

Cedar Key Water and Sewer District 2010 Public Facilities Report

Introduction

This report was prepared to satisfy the requirements of Section 189.415, Florida Statutes. The purpose of this report is to increase cooperation between special districts and local governments relating to comprehensive planning efforts.

Existing Facilities-Wastewater

The treatment plant is classified as a water reclaiming facility by the Florida DEP since it is designed to treat the wastewater to a degree where it can be reused for irrigation purposes. The water reclaiming facilities are located at C and 3rd Streets. The treatment plant consists of screening, grit removal, aeration, settling, filters and disinfection. Unit processes consist of dual tanks or equipment, providing class 1 reliability. A propane fueled motor generator set is also provided to generate electricity in case of power failure. High level disinfection is included to destroy bacteria, and dechlorination facilities dechlorinate the effluent during periods of effluent discharge into the back bayou.

The primary effluent disposal of the reclaimed water is at the approximately 1 acre block surrounded by G St., H St., 8th St. and Whiddon Ave. This area is approved for 166,000 gpd. Effluent disposal utilizes leaching chambers installed slightly below grade and is classified by the FDEP as an adsorption field. Additional areas approved for 14,000 gpd of effluent disposal by spray irrigation are the cemetery, the School, the City Park and some R/W areas along "G" Street.

Cedar Key's wastewater collection system consists of gravity sewer collection areas discharging into pumping stations and a force main network discharging to the treatment plant. As part of a CDBG to the City of Cedar Key in 1992, sewers along portions of 2nd, 4th, 5th, D, E and G Streets were rehabilitated in order to reduce infiltration and storm water inflow into the sewer system. A low pressure sewer system was constructed in 2000, connecting all remaining buildings on the island to the existing sewer system. Individual hookups were completed in 2001.

The wastewater treatment plant operating permit expires August 25, 2013.

Current Capacity

Effective in 2003, the FDEP approved the reclaiming facilities for an average annual flow of 180,000 gpd with an instantaneous peak capacity of 400 gpm, or 576,000 gpd.

City of Cedar Key Phase II Streets and Utilities Work

During 2010, work on the above project, funded by the City CRA proceeded. Essentially, the project area includes all City owned streets from Whiddon Avenue south, and from Depot Street to "H" Street. Minor portions of these streets are being funded by a CDBG Grant by the State of Florida. In addition to new pavement and replacement of several old and/or small water lines, major sewer rehabilitation was accomplished. Some sewers were replaced and many more were relined with PVC liners. Old Vitrified Clay Pipe sewer laterals were replaced with PVC. Many sewer connections were replaced; some of which had been protruding into the main and preventing the passage of TV Cameras. Many leaks were eliminated resulting in less flow to the treatment plant than was recorded in previous years.

Current Demands

Wastewater flows recorded during 2010 are summarized below:

<u>Month</u>	<u>Flow (gpd)</u>
Jan	94,000
Feb	106,000
Mar	116,000
Apr	110,000
May	103,000
Jun	95,000
Jul	120,000
Aug	109,000
Sep	99,000
Oct	95,000
Nov	80,000
Dec	<u>73,000</u>
Annual Average:	100,000

Average and maximum month flows for the last nineteen years are:

<u>Year</u>	<u>Average Wastewater Flows (gpd)</u>	<u>Maximum Month Flows (gpd)</u>
1992	89,000	111,000
1993	90,000	116,000
1994	89,000	105,000
1995	97,000	130,000
1996	109,000	147,000
1997	105,100	130,000
1998	116,300	151,000
1999	95,000	111,000
2000	95,000	108,000
2001	112,000	135,000
2002	122,000	150,000
2003	121,000	144,000
2004	117,000	153,000
2005	119,500	149,000
2006	113,750	132,000
2007	102,769	117,940
2008	111,487	134,240
2009	102,875	121,200
2010	100,000	120,000

In 2010, 55.5% of the treatment capacity was utilized based on average daily flows.

Existing Facilities – Water

Description

The District's existing public water supply system includes:

- Three wells, located on the mainland;
- A MIEX pre treatment unit and lime softening water treatment plant -- all located on the mainland at SR 24 and CR 347;
- A 250,000 gallon elevated steel water storage tank located at 8th and G Streets;
- A distribution system consisting of galvanized steel, asbestos cement, cast iron and PVC pipe ranging in size between ¾ inches to 8 inches in diameter.

Well 1, now abandoned, was located at the water treatment plant site. Well 2, is located on the west side of CR 347 approximately ½ mile north of SR 24 and is used as a standby water supply and not normally used. Wells 3 & 4 are located on the southeast side of SR 24 approximately 2 miles east of CR 347.

City of Cedar Key Phase II Streets and Utilities Work

During 2010, work on the above project, funded by the City CRA proceeded. Essentially, the project area includes all City owned streets from Whiddon Avenue south, and from Depot Street to "H" Street. Minor portions of these streets are being funded by a CDBG Grant by the State of Florida. In addition to new pavement and sewer rehabilitation, all lead and galvanized water service piping and small diameter galvanized water mains are being replaced with PVC pipe or Polyethylene tubing. Also, several 6-inch watermains were or will be replaced with 8-inch PVC or Polyethylene pipe. Many minor leaks were found and the piping replaced in 2010. Even though the entire project was not complete by year end, evidence shows that this project has contributed to lower production levels from our Water Treatment Plant this year.

