unsewered portions of the Charlotte Harbor Community Redevelopment Area (CRA). The development of these new systems will take place in two phases and will encompass over 538 acres. The future land use classifications defined in the Charlotte County Comprehensive Plan will serve as the zoning restrictions in the project area.

Before construction begins, however, Charlotte County is to perform an analysis of the existing sewer systems that are already in use. Charlotte County currently has facilities that provide wastewater collection services to almost 281 acres, or 52 percent of the service area. Existing wastewater collection systems that are located within the project area are low pressure sewers, gravity sewers, duplex wet pit pumping stations and force mains. In this memorandum, there were two alternate types of wastewater collection systems analyzed for future usage. These include conventional gravity sewers and low pressure sewers (LPS) utilizing the septic tank effluent pump (STEP) system, which is the standard type of LPS system used in the County. In the analysis of future Phase I and Phase II facilities, all existing gravity and low pressure sewers, force mains and pumping stations within the project boundary were evaluated. Upon analysis, Greeley and Hansen recommended over 51,000 feet of low pressure pipe with a total cost of just over $3.9 million.

6.2.14 Port Charlotte Punta Gorda Water System Interconnect

This report chronicles the evaluation and conceptual design of an emergency water supply interconnect between water systems at Port Charlotte, Punta Gorda and the Burnt Store area. The proposed design would be capable of transferring at least 2 MGD with planned

increases up to 6 MGD. As a part August 2006 report, DMK Associates included modeling, site, construction and cost analysis.

6.2.15 Phase I Environmental Site Analysis

This report, submitted in August 2006, was a study for determining the feasibility of constructing a well field and reverse osmosis WTP in each quadrant of Charlotte County. As a part of the site assessment, properties were evaluated for their availability and ease of construction.

The prospective properties were selected based on the following steps:

- Fatal Flaw Analysis
- Development of Site Suitability Criteria and Model
- Site Rankings based on Model
- Adjusted Site Rankings based on Planned CCU Infrastructure not included in the Model
- Environmental Site Assessments and Assessment of Regulatory Requirements

Upon completion of the analysis, each quadrant was given a list of sites ranked from best to worst. The top selection for each quadrant is listed below:

- West – Seven-acre parcel located at 11935 Waterman Avenue
- Central – 12.2-acre parcel located at 18082 Rickardway Avenue
- East – 6500 Copley St.
- South – Analysis will be given at future date

6.2.16 Basis of Design and Facility Use Plan for the Pirate Harbor Sanitary Sewer System

Prepared by Boyle Engineering Corporation, this August 2006 report discusses the need to bring the Pirate Harbor community online with the sanitary sewer systems already in use in Charlotte County. Pirate Harbor is a boating community with 386 equivalent residential units (ERUs). Most of the lots border canals that lead to Charlotte Harbor. All of the houses in this area are served by septic tanks and drain fields. With a high, tidally-affected water table, Charlotte County proposes the construction of a wastewater collection system in order to protect the sensitive environment. The wastewater collected at this site would be discharged into a force main that feeds the Burnt Store WRF.

Keeping in mind cost, environmental impacts and efficiency, CCU has identified two alternatives for evaluation. These two systems are the conventional gravity sewers and low pressure sewer systems. Upon analysis of cost and environmental considerations, the low-pressure wastewater collection system is the recommended option. A cost savings of $1,770,810 can be realized by pursuing the low pressure wastewater collection option.

6.2.17 Burnt Store Water Treatment Plant – Plant and Well Field Expansion Plan

Due to the expected expansion of the Burnt Store water service area, Malcom Pirnie submitted this September 2006 report summarizing their hydraulic modeling efforts and proposed treatment plant and well field expansion plans for the area. There were nine scenarios that were analyzed and the model has demonstrated that a sustainable groundwater supply is available in the Upper Floridan and Lower Hawthorn Aquifers to meet

the 2012 water demand. However, the existing distribution system will need to be extended and a deep injection well should be installed.

6.3 Capital Improvement Program

The Capital Improvement Program is designed to plan and construct improvements to the CCU water and wastewater systems. As the population in Charlotte County continues to grow, it is vital for CCU to provide a plan that can handle projected growth. The following section describes capital improvement projects in progress or initiated in FY 2006. In the paragraphs below, a project is considered to be a major expenditure when the expenditure is over $100,000.

6.3.1 Capital Improvement Projects – Water System

Table 6-1 lists the water system capital improvement projects initiated or in progress during FY 2006. The major expenditures were upgrades and expansions of the Burnt Store WTF, future water supply alternatives and water transmission lines. The total budget allotted for the year was $15.9 million and the total amount spent was $4.1 million.

6.3.2 Capital Improvement Projects – Wastewater System

Table 6-2 lists the wastewater system capital improvement projects initiated or in progress during FY 2006. The major expenditures were upgrades and expansions to the East Port WRF, Rotonda WRF, Burnt Store WRF, reclaimed water systems and wastewater force mains. The total budget allotted for FY 2006 was $27.9 million and the total amount spent was $5.6 million.

6.3.3 Capital Improvement Program

Part of CCU's plan to accommodate the growth taking in Charlotte County is to develop and maintain a five-year Capital Improvement Program. Table 6-3 outlines a summary of projects which CCU is planning to implement for the water and wastewater systems over the next five years.

Table 6-1 Capital Improvement Projects in Progress or Initiated in 2006 – Water System

Description	Funding Source	FY 2006 Budget	2006 Expenditures	Percent of Budget Expended
South Gulf Cove Water Expansion	SGC	$ 836,000	$ 37,972	4.54%
Automatic Meter Reading	Oper	$ 631,000	$ 211,274	33.48%
Regional Water Interconnects	S.T.	$ 968,000	$ 209,910	21.68%
Burnt Store RO WTF	Conn	$ 1,356,000	$ 1,055,743	77.86%
Burnt Store RO WTF	Oper	$ 635,000	$ -	0.00%
Future Water Supply Alternatives	Conn	$ 1,494,000	$ 561,586	37.59%
Future Water Supply Alternatives	Oper	$ 1,500,000	$ -	0.00%
Water Distribution Piping	Conn	$ 740,000	$ 9,600	1.30%
Water Distribution Piping	R & R	$ 1,419,000	$ 330,603	23.30%
Water Distribution Piping	Oper	$ -	$ 150	0.00%
Water Pumping Stations	Oper	$ -	$ 19,975	0.00%
Water Pumping Stations	Conn	$ 1,320,000	$ 10,058	0.76%
Water Pumping Stations	R & R	$ 1,106,000	$ 417,294	37.73%
Major Water Transmission Lines	Oper	$ -	$ 9,289	0.00%
Major Water Transmission Lines	Conn	$ 3,069,000	$ 810,518	26.41%
Security Upgrades	Oper	$ 169,500	$ 3,582	2.11%
South County Staging Facility	Oper	$ 400,000	$ -	0.00%
Utility Infrastructure Mapping	Oper	$ -	$ -	0.00%
Waterway Crossings	R & R	$ 436,000	$ 200,778	46.05%
Utilty Office/Maintenance Bldg	Oper	$ 219,500	$ 152,803	69.61%
Utility Information Systems Upgrades	Oper	$ 342,500	$ 70,043	20.45%
Utility Information Systems Upgrades	R & R	$ 50,000	$ -	0.00%
TOTALS		**$15,855,500**	**$ 4,111,178**	

Funding sources:

R & R = Renewal & Replacement Fund

Conn = Connection Fee Fund

Oper = O & M Fund

SGC = South Gulf Cove Water/Wastewater Expansion

S.T. = Sales Tax

Table 6-2 Capital Improvement Projects in Progress or Initiated in 2006 – Wastewater System

Description	Funding Source	FY 2006 Budget	2006 Expenditures	Percent of Budget Expended
South Gulf Cove Sewer Expansion	SGC	$ 550,000	$ 50,739	9.23%
East Port Upgrades	Conn	$ -	$ 448,256	0.00%
East Port Upgrades	R & R	$ 162,000	$ -	0.00%
East Port Upgrades	Oper	$ 1,579,000	$ 410,695	26.01%
Rotonda WRF Upgrade	Conn	$ 2,130,000	$ 579,120	21.04%
Rotonda WRF Upgrade	R & R	$ 730,000	$ 43	0.01%
Rotonda WRF Upgrade	Oper	$ 773,000	$ 6,163	0.80%
Utility System Redevelopment Plan	Grant	$ 550,000	$ -	0.00%
Utility System Redevelopment Plan	Oper	$ 200,000	$ 5,912	2.96%
East Port WRF Expansion	Conn	$ -	$ 181,400	0.00%
Rotonda Meadows MSBU WW Expansion	RM	$ -	$ 29,959	0.00%
Rotonda Meadows MSBU WW Expansion	Oper	$ 300,000	$ 129	0.04%
Burnt Store WRF	Conn	$ 740,000	$ 620,128	83.80%
Wastewater Lift Stations-Deep Creek	Conn	$ -	$ 63,211	
Lift Station Vacuum Truck	Oper	$ 225,000	$ 179,840	79.93%
Reclaimed Water Expansion	Grant	$ 1,000,000	$ -	0.00%
Reclaimed Water Expansion	Oper	$ -	$ 16,360	0.00%
Reclaimed Water Expansion	Conn	$ 7,082,000	$ 833,289	11.77%
Wastewater Force Mains	Oper	$ -	$ 500	0.00%
Wastewater Force Mains	Conn	$ 3,183,000	$ 23,395	0.73%
Wastewater Force Mains	R & R	$ 930,000	$ 7,102	0.76%
Wastewater Lift Stations	Conn	$ 1,724,000	$ 749,046	43.45%
Wastewater Lift Stations	R & R	$ 976,000	$ 527,243	54.02%
Septage Pump Truck	Oper	$ 125,000	$ 97,635	78.11%
Rotonda Reclaimed Water ASR Well	Conn	$ 435,000	$ 96,338	22.15%
Rotonda Reclaimed Water ASR Well	Grant	$ 435,000	$ -	0.00%
Pirate Harbor MSBU WW Expansion	PH	$ -	$ 113,247	0.00%
Rotonda Sands MSBU WW Expansion	RS	$ -	$ 29,959	0.00%
Rotonda Villas WW Expansion	RV	$ -	$ 21,601	0.00%
Repair, Replace, Reline sewer lines	R & R	$ 649,000	$ 1,909	0.29%
West Port WRF	Conn	$ 110,000	$ 29,185	26.53%
West Port WRF	R & R	$ 229,000	$ 426	0.19%
Road Upgrades	Oper	$ 702,000	$ 7,445	1.06%
Road Upgrades	R & R	$ 282,000	$ 85,259	30.23%
Utility System Growth Plan	Growth	$ 1,394,000	$ -	0.00%
Security Upgrades	Oper	$ 169,500	$ 3,582	2.11%
Utility Infrastructure Mapping	Oper	$ -	$ -	0.00%
Waterway Crossings	R & R	$ 436,000	$ 200,778	46.05%
Utility Office/Maintenance Bldg	Oper	$ 219,500	$ 152,803	69.61%
Utility Information Systems Upgrages	Oper	$ 342,500	$ 70,043	20.45%
Utility Information Systems Upgrades	R & R	$ 50,000	$ -	0.00%
TOTALS		**$ 27,862,500**	**$ 5,642,740**	

Funding sources: R & R = Renewal & Replacement Fund; RM = Rotonda Meadows WW MSBU; Oper = O & M Fund; Conn = Connection Fee Fund; RS = Rotonda Sands WW MSBU; PH = Pirate Harbor WW MSBU; SGC = South Gulf Cove Water/Wastewater Expansion; GROWTH = Utility System Growth Plan; RV = Rotonda Villas WW MSBU