Automatic Meter Reading System

In January, 2010, work started on the installation of new computer radio read water meters throughout the service area. Installation was complete in April. The average age of the existing meters was between 15 and 20 years old and accuracy tests on selected meters showed that we were losing a moderate amount of revenues. A more important reason for installing the new meters was the labor savings in meter reading time. It normally took two operators two days to read approximately 940 meters. The new meter reading system takes one operator approximately two hours to drive by all meters with a laptop computer and radio receiver in his truck to capture all readings. Another advantage of the new system is that an operator can visit a particular meter and download several months of stored information into the laptop, return to the office and obtain a print out showing water usage every hour for the customer. This has proved very useful in pinpointing customer leaks.

Current Capacity

The capacity of a water system, as determined by the Florida DEP is its maximum day (24 hour) supply or treatment capability, whichever is less. In the case of Cedar Key, the limiting factor is the water treatment plant, rated at 250 gpm or 360,000 gpd. This capacity is somewhat reduced (temporally), due to lime deposits in the transmission main.

Current Demands

Monthly average and maximum day (24 hour) water demands for 2010 are summarized below:

<u>Month</u>	Average Production (gpd)	Maximum Day Demand (gpd)
Jan	146,084	226,650
Feb	136,785	202,790
Mar	144,923	181,520
Apr	147,842	193,270
May	147,020	207,400
Jun	127,935	177,920
Jul	123,900	203,850
Aug	107,155	175,270
Sep	114,569	159,400
Oct	127,056	184,130
Nov	126,597	177,590
Dec	<u>108,181</u>	170,050
Annual Average:	129,837	

For the year 2010, the highest single day demand was 226,650 gallons.

Average annual and maximum day demands for the last 16 years are summarized on the following page. The high maximum day demand during 1993 resulted from broken water lines caused by the March 13th "Storm of the Century". Other maximum day demands frequently result from fire flows. The maximum single day demand will be taken into consideration in calculating the percentage of the treatment capacity (360,000 gpd) being used.

<u>Year</u>	<u>Water Treatment Capacity Used</u>		
	Average Water Production (gpd)	Maximum Day Demand (gpd)	Treatment Capacity Used
1992	175,000	302,000	84%
1993	189,775	582,000	162%
1994	132,680	322,000	89%
1995	163,175	332,000	92%
1996	182,000	380,000	105%
1997	140,750	235,000	65%
1998	153,000	288,000	80%
1999	150,400	290,000	80.6%
2000	149,500	282,000	78.3%
2001	147,000	244,000	67.8%
2002	152,000	262,000	72.8%
2003	150,600	304,000	84.4%
2004	145,900	264,000	73.3%
2005	135,100	235,000	65.0%
2006	144,583	239,000	66.3%
2007	159,623	289,430	80.4%
2008	153,095	240,650	66.8%
2009	140,652	249,190	69.2%
2010	129,837	226,650	63%

Metered water usage billed during 2010 is summarized below:

<u>Month</u>	<u>Total Billed (Gallons)</u>
Jan	3,728,020
Feb	3,109,434
Mar	3,724,865
Apr	4,946,303
May	3,597,121
Jun	4,112,568
Jul	3,185,862
Aug	2,996,284
Sep	3,142,328
Oct	2,800,613
Nov	3,431,907
Dec	<u>4,120,024</u>
Annual Total:	42,895,329
Monthly Average:	3,574,611
Daily Average:	117,521

For unbilled users, water use for the City Hall complex was measured at 2,460 gallons. Water use for the District's Office and Water Reclaiming Facility was measured at 45,260 gallons. In addition, 353,680 gallons were measured from blow offs during 2010. Total metered usage for 2010 is summarized on the following page:

<u>Category</u>	<u>Metered Water Usage - 2009</u>	
	<u>Gallons per Year</u>	<u>Gallons per Day</u>
Metered – Billed	42,895,329	117,521
Metered – Not Billed	<u>401,400</u>	<u>1,100</u>
Total Accounted For	43,296,729	118,621

Unaccounted For Water

The difference between gallons produced at the water treatment plant and metered use of consumption is referred to as "unaccounted for water". Unaccounted for water is comprised of water used for fire fighting, unmetered flushing of water lines from fire hydrants, unmetered connections, and leaks. Most state and federal agencies regulating water use recommend that unaccounted for water not exceed a maximum of 10% to 15%. Unaccounted for water was 129,837 gpd, less 118,621 gpd, or 11,216 gpd during 2010. As a percentage, the unaccounted water for 2010 was 8.6%. A summary of average water production, usage and unaccounted for water over the past 18 years is listed on the following page:

<u>Year</u>	<u>Average Water Production (gpd)</u>	<u>Total Metered Usage (gpd)</u>	<u>Unaccounted For Water</u>	
			<u>(gpd)</u>	<u>(%)</u>
1992	175,000	113,275	61,725	35
1993	189,775	113,702	76,073	40
1994	155,900	112,305	43,595	28
1995	163,175	123,377	39,798	24
1996	182,000	136,914	45,086	25
1997	140,750	130,869	9,881	7
1998	153,000	139,800	13,200	8.6
1999	150,400	144,186	6,214	4.1
2000	149,500	143,881	5,619	3.8
2001	147,000	139,043	7,957	5.4
2002	152,000	140,267	11,733	7.7
2003	150,600	131,015	19,585	13.0
2004	145,900	129,800	16,100	11.0
2005	135,100	121,914	13,186	9.8
2006	144,583	130,544	14,036	9.7
2007	159,623	130,202	29,421	18.4
2008	153,095	119,505	33,590	21.9
2009	140,652	113,835	26,617	19.1
2010	129,837	118,621	11,216	8.6

The new Water and Wastewater Conservation Rate structure, the new radio read Automatic Meter Reading System and the replacement of old galvanized water services and mains have all contributed to a major reduction of "Unaccounted for Water" this year.

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