Table 6-3 Charlotte County Capital Improvement Program - Water and Sewer

Project Name	Prior Years Actual	Project Costs (in thousands) Estimated 06	FY 07	FY 08	FY 09	FY 10	FY 11	Future Years	Total
Automatic Meter Reading	$ 1,015	$ 631	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 4,000	$ 10,646
Burnt Store Water Reclamation Facility	$ 1,903	$ 740	$ 15,000	$ 3,000	$ 2,000	$ -	$ -	$ -	$ 22,643
Burnt Store RO WTF	$ 878	$ 1,061	$ 4,704	$ 7,526	$ 100	$ -	$ -	$ -	$ 14,269
East Port Expansion Water Reclamation Facility	$ 3	$ -	$ 2,000	$ 16,000	$ -	$ -	$ -	$ 18,000	$ 36,003
East Port Operations Bldg.	$ -	$ -	$ 2,500	$ -	$ -	$ -	$ -	$ -	$ 2,500
East Port Upgrades	$ 984	$ 1,741	$ 550	$ 400	$ 400	$ 400	$ 400	$ -	$ 4,875
Future Water Supply Alternatives	$ 6	$ 1,494	$ 3,000	$ 27,600	$ -	$ -	$ -	$ 24,000	$ 56,100
Major Water Transmission Lines	$ 3,817	$ 1,569	$ 4,050	$ 5,000	$ 1,750	$ 2,000	$ 2,000	$ -	$ 20,186
Pirate Harbor MSBU Wastewater Expansion	$ -	$ -	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ 2,000
Reclaimed Water Expansion	$ -	$ 404	$ 5,594	$ 3,870	$ 1,450	$ -	$ -	$ -	$ 11,318
Regional Water Interconnects	$ 7	$ 968	$ 4,625	$ 24,400	$ -	$ -	$ -	$ -	$ 30,000
Repair, Replace, Reline Wastewater Collection Sys	$ 4,625	$ 249	$ 1,005	$ 1,205	$ 1,210	$ 1,210	$ 615	$ -	$ 10,119
Rotonda Meadows MSBU Wastewater Expansion	$ -	$ 300	$ 17,100	$ -	$ -	$ -	$ -	$ -	$ 17,400
Rotonda Sands MSBU Wastewater Expansion	$ -	$ -	$ 19,500	$ -	$ -	$ -	$ -	$ -	$ 19,500
Rotonda Villas MSBU Wastewater Expansion	$ -	$ -	$ 600	$ 45,000	$ -	$ -	$ -	$ -	$ 45,600
Rotonda Reclaimed Water ASR Well	$ -	$ 100	$ 770	$ -	$ 1,835	$ -	$ -	$ -	$ 2,705
Rotonda Water Reclamation Facility Upgrade	$ 968	$ 2,633	$ 11,000	$ 5,300	$ -	$ -	$ -	$ -	$ 19,901
Security Upgrades	$ 11	$ 139	$ 450	$ -	$ -	$ -	$ -	$ -	$ 600
South County Staging Facililty	$ -	$ 30	$ 770	$ -	$ -	$ -	$ -	$ -	$ 800
U.S. 41 to W. Tarpon Orange MSBU Wastewater Expansion	$ -	$ -	$ 300	$ -	$ -	$ -	$ -	$ -	$ 300
Utility Information Systems Upgrades	$ 2,387	$ 385	$ 960	$ 450	$ 450	$ 450	$ 450	$ -	$ 5,532
Utility Infrastructure Mapping	$ -	$ -	$ 700	$ -	$ -	$ -	$ -	$ -	$ 700
Utility System Growth Plan	$ 4,160	$ 230	$ 2,464	$ -	$ -	$ -	$ -	$ -	$ 6,854
Utility System Redevelopment Plan	$ -	$ -	$ 200	$ 7,125	$ 2,950	$ -	$ -	$ 7,905	$ 18,180
Utility Office/Maintenance Bldg	$ 4,333	$ 439	$ 4,500	$ 500	$ 500	$ 500	$ 500	$ -	$ 11,272
Wastewater Force Mains	$ -	$ 913	$ 2,700	$ 1,400	$ 1,400	$ 900	$ -	$ -	$ 7,313
Wastewater Lift Stations	$ -	$ 1,700	$ 3,381	$ 2,864	$ 2,950	$ 3,038	$ 3,189	$ -	$ 17,122
Water & Sewer Waterway Crossings	$ 1,443	$ 372	$ 660	$ 280	$ 219	$ 220	$ 160	$ -	$ 3,354
Water Distribution Piping	$ -	$ 1,159	$ 1,630	$ 600	$ 2,000	$ 2,000	$ 1,100	$ -	$ 8,489
Water Pumping Stations	$ 973	$ 926	$ 1,250	$ 174	$ 174	$ 2,400	$ -	$ -	$ 5,897
West Port Water Reclamation Facility	$ 11,100	$ 339	$ 300	$ 225	$ 7,000	$ 7,000	$ -	$ -	$ 25,964
TOTAL	**$ 38,613**	**$ 18,522**	**$ 115,263**	**$ 153,919**	**$ 27,388**	**$ 21,118**	**$ 9,414**	**$ 53,905**	**$ 438,142**

Conclusions and Recommendations

7 CONSOLIDATED CONCLUSIONS AND RECOMMENDATIONS

7.1 Capacity Improvements

Capacity-related improvements for each CCU system are summarized as follows:

7.1.1 Water Distribution System Served by PR/MRWSF

1. Continue design of the 24-inch secondary transmission main, Phase 11, from the Peace River transmission main on Kings Highway at the DeSoto County line to the "heart" of the Port Charlotte distribution system. This is the segment from Presque Isle to Harbor and Sandhill to County line.
2. Continue the current long-term look at interconnections as part of maintaining the level-of-service reliability. Consider including risk management in the analysis.

7.1.2 Water Distribution System Served by Burnt Store WTF

1. Upgrade transmission main along Burnt Store Road to meet future demands. Replace 6-inch and 8-inch pipe with C-900 SDR-18 pipe.

7.1.3 Wastewater Collection System

1. Use the wastewater lift station and force main computer model to assess the need for upgrades to the system based on anticipated demand for services.
2. Plan for the next phases of sewer expansion in Charlotte County.
3. Continue Countywide expansion study that is underway by consultant Jones Edmunds.
4. Begin the process to establish an asset management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.
5. Compute the value of the collection system and the percentage that is annually replaced or renewed. As the system grows, so will the cost to maintain the system at its design capacity.
6. Consider implementing the alternate method in asset valuation, per GASB 34.
7. In comparing the life-cycle costs between gravity-based and LPS systems, ensure that all costs are included; for example, the cost to line a gravity system manhole that has corroded because of gases from the LPS discharge, and a life longer than 20 years.

7.1.4 Burnt Store RO Water Treatment Facility

1. Continue with the design and permitting of the planned expansion of the Burnt Store WTF. The expanded plant should be online by FY 2009 in order to meet projected water demands within the Burnt Store service area.

2. Construct the three new water supply wells, as authorized by the recently renewed SWFWMD WUP. These new wells should be operational commensurate with the WTF expansion project.
3. Construct the new 9.5 MGD deep injection well. This new well should be operational commensurate with the Burnt Store WTF expansion project, or commensurate with the Burnt Store WRF expansion project (whichever occurs first).

7.1.5 East Port WRF and Reuse System

1. Continue with the design for the expansion and upgrade of the East Port WRF.
2. The existing electrical generator is undersized and should be addressed in the expansion project.
3. Upgrade the capacity of the high-service injection well pumps to fully utilize the capacity of the two injection wells.
4. Continue implementing the Central and West County Reuse Master Plan recommendations for new reuse transmission mains and customers for the effluent from the East Port WRF.

7.1.6 West Port WRF and Reuse System

1. Upgrade the deep injection well pump station to more fully utilize the capacity of the injection well.

7.1.7 Rotonda WRF and Reuse System

1. Continue with the 2 MGD expansion of the Rotonda WRF. The initial phase expanding Rotonda to 1 MGD is currently scheduled to be complete by September 2008. Another year of construction is anticipated to be required before 2 MGD is available.
2. Continue a study that was begun at the end of FY 2006 to investigate the feasibility of an ASR well for reclaimed water storage at the Rotonda WRF site.

7.1.8 Burnt Store WRF and Reuse System

1. Continue with the design for the expansion of the Burnt Store WRF.
2. Construct the new 9.5 MGD deep injection well. This new well should be operational commensurate with the Burnt Store WTF expansion project, or commensurate with the Burnt Store WRF expansion project (whichever occurs first).
3. If necessary, provide a dedicated 1.0 MG reclaimed water storage tank onsite. This recommendation is dependent upon the type of reuse customers connected. If the Tern Bay Golf Course is connected, no onsite storage may be required, since the reclaimed water will be pumped to storage located at the golf course.

7.2 Operations and Maintenance

7.2.1 Water Distribution System Served by PR/MRWSF

1. Continue program to replace water meters that are 10 or more years old.
2. Continue program to periodically inspect and repair, as necessary, all water storage tanks in the CCU system.
3. Continue program to replace existing water meters with meters that can be automatically read; that is, gradually convert the system to an automated meter reader (AMR) system. The AMR program should include additional non-billing meters to be able to perform leak detection at the neighborhood level.
4. Continue to make improvements at the Rotonda Water Storage Tank/Booster Pumping Station Facilities to promote mixing within the tank.
5. Perform a water audit in accordance with AWWA procedures and establish a leak detection program. Although the annual water loss is low, the monthly fluctuations are too large to allow the data to be used for ongoing maintenance purposes.
6. Review operations and maintenance processes for efficient use of the CMMS. Once implemented, all data will be centrally located and accessible to authorized personnel. Document processes.
7. Begin the process to establish an asset management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.
8. Compute the value of the distribution system and the percentage that is annually replaced or renewed. As the system grows, so will the cost to maintain the system at its design capacity.
9. Consider implementing the alternate method in asset valuation, per GASB 34.
10. Complete calibration of water model.

7.2.2 Water Distribution System Served by Burnt Store WTF

1. Continue program to replace water meters that are 10 or more years old.
2. Perform a water audit in accordance with AWWA procedures and establish a leak detection program. Although the annual water loss is low, the monthly fluctuations are too large to allow the data to be used for ongoing maintenance purposes.
3. Continue program to replace existing water meters with meters that can be automatically read; that is, gradually convert the system to an automated meter reader (AMR) system. The AMR program should include additional non-billing meters to be able to perform leak detection at the neighborhood level.
4. Review operations and maintenance processes for efficient use of the CMMS. Once implemented, all data will be centrally located and accessible to authorized personnel. Document processes.
5. Begin the process to establish an asset management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.

6. Compute the value of the distribution system and the percentage that is annually replaced or renewed. As the system grows, so will the cost to maintain the system at its design capacity.
7. Consider implementing the alternate method in asset valuation, per GASB 34.
8. Complete calibration of water model.

7.2.3 Wastewater Collection System

1. Continue the scheduled repair of sanitary lift stations that have deteriorated due to use and hydrogen sulfide presence.
2. Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.
3. Develop an I/I detection monitoring program that will provide, among other benefits, flow data to be used in ongoing maintenance, planning and quantification of infiltration and inflow rates.
4. Install odor control systems at lift stations where hydrogen sulfide concentrations cause odors and deterioration of structures.
5. Review operations and maintenance processes for efficient use of the CMMS. Once implemented, all data will be centrally located and accessible to authorized personnel. Document processes.
6. Perform an internal, informal CMOM self-audit.
7. Begin the process to establish an asset-management program that looks at needs and budgets much further than five years. The CMMS will be a valuable tool in this effort.
8. Compute the value of the collection system and the percentage that is annually replaced or renewed. As the system grows, so will the cost to maintain the system at its design capacity.
9. Consider implementing the alternate method in asset valuation, per GASB 34.
10. In comparing the life-cycle costs between gravity-based and LPS systems, ensure that all costs are included; for example, the cost to line a gravity system manhole that has corroded because of gases from the LPS discharge, and a life longer than 20 years.

7.2.4 Burnt Store RO Water Treatment Facility

1. Continue to monitor the condition of the concrete clearwell leak. Repair the leak if it begins to threaten the structural integrity of the clearwell.
2. Install a wind-restraint system for the existing polyethylene sodium hypochlorite storage tank.
3. Install the planned improvements to the computerized control and data acquisition system, including a new optical isolator and any required electrical grounding improvements.

7.2.5 East Port WRF and Reuse System

1. Install variable-speed drives at major wastewater pumping stations to reduce peak hourly flows and the impact of peak hourly flows on the East Port WRF. An example of this construction is the wastewater pump station for the Deep Creek subdivision that will contain a VFD drive to control peak flows and is scheduled for operation in February 2007.
2. The reoccurring problem with grease should be corrected as soon as possible by one or all of the following methods: 1) determine the sources of grease in the wastewater collection system and eliminate these sources, 2) provide grease removal for the influent wastewater, 3) provide backup filtration and 4) provide potable water backup (with back flow prevention) to onsite water demands when suitable reclaimed water is not available (i.e., polymer water demand). CCU has a very proactive grease interceptor inspection program that reveals sources of grease in the wastewater collection system which can be isolated or removed from the system. Also, the East Port facility is scheduled to add another operator and shift to the grease treatment facility as well as an additional grease holding tank.
3. Convert Pond 2 into a reclaimed water storage pond to allow greater utilization of the reclaimed water.
4. As the automated diversion valve located in the bypass around the filters is hydraulically in a gravity flow profile, it is problematic. If flow splitting is desired by plant staff, it is recommended that the ongoing design for the upgrade and expansion of the East Port WRF consider a gravity flow splitting structure consisting of an adjustable inverted slide gate or weir gate (to the filters) and two long fixed overflow weirs (to CCT 2).

7.2.6 West Port WRF and Reuse System

1. Petition FDEP to revise the operating protocol and sampling points for NTU analysis.
2. Upgrade the deep injection well pump station to more fully utilize the capacity of the injection well.
3. Provide means to distribute flow evenly to all four chlorine contact basins. As flow increases at facility, test ability to evenly distribute flows to two or more chlorine contact tanks.
4. Operate all three cloth filters at the same time.
5. Provide a cover over the cloth filters to protect the filter cloth from UV light and to prevent algae growth.
6. Provide timers on the blowers that can be used for nighttime operation to cycle the blowers on and off based on dissolved oxygen concentrations in the aeration tank. A better solution to the over-aeration problem would be to install motor-operated butterfly valves on the inlet to the blowers to regulate the air flow from the blowers.

7.2.7 Rotonda WRF and Reuse System

1. Continue to televise gravity sewers to locate inflow/infiltration (I/I). Repair gravity sewers and manholes with excessive I/I.

7.2.8 Burnt Store WRF and Reuse System

1. If necessary to meet variable reclaimed water demand, provide variable-speed drives for the reclaimed water pump station with a constant-pressure pump control system. Also, install a new meter for measuring reclaimed water flow.

Appendix

Charlotte County Utilities
25550 Harbor View Road, Unit 1
Port Charlotte, FL 33980-2500

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A MESSAGE FROM YOUR UTILITIES DIRECTOR

David G. Schlobohm

Dear Valued Customer:

This Annual Water Quality Report affords us the opportunity to make you aware of the high quality water that flows from your tap. Not only is your drinking water of high quality, as evidenced by this document, it has also been recognized as one of the best-tasting in the state by the Florida Section of the American Water Works Association.

We already know you appreciate the value of water, as most of our customers are extremely conservation-minded. Because of you, Charlotte County Utilities is among the leaders in per-capita water usage, with some of the lowest usage numbers in the state.

We thank you for your continued efforts to conserve water, one of our most precious natural resources. Thanks to the efforts of our hard-working and dedicated CCU employees, you can be confident that this clean, safe, reliable and award-winning drinking water will continue to be available at your tap and at your command.

Charlotte County Utilities

Voted
Florida's 3rd Best Tasting Drinking Water
Florida Section American Water Works Association
5th Annual Drinking Water Taste Test
Tallahassee, Fla.

2005 Water Quality Report

2005 Consumer Confidence/Annual Water Quality Report

Charlotte County Utilities Public Drinking Water System #5084100

Charlotte County Utilities (CCU) is proud to offer our customers this Annual Water Quality Report, designed to inform you about the water and services we deliver to you every day. All information contained in this report has been collected and reported in accordance with the rules and regulations of the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP). This handout is based on the Consumer Confidence Report (CCR) regulations that are published by the USEPA. The CCR rule is the first EPA rule that addresses the public's right-to-know provisions of the 1996 Safe Drinking Water Act amendments.

CCU receives its water from the *Peace River Manasota Regional Water Supply Authority* (PRMRWSA), which oversees the operations of the *Peace River Manasota Regional Water Supply Facility* (PRMRWSF), and uses the Peace River as its source of supply. The PRMRWSA presently sells water to Charlotte County, the City of North Port, DeSoto County, Manatee County and Sarasota County. The Peace River is a large river by Florida standards, having a drainage area of 2,300 square miles, with headwaters originating in the Green Swamp of northern Polk County. It flows through Lake Hancock, the Winter Haven chain of lakes and Lake Hamilton. The mouth of the Peace River is located in Punta Gorda, 120 miles downstream from headwaters that deliver much needed fresh water to the Charlotte Harbor estuary.

If you have any questions about the data provided in this Annual Drinking Water Quality Report or require additional information concerning the PRMRWSA, please contact CCU representative Stephen Kipfinger at (941) 764-4300. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of the PRMRWSA Board of Director meetings, held on the first Wednesday of each month from 10 a.m. to noon, rotated between the County Commission Chambers of Charlotte, DeSoto, Manatee and Sarasota Counties. For meeting information, visit www.regionalwater.org/schedule.html or call (941) 316-1776.

Source Water Assessment Plan The Department of Environmental Protection has performed a Source Water Assessment on our system. These assessments were conducted to provide information about any potential sources of contamination in the vicinity of the Peace River Regional Water Supply surface water intakes. Potential sources of contamination that were identified include underground petroleum storage tanks and wastewater treatment plants. Assessment results are available on the FDEP Source Water Assessment and Protection Program web site at www.dep.state.fl.us/swapp.

HOW DO I READ THIS? In the table to the right, you will find the results of our water quality analysis. You may find unfamiliar terms and abbreviations. For example, the column marked "Level Detected" shows the highest results from the last time tests were performed. "Likely Sources" shows where this substance usually originates. To help you better understand these terms, we are providing you with the following abbreviations and definitions:

- ***Action Level (AL):*** *The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.*
- ***Maximum Contaminant Level or MCL:*** *The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.*
- ***Maximum Contaminant Level Goal or MCLG:*** *The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.*
- ***Maximum residual disinfectant level or MRDL:*** *The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.*
- ***Maximum residual disinfectant level goal or MRDLG:*** *The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.*
- ***"N/A" :*** *Not applicable.*
- ***"ND":*** *Not detected, indicating that the substance was not found by laboratory analysis.*
- ***Nephelometric Turbidity Unit (NTU):*** *Measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.*
- ***Parts per million (ppm) or Milligrams per liter (mg/l):*** *One part by weight of analyte to 1 million parts by weight of the water sample, which corresponds to one minute in two years or a penny in $10,000.*
- ***Parts per billion (ppb) or Micrograms per liter (µg/l):*** *One part by weight of analyte to 1 billion parts by weight of the water sample, which corresponds to one minute in 2,000 years or a penny in $10,000,000.*
- ***Picocurie per liter (pCi/L):*** *Measure of the radioactivity in water.*
- ***Treatment Technique (TT):*** *A required process intended to reduce the level of a contaminant in drinking water.*

Charlotte County Utilities (CCU) routinely monitors for constituents in your drinking water, according to Federal and State laws. The table to the right shows the results of our monitoring for the period of January 1, 2005 to December 31, 2005. Data obtained before January 1, 2005, and presented in this report, is from the most recent testing done in accordance with the laws, rules and regulations. The employees of CCU work hard, seven days a week and 24 hours per day, to provide your family with clean, reliable, award-winning drinking water each and every day.

Drinking Water Test Results Table

Turbidity Contaminants — Peace River Authority (PRMRWSA)

Contaminant and Unit of Measurement	Dates of sampling (mo./yr.)	MCL Violation Y/N	Highest Single Measurement	Lowest monthly percentage of samples meeting regulatory limits*	MCLG	MCL	Likely Source of Contamination
Turbidity (NTU)	1/05-12/05	N	.55	98.2	N/A	TT	Soil runoff

* Based on the lowest monthly percentage of samples meeting the turbidity limits reported in the Monthly Operating Report. Turbidity is a measure of the cloudiness of the water. Monitoring turbidity is a good indicator of the effectiveness of our filtration system. High turbidity can hinder the effectiveness of disinfectants.

Radiological Contaminants — Peace River Authority (PRMRWSA)

Contaminant and Unit of Measurement	Dates of sampling (mo./yr.)	MCL Violation Y/N	Level Detected	MCLG	MCL	Likely Source of Contamination
Gross Alpha (pCi/l)	1/05-12/05	N	1.0	0	15	Erosion of natural deposits.
Combined Radium (pCi/l)	1/05-12/05	N	1.2	0	5	Erosion of natural deposits.

Inorganic Contaminants — Peace River Authority (PRMRWSA)

Contaminant and Unit of Measurement	Dates of Sampling (mo./yr.)	MCL Violation Y/N	Level Detected	MCLG	MCL	Likely Source of Contamination
Barium (ppm)	1/05-12/05	N	0.0072	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride (ppm)	1/05-12/05	N	0.363	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (as Nitrogen)	Quarterly	N	1.15	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as Nitrogen)	Quarterly	N	0.03	1	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Sodium (ppm)	1/05-12/05	N	41.2	N/A	160	Salt water intrusion, leaching from soil
Cyanide (ppb)	1/05-12/05	N	6	N/A	200	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid

Lead and Copper — Charlotte County Utilities

Contaminant and Unit of Measurement	Dates of sampling (mo./yr.)	MCL Violation Y/N	Level Detected	No. of sampling sites exceeding the AL	MCLG	AL (Action Level)	Likely Source of Contamination
Copper (tap water) (ppm)	1/04-12/04	N	0.426	0	1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (tap water) (ppb)	1/04-12/04	N	3.0	1	0	15	Corrosion of household plumbing systems; erosion of natural deposits

(table cont.) →

MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink two liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

For customers with special health concerns: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the **Safe Drinking Water Hotline** (800) 426-4791.

Facility Improvements: The CCU Rotonda water booster changed from a chlorine gas to a sodium hypochlorite feed system, and upgraded to an automatic feed system for ammonia. CCU installed three automatic flushing units in the distribution system, to maintain disinfection residuals.

Some of CCU's Planned System Upgrades for 2006: CCU's Gulf Cove and Rotonda water booster storage tanks are scheduled to be pressure cleaned, repaired and externally painted. Additionally, plans are in place for a tank mixing system to be installed in the Rotonda water booster tank, and to install a sodium hypochlorite and ammonia booster to help serve customers in the South Gulf Cove area.

Stage 1 Disinfectant/Disinfection Byproduct (D/DBP) Parameters — Charlotte County Utilities							
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**MCL Violation Y/N**	**Level Detected**	**Range of Results**	**MCLG Or MRDLG**	**MCL Or MRDL**	**Likely Source of Contamination**
Chloramines (ppm)	1/05-12/05	N	3.0	.5-4.6	MRDLG = 4	MRDL = 4	Water additive used to control microbes
Haloacetic Acids (five) (HAA5) (ppb)	03, 05, 09 and 12/05	N	17	range: 1-29	N/A	MCL = 60	Byproduct of drinking water disinfection
TTHM (Total trihalomethanes) (ppb)	03, 05, 09 and 12/05	N	34	range: 28-38	N/A	MCL = 80	Byproduct of drinking water disinfection

Stage 1 Disinfectant/Disinfection Byproduct (D/DBP) Parameters — Charlotte County Utilities							
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**TT Violation Y/N**	**Lowest removal ratio**	**Range of results**	**MCLG**	**MCL**	**Likely Source of Contamination**
Total Organic Carbon	1/05-12/05	N	1.29	1.29-1.48	N/A	TT Removal Ratio = 1 or more	Naturally present in the environment

- **Level Detected:** Results in the "Level Detected" column for radiological contaminants, inorganic contaminants, synthetic organic contaminants including pesticides and herbicides, and volatile organic contaminants are the highest average at any of the sampling points or the highest detected level at any sampling point, depending on the sampling frequency.
- **Lead:** Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community, as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to two minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at (800) 426-4791.
- **On Nov. 16, 2005** CCU failed to provide the required amount of disinfection within the distribution system near the Rotonda area. This violation was immediately corrected by flushing the area water lines and there were no health effects. The violation was later resolved with the Department of Environmental Protection through a Consent Order.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can, also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Water Conservation: It's Up to You

Charlotte County Utilities' *year-round watering restrictions are still in effect, and lawn irrigation systems continue to account for the largest residential water usage outside the home. Your family can conserve water by continuing to observe these restrictions and irrigating only on your assigned day:*

- *Addresses ending in an even number (0, 2, 4, 6, 8) may water their lawns on* ***Tuesday ONLY***
- *Addresses ending in an odd number (1, 3, 5, 7, 9) may water their lawns on* ***Sunday ONLY***
- *Irrigation* ***is not permitted*** *during peak hours, 10 a.m. to 4 p.m.* ***ON ANY DAY***

Watering restrictions apply to all irrigation systems, including wells, canals, public and private utilities. Hand-watering is permitted on any day and exceptions are provided for new plantings. We do ask that customers use a flow-regulating nozzle on all hoses and limit heavy water usage (such as filling pools, large loads of laundry and car washing) during the peak hours of 10 a.m. to 4 p.m. This helps us maintain optimal water pressure throughout the system and throughout the day. Your water conservation efforts will also help you recognize savings on your monthly utility bill. For more information on Charlotte County Utilities watering restrictions and conservation tips, visit our Web site at ***www.charlottefl.com*** *and click on* ***Water and Sewer****, or call (941) 764-4300. All of us at CCU thank you for supporting water conservation.*

Charlotte County Utilities
25550 Harbor View Road, Unit 1
Port Charlotte, FL 33980-2500

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A MESSAGE FROM YOUR UTILITIES DIRECTOR

David G. Schlobohm

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We thank you for your continued efforts to conserve water, one of our most precious natural resources. And thanks to the efforts of our hard-working and dedicated CCU employees, you can be confident that this clean, safe, reliable and award-winning drinking water will continue to be available at your tap and at your command.

Charlotte County Utilities

2005 Burnt Store Water Quality Report

2005 Consumer Confidence/Annual Water Quality Report

Charlotte County Utilities Public Drinking Water System #6080318

Charlotte County Utilities (CCU) is proud to offer our customers this Annual Water Quality Report, designed to inform you about the water and services we deliver to you every day. All information contained in this report has been collected and reported in accordance with the rules and regulations of the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP). This handout is based on the Consumer Confidence Report (CCR) regulations published by the USEPA. The CCR rule is the first EPA rule that addresses the public's right-to-know provisions of the 1996 Safe Drinking Water Act amendments.

CCU operates the reverse osmosis water treatment plant and distribution system serving the Burnt Store and Pirate Harbor service area. Our source water is groundwater from the Floridan Aquifer. This is treated through a two-stage membrane treatment process, an aeration system and a final chlorination and pH adjustment before the water is pumped to the distribution system.

If you have any questions about the data provided in this Annual Drinking Water Quality Report or require additional information, please contact CCU representative *Stephen Kipfinger at (941)764-4300*. We want our valued customers to be informed about their water utility.

Source Water Assessment Plan The Department of Environmental Protection has performed a Source Water Assessment on our system. These assessments were conducted to provide information about any potential sources of contamination in the vicinity of our wells. Potential sources of contamination that were identified include industrial wastewater and domestic wastewater treatment systems. Assessment results are available on the FDEP Source Water Assessment and Protection Program Web site at www.dep.state.fl.us/swapp.

HOW DO I READ THIS? In the table to the right, you will find the results of our water quality analysis. You may find some unfamiliar terms and abbreviations. For example, the column marked "Level Detected" shows the highest results from the last time tests were performed. "Likely Sources" shows where this substance usually originates. To help you better understand these terms, we have provided the following abbreviations and definitions:

- ***Action Level (AL):*** *The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.*
- ***Maximum Contaminant Level or MCL:*** *The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.*
- ***Maximum Contaminant Level Goal or MCLG:*** *The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.*
- ***Maximum residual disinfectant level or MRDL:*** *The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.*
- ***Maximum residual disinfectant level goal or MRDLG:*** *The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.*
- ***N/A:*** *Not applicable.*
- ***ND:*** *Not detected, indicating that the substance was not found by laboratory analysis.*
- ***Nephelometric Turbidity Unit (NTU):*** *Measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.*
- ***Parts per million (ppm) or Milligrams per liter (mg/l):*** *One part by weight of analyte to 1 million parts by weight of the water sample, which corresponds to one minute in two years or a penny in $10,000.*
- ***Parts per billion (ppb) or Micrograms per liter (µg/l):*** *One part by weight of analyte to 1 billion parts by weight of the water sample, which corresponds to one minute in 2,000 years or a penny in $10,000,000.*
- ***Picocurie per liter (pCi/L):*** *Measure of the radioactivity in water.*
- ***Treatment Technique (TT):*** *A required process intended to reduce the level of a contaminant in drinking water.*

Charlotte County Utilities *(CCU) routinely monitors for constituents in your drinking water, according to Federal and State laws. The table to the right shows the results of our monitoring for the period of January 1, 2005 to December 31, 2005. Data obtained before January 1, 2005, and presented in this report, is from the most recent testing done in accordance with the laws, rules and regulations. The employees of CCU work hard, seven days a week and 24 hours per day, to provide your family with clean, reliable, award-winning drinking water each and every day.*

Drinking Water Test Results Table

Radiological Contaminants — Peace River Authority (PRMRWSA)							
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**MCL Violation (Y/N)**	**Level Detected**	**Range**	**MCLG**	**MCL**	**Likely Source of Contamination**
Gross Alpha (pCi/l)	03/02, 05/02, 08/02, 12/02	N	6.6	(3.8-8.0)	0	15	Erosion of natural deposits.
Radium 226 or Combined Radium (pCi/l)	03/02, 05/02, 08/02, 12/02	N	2.45	(1.3-3.3)	0	5	Erosion of natural deposits.

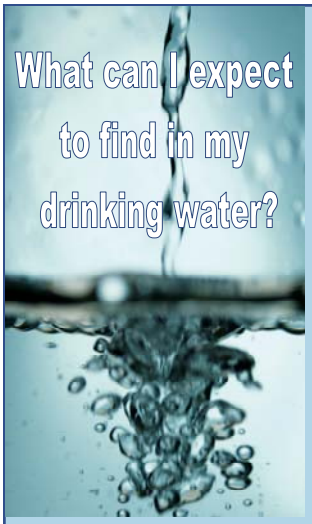
Inorganic Contaminants — Peace River Authority (PRMRWSA)						
Contaminant and Unit of Measurement	**Dates of Sampling (mo./yr.)**	**MCL Violation (Y/N)**	**Level Detected**	**MCLG**	**MCL**	**Likely Source of Contamination**
Barium (ppm)	06/05	N	0.004	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Nickel (ppb)	06/05	N	1.0	N/A	100	Pollution from mining and refining operations. Natural occurrences in soil.
Selenium (ppb)	06/05	N	10	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
Sodium (ppm)	06/05	N	40.9	N/A	160	Salt water intrusion, leaching from soil.

Lead and Copper — Charlotte County Utilities							
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**MCL Violation Y/N**	**Level Detected**	**No. of sampling sites exceeding the AL**	**MCLG**	**AL (Action Level)**	**Likely Source of Contamination**
Copper (tap water) (ppm)	10/05	N	0.188	0	1	1	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
Lead (tap water) (ppm)	10/05	N	14.1	3	0	15	Corrosion of household plumbing systems; erosion of natural deposits.

Stage 1 Disinfectant/Disinfection Byproduct (D/DBP) Parameters—Charlotte County Utilities							
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**MCL Violation Y/N**	**Level Detected**	**Range of Results**	**MCLG or MRDLG**	**MCL or MRDL**	**Likely Source of Contamination**
Chloramines (ppm)	1/05-12/05	N	2.6	2.4-3.0	MRDLG=4	MRDL=4	Water additive used to control Microbes.
Haloacetic Acids (five) (HAA5) (ppb)	08/05	N	3.0	N/A	N/A	MCL=60	Byproduct of drinking water disinfection.
TTHM (Total trihalomethanes) (ppb)	08/05	N	13.3	N/A	N/A	MCL=80	Byproduct of drinking water disinfection.

Stage 1 Disinfectant/Disinfection Byproduct (D/DBP) Parameters—Charlotte County Utilities						
Contaminant and Unit of Measurement	**Dates of sampling (mo./yr.)**	**MCL Violation Y/N**	**Total Number of Positive Samples for the Year**	**MCLG**	**MCL** (For systems collecting fewer than 40 samples per month, presence of coliform bacteria in one sample)	**Likely Source of Contamination**
Total Coliform Bacteria	1/05-12/05	N	0	0	0	Naturally present in the environment

We're ready in an emergency. Charlotte County Utilities takes great pride in our highly skilled and well-trained award winning staff, providing products and services of uncompromising value—including maintenance of over 4,200 fire hydrants used in fire suppression— to the nearly 125,000 customers in CCU's certificated area. During the 2004 hurricane season, the men and women of CCU, most of whom had also been impacted by the storm, worked day and night around the clock to provide our customers with water and wastewater services with limited interruptions. We continue to train and prepare for any emergency that may affect the utility and our valued customers. Thank you for allowing us to continue to serve you, around the clock, every day of the year.



The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at (800) 426-4791.

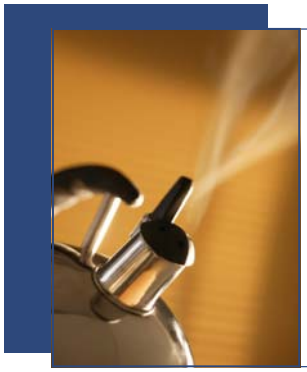
You can help CCU conserve water and reduce your water usage by up to 14 percent if you repair or replace leaky faucets, hoses and other defective household fixtures.

(Source: American Water Works Association)

MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink two liters of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having the described health effect.

For customers with special health concerns: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the **Safe Drinking Water Hotline** (800) 426-4791.

- **Level Detected:** Results in the Level Detected column for radiological contaminants, inorganic contaminants, synthetic organic contaminants including pesticides and herbicides, and volatile organic contaminants are the highest average at any of the sampling points or the highest detected level at any sampling point, depending on the sampling frequency.
- **Lead:** Infants and young children are typically more vulnerable to lead in drinking water than the general population. Infants and children who drink water containing lead in excess of the MCL could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. It is possible that lead levels at your home may be higher than at other homes in the community, as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to two minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800) 426-4791.
- **In 2005** CCU failed to collect Lead and Copper samples when required. Lead and Copper samples were later collected in October and the results are in the table on the previous page. This violation was immediately corrected by flushing the area water lines and there were no health effects. The monitoring violation was later resolved with the Department of Environmental Protection through a Consent Order.



What is a Boil Water Notice?

Boil water notices are issued by CCU from time to time due to a loss of system pressure, below 20 pounds per square inch, which is generally the result of a water line break or occasional equipment malfunctions. A boil water notice is NOT notification that your water is contaminated, but is issued as a precautionary measure pending testing results, to ensure the health and safety of our customers. A boil water notice advises you, the customer in an affected area, to boil your tap water for a minimum of three minutes before using it for drinking, cooking and ice making, until lab tests verify the water is safe for consumption. Lab tests generally take 24 hours to complete, and once results conclude that the water is safe for human consumption CCU will issue a rescission notice to customers in the affected area.

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